

**Response to CEC Staff Data Adequacy Comments**

**Technical Area: Biological Resources**

Following are additional information and/or clarifications in response to the specific issues raised in the CEC staff Data Adequacy review. For each specific area where the questions were raised by CEC staff, the applicable section of the CEC Siting Regulations is identified, followed by the "Information Required to Make AFC Conform with Regulations," followed by the supplemental/clarifying information.

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**BIO-1. Appendix B (g) (13) (A) (iii).**

**Information Required:**

Please identify which species, if any, discussed in the AFC are designated as Fully Protected by updating Table 5.3-5 with this status.

**Response:**

None of the species in Table 5.3-5 are classified as "Fully Protected" by CDFG.

**BIO-2. Appendix B (g) (13) (D).**

**Information Required:**

Please submit results for the protocol burrowing owl surveys reported to be complete by August 15, 2008.

**Response:**

Please see **Attachment BIO-2.**

**BIO-3. Appendix B (g) (13) (D).**

**Information Required:**

Please submit resumes for rare plant/drainage surveyors Green, Rajtaniak, Trumbo, and Rado.

**Response:**

Please see **Attachment BIO-3.**

**BIO-4. Appendix B (g) (13) (D) (i).**

**Information Required:**

Provide survey dates for each sensitive species/resource (e.g., rare plants – specific dates, burrowing owl – specific dates, Mohave ground squirrel – specific dates, general wildlife/vegetation – specific dates, etc.).

**Response:**

The dates on which the various surveys of the power plant site and all linear facilities were conducted are shown below. These dates also include the surveys that were done in 2006 of the power plant site only.

General Wildlife/Vegetation – Apr 1-26, 2008; May/June 2006 (plant site only)

Desert Tortoise – Apr 1-26, 2008; June 2006 (plant site only)

Burrowing Owl – Apr 1-26, 2008; Aug 11-14, 2008; June 2006 (plant site only)

Mohave Ground Squirrel – Habitat Assessment in July 2008 (Leitner); Trapping (plant site only) in Apr, May, Jul 2006 (conducted by Eremico Biological Services) and in Mar, Apr, May, Jun, Jul 2006 (conducted by CSU Stanislaus).

Special-status Plants – Apr 1-26, 2008; June 2006 (plant site only)

Jurisdictional Delineation – July 2008

**BIO-5. Appendix B (g) (13) (D) (iii).**

**Information Required:**

Please submit completed USACE delineation forms with field data for drainages and consult with USACE on any additional data forms required (re: Rapanos decision).

**Response:**

A delineation report was provided in the AFC with the drainages shown in Figure 5.3-3 and Attachment 3 of Appendix H. Most of the drainages are along the transmission line route, and it is expected that it will be possible to avoid impacts to the drainages when installing the transmission line. Diagrams showing the potential locations of the transmission line poles that would avoid impacts to the washes are shown in **Attachment BIO-5**. When final Project engineering and design is complete, if there could be impacts to jurisdictional waters, an assessment of the type of habitat impacted (e.g., desert wash, wetlands, riparian) will be conducted. This assessment will include impact assessment, mitigation coordination, and completion of permit applications to USACE, CDFG, and RWQCB. A permit schedule, if necessary, is outlined in BIO-10.

**BIO-6. Appendix B (g) (13) (D) (iii).**

**Information Required:**

Please submit resumes for drainage surveyors Green, Rajtaniak, Trumbo, and Rado.

**Response:**

See BIO-3 above (see Attachment BIO-3).

**BIO-7. Appendix B (g) (13) (H).**

**Information Required:**

Please provide copies of preliminary agency correspondence (if contact has been made) with CDFG, USFWS, the city, the county, USACE, and RWQCB to discuss potential biological resource concerns, impacts, mitigation, whether separate local, state, or federal permits will be required. Submit detailed records of conversations. Also, include the agency personal conversations cited in the AFC (i.e., Larkin 2008 and Trinh 2008) in the submittal.

**Response:**

Please see **Attachment BIO-7**.

**BIO-8. Appendix B (i) (1) (B).**

**Information Required:**

Add the USACE, RWQCB and the County to Table 5.3-2.

**Response:**

Revised Table 5.3-2 is provided below.

**BIO-9. Appendix B (i) (2).**

**Information Required:**

Include contact information for the appropriate USACE, RWQCB, and County staff in Table 5.3-2.

**Response:**

See BIO-8 above (see revised Table 5.3-2 below).

**Table 5.3-2R Agencies and Agency Contacts**

Agency Contact	Phone/E-mail	Permit/Issue
Julie Vance CDFG 1234 East Shaw Avenue Fresno, CA 93710	(559) 243-4017 JVance@dfg.ca.gov	California Endangered Species Act Incidental Take Authorization requirements
Ray Bransfield USFWS 2493 Portola Road, Suite B Ventura, CA 93710	(805) 644-1766, e.317 ray_bransfield@fws.gov	Federal Endangered Species Act Section 7 Consultation
Asoka Herath City of Palmdale Planning Department 38250 Sierra Highway Palmdale, CA 93550	(661) 267-5200 aherath@cityofpalmdale.org	Compliance with City Native Desert Vegetation Ordinance
Phuong Trinh USACE Los Angeles District 915 Wilshire Blvd., Suite 980 Los Angeles, CA 90017	213-452-3372 phuong.h.trinh@usace.army.mil	Jurisdictional status of desert washes and dry lakes in western Mojave Desert near Palmdale and Edwards Air Force Base.
Kirk Larkin RWQCB Colorado River Basin Region 73-720 Fred Waring Drive, Ste 100 Palm Desert, CA 92260	760-776-8964 klarkin@waterboards.ca.gov	Regulates impacts to isolated waters of the State of California under the Porter Cologne Water Quality Control Act. Although water quality issues related to impacts to waterways are normally addressed during 401 Water Quality Certification, waters of the State determined by the Corps not to have Clean Water Act jurisdiction, Porter Cologne would be addressed under a Construction General Permit, State General Waste Discharge Order, or Waste Discharge Requirements depending upon the level of impact and the properties of the waterway.
Bruce McLendon Los Angeles County Department of Regional Planning 1390 Hall of Records 320 West Temple Street Los Angeles 90012	(213) 974-6401 dslavin@planning.lacounty.gov Zoningldcc@planning.lacounty.gov	Land Use and Zoning

**BIO-10. Appendix B (i) (3).**

**Information Required:**

Provide approximate month and year for each submittal, particularly the federal Biological Assessment.

**Response:**

Biological Assessment

An abbreviated Biological Assessment (see Attachment BIO-7 for correspondence with Ray Bransfield, USFWS) needed for the USFWS to make a determination through informal consultation with the U.S. EPA under the PSD permit is expected to be submitted in October 2008.

Jurisdictional Waters (if necessary)

Fill into Waters of the U.S. requires:

- USACE – Nationwide Permit 12 for linear utilities (Section 404 of the Clean Water Act)
- CDFG – Streambed Alteration Agreement (Section 1602 of State Fish and Game Code)
- RWQCB – Water Quality Certification (Section 401 of the Clean Water Act)

Impacts to Waters of the State requires:

- CDFG – Streambed Alteration Agreement
- RWQCB – compliance with Porter Cologne Act through General Construction Permit (requires Stormwater Pollution Prevention Plan) or other means

Schedule:

- Preliminary Designs come in (mid-November).
- Week 1 – AMEC ground truths locations and routes. While in the field, assess potential impacts.
- Week 2 – if impacts would occur, discuss with engineers a re-route/design change.
- Week 3 – if not avoidable, assess impacts and delineate wetlands (if applicable).
- Week 4 – discuss and institute minimization measures and offsite mitigation (if needed). Assemble application materials and submit (Jan 2009).
- 3-6 months for processing permits through agencies.

California Endangered Species Act (CESA)

CEC may include CESA permit requirements in the license, but if not, an application for an Incidental Take Permit (Section 2081) for Mohave ground squirrel, and possibly desert tortoise, will be submitted to CDFG.

Schedule:

- Preliminary Designs come in (mid November).
- Submit Application in January 2009.
- Application approval can take up to 30 days once the application is complete.

City of Palmdale

Permits for the Native Desert Vegetation Ordinance (designed to preserve a number of specimen-quality juniper and Joshua trees, and to encourage the use of native vegetation in new development landscaping) will be obtained.

Schedule:

- Submit a permit request in May 2009 (can occur at any time, timing selected to be near end of AFC process such that removing Joshua trees occurs within a few months of start of construction).
- Approximately ½ month for the City to review the permit application.
- Approximately 4 months to identify, mark and remove the Joshua trees.

# Attachment BIO-2



## PALMDALE HYBRID POWER PROJECT

*FINAL*

### BURROWING OWL HABITAT ASSESSMENT AND FOCUSED SURVEY LOS ANGELES COUNTY, CALIFORNIA

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September 2008

AMEC Project No. 6554000247

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## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	Purpose and Need.....	1
1.2	Project and Property Description.....	1
1.2.1	Power Plant Site and Construction Laydown Area.....	2
1.2.2	Transmission Line.....	3
1.2.3	Reclaimed Water Pipeline.....	3
1.2.4	Natural Gas Supply Pipeline.....	3
1.2.5	Sanitary Wastewater Pipeline.....	3
1.3	Burrowing Owl Background.....	4
<b>2.0</b>	<b>METHODS</b> .....	<b>4</b>
2.1	Records Search.....	6
2.2	Habitat Assessment.....	6
2.3	Focused Burrow Survey.....	6
2.4	Focused Burrowing Owl Survey.....	6
<b>3.0</b>	<b>RESULTS</b> .....	<b>7</b>
3.1	Records Search.....	7
3.2	Habitat Assessment and Focused Burrow Survey.....	7
3.3	Focused Burrowing Owl Survey.....	7
<b>4.0</b>	<b>CONCLUSIONS</b> .....	<b>7</b>
<b>5.0</b>	<b>REFERENCES</b> .....	<b>7</b>

### LIST OF TABLES

Table 1.	Burrowing Owl Survey Details.....	5
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### LIST OF FIGURES

Figure 1	PHPP Vicinity and Location
Figure 2	PHPP Habitat Suitability for Burrowing Owl

### LIST OF APPENDICES

Appendix 1	Qualifications of Individuals Conducting Studies
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## **1.0 INTRODUCTION**

### **1.1 Purpose and Need**

AMEC Earth & Environmental, Inc. (AMEC) was contracted by ENSR Corporation (ENSR) to prepare a Biological Resources Technical Report (BRTR) for the development of the proposed Palmdale Hybrid Power Project (PHPP or Project), a nominal 570-megawatt (MW) hybrid combined-cycle/solar thermal electrical generation facility. As part of the BRTR, AMEC conducted a habitat assessment and focused survey for burrowing owl (*Athene cunicularia*).

The California Burrowing Owl Consortium (CBOC 1993) and California Department of Fish and Game (CDFG 1995) developed Survey Protocol and Mitigation Guidelines to meet the need for uniform standards when surveying burrowing owl populations and evaluating impacts from development projects. The guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or the resources that support them. The process begins with a four-step survey protocol to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the Project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures are followed to minimize impacts to burrowing owls, their burrows, and foraging habitat on the Project site. The guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

### **1.2 Project and Property Description**

The Project is located in the City of Palmdale (City) and unincorporated areas of Los Angeles County, California (the power plant site and most linear facilities are within the City of Palmdale; portions of the transmission line route are within unincorporated areas), and includes a 377-acre power plant site, 50-acre construction laydown area, 35.6-mile transmission line, 7.4-mile reclaimed water pipeline, 8.7-mile natural gas supply pipeline, and 1-mile sanitary wastewater pipeline (Figure 1). The Project also includes a 1-mile potable water pipeline that will be installed along the same alignment as the last portion of the reclaimed water pipeline. Throughout this report, the term "Project site" refers to all Project elements in the aggregate (power plant site and all linear facilities); "linear facilities" refers to the various Project pipelines and the transmission line in the aggregate; all other references are to the specific Project component being addressed ("power plant site" or "plant site," "transmission line," "reclaimed water pipeline," "natural gas supply pipeline," and "sanitary wastewater pipeline").

The Project consists of five components (with quadrangle and Township Range Section (TRS) data below):

1. Power Plant Site and Construction Laydown Area:
  - USGS 7.5' Quadrangle: Lancaster East
  - T6N, R12W, S 1-2
  - T7N, R12W, S 35-36
  
2. Transmission Line
  - USGS 7.5' Quadrangles: Lancaster East, Alpine Butte, Littlerock, Palmdale, Pacifico Mountain
  - T5N, R10W; R11W, S 19-24; R12W, S 23-24, 26-27;
  - T6N, R10W, S 4-5, 8-9, 16-17, 20-22, 26-28, 34-35; R11W, S 6; R12W, S 1;
  - T7N, R10W, S 29-33; R11W, S 25-29, 31-36; R12W, S 36
  
3. Reclaimed Water Line
  - USGS 7.5' Quadrangles: Lancaster West, Lancaster East, Palmdale
  - T6N, R11W, S 17-20; R12W, S 2, 11, 13-14, 24
  - T7N, R12W, S 35
  
4. Natural Gas Supply Pipeline
  - USGS 7.5' Quadrangles: Lancaster West, Lancaster East, Palmdale
  - T5N, R12W, S 2
  - T6N, R12W, S 2, 11, 13-14, 23-26, 35-36
  
5. Sanitary Wastewater Pipeline
  - USGS 7.5' Quadrangle: Lancaster East
  - T7N, R12W, S 36

### **1.2.1 Power Plant Site and Construction Laydown Area**

The Project power plant consists of a hybrid of natural gas-fired combined-cycle generating equipment integrated with solar thermal generating equipment to be developed on an approximately 377-acre site in the northern portions of the City. The combined-cycle equipment utilizes two natural gas-fired combustion turbine generators (CTG), two heat recovery steam generators (HRSG), and one steam turbine generator (STG). The solar thermal equipment utilizes arrays of parabolic collectors to heat a high-temperature working fluid. The hot working fluid is used to boil water to generate steam. The combined-cycle equipment is integrated thermally with the solar equipment at the HRSG and both utilize the single STG that is part of the Project. All of this 377-acre power plant site area would be subject to permanent impacts.

The construction laydown area would occupy a footprint of 50 acres located west of the power plant site. This area would be used for storing Project-related equipment; parking, staging, and maintenance of construction heavy equipment and personnel vehicles; and assembling power plant components. All of this 50-acre area would be subject to permanent impacts.

### **1.2.2 Transmission Line**

The proposed interconnection point for the Project with the Southern California Edison (SCE) electrical transmission system is at SCE's existing Vincent Substation, approximately 11 miles south-southwest of the proposed power plant site. To accommodate the needs of Palmdale's aviation community (Air Force Plant 42 and Los Angeles (LA) World Airports), a transmission line route approximately 35.6 miles long is planned that extends north and east from the power plant site, then south and back to the west. The Project's transmission system will be constructed in two segments, as briefly summarized below.

Transmission line segment 1 involves the construction of approximately 23.7 miles of 230-kilovolt (kV) transmission line in new and existing right-of-ways (ROWs) between the power plant site and SCE's Pearblossom Substation. The route extends northward and eastward from the power plant site, then southward and finally back to the southwest. Transmission line segment 2 is a system reliability upgrade that includes increasing transmission capacity and expansion of the existing Vincent Substation. A new single-circuit 230 kV line will be installed on new 230 kV towers parallel to existing lines in an existing 11.9-mile transmission ROW extending westward from the Pearblossom Substation to the Vincent Substation.

Permanent disturbance areas for the transmission line include pole footprints, access roads, and laydown areas.

### **1.2.3 Reclaimed Water Pipeline**

Reclaimed water for the Project cooling tower makeup and other industrial uses will be supplied from the City Water Reclamation Plant (PWRP). The City will design and construct an approximately 7.4-mile 14-inch pipeline from the PWRP to the power plant site in existing City street ROWs. No new disturbance is anticipated.

### **1.2.4 Natural Gas Supply Pipeline**

The Project will be fueled with natural gas delivered via a new 20-inch natural gas pipeline. The Southern California Gas Company (SCG) will design and construct the approximately 8.7-mile pipeline in existing City street ROWs. The pipeline will originate at the SCG facility on East Avenue S and terminate at the power plant site. No new disturbance is anticipated.

### **1.2.5 Sanitary Wastewater Pipeline**

Sanitary wastewater will be disposed through an existing Los Angeles County Sanitation Districts 12-inch sanitary wastewater pipeline. The Project will connect to the existing line at an existing manhole just north of Avenue L along Challenger Way approximately one mile from the power plant site. The sanitary wastewater pipeline will be approximately 1 mile long and will be constructed in existing City street ROWs. No new disturbance is anticipated.

### 1.3 Burrowing Owl Background

Burrowing owls, a California Special Concern Species (CSC), use a variety of natural and modified habitats for breeding, wintering, foraging, and/or migration stopovers that are typically characterized by low growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrub lands, shrub lands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas.

Burrowing owls typically use burrows made by fossorial (adapted for burrowing or digging) mammals, such as California ground squirrels (*Spermophilus beecheyi*) or badgers (*Taxidea taxus*). They often utilize manmade structures, such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Owls can be affected by disturbance and habitat loss, even though there may be no direct impacts to the birds themselves or their burrows.

Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year. A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

## 2.0 METHODS

AMEC biologists and sub-consultants knowledgeable in burrowing owl habitat, ecology, and field identification of the species and burrowing owl sign conducted surveys on the dates shown in Table 1 (see Appendix 1 for surveyor qualifications). The weather conditions during these surveys were conducive to observing owls outside their burrows and detecting burrowing owl sign. Survey methodology adhered to the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) and the *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). Data were collected by numerous techniques including the use of a hand-held Global Positioning System (GPS), standardized data forms, photographs, and aerial field maps.

One segment of the transmission line route (along 105<sup>th</sup> Street from Avenue M-4 to Avenue P) was changed after field surveys were conducted; therefore, 3.75 miles of ROW were not surveyed. However, a cursory field survey identified the habitat communities along this revised route to be very similar to surveyed areas, so species composition is expected to be similar.

**Table 1. Burrowing Owl Survey Details**

Date (2008)	Surveyors <sup>1</sup>	Time	Area/Location Surveyed <sup>2</sup>	Percent Cloud Cover	Wind (mph)	Temp. (°F)
<b>Habitat Assessment and Focused Burrow Survey</b>						
Apr 01	MA, SF, NMo, NMu	07:00-16:00	Plant	0-15	0-15	45-70
Apr 02	MA, SF, NMo, NMu	07:00-16:00	Plant	15-90	1-15	52-66
Apr 03	MA, SF, NMo, NMu	07:00-15:00	Plant	0-5	1-10	47-72
Apr 04	MA, SF, NMo, NMu	06:30-12:00	Plant	0-60	0-3	38-76
Apr 07	MA, JB, SF, AH, NMu	07:00-17:00	Plant & Buffer	5-40	2-15	48-70
Apr 09	MA, JB, SF, AH	07:00-16:00	Water ROW & Buffer	0-20	5-20	47-68
Apr 10	MA, JB, SF, AH	09:00-16:00	Water ROW & Buffer	0	0-5	65-79
Apr 11	MA, JB, SF, AH	07:00-12:00	Gas ROW & Buffer	0	0-10	46-72
Apr 14	MA, JB, SF, AH, NMu	07:00-17:00	T-Line ROW & Buffer	0	0-20	60-88
Apr 15	MA, JB, SF, AH, NMu	07:00-16:00	T-Line ROW & Buffer	0-10	5-22	46-68
Apr 16	JB, SF, AH, NMu	07:30-16:00	T-Line ROW & Buffer	0	0-8	45-75
Apr 17	MA, JB, SF, AH, NMu	07:00-16:30	T-Line ROW & Buffer	0	0-12	48-80
Apr 18	MA, JB, SF, AH, NMu	07:30-14:00	T-Line ROW & Buffer	0-40	0-10	64-86
Apr 21	MA, JB, AH, NMu, HR, DS	08:30-15:00	T-Line Buffer	0	0-8	58-82
Apr 22	MA, JB, AH, NMu, HR, DS	08:00-17:00	T-Line ROW & Buffer	0	1-18	58-79
Apr 23	MA, JB, AH, NMu, HR, DS	07:30-15:00	T-Line ROW	0-5	1-25	52-62
Apr 24	JB, AH, NMu, HR, DS	07:00-16:00	T-Line ROW & Buffer	0	1-15	45-76
Apr 25	MA, JB, AH, NMu, HR, DS	07:30-17:00	T-Line ROW & Buffer	0	0-8	60-85
Apr 26	JB, AH	06:45-15:00	T-Line Buffer	0	0-5	55-85
<b>Focused Burrowing Owl Survey</b>						
Aug 11	TM	05:15-10:45	Suitable Habitat	50-75	5-10	61-77
Aug 12	TM	05:00-10:00	Suitable Habitat	40-80	5-10	65-79
Aug 13	TM	05:20-09:20	Suitable Habitat	20-50	5-10	61-78
Aug 14	TM	05:05-09:30	Suitable Habitat	10-40	5-10	59-79

1 Surveyor Initials: MA = Matt Amalong, Wildlife Biologist, AMEC  
 JB = Jim Boone, Botanist/Ecologist, Desert Wildlife Consultants, LLC  
 SF = Steve Ferrand, Wildlife Biologist, Nevada Biological Consulting, LLC  
 AH = Alex Heindl, Herpetologist, Desert Walkabouts, Inc.  
 TM = Tsegaye Mengistu, Wildlife Biologist, AMEC  
 NMo = Nathan Moorhatch, Wildlife Biologist, AMEC  
 NMu = Nathan Mudry, Wildlife Biologist, eGIS Services, LLC  
 HR = Heather Rothbard, Botanist, AMEC  
 DS = Dennis Strong, Herpetologist, Nevada Biological Consulting, LLC

2 Area/Location: Plant = Power Plant Site  
 T-Line = Transmission Line  
 Water = Reclaimed Water Pipeline  
 Gas = Natural Gas Supply Pipeline  
 ROW = Right-of-Way  
 Buffer = 100, 200, 300, 400, & 500-foot Transects

## **2.1 Records Search**

Prior to the field surveys, a records search was conducted to identify the historical occurrences of burrowing owls in the Project vicinity. The CDFG California Natural Diversity Data Base (CNDDDB) was queried: USGS Lancaster West, Lancaster East, Alpine Butte, Hi Vista, Ritter Ridge, Palmdale, Littlerock, Lovejoy Buttes, Acton, Pacifico Mountain, Juniper Hills, and Valyermo 7.5-minute series topographic quadrangles (CDFG 2008).

## **2.2 Habitat Assessment**

The Project site and a 500-foot buffer (where possible and appropriate based on habitat) were surveyed to assess the presence of special-status species and habitats. Pedestrian survey transects were spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines was no more than 100 feet and was reduced to account for differences in terrain, vegetation density, and ground surface visibility.

## **2.3 Focused Burrow Survey**

A focused burrow survey to detect natural burrows or suitable man-made structures was conducted concurrently with the habitat assessment. The biologists walked areas of suitable habitat (the Project site and, where appropriate, the 500-foot buffer zone) while searching for burrowing owls, potential and active burrows, and owl sign such as feathers, pellets, and prey items. The 500-foot buffer zone was surveyed to identify burrows and owls outside of the Project site which may be impacted by factors such as noise and vibration created by heavy equipment during Project construction. Pedestrian survey transects were spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines was no more than 100 feet and was reduced to account for differences in terrain, vegetation density, and ground surface visibility. The locations of all suitable burrowing owl habitat, potential owl burrows, burrowing owl sign, and any owls observed were recorded and mapped.

## **2.4 Focused Burrowing Owl Survey**

Focused nesting season burrowing owl surveys were conducted on four separate days. Surveys were conducted in the morning one hour before sunrise to two hours after sunrise (see Table 1 for times). Binoculars were used to scan all suitable habitat, locations of mapped burrows, and potential perch locations. Surveys were conducted from fixed points and provided 100 percent visual coverage of the suitable habitat areas within the Project site. Surveys were conducted during weather conducive to observing owls outside their burrows.

## **3.0 RESULTS**

### **3.1 Records Search**

CNDDDB records did not indicate the historical presence of burrowing owls and burrows within the Project site or buffer zone, but they have been observed in the Project vicinity. Known occurrences (12 records from 1999 to 2006) range from 2 to 6 miles from the Project site (CDFG 2008).

### **3.2 Habitat Assessment and Focused Burrow Survey**

Evidence of burrowing owls (*i.e.* suitable habitat with potential burrows present, discussions with landowners, etc.) was apparent throughout various areas of the Project site footprint and 500-foot buffer zone (Figure 2). One live individual was observed along the desert tortoise 1,200-foot zone of influence (ZOI) transect for the transmission line (outside the proposed disturbance footprint and the 500-foot buffer zone). Additionally, numerous areas of suitable habitat containing small mammal burrows (primarily California ground squirrels) were observed across much of the Project site and within the buffer zone. These burrows provide ample nesting opportunities for this species.

### **3.3 Focused Burrowing Owl Survey**

No burrowing owls or burrowing owl sign were detected on the Project site or buffer zone.

## **4.0 CONCLUSIONS**

The habitat assessment and focused burrow survey resulted in the detection of suitable habitat for potential future burrowing owl use. One live individual was observed along the 1,200-foot ZOI transect. The focused burrowing owl survey resulted in the absence of burrowing owls within the area of concern (Project site and 500-foot buffer zone).

Because of the potential for burrowing owls to be present in areas containing suitable habitat, a focused burrowing owl survey for winter residents will be conducted between December 1 and January 31, as well as a pre-construction survey no more than 30 days prior to ground disturbing activity. If live burrowing owls are found within the area of concern, impact avoidance, minimization, and/or mitigation will be required. See the Project's BRTR (AMEC 2008) for impact minimization and mitigation recommendations for burrowing owl and other nesting migratory birds.

## **5.0 REFERENCES**

AMEC. 2008. Palmdale Hybrid Power Project: Biological Resources Technical Report. Unpublished report dated July 2008 and submitted to the California Energy Commission as part of an Application for Certification.

Palmdale Hybrid Power Project  
Burrowing Owl Habitat Assessment and Focused Survey  
ENSR Corporation  
September 2008

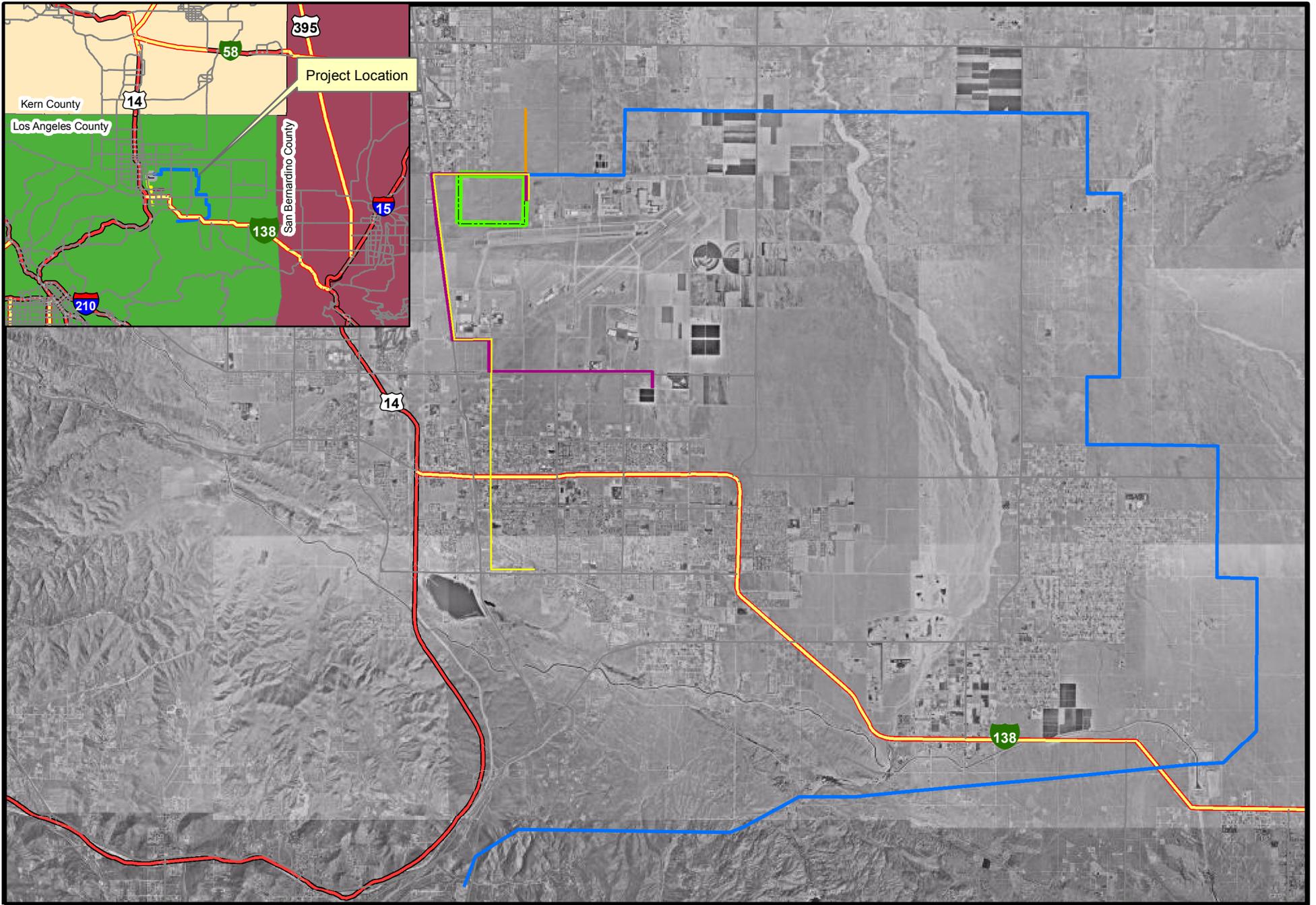
California Burrowing Owl Consortium (CBOC). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines.

California Department of Fish and Game (CDFG). 2008. California Natural Diversity Data Base, Rarefind 3, Version 3.1.0.

CDFG. 1995. Staff Report on Burrowing Owl Mitigation.

Rich, T. 1984. Monitoring Burrowing Owl populations: Implications of burrow re-use. Wildlife Society Bulletin 12: 178-180.

## **FIGURES**

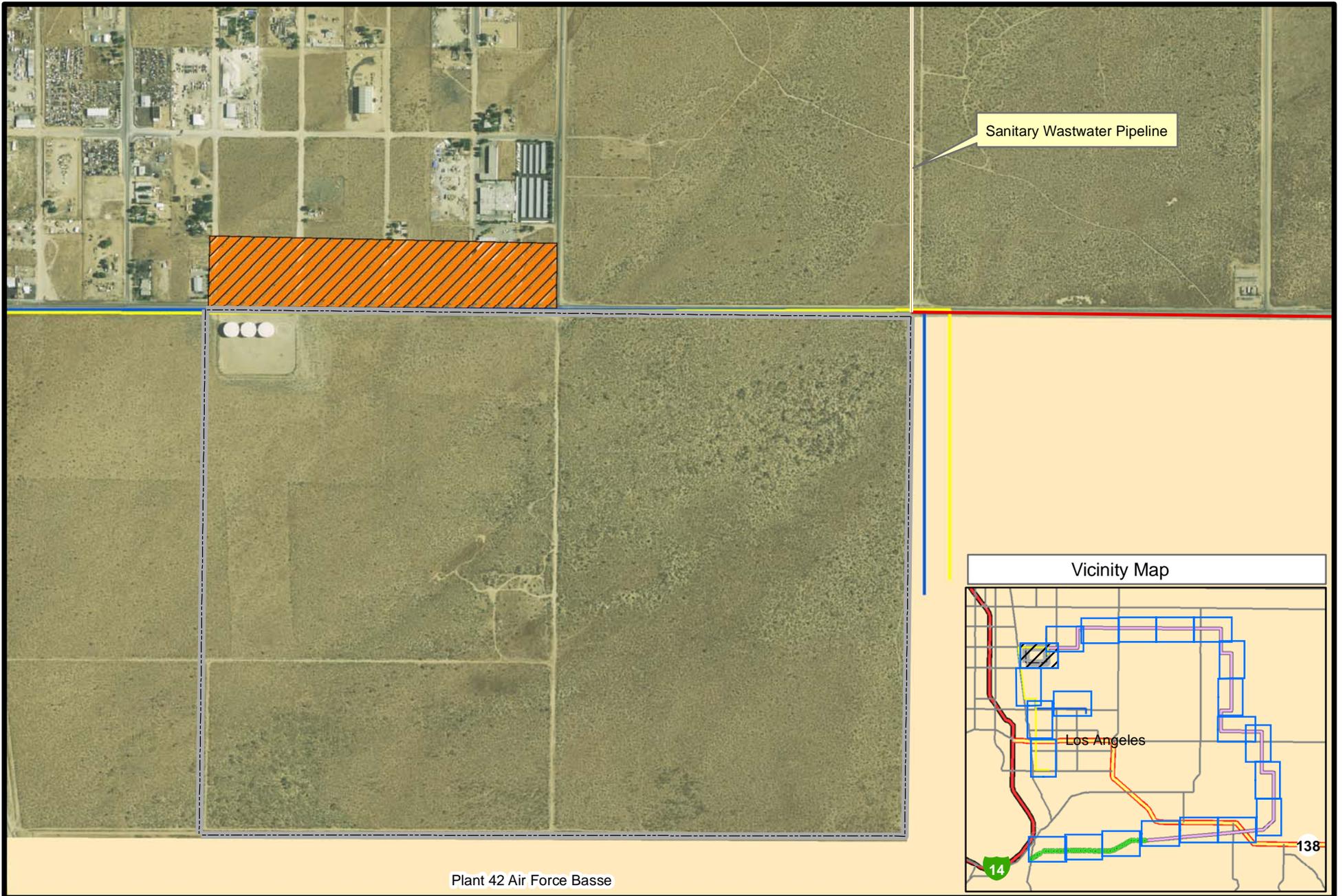


- Legend**
- - - Power Plant Site
  - Transmission Line
  - Sanitary Wastewater Pipeline
  - Natural Gas Pipeline
  - Reclaimed Water Pipeline

**Palmdale Hybrid Power Project**  
 Figure 1  
 Vicinity & Location  
 0 1 2 3 4 Miles  
 1:125,000

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 07/23/08



**Legend**

-  Potential Burrowing Owl Habitat
-  Transmission Line Route
-  Reclaimed Water Pipeline
-  Natural Gas Supply Pipeline

**Palmdale Hybrid Power Project**

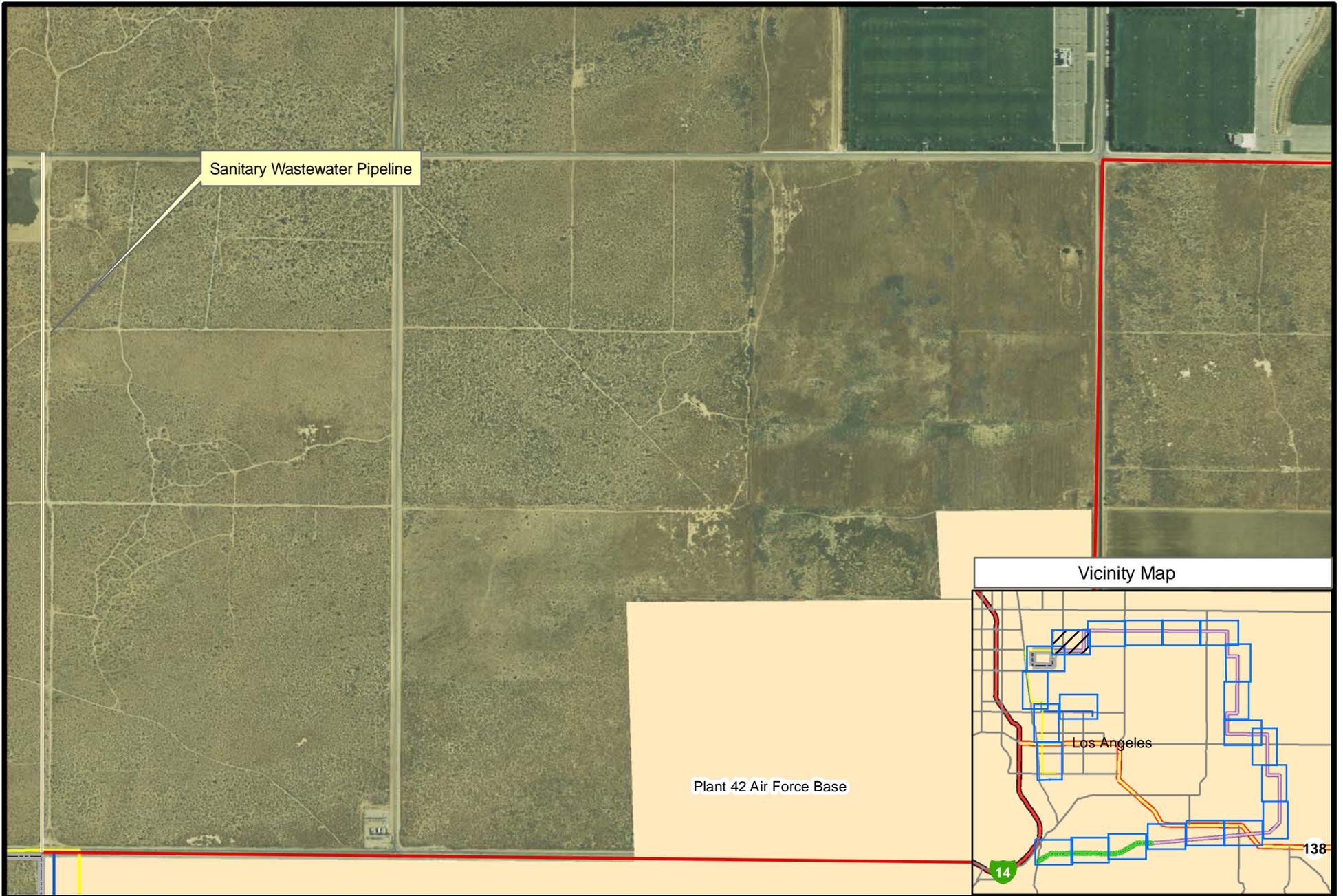
Habitat Suitability for Burrowing Owl  
Figure 2-A



**Map Notes:**

Projection: NAD 83, Zone 11  
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 Date: 08/26/08

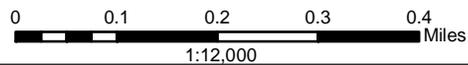




**Legend**  
 — Transmission Line Route

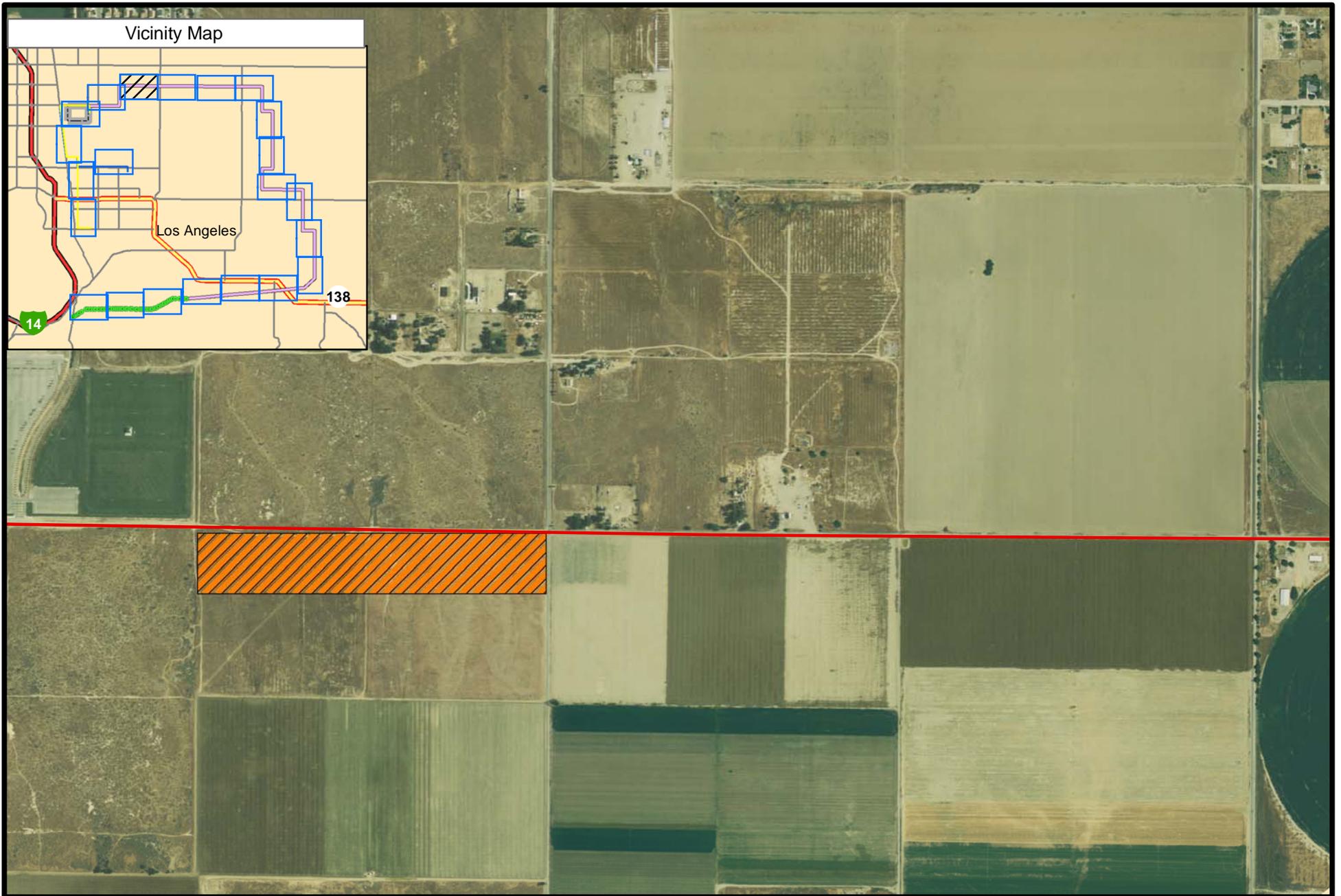
### Palmdale Hybrid Power Project

Habitat Suitability for Burrowing Owl  
 Figure 2-B



**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08





- Legend**
-  Transmission Line Route
  -  Burrowing Owl Habitat

## Palmdale Hybrid Power Project

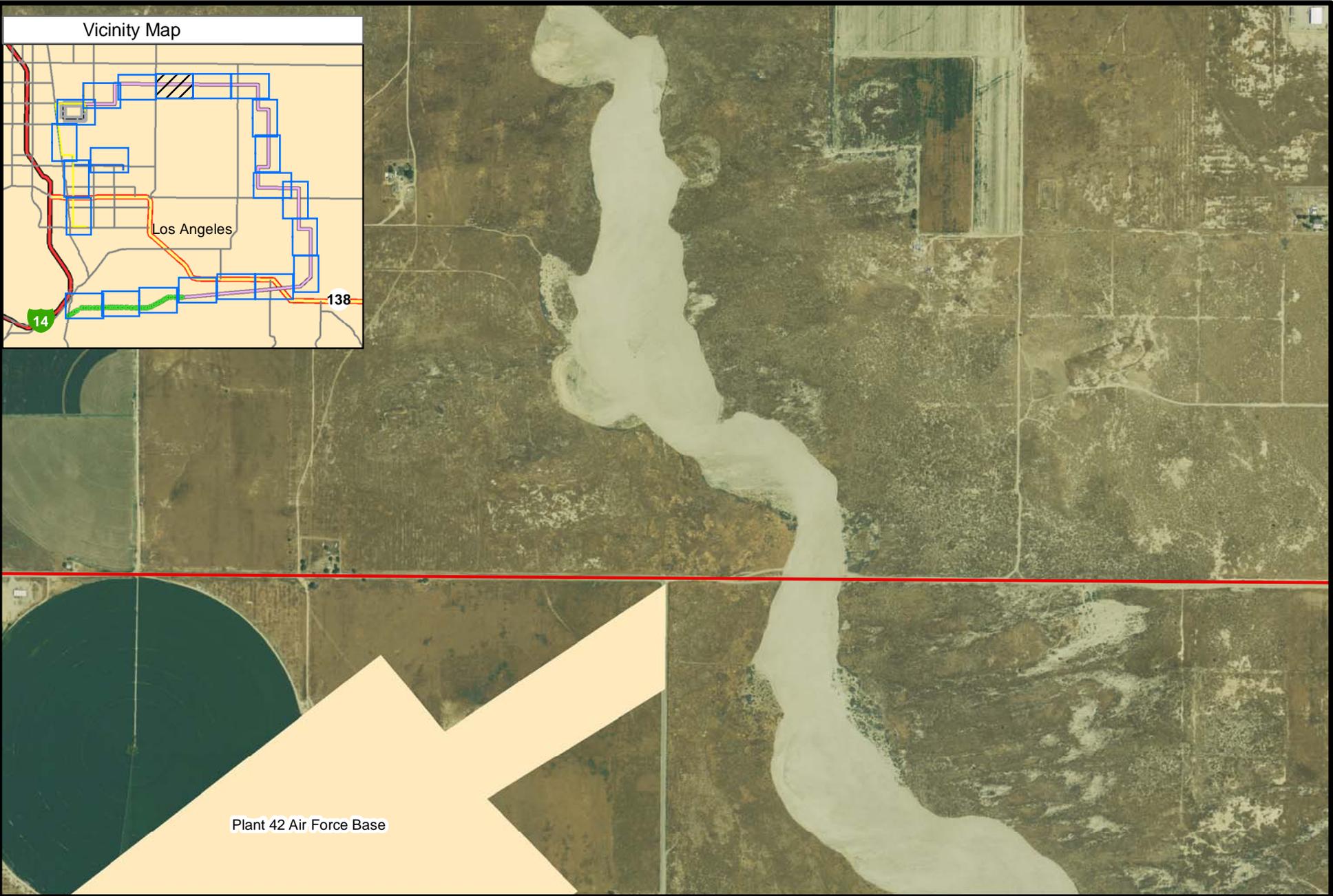
Habitat Suitability for Burrowing Owl  
Figure 2-C



**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08





**Legend**

— Transmission Line Route

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-D

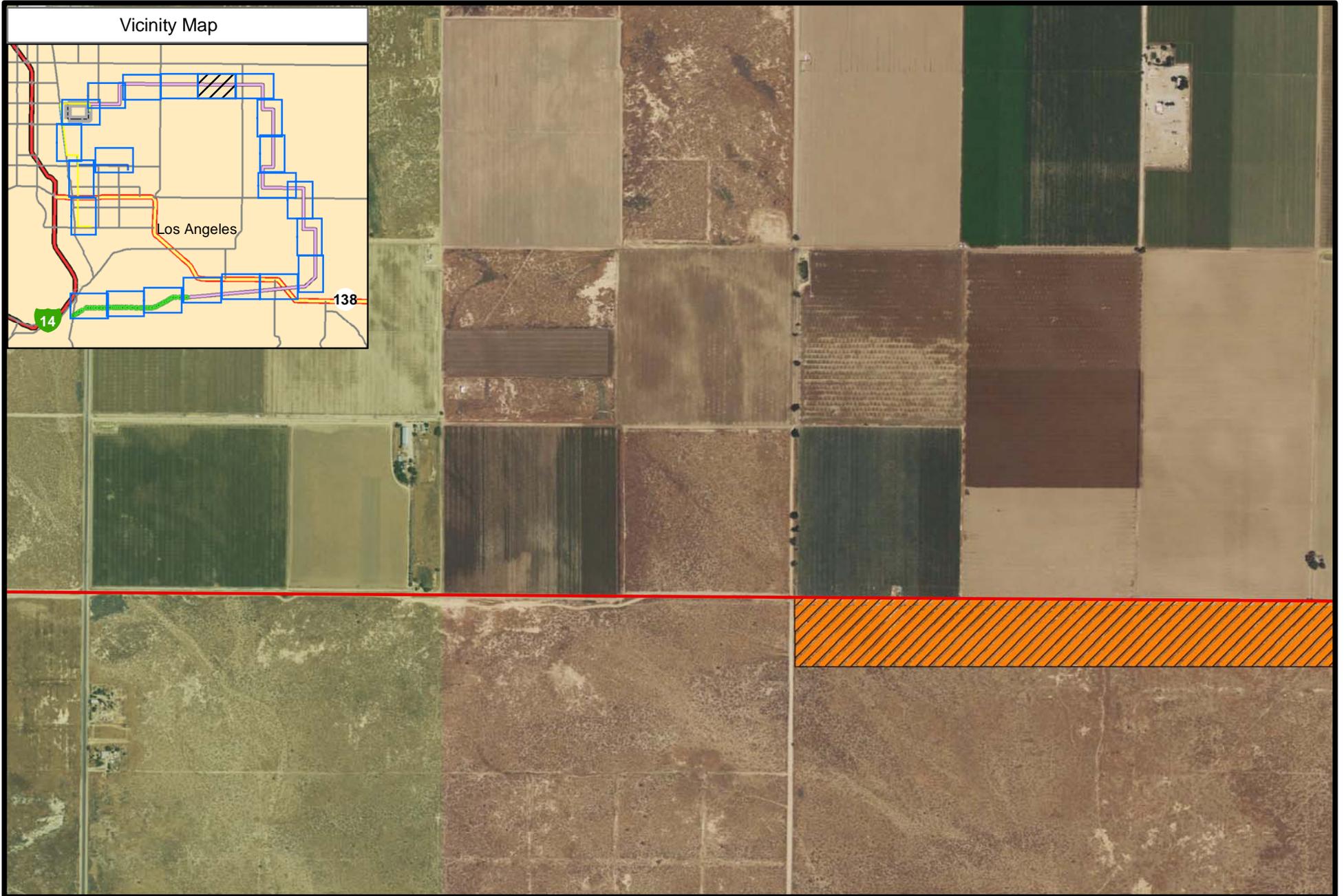
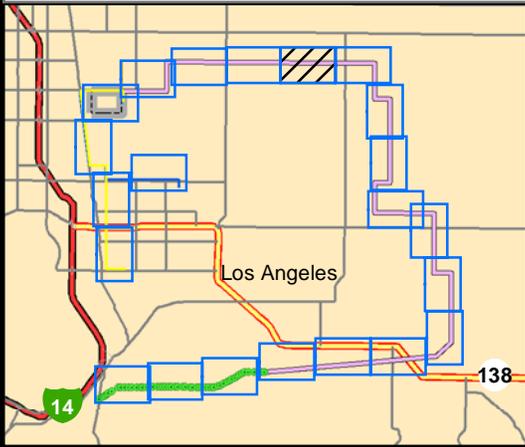
0 0.1 0.2 0.3 0.4 Miles

1:12,000

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08




Vicinity Map

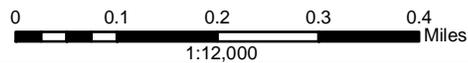


Legend

- Transmission Line Route
- ▨ Burrowing Owl Habitat

Palmdale Hybrid Power Project

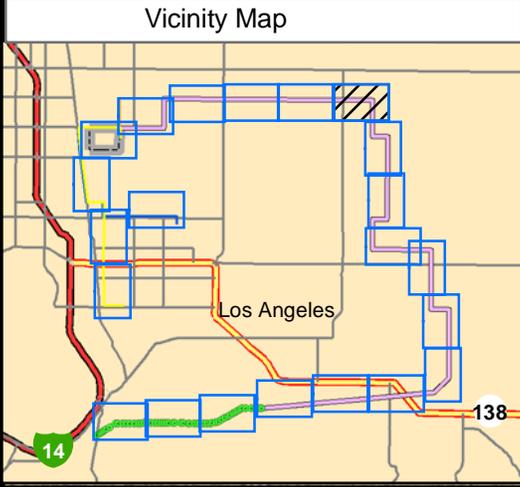
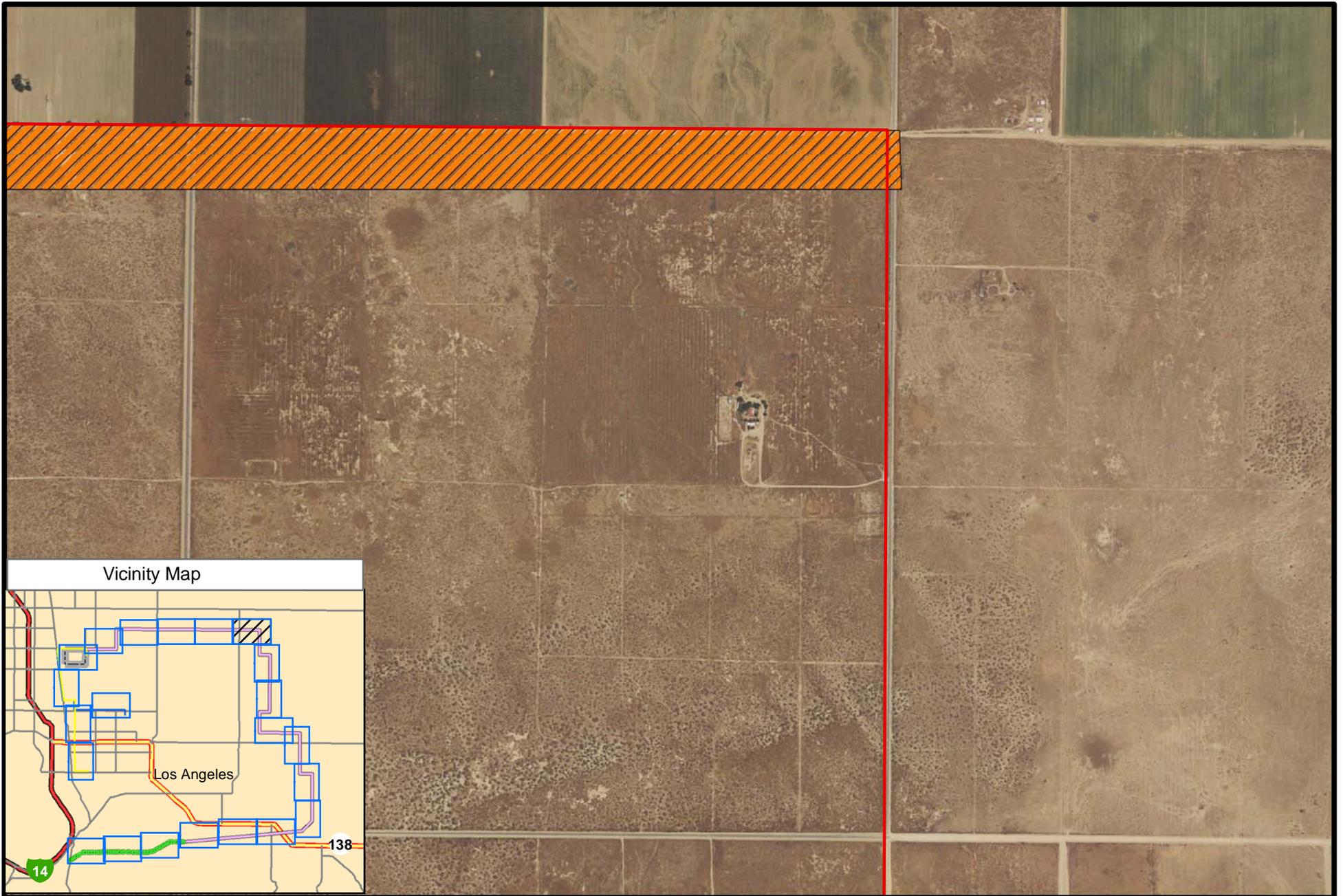
Habitat Suitability for Burrowing Owl  
Figure 2-E



Map Notes:

Projection: NAD 83, Zone 11  
Path: S:\active projects\Palmdale  
Power Plant Bio 6554000247\graphics\mxd  
Date: 08/26/08



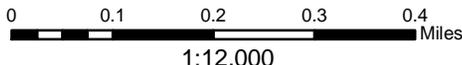


**Legend**

-  Transmission Line Route
-  Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

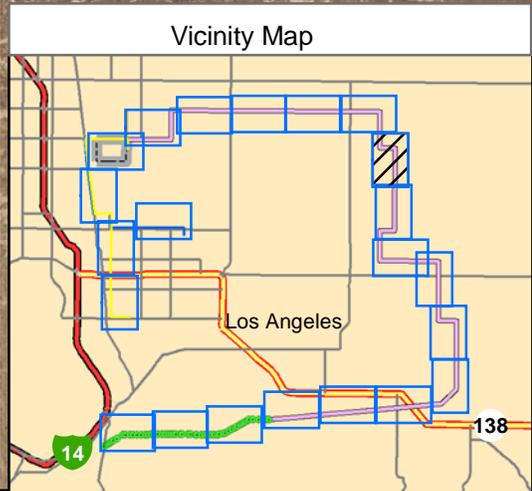
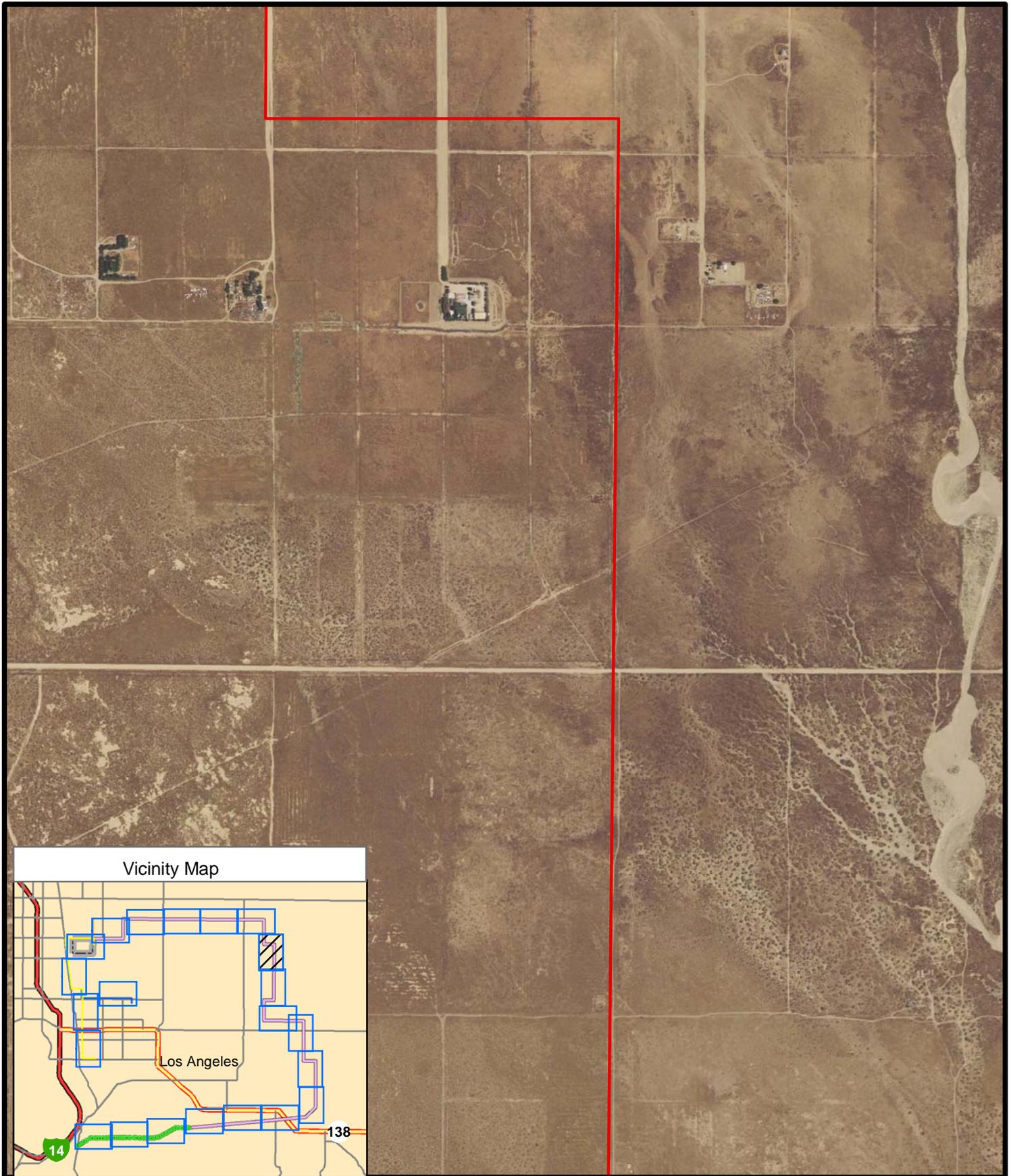
Habitat Suitability for Burrowing Owl  
Figure 2-F



**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08



**Legend**

— Transmission Line Route

**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl

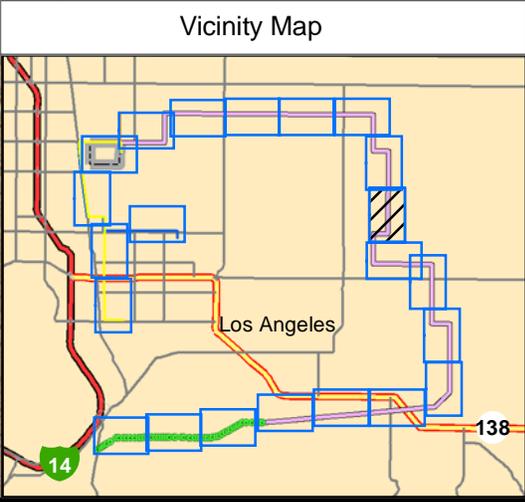
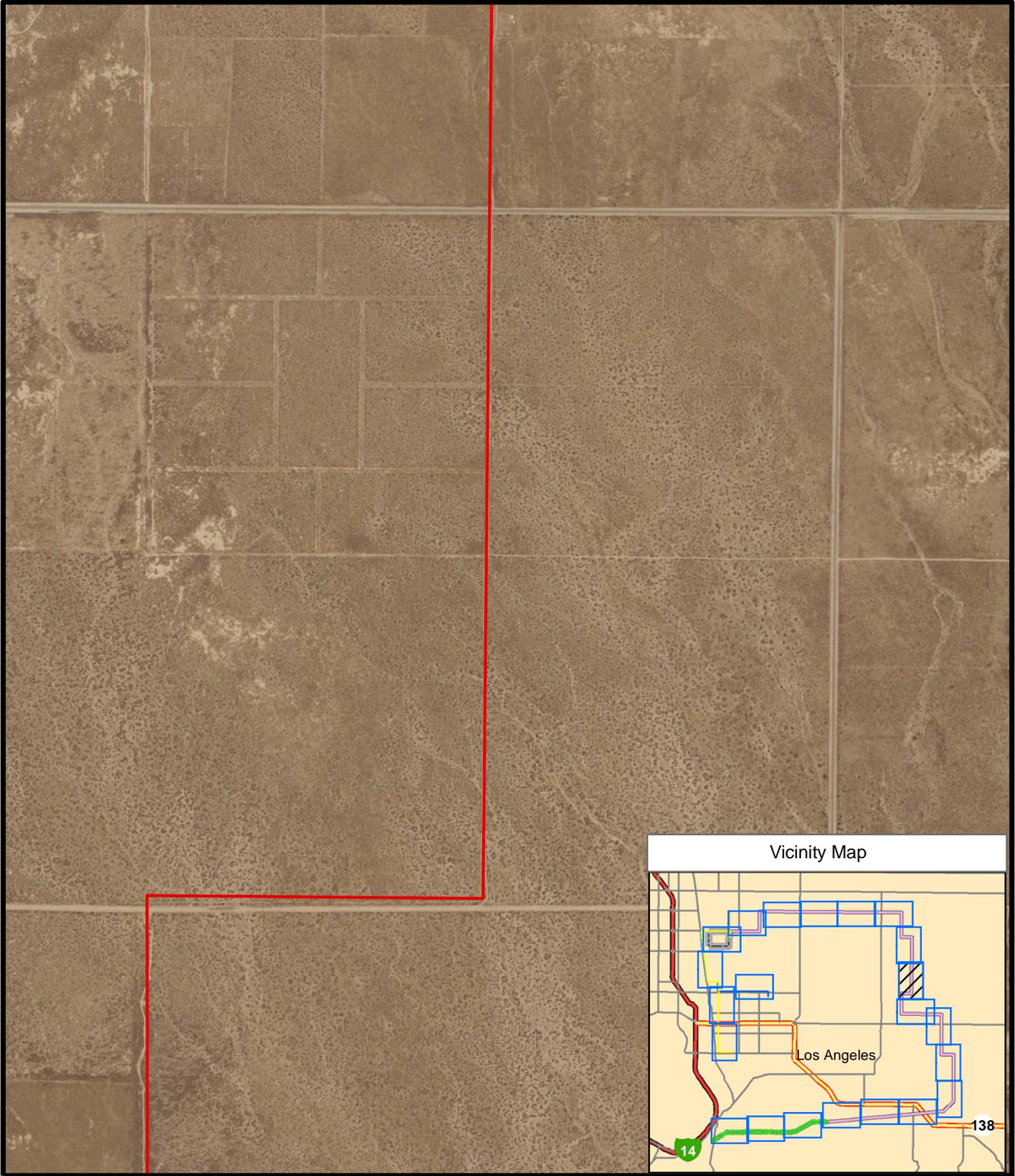
Figure 2-G

0 0.08 0.16 0.24 0.32 Miles

1:12,000

**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08



**Legend**

— Transmission Line Route

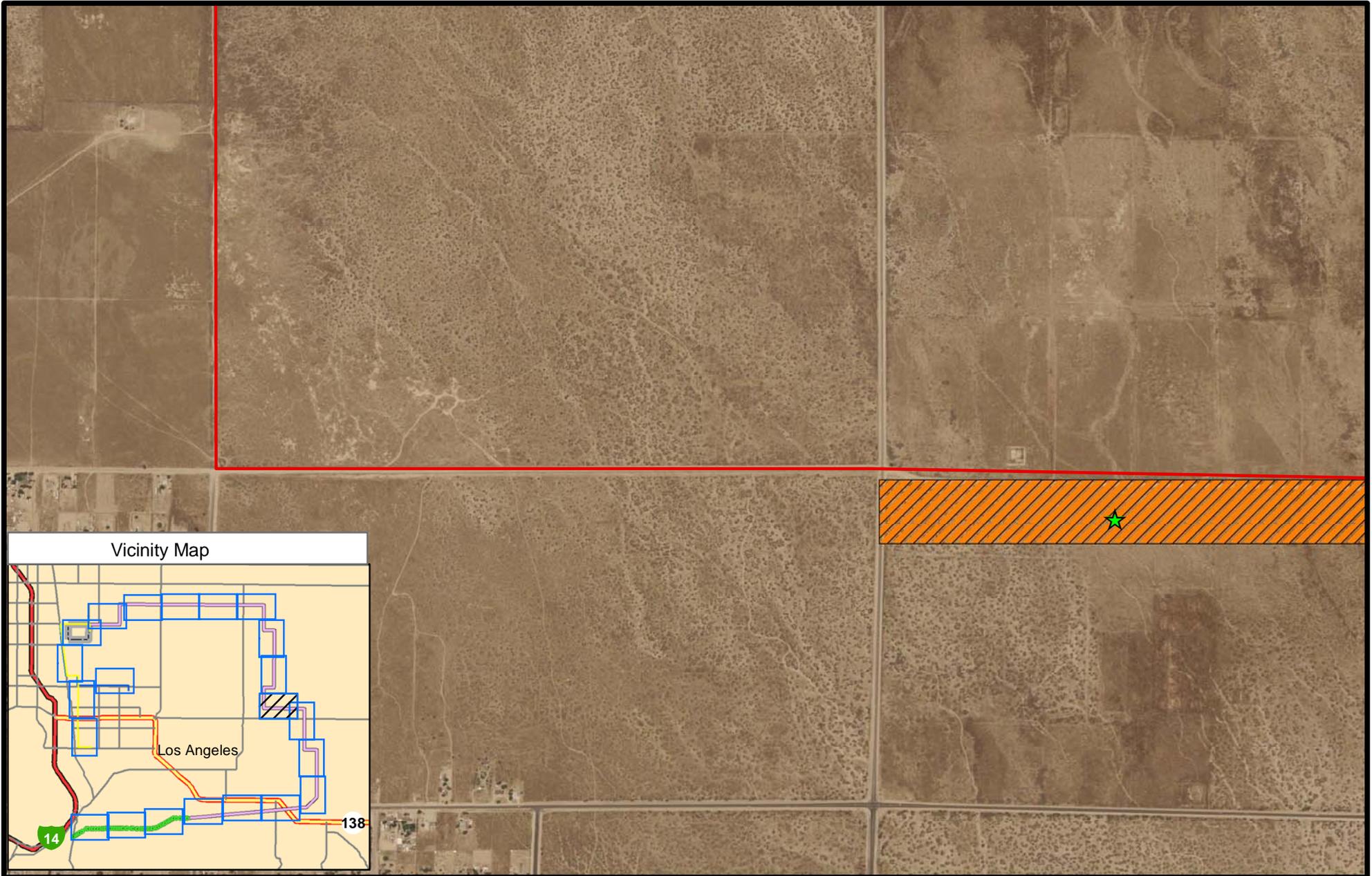
**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl  
Figure 2-H

1:12,000

**Map Notes:**

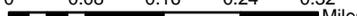
Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08



**Legend**

-  Transmission Line Route
-  Burrowing Owl Burrows
-  Burrowing Owl Habitat

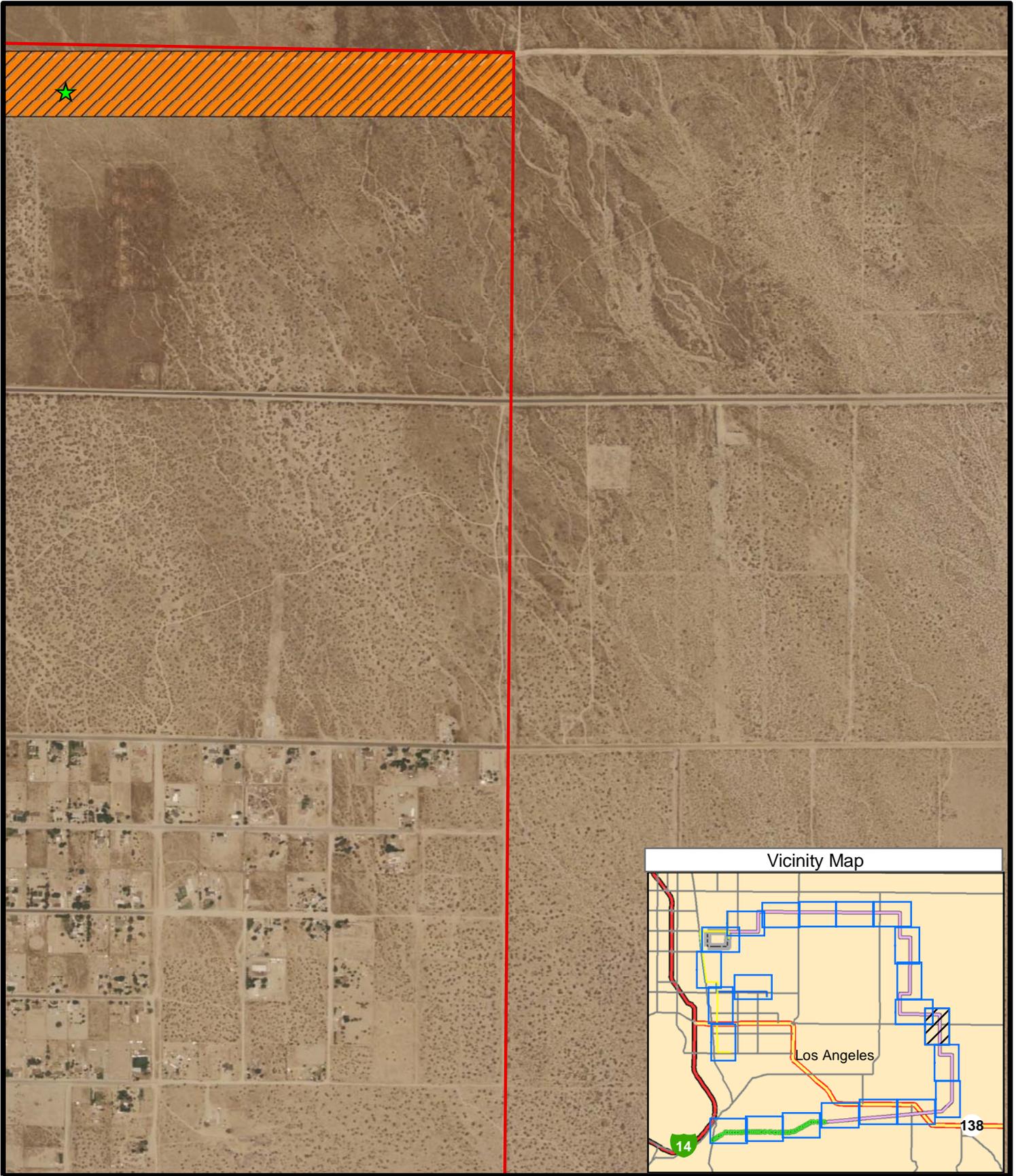
**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-1

0    0.08    0.16    0.24    0.32  
 Miles  
 1:12,542

**Map Notes:**

Projection: NAD 83, Zone 11  
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 Date: 08/26/08

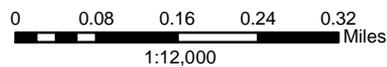



**Legend**

-  Transmission Line Route
-  Burrowing Owl Burrows
-  Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

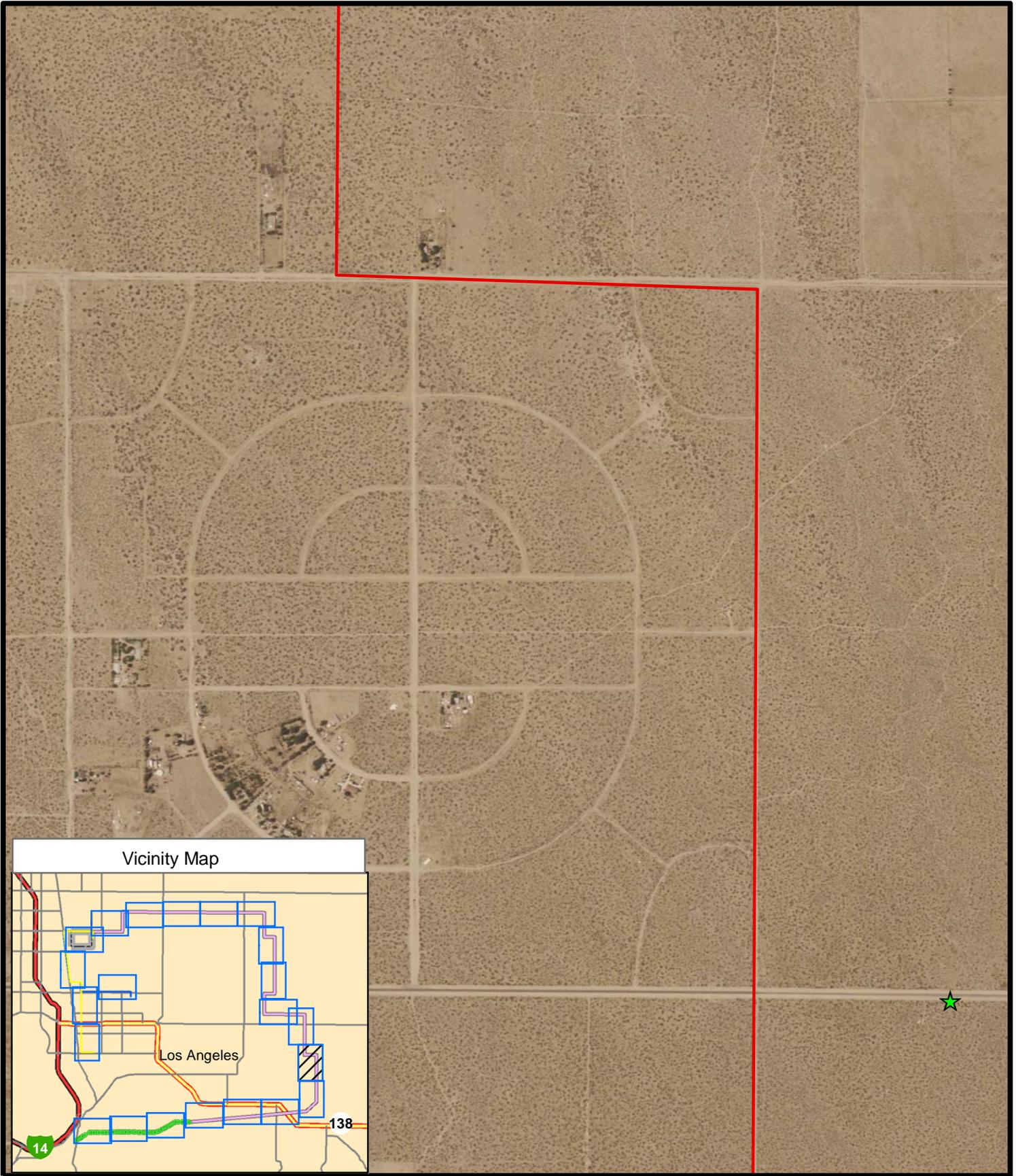
Habitat Suitability for Burrowing Owl  
Figure 2-J



**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08





**Legend**

- Transmission Line Route
- ★ Burrowing Owl Burrows

**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl  
Figure 2-K

0    0.08    0.16    0.24    0.32  
 Miles

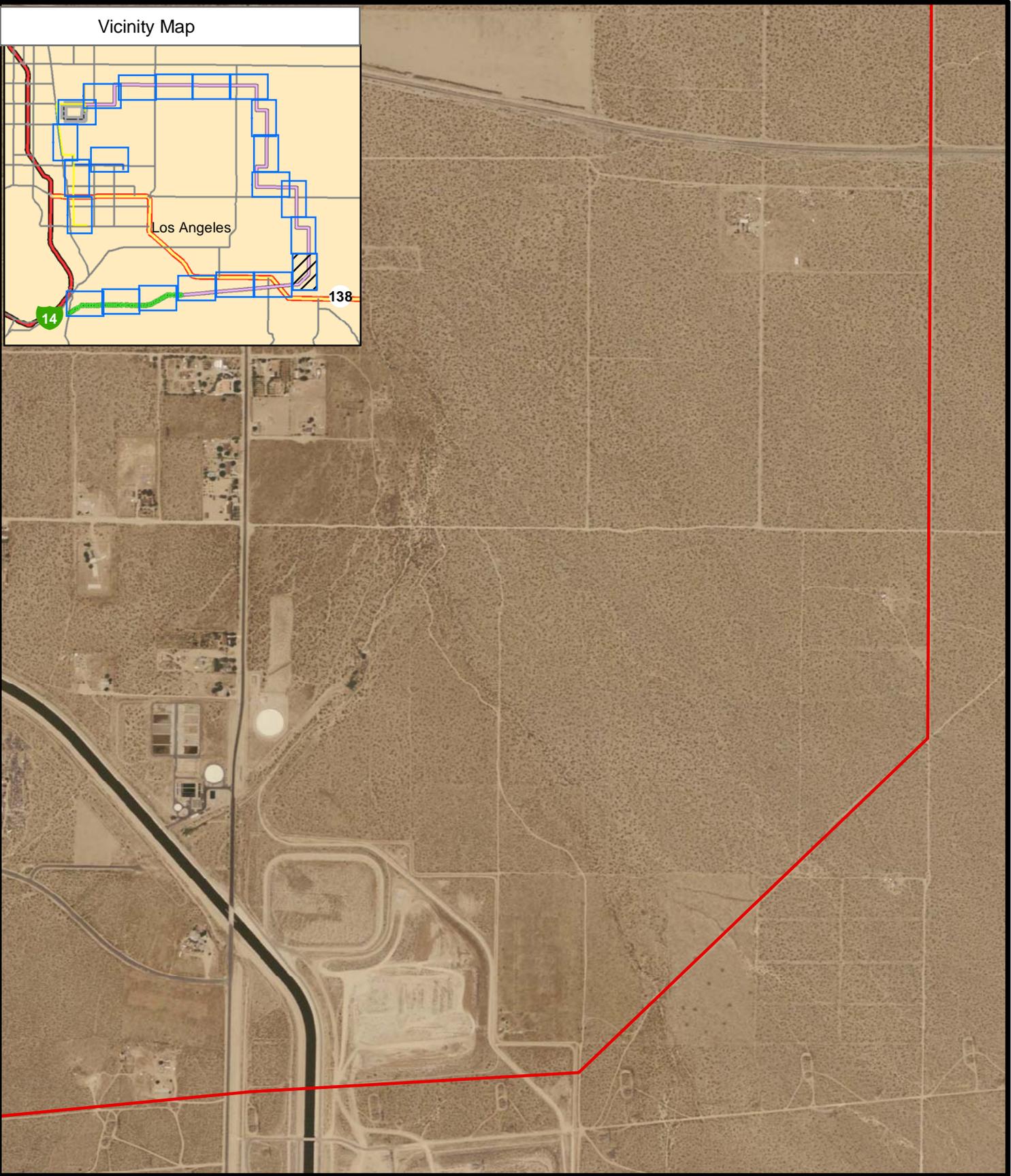
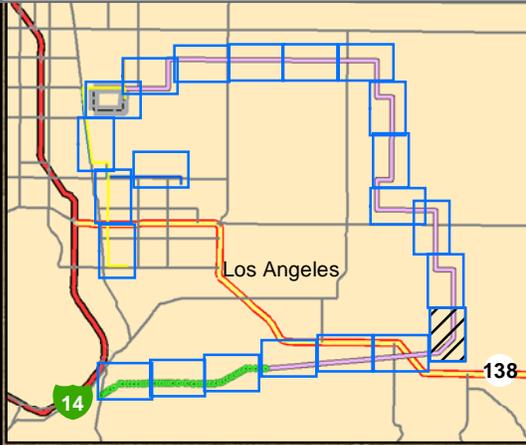
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**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08


Vicinity Map



**Legend**

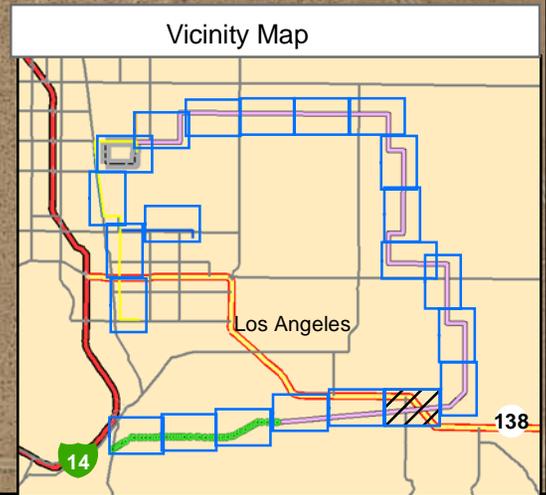
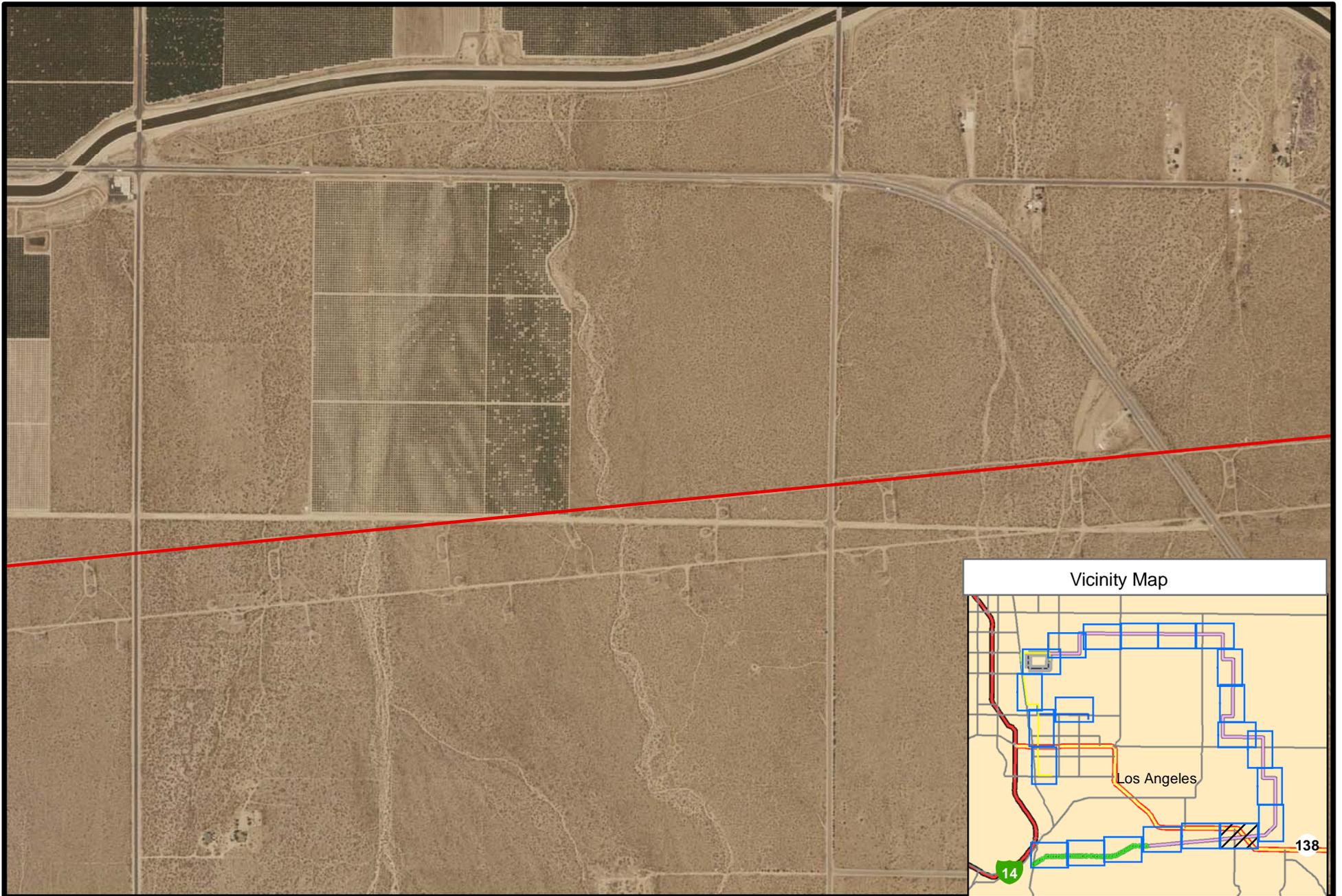
- Transmission Line Route

**Palmdale Hybrid Power Project**  
Habitat Suitability for Burrowing Owl  
Figure 2-L

0 0.08 0.16 0.24 0.32 Miles  
1:12,000

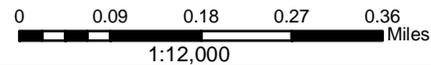
**Map Notes:**  
Projection: NAD 83, Zone 11  
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Date: 08/26/08

North arrow pointing up. amec logo.



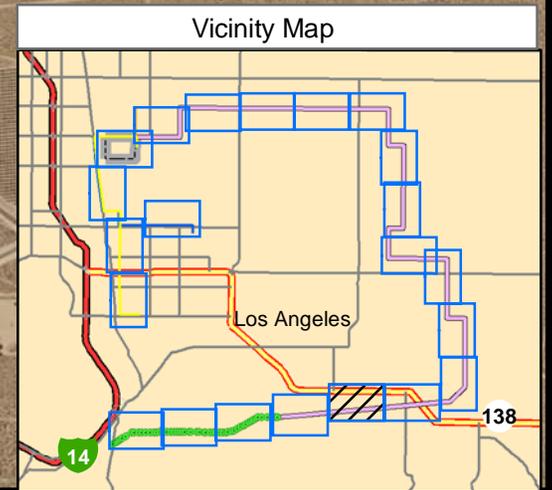
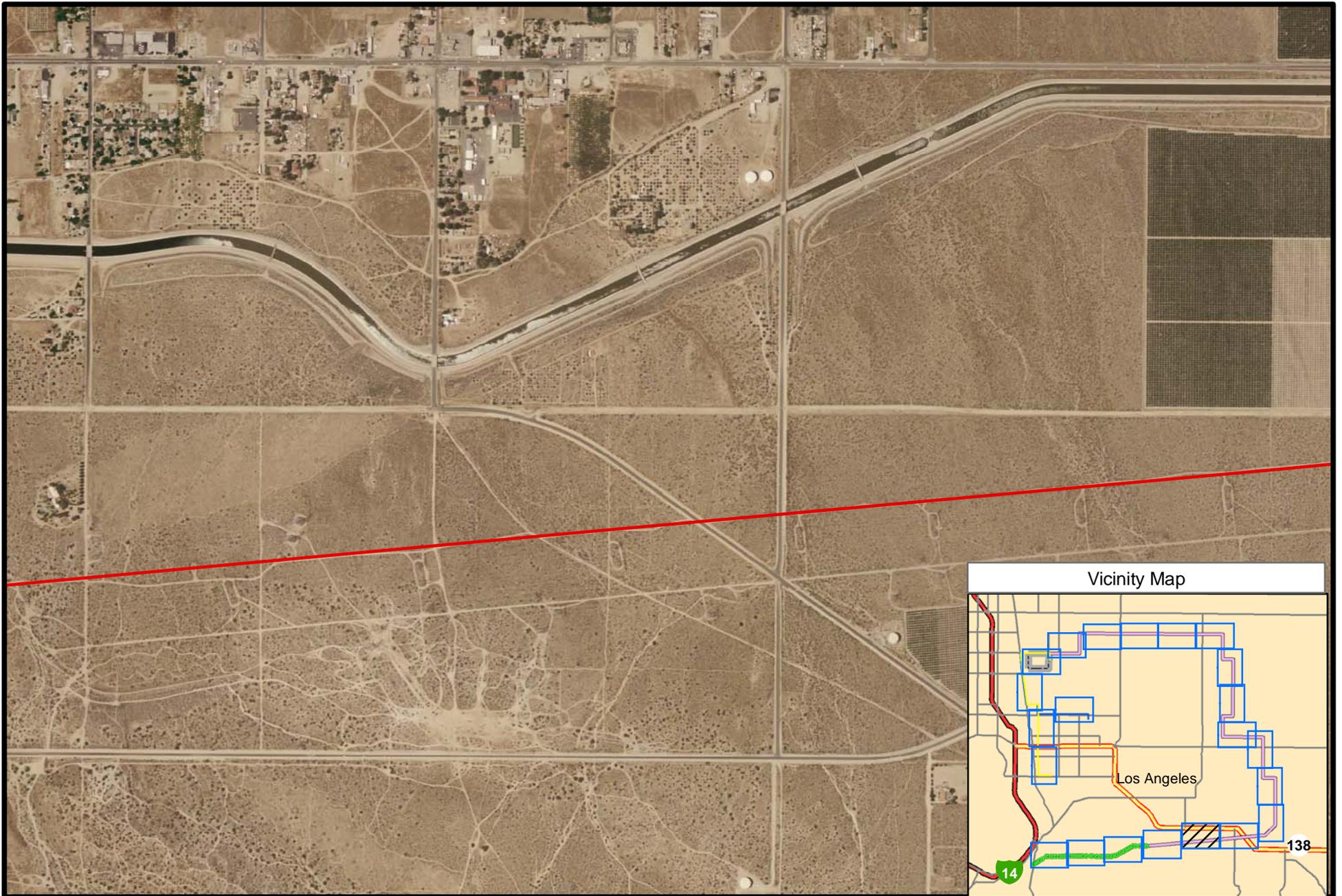
**Legend**  
 — Transmission Line Route

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-M



**Map Notes:**  
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 Date: 08/26/08

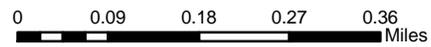




**Legend**  
 — Transmission Line Route

### Palmdale Hybrid Power Project

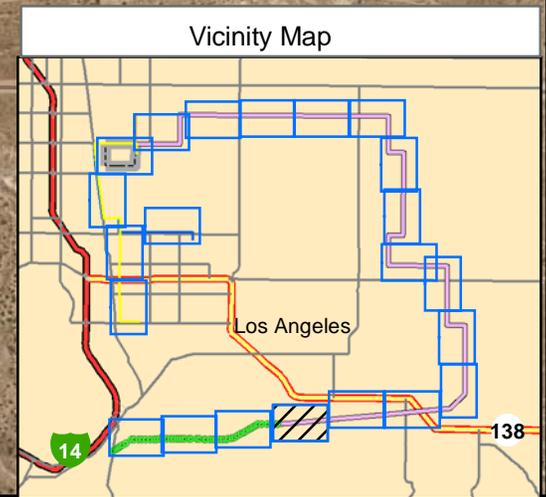
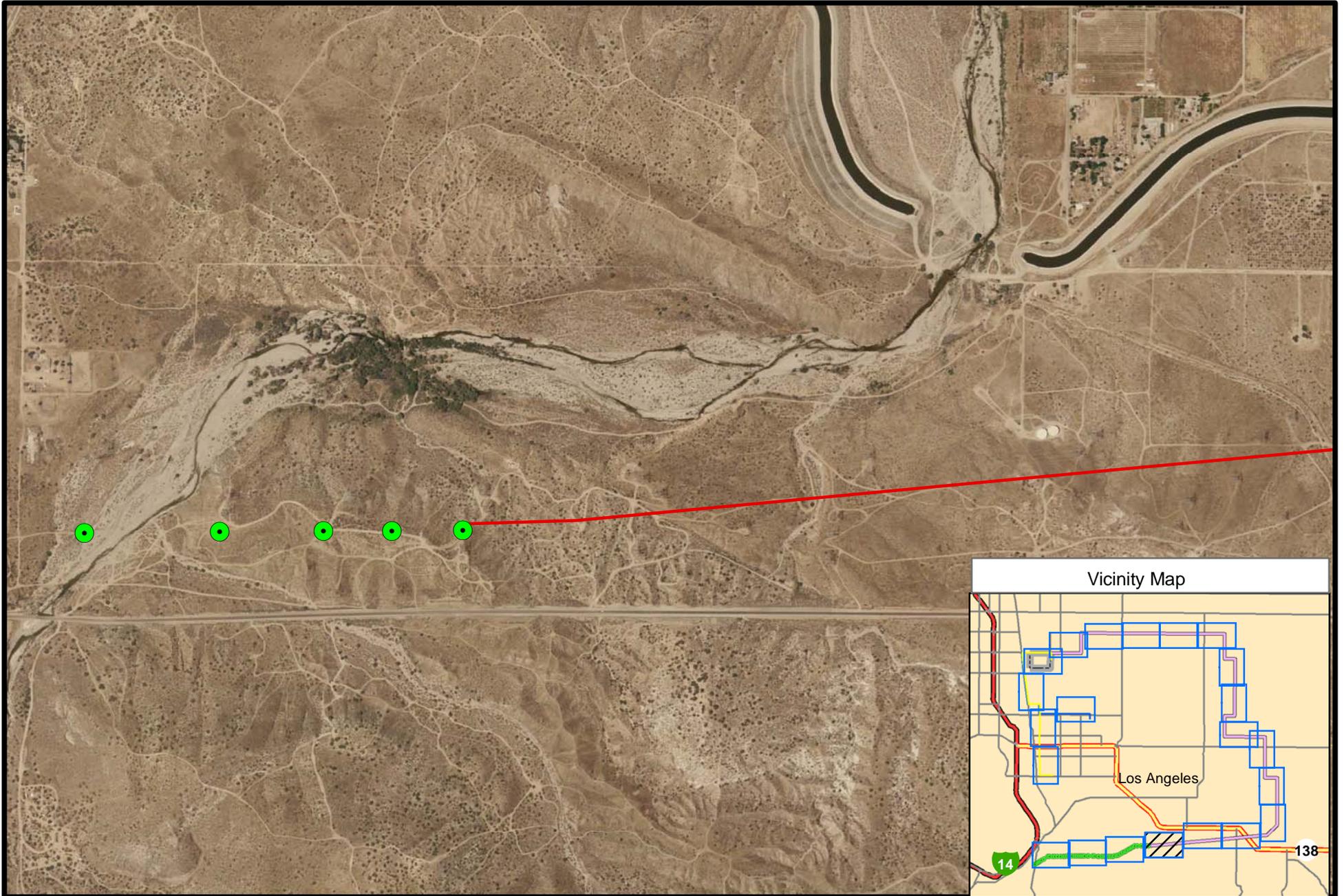
Habitat Suitability for Burrowing Owl  
 Figure 2-N



1:12,000

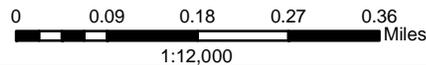
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 Date: 08/26/08





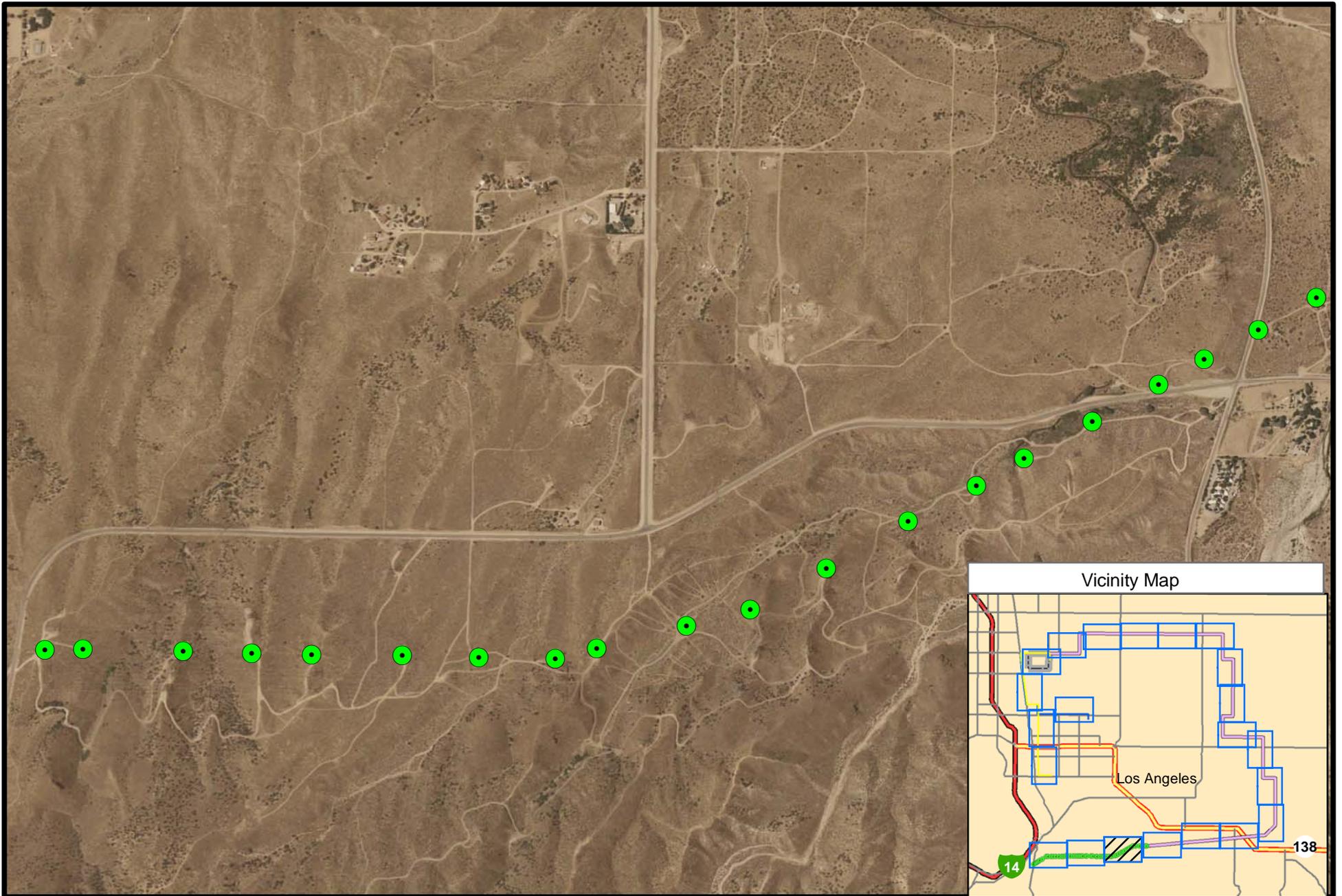
- Legend**
- Towers
  - Transmission Line Route

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-O



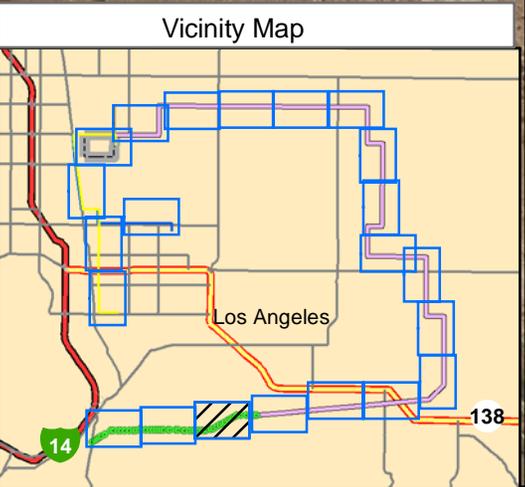
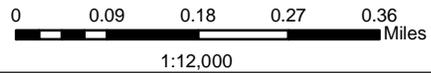
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 Date: 08/26/08





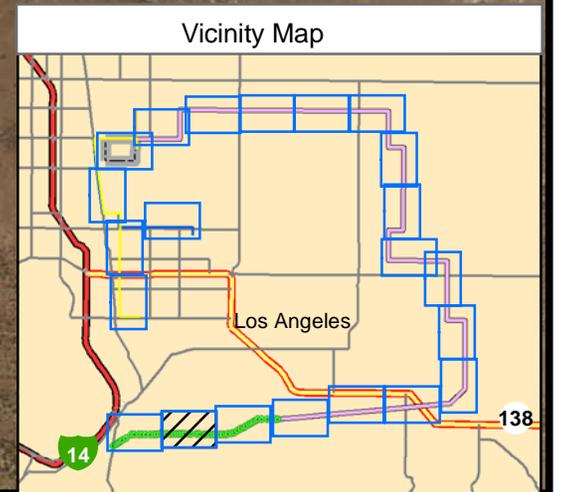
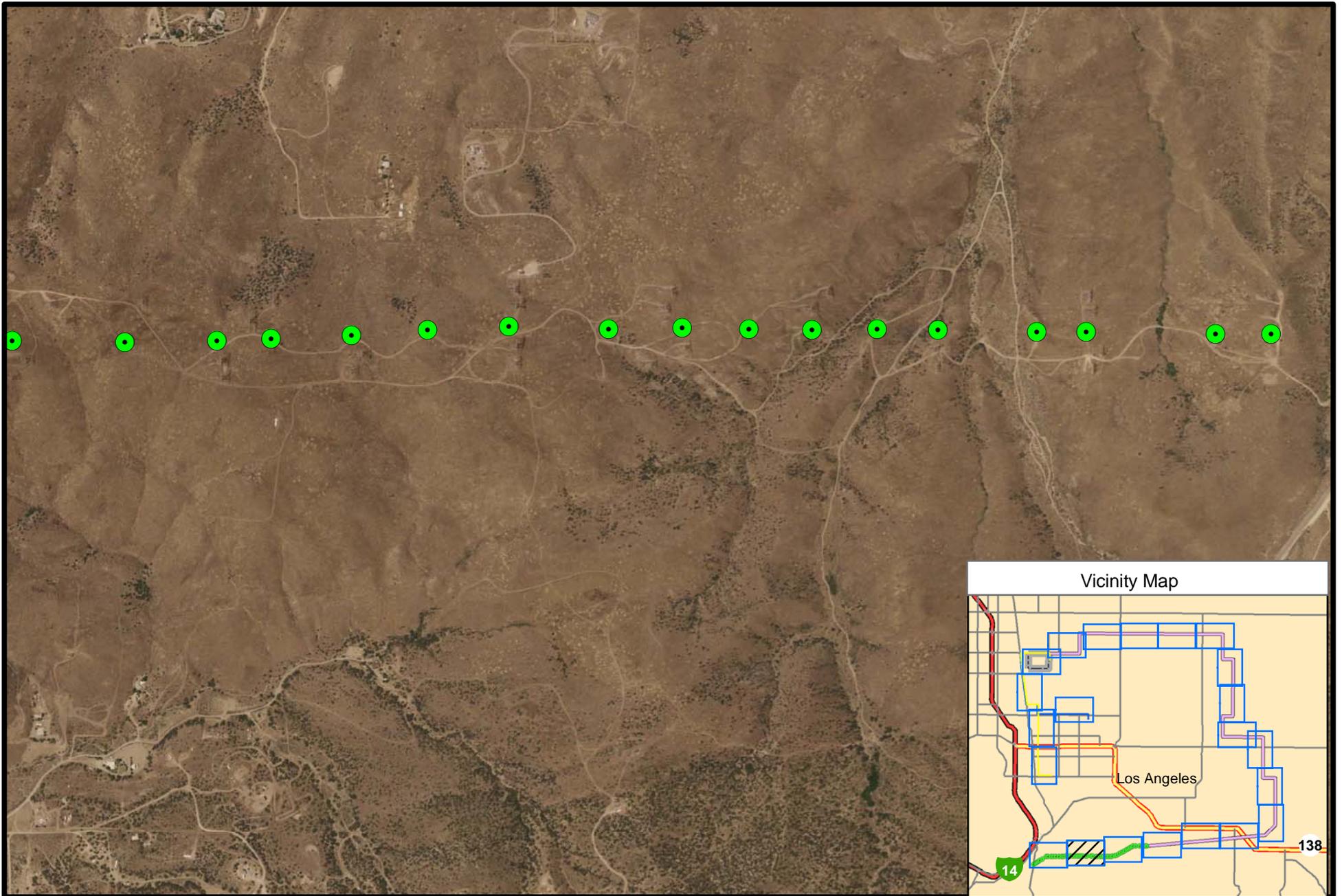
**Legend**  
 Towers

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-P



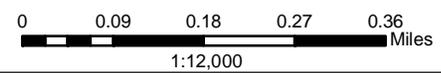
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 Date: 08/26/08





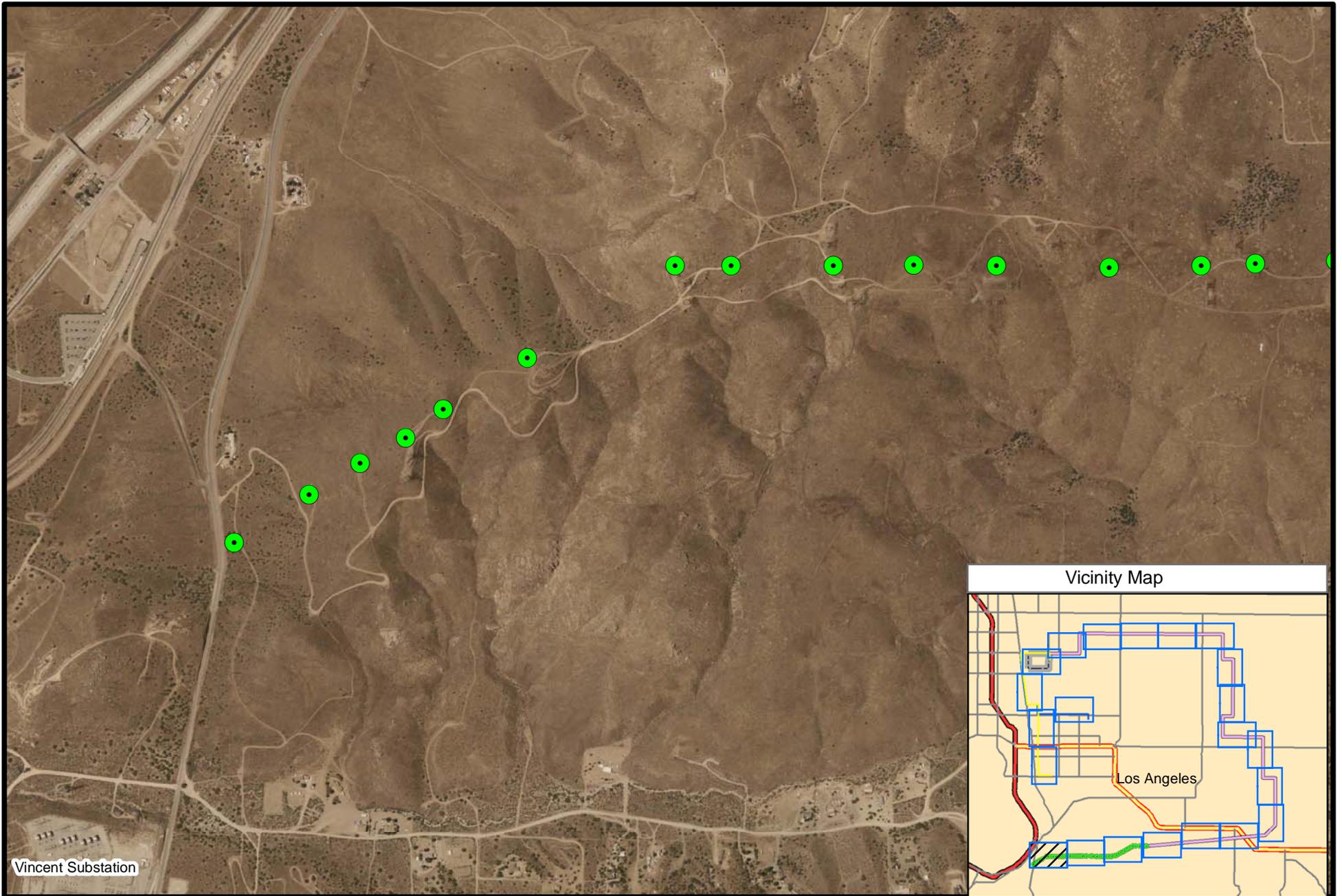
**Legend**  
 Towers

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-Q



**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08

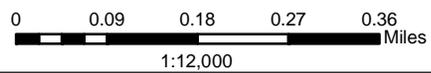




Vincent Substation

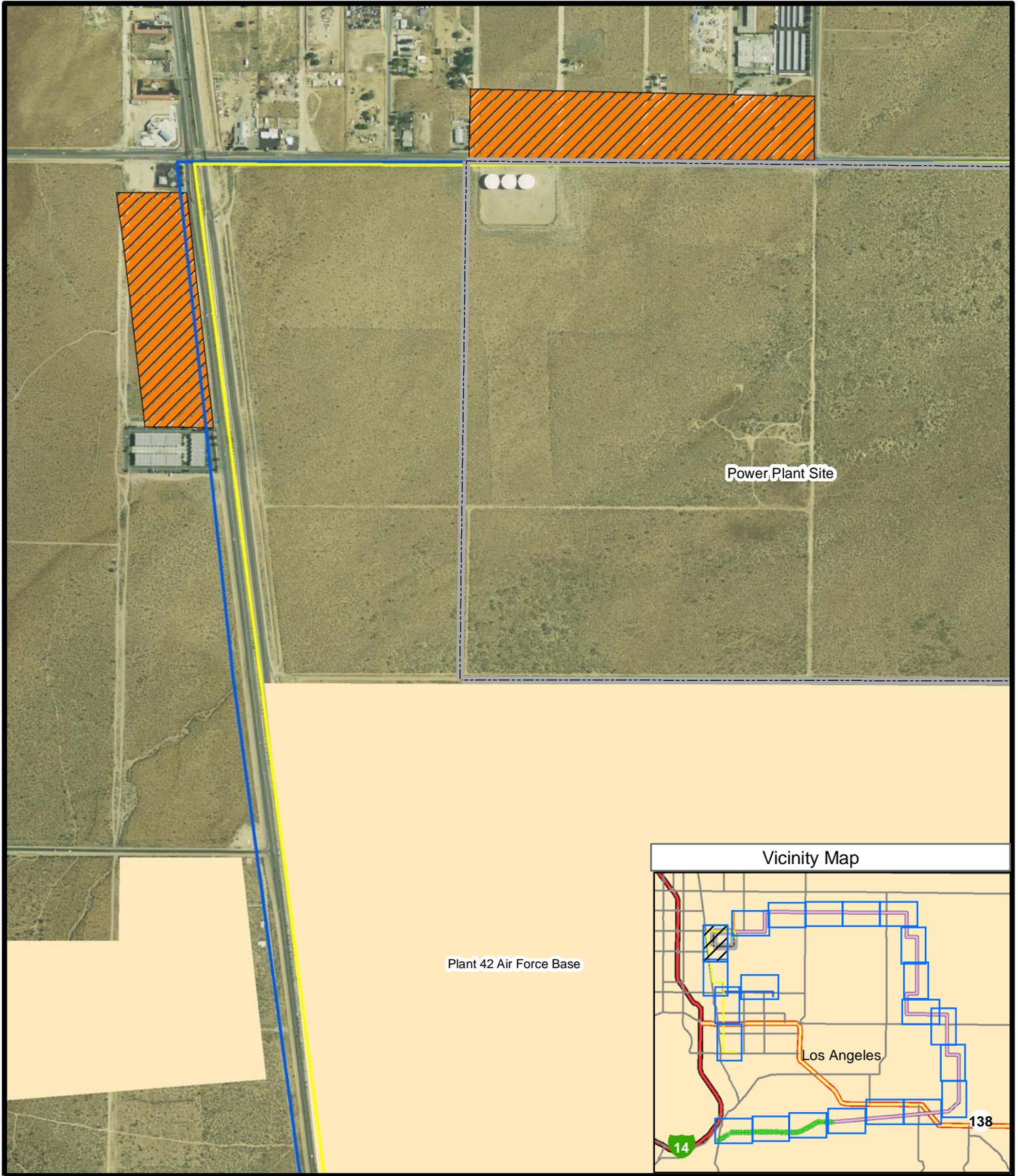
**Legend**  
 Towers

**Palmdale Hybrid Power Project**  
 Habitat Suitability for Burrowing Owl  
 Figure 2-R



**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08



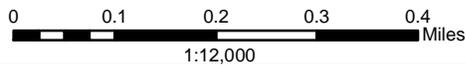


**Legend**

- Natural Gas Supply Pipeline
- Reclaimed Water Pipeline
- Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

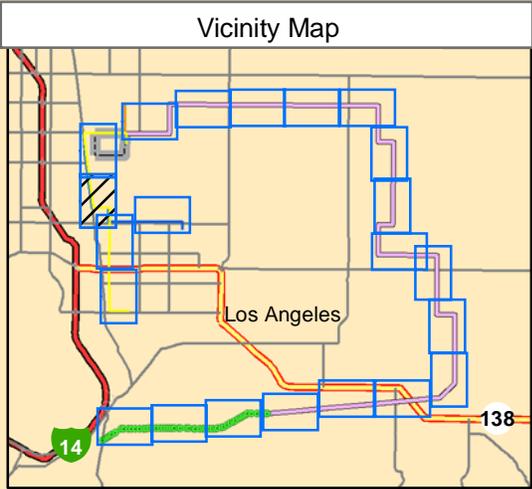
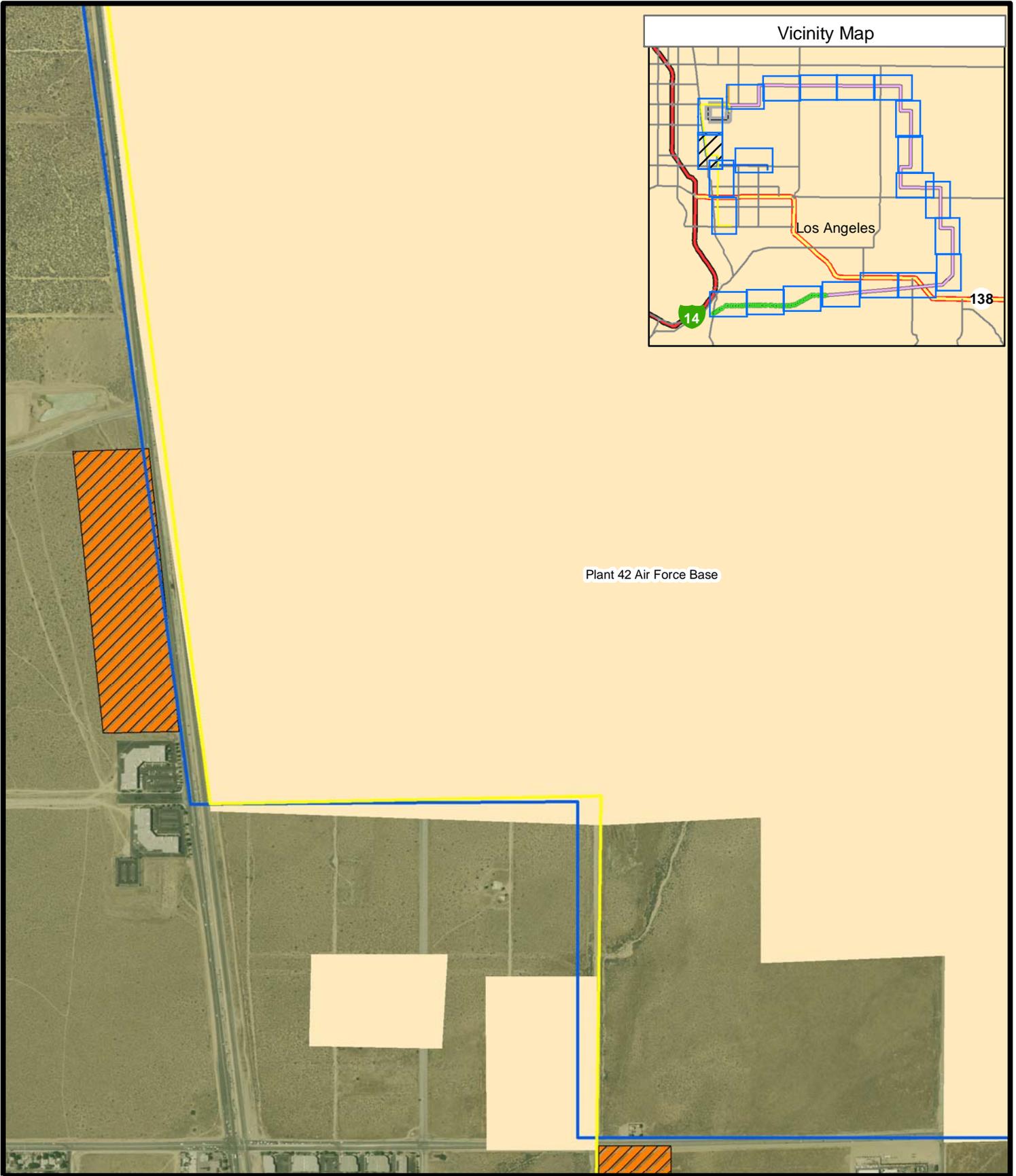
Habitat Suitability for Burrowing Owl  
Figure 2-S



**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
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 Date: 08/26/08





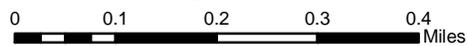
Plant 42 Air Force Base

**Legend**

-  Natural Gas Supply Pipeline
-  Reclaimed Water Pipeline
-  Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl  
Figure 2-T



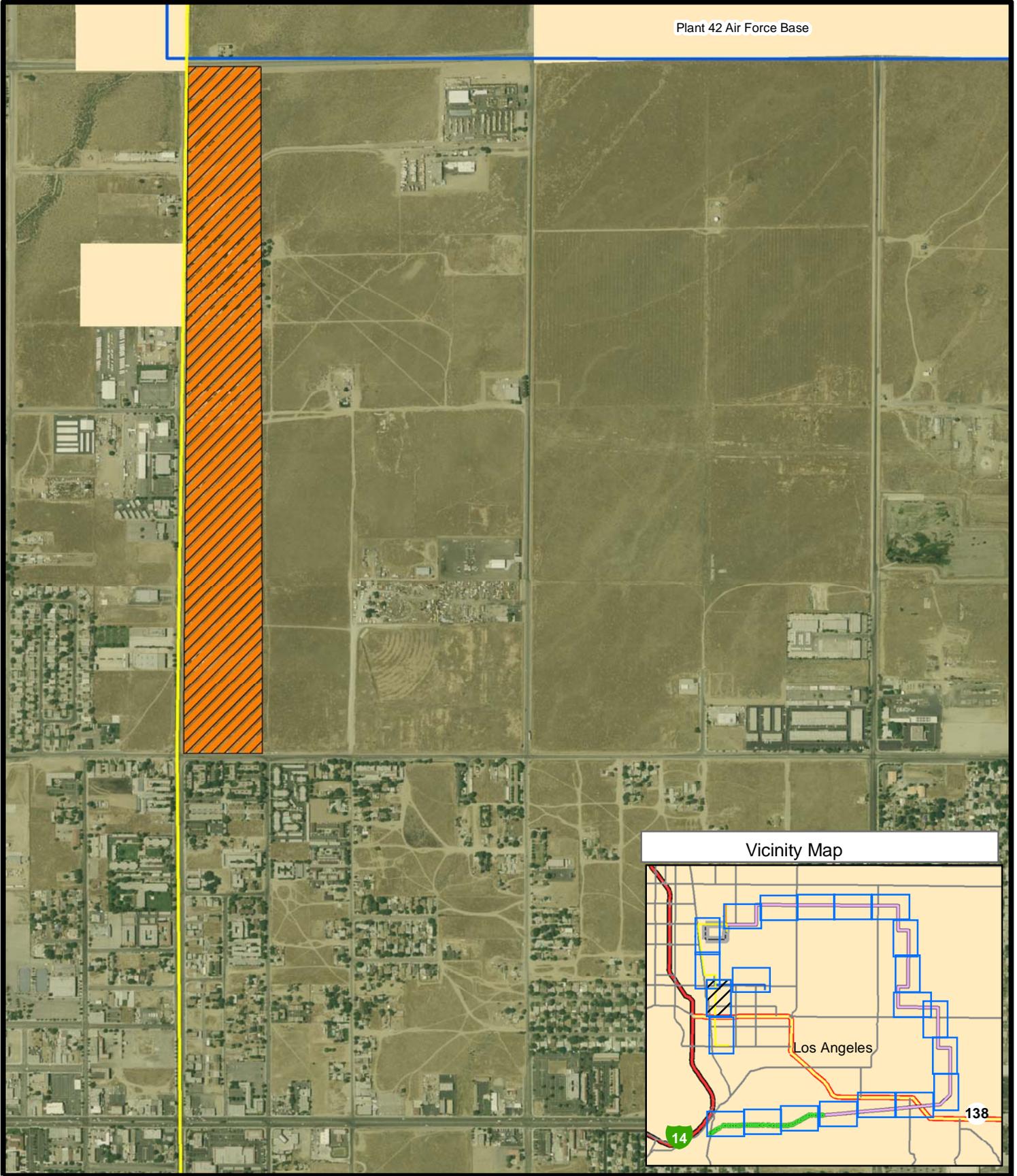
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**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
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 Date: 08/26/08



Plant 42 Air Force Base

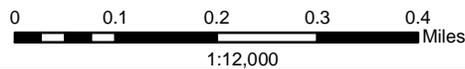


**Legend**

- Natural Gas Supply Pipeline
- Reclaimed Water Pipeline
- ▨ Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

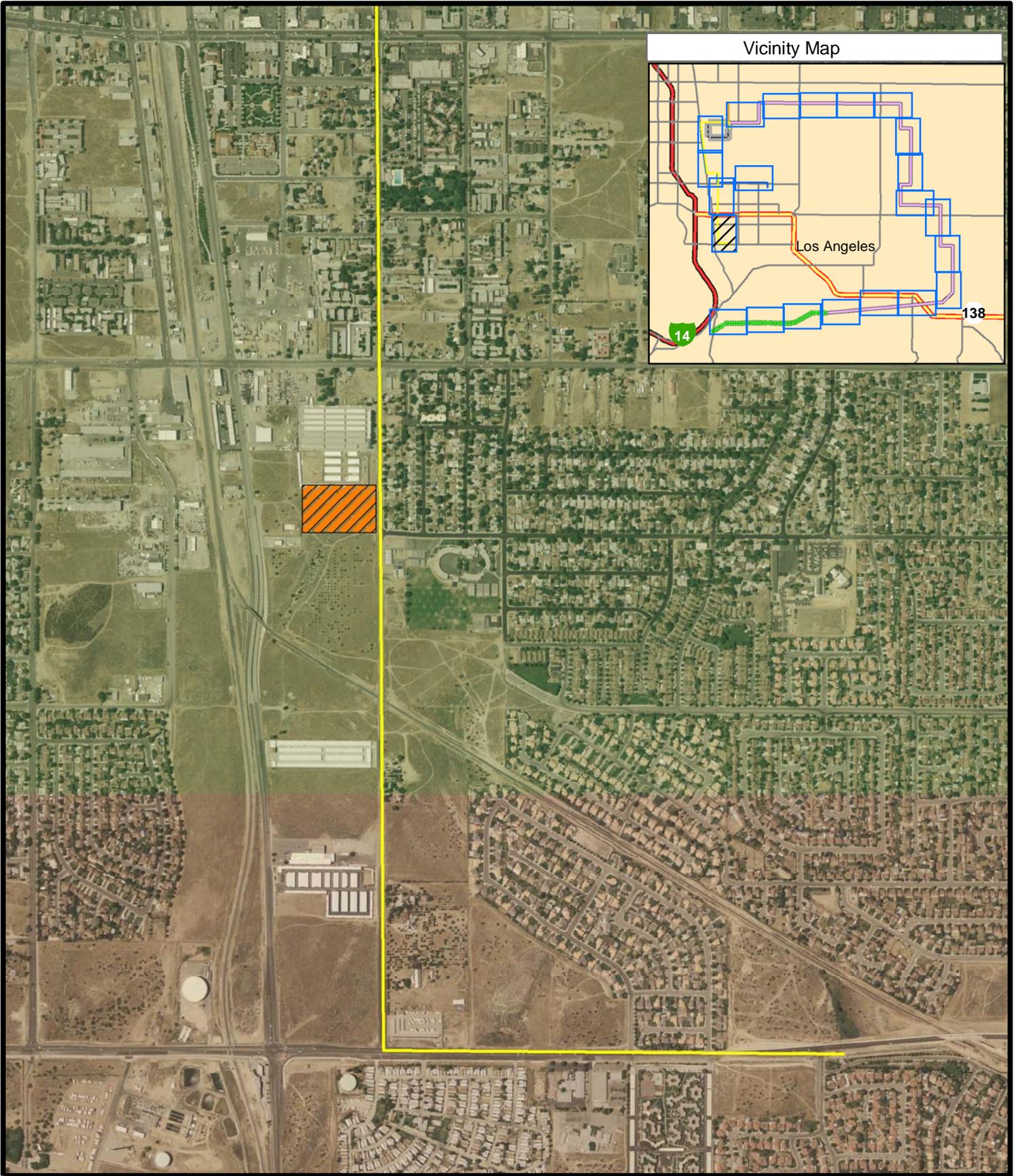
Habitat Suitability for Burrowing Owl  
Figure 2-U



**Map Notes:**

Projection: NAD 83, Zone 11  
Path: S:\active projects\Palmdale  
Power Plant Bio 6554000247\graphics\mxd  
Date: 08/26/08



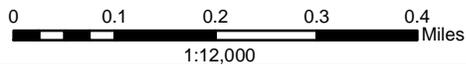


**Legend**

-  Natural Gas Supply Pipeline
-  Burrowing Owl Habitat

**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl  
Figure 2-V



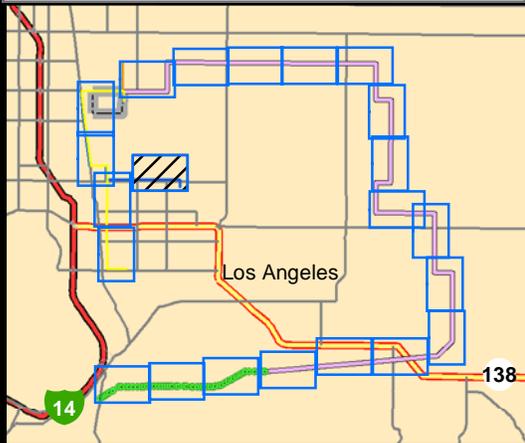
**Map Notes:**

Projection: NAD 83, Zone 11  
 Path: S:\active projects\Palmdale  
 Power Plant Bio 6554000247\graphics\mxd  
 Date: 08/26/08



Plant 42 Air Force Base

Vicinity Map

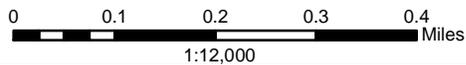


**Legend**

— Reclaimed Water Pipeline

**Palmdale Hybrid Power Project**

Habitat Suitability for Burrowing Owl  
Figure 2-W



**Map Notes:**

Projection: NAD 83, Zone 11  
Path: S:\active projects\Palmdale  
Power Plant Bio 6554000247\graphics\mxd  
Date: 08/26/08



Palmdale Hybrid Power Project  
Burrowing Owl Habitat Assessment and Focused Survey  
ENSR Corporation  
September 2008

## **APPENDIX 1**

# **QUALIFICATIONS OF INDIVIDUALS CONDUCTING STUDIES**

# Matt Amalong

Wildlife Biologist

## **Professional summary**

Eight years experience as an environmental consultant/biologist. Responsibilities have included: project management; preparation of FERC, BRAR, BRTR, EA, EIR, CIA, AFC and CEQA Biological Resource Reports; preparation of scopes, schedules, and budgets; desktop surveys (CNDDDB, internet, literature search, etc.); technical editing and report writing; proposed wind energy facilities surveys (avian, wildlife, plant); monitoring of endangered species (California least tern & western snowy plover); wetland delineation projects; restoration projects; wind energy projects; superfund site projects; coordinating and conducting field surveys (avian, herpetological, mammalian, vegetation); and construction monitoring.

## **Professional qualifications**

Basic Wetland Delineation, Wetland Training Institute, Aug 2007

Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, Nov 2006

Avian/Bat Fatality Survey Training, Searcher Efficiency, and Carcass Removal Trials at Wind Farms, Aug 2006

Flat-tailed Horned Lizard Survey Certification, Jun 2006

Successful CEQA Compliance Workshop, Feb 2006

40-Hour HAZWOPER Training, Dec 2005

8-Hour HAZWOPER Refresher, Nov 2006

CDFG Scientific Collecting Permit

## **Education**

Graduate School, Biology/Ornithology, California State University, Long Beach, 2000-2003

B.S., Biology, Stetson University, 1999

## **Memberships**

The Wildlife Society, Western Section

National Wind Coordinating Collaborative

The Desert Tortoise Council

## **Languages**

English

## **Summary of core skills**

As Project Manager, responsible for scope, schedule, budget, and level of quality for a variety of projects.

**Detailed core skills or details by project**

**Oak Creek Energy Systems Inc., Wind Assessment Projects, southern CA and southern NV.** Coordinated cultural and biological field surveys for three-year renewable wind prospecting BLM right-of-way grants for the installation of meteorological towers at five project sites in southern CA (San Bernardino and Kern Counties) and southern NV (Clark County). Prepared Biological Resource Assessment Reports to support EA documents.

**Energy Unlimited Inc., Revised Commercial WECS 20 Permit Project, Riverside County, CA.** Provided biological support and prepared DEIR Response to Comments for a Repower Project in Desert Hot Springs, CA. The proposed Project will install eight new GE 1.5 MW wind turbine generators, remove sixteen existing smaller Bonus 65 kW wind turbine generators, construct a single-story storage building, and expand an existing outdoor storage area within the existing WECS 20 Wind Park.

**RES Energy, Granite Mountain Wind Project, San Bernardino County, CA.** Prepared biological study plan. Coordinated and conducted bi-weekly avian point-count surveys for proposed 46 MW Granite Mountain Wind Project in San Bernardino County. Analyzed avian point-count data and prepared mean use report providing results of those surveys. Identified species at risk by visual and aural observations. RES proposes to develop a new wind energy generation facility. This facility will include access roads, underground electrical lines, underground communication lines, concrete wind turbine foundations, tubular steel towers, 2.3-megawatt wind turbines, transformers, a communications system, and undisturbed open space. Project work required for preparation of an EIR for submission to the Bureau of Land Management (Barstow Field Office).

**Dillon Wind, LLC, Field Surveys and EIR, Riverside County, CA.** Coordinated and conducted field surveys for special-status species, including desert tortoise, flat-tailed horned lizard, and burrowing owl. Wrote General Biological Assessment for County of Riverside and Biological Resources Technical Appendix for EIR. Dillon Wind, LLC is proposing to construct and operate an approximately 45 megawatt (MW) wind energy conversion system (WECS) project in the San Gorgonio Pass area of Riverside County. The Project will involve the installation of supporting facilities including on-site access roads, pad mount transformers, underground electrical transmission, and communication lines.

**Edwards Air Force Base, Common Raven Study, Lancaster, CA.** Developed and implemented a monitoring program to provide information on the population and behavior of ravens and their interaction with desert tortoise within the Desert Tortoise Critical Habitat Area (DTCHA) on Edwards Air Force Base (EAFB). Factors investigated included raven population densities, movement patterns, and diet characteristics. These three primary factors were evaluated both inside and outside the boundaries of the DTCHA and EAFB. Additional information collected included raven nesting locations and staging areas. The study was also intended to establish point count locations where long-term comparative data can be collected to measure the status and impact of raven populations within and adjacent to the DTCHA. Wrote biological report for Army Corps of Engineers.

**PPM Energy, Tule Wind Project, San Diego County, CA.** Prepared biological study plan. Coordinated and conducted bi-weekly avian point-count surveys, surveys for rare plant species, and surveys for refining vegetation community maps for proposed 177 MW Tule Wind Project in eastern San Diego County. Identified species at risk by visual and aural observations. The primary components of the proposed project are approximately 118 1.5-MW capacity wind turbines with a hub height of approximately 80 meters, a rotor diameter of 77 meters, and a total height of approximately 118 meters. Electrical power generated by the wind turbines would be

collected on-site by underground 34.5kV transmission lines and ultimately delivered to an existing substation in Boulevard, approximately 3 mi. south of the project site via an overhead 230kV transmission line. Project work is required for preparation of an EIR.

**FPL Energy, LLC, Beverly and DeKalb & Lee Wind Resource Areas, IL.** Wrote Environmental Critical Issues Analysis (CIA) Report for two proposed wind energy conversion facilities in Beverly and DeKalb & Lee Counties, Illinois. These reports evaluated current environmental conditions and potential impacts on sensitive biological and cultural resources within the Wind Resource Areas (WRA). It also evaluated applicable land uses, zoning, and identified the types of permits, plans, and approvals that would likely be required for project development. Current plans for the Beverly WRA include the installation of 126 tubular-steel, 80 meter tall, 1.5 megawatt (MW) GE turbines (approximately 190 MW). Current plans for the DeKalb & Lee WRA include the installation of 129 tubular-steel, 80 meter tall, 1.5 megawatt (MW) GE turbines (approximately 194 MW). Infrastructure to be constructed or installed in conjunction with the turbine arrays and associated substations include access routes and both buried and overhead transmission lines.

**Salton Sea Authority, New & Alamo River Wetland Restoration Plan, Imperial County, CA.** Coordinated and implemented reconnaissance-level habitat and biota surveys along the New and Alamo Rivers in Imperial County, CA. The primary goal of the proposed surveys were to identify those flora and fauna that are currently present at the undeveloped sites and to help predict those species that may be present in any future wetlands scenario. Wrote biological report for Tetra Tech Divisions to be incorporated as a chapter in the Master Plan for New and Alamo Rivers.

**UPC Wind Energy, LLC, Mile High Ranch Wind Project, Hudspeth County, TX.** Analyzed avian point-count data and prepared mean use report providing results of those surveys for proposed wind energy conversion facility on an approximately 44.5 km<sup>2</sup> (11,000 acre) area of west-central Texas, approximately 50 km east of El Paso near the El Paso/Hudspeth County line. The proposed design includes GE 1.5 MW turbines, which have an 80-meter hub height and a rotor diameter of 77 meters, resulting in a rotor swept area (RSA) between 41.5 and 118.5 meters above ground level. Infrastructure to be constructed or installed in conjunction with the turbine array and associated substation includes access routes and transmission lines. The protocol for this analysis was similar to protocols used at the Condon, Maiden, Stateline, and Vansycle wind projects in Oregon and Washington, the Buffalo Ridge wind project in southwest Minnesota, and the Foote Creek Rim wind project in Wyoming.

**Luke Air Force Base, Barry Goldwater Tactical Range, Nevada.** Coordinated and conducted biological surveys for Sonoran pronghorn antelope. Utilized video camera surveillance to monitor wildlife activity at watering/revegetation plots. Included installation of cameras and DVR equipment.

**All-American Canal Lining Project, Imperial County, CA.** Prepared training and safety materials, including Worker's Environmental Education Program (WEEP) manual, special-status species identification cards, environmental signs, training documentation database, and stickers. The purpose of the AAC Lining Project is to conserve seepage lost from the unlined AAC. The conserved water is needed in the southern California coastal area to offset a projected water shortage of 1.2 million acre-feet that is expected by the year 2010. The proposed project has the potential to conserve about 67,700 acre-feet per year.

**North Baja Expansion Project, Imperial and Riverside County, CA.** Prepared FERC Resource Report: Vegetation and Wildlife. The purpose of this report was to describe the

existing fish, wildlife, and vegetation resources that would be affected directly and indirectly by the proposed North Baja Expansion (NBX) Project and to assess the potential impacts to these resources resulting from construction and operation of the proposed project. The report also identifies the mitigation measures that are proposed to reduce the impact to these resources. The proposed project consists of the following two components: the B-line, which is comprised of the North Baja Loop, the Blythe Lateral, and the SoCal Gas Lateral; and, the IID Lateral.

**Sempra Energy Resources, Imperial Valley Desert Restoration Project.** Compiled and edited the “As-built” baseline surveys and initial execution of Sempra’s restoration plan, including tamarisk, a non-native invasive shrub/small tree, removal and off-site mitigation for impacts.

**North Baja Pipeline Extension, Avian Surveys, AZ and CA.** Compiled and edited focused avian survey reports for southwestern willow flycatcher and clapper rail.

**South Coast Water District, Laguna Sur Sanitary Easement Natural Resources Evaluation, Orange County, CA.** Compiled and edited an assessment intended to determine potential environmental regulatory and compliance issues associated with regular and emergency maintenance activities needed to maintain operation of SCWD facilities within the Laguna Sur Sanitary Easement.

**South Coast Water District, Casden Properties, LLC, Los Angeles County, CA.** Compiled and edited focused avian survey reports for California gnatcatcher and burrowing owl. Complied with California Environmental Quality Act (CEQA), state and federal Endangered Species Acts (ESA), Clean Water Act (CWA), California Department of Fish and Game (CDFG) Code Sections, and Migratory Bird Treaty Act (MBTA) associated with emergency maintenance activity requisite to maintain use and operation of SCWD facilities.

**Department of the Navy, Superfund Site, Hunters Point, CA.** Monitored biological resources on former Hunters Point Naval Shipyard superfund cleanup site. Maintained buffer zones to protect biological resources; prepared and filed daily field monitoring reports; interacted with construction staff to ensure compliance with established environmental protection measures.

**Rialto Municipal Airport, Phase I Environmental Site Assessments, Rialto, CA.** Compiled and edited Phase I Environmental Site Assessments for four properties in and around the Rialto Municipal Airport.

**Pacific Gas and Electric, North Baja Natural Gas Pipeline, California and Arizona.** Field compliance with NEPA, CEQA, FERC, and federal and state Endangered Species Acts for an 80-mile natural gas line extending from Ehrenberg, La Paz County, Arizona, through Riverside and Imperial Counties, California to an interconnection with Sempra International's proposed Gasoducto Bajanorte pipeline at the U.S./Mexico border west of Yuma, Arizona. Implemented field compliance with terms and conditions of formal consultation with the USFWS pursuant to Section 7 of the Endangered Species Act of 1973 (as amended) and CDFG 2081 Take Permit. Field executed desert restoration plan, field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Assisted with threatened and endangered species surveys for rare plants, desert tortoise, flat-tailed horned lizard, burrowing owl, Gila wood pecker, southwestern willow flycatcher, and nesting bird surveys in accordance with the MBTA. Additional responsibilities included instructing, implementing, and maintaining compliance with various mitigation measures outlined in numerous project approvals and permits.

**Port of Los Angeles, Pier 400 California Least Tern Nesting Site, Los Angeles County, CA.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Monitored breeding biology of California least tern. Observed and monitored other sensitive species such as western snowy plover, burrowing owl, black skimmer, Caspian tern. Assisted with predator management (trapping and relocating) of peregrine falcon, American kestrel, burrowing owl, feral cats, corvids, gulls. Conducted banding studies on least, Caspian, and elegant terns. Compiled and analyzed data into annual reports.

**City of Murrieta/USFWS, Southern California.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Monitored construction during Clinton Keith Roadway Ramp Interim Improvement Project in habitats containing the endangered California gnatcatcher. Interacted with construction crews to ensure environmental compliance.

**Army Corps of Engineers, Southern California.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Conducted California least tern foraging surveys at the Port of Los Angeles and Camp Pendleton. Monitored snowy plover activity adjacent to CLT nesting sites. Compiled and analyzed data in an annual foraging report.

**Upper Newport Bay, Orange County, CA.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Conducted avian surveys at Big Canyon and West Bay. Monitored endangered California gnatcatcher. Compiled avian, mammalian, herpetological, and entomological species lists.

**Myra Frank, Southern California.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Monitored construction during I-5 highway construction in habitats containing endangered species (Willow Flycatcher, Least Bell's Vireo, Unarmored 3-spined Stickleback). Interacted with CalTrans and construction crews to ensure environmental compliance.

**Alameda Corridor, Los Angeles County, CA.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Located and marked nests, monitored breeding biology, interacted with construction crews during railroad construction to minimize disturbance to nests. Prepared annual breeding report.

**Cajalco Creek Dam and Detention Basin, Riverside County, CA.** Maintained compliance with various mitigation measures outlined in numerous project approvals and permits. Field compliance included field survey protocols, field survey schedules, and mitigation packages in accordance with local and federal agency standards. Monitored construction in habitats containing endangered species (California gnatcatcher, Stephens' kangaroo rat). Ensured construction crews were in compliance with environmental permits. Prepared annual report.

**Batiquitos Lagoon, Carlsbad, CA.** Managed four endangered California least tern and western snowy plover nesting sites. Coordinated and communicated with predator management, CDFG, and others to optimize reproductive success. Prepared annual breeding report.

**Employment history**

Apr 2007 – present Wildlife Biologist, AMEC Earth & Environmental, Inc., Anaheim, CA

Aug 2005 – Apr 2007 Associate Biologist, Tetra Tech EC, Inc., Santa Ana, CA. Project Manager responsible for preparing and executing biological study plans.

Apr 2000 – Aug 2006 Project Biologist, Keane Biological Consulting, Long Beach, CA. Project Manager responsible for coordinating biological surveys and maintaining compliance with mitigation measures.

Jan 2005 – Aug 2005 Assistant Biologist, LSA Associates, Inc., Irvine, CA. Conducted biological monitoring in habitats containing endangered, threatened, and/or species of special concern.

Apr 2004 – Nov 2004 Biological Monitor, CA Department of Fish and Game, Carlsbad, CA. Managed four California least tern and western snowy plover nesting sites.

## **James L. Boone**

Desert Wildlife Consultants, LLC  
3112 Ivory Coast Drive, Las Vegas, NV 89117-2346  
(702) 286-6477; email: jlboone@aol.com

### **WORK SUMMARY**

I have been involved in basic and applied environmental research since 1975, and in 1995 I earned a Ph.D. in ecology. My experience includes planning and conducting plant and wildlife field surveys, designing experiments, collecting data, performing advanced statistical and computational procedures using a variety of computer programs and platforms, database management, and preparing technical reports and scientific publications. More recently, I made a living as a technical writer in science and engineering. During that time, I remained active in studying the flora, fauna, and geology of the Mojave Desert, and I maintain a website (birdandhike.com) about the Mojave Desert. I also started an environmental consulting firm focused on monitoring desert tortoise activity on construction sites. In the old days, I worked in wildland fire fighting, law enforcement, search and rescue, and emergency medicine.

### **EDUCATION**

#### **Ph.D., ECOLOGY, 1995.** University of Georgia, Athens.

Population genetics, systematics, conservation, ecology, applied mathematics.

Dissertation: *Patterns of Temporal and Geographic Variation in the Genetics and Morphology of Cotton Mice* (*Peromyscus gossypinus*).

#### **M.S., FOREST RESOURCES, 1990.** University of Georgia, Athens.

Population genetics, conservation, wildlife management, land use planning.

Thesis: *Reassessment of the Taxonomic Status of the Cotton Mouse* (*Peromyscus gossypinus anastasae*) *on Cumberland Island, Georgia, and the Implications of this Information for Conservation.*

#### **B.S., WILDLIFE MANAGEMENT, 1986.** Humboldt State University, Arcata, CA.

Wildlife management, biostatistics, botany, computers. Graduated summa cum laude.

Senior Thesis: *Morphological Differences between Populations of Deer Mice* (*Peromyscus maniculatus rubidus*) *in Sand Dune and Upland Habitats.*

### **PRIMARY RESEARCH PROJECTS**

- \* Response of Mojave Desert vegetation to wildfire.
- \* Modeling the movement of radioactive materials on a subsistence farm.
- \* Ecology of mammals and reptiles at Yucca Mountain.
- \* Impacts of human activities on mammals and reptiles at Yucca Mountain.
- \* Small-scale genetic change (geographic and temporal) in populations.
- \* Subspecific taxonomy of *Peromyscus gossypinus*.
- \* Vertebrate community ecology in the southern Appalachian Mountains.
- \* Distribution of Lyme disease in the southeastern U.S.
- \* Wading birds at Cumberland Island National Seashore.
- \* Control of invasive salt marsh plants without herbicides.
- \* Effects of fire on small mammal populations.
- \* Foraging behavior of White-headed Woodpeckers.
- \* Black bear research and management.

## SELECTED PUBLICATIONS

Boone, J.L. 2006. Birding, Hiking, and Naturalizing Around Las Vegas. [www.birdandhike.com](http://www.birdandhike.com)

Rautenstrauch, K. R., D. L. Rakestraw, G. A. Brown, J. L. Boone, and P. E. Lederle. 2002. Patterns of Burrow Use by Desert Tortoises (*Gopherus agassizii*) in Southcentral Nevada. *Chelonian Conservation and Biology*, 4(2):398-405.

Walters, J.P., and J.L. Boone. 2002. Effects of Salinity and Sodidity on Vegetation Used for Strip Mine Reclamation in Webb County, Texas. Farco Mining, Laredo, Texas, 33 pp. plus Appendices.

Boone, J. L., and E. A. Holt. 2001. Field Sexing Young Free-ranging Desert Tortoises (*Gopherus agassizii*) Using External Morphology. *Chelonian Conservation and Biology*, 4(1):28-33.

Boone, J. L., J. Laerm, and M. H. Smith. 1999. Allozyme Variation in the Cotton Mouse (*Peromyscus gossypinus*). *Journal of Mammalogy*, 80:833-844.

Boone, J. L. 1998. Indirect Impacts of Site Characterization Activities on Small Mammal Populations in the Larrea-Lycium-Grayia Vegetation Association at Yucca Mountain, Nevada: 1991-1997. CRWMS M&O, B00000000-01717-5705-00102.

Lederle, P. E., M. C. Nelson, and J. L. Boone. 1997. A simple, Inexpensive, and Versatile Research Blind. *North American Bird Bander*, 22:18-21.

Laerm, J., W. M. Ford, M. A. Menzel, T. S. McKay, J. L. Boone, and T. Pig. 1996. Symposium on Appalachian Biodiversity: Soricid Communities in the Southern Appalachians. Virginia Museum of Natural History, Blackburg.

Laerm, J., and J. L. Boone. 1995. Corrections of Records of Occurrence of *Peromyscus polionotus* (Wagner) and *P. gossypinus* (LeConte) (Rodentia: Muridae) in the Blue Ridge Province of Georgia. *Brimleyana*, 22:9-14.

Boone, J. L., and R. G. Wiegert. 1994. Modeling Deer Herd Management: Sterilization is a Viable Option. *Ecological Modeling*, 72:175-186.

Boone, J. L., J. Laerm, and M. H. Smith. 1993. Taxonomic Status of the Anastasia Island Cotton Mouse (*Peromyscus gossypinus anastasiae*). *Journal of Mammalogy*, 74: 363-375.

Weed, J., and J. L. Boone. 1992. A Macintosh Computer System for Collecting and Analyzing Rodent Sexual Behavior. *Physiology and Behavior*, 52: 183-184.

Magnarelli, L. A., J. H. Oliver, H. J. Hutcheson, J. L. Boone, and J. F. Anderson. 1992. Antibodies to *Borrelia burgdorferi* in Rodents in the Eastern and Southern United States. *Journal of Clinical Microbiology*, 30: 1449-1452.

Boone, J. L., E. Furbish, K. Turner, and S. P. Bratton. 1988. Clear Plastic. A Non-Chemical Herbicide. *Restoration and Management Notes*, 6:94-95.

## **WORK EXPERIENCE**

### **Desert Ecologist**

Desert Wildlife Consultants, LLC; Las Vegas, Nevada (2000 to present)

Operated my own business doing consulting work for the county government, state government, mining companies, and individuals, focusing mainly on technical publications. During September 2006 to March 2007, I worked as a Tortoise Biologist as an independent contractor. I attended the Desert Tortoise Council Training Workshop in 2007.

I also developed a website (birdandhike.com) about the ecology of the Mojave Desert (flora, fauna, and geology) by providing information on things to do and places to go in the desert around Las Vegas (e.g., hiking, birding, four-wheeling, and other outdoor activities). During this time, I became proficient in GPS and mapping, drove four-wheel drive vehicles to remote locations, and lived and worked under extreme environmental conditions alone and with small groups for extended periods of time. I collected data, organized information, and published results. My formal education focused on vertebrate ecology and wildlife management, but during this time I studied botany and geology to expand the breadth of my understanding of the Mojave Desert ecosystem.

### **Temporary Field Botanist (4/2006 to 5/2006)**

USGS, Western Ecological Research Center, Henderson, Nevada

Set up study plots and measured vegetation in middle-elevation Mojave Desert habitats as part of a study evaluating the response of plants to fire. Responsible for identifying annual and perennial plants to species, counting plants in quadrats, and measuring plant heights along transect lines. Worked with small crews and lived in field camps.

### **Technical Writer II (1999 to present)**

SAIC (4/1999 to 2/2001)

Bechtel-SAIC, Las Vegas, Nevada (2/2001 to present)

Responsible for writing, editing, compiling, and assisting in the production of scientific technical reports (mostly hydrology and geology), engineering reports (e.g., system description documents, facility description documents, and specifications) for the Yucca Mountain Project. Rewrote technical material to levels appropriate for intended audiences (e.g., rewriting technical jargon and conceptually challenging material using words and writing styles that made the resulting text understandable by the general public). Compiled information from original sources and numerous project authors, developed reference lists and data tracking databases, and produced graphics. Worked with authors and reviewers to resolve technical issues and clarify material. Ensured consistency and professional quality. Worked independently and in groups while leveraging knowledge of computer systems to speed the work while reducing the workload and the cost of doing business. Note: In 2001, management of the Yucca Mountain Project changed from SAIC to Bechtel-SAIC.

### **Animal Ecologist (Senior Scientist) (1995 to 1999)**

EG&G/Energy Measurements (4/1995 to 9/1995)

SAIC, Las Vegas, Nevada (9/1995 to 4/1999)

Responsible for conducting long-term impact assessment and ecological research for the Yucca Mountain Project. Engaged in mark-recapture studies of rodent and reptile community dynamics. Curated faunal collections. Supervised scientists in the field and office. Reviewed and edited technical and other documents. Managed data. Manipulated databases including

GPS and GIS data (ArcView). Performed statistical analyses. Authored technical reports and peer-reviewed journal articles. Worked on teams composed of people from a variety of scientific, technical, and non-technical backgrounds in contributing to environmental impact statements. Lead efforts of the ecology team to model the movement of radioactive materials through a desert agroecosystem. My last year in this position was spent analyzing data and writing reports for other environmental scientists, primarily those in the environmental restoration and botanical research groups. By early 1999, all of the environmental research staff had been laid off, and I transferred to a technical writing position. Note: In 1995, management of environmental research on the Yucca Mountain Project changed from EG&G to SAIC.

**Manager of Mammal Collections** (Research Associate)  
Nevada State Museum, Las Vegas, Nevada (1997 to 2001)

Responsible for curating the mammal collection: organized, updated, and maintained the collection of more than 8,000 specimens. Maintained and updated and the computerized collection catalog. Cleaned and prepared specimens. Reviewed, investigated, and updated historical collection records. Provided reports on holdings.

**Graduate Student (Teaching Assistant)**

University of Georgia, Institute of Ecology and Museum of Natural History, Athens, GA (1990-1995)

Taught labs for Comparative Anatomy, Mammalogy, Vertebrate Natural History, Ecology, and non-majors Biology. Prepared and delivered lectures in classroom and laboratory settings, made and gave exams, and maintained grade lists. Presented guest and substitute lectures in several classes. Organized and trained new teaching assistants. During this time, I conducted my independent dissertation research on the population genetics and morphology of Cotton Mice (*Peromyscus gossypinus*). I also helped other graduate students characterize vegetation in the north Georgia and North Carolina mountains (count and measure trees, record data on understory plants, coarse woody debris, and physical conditions), study of the distribution of Lyme disease in the Southeast, inventory amphibians and bats in north Georgia, and inventory shrews in North Carolina.

**Macintosh Computer Consultant**

MacRescue, Athens, GA (1988-1995)

Operated my own computer consulting business. Assisted individuals and institutions in developing Macintosh computer skills and making purchasing decisions. Performed hardware and software maintenance. Taught non-credit courses through the university continuing education program.

**Graduate Student (Research Assistant)**

University of Georgia, School of Forest Resources, Athens, GA (1987-1989)

Conducted and published independent and directed research projects mostly dealing with small mammals. Analyzed the data and published reports from the floral and faunal studies that I collected in the Georgia and North Carolina coastal marshes during 1987.

### **Biological Technician**

University of Georgia Institute of Ecology, and National Park Service. 1987.

Designed and implemented field studies concerning small mammals, migrant birds, prescribed fire, and invasive plants in coastal barrier-island marsh communities. In Georgia, studies focused on the effects of disturbance and potential beach erosion on ducks and wading birds along an intercoastal waterway (Cumberland Island). In North Carolina, studies focused on small mammals, birds, and invasive plant species in barrier-island sand dune and salt marsh communities (Cape Hatteras). Evaluated several methods to control invasive plants, including fire, mechanical removal (chainsaws), hand removal (hand tools), and covering with clear plastic. We also studied the effects of disturbance in several habitat types on the island. I participated in all of these studies, but for some, I set up, conducted studies, supervised others, collected data, analyzed data, and published the results. I reactivated my Fire Boss card and participated in experimental burns.

### **Park Ranger**

National Park Service. Joshua Tree National Park, Sequoia and Kings Canyon NP, Grand Canyon NP, Lake Mead National Recreation Area (1978-1986; 12 seasons).

Primarily responsible for emergency response and conflict resolution in law enforcement, emergency medicine, search and rescue, technical rock rescue, structural and wildland fire suppression, ambulance, campground operations, visitor programs (campfire programs and nature walks), backcountry patrol, other technical and non-technical aspects of park management. Supervised employees under technically difficult, life threatening, and stressful situations. Documented activities in written form. Participated in resource management activities such as bear research and management, bird studies, bubonic plague surveys, fire management, and vegetation studies. Details available on request.

### **Forestry Aid**

U.S. Forest Service, Clearwater National Forest, Idaho (1975-1976; 2 seasons)

Worked on timber stand improvement, tree planting, timber cruising, controlled burns, and firefighting crews. Timber cruising involved working in teams of two to inventory timber, identify understory plants, take soil samples, inventory coarse woody debris, and identify forest pathogens. The focus of this work was timber inventory (number, height, DBH, condition, disease) using variable radius plots, but we also collected ecological data for forest fire planning and soils data for soil mapping. Used maps, compasses, and chains to navigate the mountains and locate plots. Lived in remote field camps (drive-in and fly-in) for 10 days at a time. Did seedling survival surveys in replanted clearcuts using fixed radius plots. Worked on a timber stand improvement crew using chainsaws to thin trees in regenerating clearcuts. Selected trees to keep based on species, size, and condition, and cut down the others. Participated in controlled burn to remove debris from clearcuts and fought wild fires. Details available on request.

Details available on request.

# STEVEN C. FERRAND

## OBJECTIVE

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THIS RESUME IS SUBMITTED FOR CONSIDERATION OF OBTAINING A POSITION AS A BIOLOGICAL MONITOR .

## EXPERIENCE

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### FOSTER WHEELER ENVIRONMENTAL CORPORATION

August 2001 – Present

Approved monitor / handler for flat-tailed horned lizard, burrowing owl, Arroyo toad, and desert tortoises.

### CONSTRUCTION MONITORING ASSIGNMENTS

- Monitoring of directional drilling under roads, water ways, and riparian areas in burrowing owl habitat in Blythe and Brawley CA.
- Monitoring of conventional plow installation of ducting in burrowing owl habitat in Blythe and Brawley CA.
- Conducted desert tortoise survey, presence / absence along Hwy 78 for a proposed construction corridor change.

### TRAINING THROUGH FOSTER WHEELER

1. Cultural & Environmental Training

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### BIORESOURCE CONSULTANTS, Carl G. Thelander

September, 2001

- Participated in a raptor survey involving recording raptor usage of non APLIC compliant power poles to determine raptor electrocution frequency.

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### HDR ENGINEERING

October 2000 – August 2001

### CONSTRUCTION MONITORING ASSIGNMENTS

#### LEVEL 3 ( Lines 04 AND 08 )

- Directional drilling 100' – 5000' long bores of washes, streams, culverts, roads, Cal Trans off ramps, the New River, Alamo River, and under cultural sites.
- Paving of finished trenching from Santee CA to Alpine CA
- Spider plow installation of ducting west of El Centro CA & from Hesperia CA to Primm NV
- Conventional plow installation of ducting from El Centro CA through the

Algodones Dunes west of Yuma Az.

- Pot holing for utilities throughout El Centro CA
- Trenching for ducting installation with track and back hoes from Santee CA to Yuma AZ & from Hesperia CA to Primm NV
- Rock saw trenching for ducting installation from Santee through Pine Valley CA
- Fiber installation (blowing) east of El Centro CA and from Barstow CA to Baker CA
- Fiber splicing from Barstow CA ILA to Cima Road (between Primm NV & Baker CA)
- Fiber testing from Barstow CA ILA to Cima Road
- Preconstruction sweeps for desert tortoise presence / absence survey from Ogilby Road and I-8 along the construction line to Yuma AZ
- Taught burrowing owl, flat-tailed horned lizard and desert tortoise worker awareness classes on the Level 3 O4 line, Santee CA to Yuma Az. Taught desert tortoise worker awareness classes on the O8 line, Hesperia CA to Primm NV.
- Selected as one of six biologists to conduct preconstruction sensitive plant surveys and flagging from Hesperia CA to Primm NV. This provided information that was used to modify the construction corridor and reduce the impact to native vegetation.
- Field trained biologists that were qualified as tortoise monitors so they could be considered for qualification to be tortoise handlers – 60 hours training each

#### **TRAINING THROUGH HDR ENGINEERING:**

1. Biological monitor training
2. Burrowing owl training
3. Flat-tailed horned Lizard training
4. Desert tortoise training
5. Arroyo toad training
6. Union Pacific Railroad training 2000 & 2001
7. Kiewit environmental, cultural & safety training
8. Sexual harassment training

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#### **SELF EMPLOYED**

1991–September 2000

NEVADA

- Actively involved in Clark County Nevada’s Multiple Species Habitat Conservation Plan as a member of the Implementation and Monitoring Committee representing the Searchlight Nevada Town Advisory Board.
- Tortoise monitoring for the University of Nevada at Las Vegas.
- Taught workshop classes for public school educators for Project Wild developed by the Nevada Division of Wildlife.
- Licensed by the Nevada Division of Wildlife to collect selected scientific specimens for the Barrick Museum at University of Nevada at Las Vegas.
- Licensed by the Nevada Division of Wildlife to commercially collect reptiles in

Nevada.

- Wildlife presentations to Nevada public schools (elementary through high school).
- Research assistant for university projects to study the desert tortoise and western chuckwalla.

1975–1990

**Employed in the structural steel industry in varying capacities:**

- Operations Manager, responsible for company operations, estimating, sales and fabrication of structural steel and reinforcing bar
- Engineering Manager, managed engineering, estimating and detailing departments for structural steel fabrication
- Chief Estimator, managed estimating departments from 3 – 9 estimators
- Estimator, estimated structural steel and pressure vessel projects
- Planner, wrote construction sequence planning for ASME section 8 and nuclear fabricated assemblies
- Steel fabricator working on the shop floor fabricating parts

EDUCATION

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- |                     |                             |               |
|---------------------|-----------------------------|---------------|
| 1965–1968           | Arizona Western College     | Yuma, AZ      |
| ■ A.A               | Applied Sciences            | 1968-1969     |
| 1968-1969           | Northern Arizona University | Flagstaff, AZ |
| ■ Major in Zoology, | emphasis in Herpetology     |               |

INTERESTS

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Biological research in herpetology, ecology and conservation biology

**REFERENCES**

- Alex Heindl, Curator of Reptiles, Barrick Museum, University of Nevada, Las Vegas (702) 895-1401 (office)
- Richard Montanucci, Ph. D., Professor, Department of Biological Sciences, Clemson

University, South Carolina (864) 656-3625 (office)

- Dave Sanger, Biologist, Nevada Division of Wildlife, Reno, NV (administered Project Wild) (775) 688-1500 (office)
- John Wear, Biologist, Biological Resource Specialists, Yucaipa, CA. (909) 797-5740 (office)
- Jim Boone, Ph.D., Ecologist, Las Vegas, NV. (702) 228-4603 (home)

Email: [steve@chuckwallas.com](mailto:steve@chuckwallas.com)

Searchlight, NV 89046 Phone: (702) 296-1616

## RÉSUMÉ

***Alex L. Heindl***

Desert WalkAbouts, Inc.  
426 W. Viewmont Dr.  
Henderson, Nevada 89015

Res.: (702) 566-4297 Cell: (702) 370-1309

E-mail: Desertwalkabouts@gmail.com

### **Education:**

B.S. Wildlife Science, Oregon State University, Corvallis, 1972.

M.A. Biology major/Geology minor, University of Nevada, Las Vegas, 1999.

Thesis title: *Preliminary investigations into distribution of the Western Diamondback Rattlesnake, Crotalus atrox, in Nevada and discussion of some factors possibly contributing to the species' present Nevada distribution pattern.*

Additional (1.5 years) graduate level study toward PhD in geoscience, University of Nevada, Las Vegas, 2000 – 2002.

### **Summary of Professional Work Experience:**

Thirty-six years terrestrial and marine field experience as wildlife and fisheries biologist/ecologist for state, federal and tribal agencies and academic institutions. Self-employed environmental consultant since 2006. Strong background in all aspects of desert ecology, (particularly herpetology), terrestrial and marine mammalogy, ichthyology and geology. Good background in ornithology, particularly waterfowl and pelagic sea birds. Experienced in archaeological survey and field techniques. Author of numerous staff and technical reports and NEPA documents.

### **Specific Experience:**

ENVIRONMENTAL CONSULTANT - Desert WalkAbouts, Inc., Henderson, Nevada – 2006 to present. Conduct biological and ecological field surveys; prepare project reports and NEPA documents.

CURATOR OF HERPETOLOGY - Marjorie Barrick Museum of Natural History, University of Nevada, Las Vegas - 1993 to 2006. Conduct biological and ecological field studies and surveys; maintain and expand UNLV herpetological collection; write and edit staff reports and NEPA documents. Conduct Museum-sponsored educational outreach program re: local herpetology.

## **Alex L. Heindl, resume, p. 2**

RESEARCH ASSISTANT - Marjorie Barrick Museum of Natural History, University of Nevada, Las Vegas - 1992 to 1993. Duties similar to those in previously described position.

ENVIRONMENTAL ANALYST - Nevada Department of Transportation - 1989 to 1991. Conduct environmental studies and secure federal and state permits necessary to permit maintenance and expansion of state highway system. Write correspondence and project reports; compose and present department testimony before various private and governmental bodies.

FISHERY BIOLOGIST - Columbia River Inter-Tribal Fish Commission, Portland, Oregon - 1979 to 1989. Staff representative of four tribes with treaty fishing rights on Columbia/Snake River system. Conduct field studies; write correspondence and staff reports; write and present testimony to state and congressional bodies; appear as expert witness in court cases involving Indian fishing issues.

FISHERY BIOLOGIST/MARINE MAMMALOGIST - Fisheries Research Institute, University of Washington, Seattle - 1978 and 1981. Foreign Fishery Observer of Japanese salmon gillnet fishery in North Pacific Ocean. Compile harvest records; collect marine mammal sighting and behavior data; conduct field necropsies on incidentally captured marine mammals and write project reports.

WILDLIFE BIOLOGIST - Oregon Department of Fish and Wildlife - 1973 to 1979. Conduct research and management of large and small mammal, bird, and resident and anadromous fish populations in western and central Oregon. Census mammal, bird and fish populations; trap and relocate elk; trap and band waterfowl; plan and direct habitat rehabilitation projects; enforce hunting and fishing regulations; handle animal damage complaints; serve as agency's Public Information Officer.

### **Pertinent and Related Skills:**

- > Proficient writer and editor.
- > Experienced public speaker, including experience before state and federal congressional bodies.
- > Mine Safety and Health Administration (MSHA – US Dept. Labor) certified in underground mine safety (underground biological surveys)
- > Experienced in negotiation and dispute resolution.
- > Experienced in archaeological field techniques.

## **Alex L. Heindl, resume, p. 3**

- > Graduate of Dale Carnegie Course: "Effective Speaking and Human Relations".
- > Experienced horseman and outdoorsman.
- > Licensed private pilot (license not current).

**References:**

Dr. Donald Baepler, Director Emeritus  
Marjorie Barrick Museum of Natural History  
Harry Reid Center for Environmental Studies  
University of Nevada, Las Vegas  
4505 Maryland Parkway  
Las Vegas, Nevada 89154-4009 (702) 895-3381

Ms. Diane Winslow, Director  
Cultural Resources Division  
Harry Reid Center for Environmental Studies  
University of Nevada, Las Vegas  
4505 Maryland Parkway  
Las Vegas, Nevada 89154-4009 (702) 895-2687

Dr. Will Pratt, Curator of Invertebrates  
Marjorie Barrick Museum of Natural History  
Harry Reid Center for Environmental Studies  
University of Nevada, Las Vegas  
4505 Maryland Parkway  
Las Vegas, Nevada 89154-4009 (702) 895-1403

Mr. Jeff Wedding, Historic Archaeologist  
Cultural Resources Division  
Harry Reid Center for Environmental Studies  
University of Nevada, Las Vegas  
4505 Maryland Parkway  
Las Vegas, Nevada 89154-4009 (702) 895-1480

Publications list supplied on request.

# Tsegaye Mengistu

Staff Biologist

## Professional Summary

Mr. Mengistu has over eight years of professional experience with public and private organizations. To date, he has conducted professional biological and environmental assessment work Minnesota, Oregon, Washington, Nevada and California as well as research in Kenya. He has performed surveys for Desert Tortoise and many other sensitive species in the Coachella Valley. Mr. Mengistu's has worked for the Bureau of Land Management in Medford Oregon, and Las Vegas Nevada under a contract with Environmental Careers Organization performing biological and botanical surveys using GIS/GPS technology. This has incorporated broad computer and mechanical skills to perform analyses and documentation within project-related assignments. Over the past year Mr. Mengistu has served at the lead biological monitor for the Coachella Canal Lining Project and has lead teams doing seed collection and clearance surveys. His expertise has been derived from a formal education and extensive domestic field experience.

## Professional Qualifications

Desert Tortoise Council Tortoise Survey Workshop, 2006

## Education

**B.A. Environmental Science, Hamline University, St. Paul, Minnesota 1999**

## Employment History

Staff Biologist / Lead Biological Monitor, AMEC Earth & Environmental, Inc.:

January 2005 – present

Conducts focused presence/absence surveys for rare and endangered flora and fauna including the Coachella Valley milkvetch, burrowing owl, desert tortoise and many desert Plants. Serves as Lead Field Monitor for biological compliance monitor for large-scale construction projects.

Natural Resource Specialist, Oregon Department of Environmental Quality.: June 2004 – October 2004

- Stream survey involving electro fishing and fish survey.
- Macro invertebrate and Periphyton sampling.

- Stream habitat assessment, and water quality measurements.
- Water sampling and analysis, benthic fauna sampling and fish collecting.
- General water quality and effluent sampling and analysis.

**Botanist, Charis Corporation.: April 2004 – May 2004**

Performed sensitive plant survey for *Cymopterus deserticola* in the Mojave Desert region. Survey included:

- Establishing transects and performing navigation for survey crew.
- Entering and recording GPS data for input into ArcView GIS.
- Navigation by topographical maps.
- All work performed as a member of a survey team.

**Hydrologic Technician and GIS/ Hydrographer, Environmental Careers Organization, placed as an Associate at the Bureau of Land Management (BLM), Medford, Oregon: December 2002 – December 2003**

- Organization, collection, and maintenance of BLM hydrography spatial and attribute databases.
- Assess, review, and verify the quality and accuracy of map.
- Performed digitization and map editing techniques with ArcView 3.3 and ArcInfo.
- Served as production assistant for the analysis and creation of spatial display products.
- Performed soil, ground water and surface water sampling.

**Hydrologic Technician and GIS/ Hydrographer, Environmental Careers Organization, placed as an Associate at the Bureau of Land Management (BLM), Medford, Oregon: June 2002 – December 2002**

- Surveyed stream reaches as defined by the Northwest Forest plan by using topographic maps, compass, clinometer, altimeter, and aerial photos.
- Identified unmapped stream reaches and modified base maps.
- Identified riparian and upland area vegetation.
- Conducted measurements of stream flow along with conductivity and turbidity sampling.
- Utilized Rosgen Classification and Wolman Pebble count methodology for interpreting stream channel characteristics.

**Botanist, California Native Plant Society: Spring 2002**

- Identify and map endangered plant species using GPS.
- Identify and record Sonoran desert flora.
- Survey Algodones Dunes in CA, for *Helianthus niveus*, *Palafoxia arida*, *Astragalus magdalenae* and *Pholisma sonarae*.

**Restoration Ecologist and GIS/ Hydrographer, Environmental Careers Organization, placed as an Associate at the Bureau of Land Management (BLM), Las Vegas, Nevada: November 2001 – May 2002**

- Seed collection, harvest and clean seeds from species identified for harvesting.
- Plant restoration, Identify disturbed areas needing restoration.
- Restored roads, trails, corrals, old livestock concentration areas, and abandoned mine sites.

### **Surveying Technician**

- Stream and spring survey.
- Sampling and sorting insects by using deep net and kick net for thirty second trap.
- Identify and keyed aquatic and terrestrial insects for further water quality assessment.
- Used Min Sound 4a Hydrolab for stream and spring survey.
- Utilization survey to determine grazing impacts.
- Identify use patterns and collected data on vegetation and soil conditions.

### **Botanist /Field Technician (April 2001-September 2001)**

Charis Corporation (Environmental Consulting Group), Barstow, CA

- Identify and map all federally listed endangered plant species using GPS.
- Utilize GPS and compass to run transect lines by applying the mid-intensive and reconnaissance survey method.
- Identify and record Mojave Desert flora.
- Survey land in Barstow, CA, for Lane Mountain Milk vetch (*Astragalus Jaegerianus*).
- Administer advanced techniques for determining individual plant species and their precise locations.

### **Botany/Restoration Technician (June 2000-April 2001)**

Employed by Environmental Careers Organization placed as an Associate at the Bureau of Land Management, Las Vegas, Nevada.

- Seed collection.
- Plant restoration.
- Arid land restoration and rehabilitation.
- Identify noxious weeds and GPS area of habitat.
- Identified and inventoried threatened native plant species and GPS perimeters.

### **Research (1996-1999 Hamline University, St. Paul, MN, and 1999 Kenya, East Africa)**

- Examined forest community structure and the diversity between the riverbank and Interior Forest of the Mississippi River.
- Analyzed extinction risks of endangered animals by conducting a population viability analysis under varying environmental conditions.
- Identified and classified plant species in Nairobi National Park for the Kenya Wildlife Service.
- Assessed the effect of feedlots on water, soil, and air.
- Examined the impact of game cropping as a viable land option in Machakos District, Kenya.
- Developed strategies to reduce conflict between the elephants and the Massai people living around Amboseli National Park Kenya.
- Identified ways to reverse rangeland degradation on Nyokie Massai group ranch in Kenya.
- Identified wildlife signs, animal's tracks and dung as well as identified birds and their environment.
- Assessed the roles of the stakeholders and the management structure of Nairobi National Park.
- Examined several different environmental threats to frogs both locally and globally.

### **Community Involvement (1992-2000)**

- Tutored adults with limited English skills in mathematics and citizenship at the YMCA while working for AmeriCorps in Minneapolis, MN.
- Coached youth soccer team for Hopkins School District as well as the YMCA in Minneapolis, MN.
- Assisted with Habitat for Humanity projects in Minneapolis, MN.
- Supervised neighborhood revitalization and clean-up programs for AmeriCorps in Minneapolis, MN.
- Assisted with GPS, GIS and coordinating volunteers for Red Rock Canyon National Conservation Area, Las Vegas, NV.
- Coordinated and Supervised Ameri Corps and Friends of Red Rock Canyon members for Soil and Plant Restoration.

### **Memberships**

California Native Plant Society

### **Languages**

English

# Nathan T. Moorhatch

Wildlife Biologist/Herpetologist

## Professional summary

Mr. Moorhatch has over 11 years consulting experience performing a wide variety of biological surveys throughout California, spanning from the Sacramento Valley to the International Border. He has had a life-long interest in general biology, and obtained a degree in Zoology from the California State Polytechnic University at Pomona under Dr. Glen Stewart in 1991. Mr. Moorhatch has conducted biological and environmental assessments at project sites in Solano, Monterey, Tulare, Fresno, Inyo, Kern, Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial counties in California, as well as in Nevada. He has conducted the following types of assessments: rare plant species surveys; plant species inventory and vegetation mapping; revegetation plan preparation and implementation; general wildlife species surveys; focused sensitive wildlife species surveys and habitat quality assessments; sensitive wildlife species monitoring and relocations; small mammal trapping studies; Corps Section 404 waters/wetlands delineation and jurisdictional determination; CDFG 1601-3 stream and riparian habitat assessments and jurisdictional determinations; and preparation of biological assessment reports and sections of EIS and EIR documents for federal, state, and/or county agency CEQA and NEPA environmental review.

Mr. Moorhatch has extensive experience conducting herpetological studies including focused surveys and monitoring of endangered species. Mr. Moorhatch has performed surveys for a wide variety of sensitive amphibians and reptiles including: California Tiger Salamander, Tehachapi Slender Salamander, Large-blotched Ensatina, Arroyo Toad, California Red-legged Frog, Mountain Yellow-legged Frog, Western Spadefoot, Southwestern Pond Turtle, Desert Tortoise, Switak's Barefoot Gecko, Blunt-nosed Leopard Lizard, San Diego Horned Lizard, Coachella Valley Fringe-toed Lizard, Flat-tailed Horned Lizard, Orange-throated Whiptail, Southern Rubber Boa, and Two-striped Garter Snake. He has a deep personal interest in general Herpetology, and has undertaken numerous forays in the field in search of both common and rare amphibian and reptile species in California, Nevada, Arizona, Utah, Texas, Kansas, Maryland, Virginia, Florida, Hawaii and Costa Rica.

He also is an avid birder, and has assisted in conducting surveys for California Gnatcatcher, Least Bell's Vireo, Burrowing Owl, Le Conte's Thrasher, Snowy Plover, Least Tern, and various nesting raptor species in Riverside, Orange, Los Angeles, Kern, San Diego, and San Bernardino counties. Mr. Moorhatch has conducted Bird Air Strike Hazard (BASH) studies on the Edwards Air Force Base Main Base Flightline during 1998 and 1999, and is currently participating in a base-wide bird survey utilizing point counts to determine distribution and abundance of bird species on EAFB. He has also conducted bird use surveys of several landfill sites in San Bernardino and Tulare Counties in support of BASH studies related to local airports. Mr. Moorhatch is a member of the American Birding Association and the Audubon Society. His personal interest in birds has led him on numerous field searches in California, Arizona, Utah, Texas, Kansas, Florida, Hawaii, Baja California, and Costa Rica.

## **Nathan T. Moorhatch**

Mr. Moorhatch has conducted focused surveys for Delhi Sands Flower-loving Fly and Quino Checkerspot Butterfly; and has a Federal Endangered Species Permit [10(a)(1)(A)] for both of these insects. Mr. Moorhatch has also participated in “Fourth of July Butterfly Counts” sponsored by the North American Butterfly Association. He has a personal interest in Entomology and is a member of the Friends of the University of California, Riverside, Entomological Research Museum (FERM).

Mr. Moorhatch has assisted in trapping surveys for several sensitive small mammals including: San Bernardino Kangaroo Rat, Los Angeles Pocket Mouse, Tehachapi Pocket Mouse, and Short-nosed Kangaroo Rat. He has also participated in focused surveys for San Joaquin Kit Fox, San Joaquin Antelope Ground Squirrel, Mojave Ground Squirrel, and Peninsular Bighorn Sheep.

In addition to his experience with sensitive wildlife species, Mr. Moorhatch has conducted numerous surveys for sensitive plant species throughout California. He has conducted surveys for over 35 sensitive plant species, including limestone endemics, Big Bear Valley endemics, vernal pool species, and a wide variety of sensitive species in the San Joaquin Valley, Mojave and Colorado Deserts, and various coastal and inland valley habitats. Mr. Moorhatch has also assisted in the preparation of revegetation plans, and has conducted restoration/revegetation activities including site preparation, seeding/transplanting, and monitoring on Edwards Air Force Base. Additionally, he conducts general inventories of flora and fauna; and authors biological assessments and mitigation plans. Mr. Moorhatch also has a current California Department of Fish and Game Scientific Collector's Permit.

### **Professional qualifications**

California Department of Fish and Game Scientific Collectors Permit #801166-04

Federal Endangered Species Permit ("10a") for Quino Checkerspot Butterfly, #TE029414-0

Federal Endangered Species Permit ("10a") for Delhi Sands Flower-loving Fly, #TE029414-0

Authorized Individual for studies regarding the Desert Tortoise (Authorized to monitor, handle, and relocate desert tortoises when necessary for specific project implementation).

### **Education**

B.S. Zoology (cum laude), California State Polytechnic University, Pomona, 1991

University of California, Riverside – Extension Course Work: Ornithology – A Field Study of Birds

Victor Valley Community College: Ecology of Costa Rica, 2001

### **Location**

Riverside, California

### **Seminars, Workshops, and Symposia**

Desert Tortoise Council Symposium, 1992 - 1999

Desert Tortoise Council Field Techniques Workshop, 1992, 1994

Mojave Ground Squirrel “CHIEF” Workshop. 1992

Declining Amphibians in California I, San Diego Natural History Museum, 3/97.

Declining Amphibians in California II, San Diego Natural History Museum, 3/98.

## Nathan T. Moorhatch

Workshop on Year 2000 Draft Quino Checkerspot Butterfly Survey Protocol, Carlsbad, California, 1999.

Planning for Biodiversity: Bringing Research and Management Together. 2/29-3/2/00; Pomona, California.

Arroyo Toad Symposium (*Bufo californicus*): Natural History and Management Practices. 10/05/00; Marine Corps Air Station, Camp Pendleton, California.

Current Research on Herpetofauna of the Sonoran Desert II. 4/5-7/02; Tucson, Arizona.

### Memberships

American Birding Association

Friends of the University of California, Riverside, Entomological Research Museum

Desert Tortoise Council

National Audubon Society

Southwestern Herpetologist's Society

### Detailed Core Skills by Project

Domestic Water Development and Supply

**Cadiz Land Company Inc. Exploratory Drilling and Proposed Water Line Surveys and Monitoring.**

Conducted presence/absence surveys and monitoring for Desert Tortoise and sensitive plants during exploratory drilling and surveys for proposed water line system right-of-ways, Danby and Cadiz, Fenner Valley, San Bernardino County, California.

Oil and Gas Development and Supply

**Kramer Junction Line 6905 Expansion Project.** Acted as an assistant Lead Biologist supervising a team of 30+ biologists and biological monitors for the installation and development of a 33-mile natural gas pipeline project in the Mojave Desert. Conducted general and focused (for Desert Tortoise, Burrowing Owl, and sensitive plant species) biological surveys; Desert Tortoise burrow excavation, artificial burrow construction, processing, and relocation; Burrowing Owl burrow excavation, artificial burrow construction, and passive relocation; mitigation monitoring; personnel awareness training, yucca and cacti transplantation, and vertical mulching; San Bernardino County; Southern California Gas Company.

**All American Pipeline Project.** Conducted general and focused biological surveys and mitigation monitoring for the Desert Tortoise for exploratory geotechnical drilling activities in support of the All American Pipeline Project; San Bernardino County; All American Pipeline Company.

**Four Corners Pipeline Company (ARCO).** Conducted Desert Tortoise Monitoring for two oil line leak repairs at Danby and Sheephole Pass, San Bernardino County, California.

**Four Corners Pipeline Company (ARCO).** Conducted Desert Tortoise Monitoring for anode bed installation, San Bernardino County, California.

Renewable Energy Resources

**Whitewater Wind Energy Conversion Systems.** Acted as a Lead Biologist for the development, installation, and implementation of a wind energy park located in the San Gorgonio Pass area, on the northwestern outskirts of the Coachella Valley. Conducted general and focused (for Desert Tortoise, Burrowing Owl, and sensitive plant species) biological surveys; Desert Tortoise burrow excavation,

## Nathan T. Moorhatch

artificial burrow construction, processing, and relocation; Burrowing Owl burrow excavation, artificial burrow construction, and passive relocation; mitigation monitoring; personnel awareness training for the life of the project; Shell Oil Corporation; Riverside County.

**Cabazon Wind Energy Conversion Systems.** Lead Biological manager for the development, installation, and implementation of a wind energy park located in the San Geronio Pass area. Conducted general and focused biological surveys (for Desert Tortoise, Burrowing Owl, and Coachella Valley Fringe-toed Lizard), mitigation monitoring, and personnel awareness training for the life of the project; Cannon Power; Riverside County.

### Electrical Power

**Otay Mesa Generating Plant.** Conducted habitat assessments and focused surveys for the Quino Checkerspot Butterfly the proposed generation plant site and throughout the associated transmission line easements on Otay Mesa from the U.S./Mexican border north to Chula Vista; San Diego Gas and Electric Company; San Diego County.

**Valley to Auld Electrical Substation and Transmission Line Upgrade Project.** Conducted mitigation monitoring for the Valley to Auld transmission line and electrical substation upgrade project. Significant biological issues included the California Gnatcatcher, Burrowing Owl, Stephens' Kangaroo Rat, Quino Checkerspot Butterfly, Belding's Orange-throated Whiptail, San Diego Coast Horned Lizard, and Southwestern Pond Turtle; Southern California Edison Company; Riverside County.

### U.S. Forest Service

**Arroyo Toad Surveys.** Conducted habitat assessments and focused surveys for the Arroyo Toad throughout drainage systems containing potentially suitable and historically occupied habitat within the San Bernardino National Forest (including San Jacinto Range).

**Mountain Yellow-legged Frog Surveys.** Conducted habitat assessments and focused surveys for the Mountain Yellow-legged Frog throughout drainage systems in historically occupied habitat within the San Bernardino National Forest.

### Transportation and Infrastructure

**State Highway 138.** Conducted habitat assessments and focused protocol surveys for the Arroyo Toad for the proposed realignment of SR 138 between Interstate 15 and State Highway 18; San Bernardino County; Caltrans.

**Interstate 215 Seismic Retrofit Project.** Conducted habitat assessments and focused protocol surveys for the Arroyo Toad for the proposed Interstate 215 seismic retrofit project in the City of Riverside; Riverside County; Caltrans.

**Interstate 15 Bridge Widening Project.** Conducted habitat assessments and focused protocol surveys for the Arroyo Toad for the proposed Interstate 15 Bridge Widening Project over the Mojave River in the City of Victorville; San Bernardino County; Caltrans.

**State Highway 18 Seismic Retrofit Project.** Conducted habitat assessments and focused protocol surveys for the Arroyo Toad for the proposed seismic retrofitting of SR 18 at the crossing of the Mojave River in the town of Apple Valley; San Bernardino County; Caltrans.

**State Highway 79/371 Interchange Realignment Project.** Conducted habitat assessments and focused protocol surveys for the Quino Checkerspot Butterfly for the proposed SR 79/371 Interchange Realignment Project in the community of Aguanga; Riverside County; Caltrans.

**Big Bear Dam/State Highway 18 Improvement Project.** Conducted habitat assessments and focused protocol surveys for the Mountain Yellow-legged Frog for the proposed improvements of SR 18 at the

## **Nathan T. Moorhatch**

crossing of the dam at the southwest end of Big Bear Lake in the San Bernardino Mountains; San Bernardino County; Caltrans.

**Opah Ditch Mining Reclamation Project.** Conducted focused protocol surveys for the Desert Tortoise for the proposed Opah Ditch Mining Reclamation Project located south of Baker; San Bernardino County; Caltrans.

Department of Defense.

**Edwards AFB Main Base Flightline BASH study.** Conducted Bird Air Strike Hazard (BASH) studies on the EAFB Main Base Flightline during 1998 and 1999. Responsibilities included seasonal field inventories of bird species diversity and population size, coordination and management of experimental use of falconry as method to deter bird use, and preparation of documentation summarizing the effectiveness of bird control measures.

**Edwards AFB Base-wide Bird Inventory.** Base-wide surveys utilizing point counts to determine distribution and abundance of bird species on EAFB, 2000 to present (ongoing).

**Edwards AFB Desert Tortoise Monitoring.** Conducted Desert Tortoise presence/absence surveys and monitoring throughout EAFB for a variety of projects including: Historic Homestead Well destruction, Monitoring Well Drilling, site restoration, and Joshua Tree transplantation.

**Edwards Air Force Base Revegetation Efforts.** Has participated in revegetation/habitat rehabilitation on over 270 acres of desert scrub on Edwards AFB. These largely successful efforts have incorporated a wide-variety of seeding methodologies including imprinting and hand seeding. Efforts have also included planting of nursery stock, transplanting of numerous desert shrub species, Joshua tree transplanting, and long-term viability monitoring.

**Nellis AFB Desert Tortoise and Rare Plant Survey.** Conducted presence/absence surveys for Desert Tortoise and rare plants for proposed road construction and residential expansion projects.

**Travis AFB Vernal Pool and Rare Plant Inventory.** Conducted field surveys to inventory vernal pools and rare plant species on Travis AFB. Responsibilities included identification and mapping of vernal pools and rare plants (including the federal Endangered Contra Costa Goldfields *Lasthenia conjugens*).

### **Employment history**

**Wildlife Biologist/Herpetologist, AMEC Earth and Environmental, Inc. November 2000-present.** Conducts field inventories of fauna and flora, performs literature reviews, prepares biological assessment reports emphasizing impact analysis, mitigation measures, and mitigation monitoring. Specializes in herpetological and entomological field studies, and also conducts ornithological field studies. Authorized by U.S. Fish and Wildlife Service to conduct focused surveys for the following Endangered or Threatened species: Quino Checkerspot Butterfly and Delhi Sands Flower-loving Fly.

**Wildlife Biologist/Herpetologist, Ogden Environmental and Energy Services, March 2000-November 2000.**

**Wildlife Biologist/Herpetologist, Tierra Madre Consultants, Inc., August 1999-March 2000.**

**Wildlife Biologist/Herpetologist, Earth Tech, August 1997 – August 1999**

**Nathan T. Moorhatch**

**Assistant-Associate Biologist, Lilburn Corporation, November 1991 - August 1997**

**Languages**

**Spanish - Fair**

## EXPERIENCE SUMMARY

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Nine years of experience as an environmental consultant/biologist. Responsibilities have included monitoring of nesting grounds for endangered species (California Least Tern & Western Snowy Plover), preparation of field reports, GIS mapping of GPS data (species locations) including vegetation/habitat maps, general avian surveys, construction monitoring, wetland delineation projects, restoration projects, as well as GIS support for a variety of wind and solar energy development projects.

## EDUCATION

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BS, Biology, 2000, California State University Long Beach

## TRAINING

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40-Hour OSHA Hazardous Waste Health and Safety Training – 2004

Willow Flycatcher Training May 2004

Wetlands Delineation Training-Jan 2005

Remote/Automatic Camera Monitoring for Wildlife - May 2006

Avian Mortality at Wind Sites- August 2006

Desert Tortoise Surveying, Monitoring, and Handling – November 2006

## PROJECT EXPERIENCE

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### **Desert Tortoise/ Raven Interaction Studies, Edwards Air Force Base, Kern County, CA.**

Project Biologist responsible for development and supervision of field surveys of populations, movements, and feeding habits of common raven within desert tortoise critical habitat on Edwards Air Force Base. Participated in field surveys for multi-year field program and statistical analyses of field data. Responsible for preparation of GIS-based maps illustrating survey sites and raven distribution and movements within the study area.

### **PPM Energy, Dillon Wind Project EIR, Riverside County, CA.**

Biologist and GIS specialist responsible for coordination and supervision of biological field surveys and preparation of maps and other graphics of an Environmental Impact Report (EIR) prepared for a proposed 45MW wind energy facility near Palm Springs in Riverside County, CA. Participated in field programs to collect information on biological resources and wetlands. Conducted avian point-count surveys, surveys for rare plant species, desert tortoise surveys, and surveys for refining vegetation community maps.

### **Calpine Corporation, Inland Empire Energy Center Application for Certification, Calpine IEEC, Romoland, CA**

Served as Designated Biologist during construction of the 670 MW combined-cycle power plant facilities located in southwest Riverside County, CA. Monitored clearing, grading, and construction activities for potential impacts to biological resources. Prepared daily field reports and incident reports including photographs and maps in cooperation with other staff conducting cultural and paleontological monitoring. Supervised activities of other biological monitors.

**North Baja Expansion Project, Imperial and Riverside County, CA**

Conducted field surveys on vegetation plots to determine success of plant recruitment along the right-of-way. Conducted protocol level surveys for Desert Tortoise and other special status species. Responsible for coordination of data recording by biological field staff and for production of detailed GIS-based route maps for biological resources.

**Blythe Energy Transmission Project, Blythe, CA**

Prepared GIS maps for 67.4 mile transmission route in Riverside County proposed by Blythe Energy for submission to the California Energy Commission. Imported engineering data for integration with GIS data to prepare maps for all resources including: cultural resources, water resources, transportation, geology, visual, and biological resources. Conducted bed and bank field surveys for delineation of microphyll woodland habitat to support preparation of CDFG Stream Bed Alteration Agreement. Prepared draft Storm Water Pollution Prevention Plan for construction phase of the project.

Participated in protocol level surveys for Desert Tortoise and other special status species for 67.4 mile primary route and several alternative transmission line routes and alternate substation locations. Responsible for coordination of data recording for approximately 13 biological field staff using standard data sheet resulting in several thousand data points for special status species observations. Responsible for production of GIS-based route maps for biological resources.

**Department of the Navy, Superfund Clean-up Site, Hunters Point, CA**

Conducted California Clapper Rail and Burrowing Owl surveys in wetland areas where radiological surveys were being conducted. Conducted biological compliance monitoring during construction activities related to development of replacement wetlands areas. Produced daily reports and summary reports. Prepared a biological assessment for the Department of the Navy for the Shipyard.

**Department of the Navy, Superfund Clean-up Site, Alameda Point, CA**

Conducted avian surveys in wetland areas where radiological surveys were being conducted. Produced daily reports and summary reports. Prepared a biological assessment for the Department of the Navy for the Shipyard. Produced maps depicting natural resources found on site.

**Orange County and Riverside County, CA (Harmsworth Associates)**

Conducted site visits at various locations within Orange County and Riverside County to monitor construction related activities in accordance with issued permits. Performed surveys for waterfowl, raptor, burrowing owl, least bell's vireo, yellow breasted chat, and other passerines. Monitored influence of earth moving activities on adjacent biological resources.

**Alameda Corridor Project, Alameda, CA (Keane Biological Consultants)**

Monitoring of Killdeer nesting area. Conducted weekly monitoring of Killdeer nesting areas adjacent to active construction zones protected by Migratory Bird Treaty Act. Tasks included: bird counts, nest marking, monitoring, and chick and fledgling censuses; Monitoring for presence and activity of predatory birds (such as Kestrel, Red Tailed Hawk, Coopers Hawk and

Peregrine Falcon ) and feral cats; Provided advice on biological mitigation measures to both construction workers and engineers regarding precautions that should be taken to ensure nesting success; Preparation of daily field reports.

**PPM Energy, Tule Wind Project, San Diego County, CA**

Organized and conducted bi-weekly avian point-count surveys for proposed 125 MW Tule Wind Project in southeast San Diego County. Project work is required for preparation of an environmental assessment for submission to the Bureau of Land Management (El Centro office). Prepared GIS maps to identify environmental constraints applicable to the 17,000 acre project area. Utilized California Natural Diversity Data Base (CNDDB) to identify potential habitat for threatened and endangered species.

**UPC Energy Wind Projects, San Bernardino and Riverside County, CA**

Prepared GIS-based maps for several potential wind energy sites in California with emphasis on biological and cultural resources. Conducted field biology surveys for ten selected sites and prepared biology sections for inclusion in an Environmental Assessment needed to support right-of-way applications for wind testing on lands managed by Bureau of Land Management (BLM).

**FPL Energy Wind and Solar Prospecting, CA, NV, AZ, NM**

Prepared GIS maps for several wind and solar energy projects in four southwestern states using NREL wind and solar data and GIS database information for topography, land use, land ownership, and environmental constraints (parks, wilderness, areas of critical environmental concern, etc.). Participated in surveys to ground-truth selected sites.

**Casden Properties, Los Angeles County, CA**

Produced GIS maps for constraints analysis of the entire property. Maps were prepared for resources including wetlands, habitats, and general topography.

**Port of Los Angeles, San Pedro, CA (Keane Biological Consultants)**

Monitoring of California Least Tern nesting and adjacent feeding areas on Terminal Island in the Port of Los Angeles. The Terminal Island area has three Least Tern nesting areas: Pier 300, Pier 400 and transportation corridor area (known as TC-2). During the 1997 season, Pier 400 was an island under construction in San Pedro Bay. Other species regularly observed during surveys included: Western Grebe, Elegant Tern, Caspian Tern and Black Skimmer. Protection and habitat enhancement for this federally listed Endangered Species at this site has been established under the California Least Tern Recovery Plan. Tasks included: Bird counts, banding, nest marking, monitoring, and chick and fledgling censuses; Monitoring for presence and activity of predatory birds (such as Kestrel and Peregrine Falcon) and feral cats; Recording disturbance to the nesting sites by vehicles, boaters, and aircraft; Preparation of daily field reports.

**Batiquitos Lagoon, San Diego County, CA (California Department of Fish and Game)**

Monitoring of California Least Tern nesting and adjacent feeding areas in Batiquitos Lagoon, San Diego County, CA. Conducted weekly monitoring of Least tern and Western Snowy Plover nesting areas. The Batiquitos Lagoon area includes five nesting sites for the Least Tern and three for the Snowy Plover. Other species regularly observed during surveys included: Black Skimmer, American Avocet, Black Necked Stilt, and Forester's Tern. Protection and habitat enhancement for this federally listed Endangered Species at this site has been established under

the California Least Tern Recovery Plan. Tasks included: bird counts, nest marking, monitoring, and chick and fledgling censuses; monitoring for presence and activity of predatory birds (such as Kestrel, Red Tailed Hawk, Coopers Hawk and Peregrine Falcon ) and feral cats; recording disturbance to the nesting sites by vehicles, boaters, and aircraft.

**Venice Beach, Los Angeles County, CA (California Department of Fish and Game)**

Monitoring of California Least Tern nesting site. Conducted weekly monitoring of Least Tern (endangered species). Tasks included: Bird counts, nest marking, monitoring, and chick and fledgling censuses; Monitoring for presence and activity of predatory birds (such as Kestrel, Red Tailed Hawk, Coopers Hawk and Peregrine Falcon) and feral cats; Recording disturbance to the nesting sites by vehicles, boaters, and aircraft; Preparation of daily field reports.

**Long Beach, CA; Teaching Assistant, (California State University at Long Beach)**

Provided instruction for human physiology labs (Bio 207L – 2 semesters) and general biology (Bio 200 – 4 semesters). Topics included: enzymes and energy, nervous system, natural selection, cell biology, general chemistry, plant anatomy, etc.

**Veteran Affairs Memorial Hospital Long Beach, CA; Research Assistant.**

Assisted with sensitive experimental procedures focusing on techniques used in protein receptor studies and cell culture. Performed electrophoresis and general lab techniques on a daily basis. Study area involving estrogen signaling and its relationship to cancer. Techniques Used: SDS gel electrophoresis, affinity chromatography.

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**RESEARCH EXPERIENCE**

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**California State University at Long Beach, Long Beach, CA; Masters Thesis Research: Movements and Behavior of Pre-Breeding Island Scrub-Jays.**

Movements of 1<sup>st</sup> year individuals were investigated for dispersal patterns, amount of habitat utilized, and behaviors exhibited during the post-breeding season. Movements were monitored using radio-telemetry techniques and analyzed using Arcmap® (GIS) to establish Kernel Home Ranges (Animal Movements Extension). Home ranges of 1<sup>st</sup> year Island Scrub-Jays were compared to adult breeding territory sizes to investigate any significant differences. Findings of this study will form recommendations for management / conservation of Island Scrub-Jays during planned island restoration activities.

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**PUBLICATIONS & PRESENTATIONS**

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Mudry, N.W. 2003. Movements and behavior of pre-breeding island scrub-jays on Santa Cruz Island. Sixth California Islands Symposium. Ventura Beach, CA.

Mudry, N.W., M. L. Amalong, and K. Keane. 2004. Foraging Patterns of Least Terns in Los Angeles Harbor. The Western Section of the Wildlife Society. Rohnert Park, CA.

# Heather Rothbard

Environmental Scientist/Botanist/Planner

## **Professional summary**

Ms. Rothbard has 5 years experience in botanical survey and environmental regulatory compliance. Her experience includes rare and sensitive plant surveys, noxious weed surveys, rangeland studies including flora identification, biomass and species diversity data collection, National Environmental Policy Act (NEPA) documentation, environmental site assessments, Section 404 delineation and permitting, Phase I Environmental Site Assessments, and biological reviews. Ms. Rothbard has managed and performed numerous plant surveys for a major utility in Arizona, managed a biological and soil salinity study on a major oilseed crop for the USDA-ARS, and held responsibility for arthropod collection and identification, identification of native and non-indigenous plants, soil and plant root collection for mycorrhizal fungi detection, and vegetation sampling and monitoring at sites in the Phoenix metro and surrounding area for the Central Arizona Phoenix Long-Term Ecological Research Project (CAP-LTER).

## **Professional qualifications**

40-hour HAZWOPER Training, 2008

Desert Tortoise Survey and Handling Workshop, 2007

Chiricahua Leopard Frog Survey Training, 2007

Southwestern Willow Flycatcher Survey Training, 2007

Integrated Weed Management Workshop, Montana State University, 2007

USFWS Biological Assessment Workshop, 2006

Southwest Noxious Weed Short Course, 2006, 2007

Red Brome (*Bromus rubens*) Grass Symposium, ASU, 2006

Arizona Wildfire Academy, 2006

Sahara Mustard (*Brassica tournefortii*) Workshop, August 2005

## **Education**

Bachelor of Science, Botany: emphasis in Environmental Science and Ecology, Arizona State University, Tempe, Arizona, 2003

## **Memberships**

Arizona-Nevada Academy of Sciences (ANAS), 2003-present

Arizona Riparian Council (ARC), 2005-present

Arizona Native Plant Society (AzNPS), 2005-present

Botanical Society of America (BSA), 2005-present

## **Heather Rothbard**

Central Arizona Weed Management Area (CAWMA), 2005-present

Western Yavapai Weed Management Area (WYWMA), 2005-present

Southwest Vegetation Management Association (SWVMA), 2005-present

Western Society of Weed Science (WSWS) 2006-present

National Association of Environmental Professionals, Arizona Chapter (AZAEP) 2006-present

Desert Tortoise Council – 2007-present

California Invasive Plant Council (CAL-IPC) – 2007 – present

California Native Plant Society – 2007-present

Arizona Field Ornithologists – 2007-present

### **Location**

Tempe, Arizona

### **Summary of core skills**

#### **Clean Water Act Section 404 Delineation and Permitting**

Ms. Rothbard has prepared Section 404 jurisdictional delineations for waters of the U.S., including ephemeral washes, intermittent and perennial streams, and freshwater, tree-dominated wetlands. She has also prepared nationwide and individual permit applications. Her Section 404 work includes projects in Arizona, Oklahoma, and South Carolina.

#### **National Environmental Policy Act**

Ms. Rothbard has prepared National Environmental Policy Act (NEPA) environmental assessments (EAs) and technical studies for environmental impact statement (EISs) for water distribution and collection, utility, development, aviation, and transportation projects in Arizona, Oklahoma, Nevada, Mexico, and California. Clients include municipalities, transportation departments, United States Air Force Bases, National Guard Training Facilities, and private developers.

#### **Botanical Surveys**

Ms. Rothbard has conducted numerous botanical surveys including noxious weed, rare plant, and rangeland diversity surveys in Arizona, California, Oklahoma, and New Mexico. Vegetative areas include low and high desert, chaparral, juniper/pinyon pine, coniferous forest, grasslands, and rangelands. Clients include utilities and federal land management departments.

#### **Environmental Site Assessments**

Ms. Rothbard has conducted Phase I Environmental Site Assessments (ESAs) of undeveloped, industrial, residential, and commercial facilities in Arizona. Clients included municipalities, commercial developers, and residential developers.

### **Employment history**

2006 - Present: Environmental Scientist/Planner, AMEC Earth & Environmental, Inc., Tempe, Arizona

2005 - 2006: Botanist/Forestry Planner, Arizona Public Service, Cottonwood, Arizona

2004 - 2005: Field Research Technician, International Institute for Sustainability, Arizona State University, Tempe, Arizona

## Heather Rothbard

2002 – 2004: Research Technician, USDA-ARS Water Conservation Lab., Phoenix, Arizona.

### **Detailed core skills or details by project**

National Environmental Policy Act

**EA of New Facilities at Yuma International Airport, Yuma, Arizona, Merrick & Company/TEPA/Department of Homeland Security Customs and Border Protection** (ongoing, \$75,502.44, 7114003050): AMEC is preparing an Environmental Assessment to address Custom and Border Protection Air and Marine Section's construction of new facilities and operations at the Yuma International Airport. The proposed action includes construction of facilities needed to fly and maintain helicopters and fixed wing aircraft and the operation of that aircraft for border security activities. Ms. Rothbard is the environmental scientist for this effort.

**Environmental Information Document, Wastewater System Expansion Program Conventional Gravity Sewer Collection System (2008–2012), Lake Havasu City Arizona** (ongoing, \$43,671, 7114003032): AMEC is preparing an Environmental Information Document (EID) update for the second five-year period of Lake Havasu City's Wastewater System Expansion Program. AMEC is preparing the EID in accordance with the Arizona Water Infrastructure Finance Authority's guidelines. Since the program is receiving federal funds through the Clean Water State Revolving Fund, the EID must be NEPA compliance. Ms. Rothbard is the environmental scientist for this effort.

**Winter Storm Management/Operations Plan and EA, Arizona – Statewide, Arizona Department of Transportation** (ongoing, \$307,000, 7115005004): AMEC was recently awarded the development of a Winter Storm Management/Operations Plan and EA for the implementation of that plan. Ms. Rothbard is preparing the NEPA portion for this project. Preparation of the EA for this project will consist of collecting, reviewing, and evaluating data to define environmental thresholds related to such factors as air quality, socioeconomic factors, water quality, and biological resources. In concert with the evaluation of environmental issues, AMEC's winter storm management specialists will be reviewing winter storm management alternatives regarding cost, including long-term costs such as impacts to pavement, and effectiveness. Ms. Rothbard is the environmental scientist for this effort.

**Three EAs for Consolidated Wing Headquarters, New Control Tower, and Realignment of Air Depot Boulevard, Tinker Air Force Base, Oklahoma.** (ongoing, \$118,895, 376060107, Task Order 0107): Ms. Rothbard is the environmental scientist for preparation of EAs for three projects at Tinker Air Force Base. The projects include construction of a consolidated wing headquarters, construction of a new control tower, and realignment of Air Depot Boulevard. The project is being performed under the requirements of the Air Force Center for Environmental Excellence.

**EA Revision for Construction of Consolidated Fuel Overhaul and Repair Facility, Tinker Air Force Base, Oklahoma.** (ongoing, \$24,852, 376060106, Task Order 0106): Ms. Rothbard is the environmental scientist for revision of an EA for construction of a consolidated fuel overhaul and repair facility. This project is being performed under the requirements of the Air Force Center for Environmental Excellence. The project will impact a wetland; therefore, AMEC's scope of work includes preparation of a Finding of No Practicable Alternative (FONPA) and inclusion of wetland mitigation in the EA.

**Integrated Natural Resources Management Plans, Arizona Department of Emergency and Military Affairs, Camp Navajo and Florence Military Reservation, Arizona** (ongoing, \$77,000, 6114003063): Ms. Rothbard is serving as the primary environmental scientist for completion of Integrated Natural Resources Management Plans (INRMPs) for Camp Navajo, near Bellemont Arizona, and Florence Military Reservation, near Florence, Arizona. The INRMPs document natural resources within the installations and serve as a tool for the Arizona Army National Guard to manage those

## Heather Rothbard

resources. In addition to the INRMPs, Ms. Rothbard is also preparing the National Environmental Policy Act (NEPA) compliant Environmental Assessments (EAs) for implementation of the INRMPs.

**EA for BRAC Actions, Luke Air Force Base, Arizona.** (\$74,896.00, 376065DO5): Ms. Rothbard is the environmental scientist assisting in the preparation of an EA for Base Realignment and Closure (BRAC) actions at Luke Air Force Base (AFB) affecting aircraft inventory, aircraft flight operations, and associated mission realignment.

**507th KC-135 Transfer EA, Tinker Air Force Base, Oklahoma.** (ongoing, \$53,546.00, 376060088, Task Order 88): Ms. Rothbard is the environmental scientist assisting in the preparation of an EA for the proposed expansion of the airfield/apron fuel hydrant system; construction of Air Force Reserve Command and Air National Guard squadron operations, operations support squadron, life support storage, and life support work area; construction of a new hangar; and building renovation under the requirements of the Air Force Center for Environmental Excellence.

**Diamond Valley Speed Racing, Marathon Racing, LLC, Diamond Valley, Nevada.** Ms. Rothbard prepared numerous resource sections of an EA for BLM land in Diamond Valley, Nevada. The project area was within the jurisdiction of BLM's Battle Mountain Field Office.

**51st Avenue Intersection Improvements, City of Glendale, Glendale, Arizona** (ongoing, \$75,240.00, 6114003014): Ms. Rothbard is the environmental scientist/botanist for environmental work, including native plant surveys, related to projects involving intersection improvements at 51<sup>st</sup> Avenue and Northern Avenue and 51<sup>st</sup> Avenue and Camelback. The project sponsor, the City of Glendale, is applying for federal funds for these projects; therefore review through the Arizona Department of Transportation's Local Government Program is necessary.

**Transboundary Environmental Site Assessment for Construction of a Water Distribution and Wastewater Collection System in Tecate, Border Environment Cooperation Commission, Tecate, Baja California** (ongoing, \$38,876.00, 6551000503): Ms. Rothbard is preparing a NEPA compliant environmental assessment (EA) to address the impacts of construction of a water distribution and wastewater collection system within colonias of Tecate, Baja California. This project is receiving funding from the Border Environment Cooperation Commission (BECC). BECC receives federal funds from the U.S. and Mexico for projects that improve environmental conditions within the U.S.-Mexico border region.

### Clean Water Act Section 404 Delineation and Permitting

**Arkoma Connector Pipeline Environmental Field Surveys, MarkWest Energy Partners, L.P. - Atoka, Bryan, and Coal Counties, Oklahoma, AMEC Paragon.** (December 2007 – February 2008) Role: Botanist/Environmental Scientist. The Arkoma Connector Pipeline will provide transportation for natural gas from the Woodford field in southeastern Oklahoma to major interstate pipeline systems and will consist of one 24-inch diameter pipeline, approximately 50 miles in length, one compressor station of approximately 10,000 horsepower, and associated pipeline support facilities, including a pig launcher and receiver, and metering equipment. Environmental components of the survey program include land use, wetlands delineation, and threatened and endangered species habitat delineation in accordance with the US Army Corp of Engineers, US Fish and Wildlife Service, and FERC regulations. The surveys were conducted in areas along the proposed pipeline 300 ft ROW.

**Section 404 Jurisdictional Delineation, Arizona State Lands Department, 303 Peoria East, Maricopa County, Arizona:** Ms. Rothbard is serving as field reconnaissance leader to identify and establish boundaries of Section 404 jurisdictional areas on the 4,600 acre project site. Jurisdictional areas are identified and delineated in accordance with the USACE's 1987 Wetland Delineation Manual, the USACE's 2001 guidelines for conducting JDs in the arid southwest, USACE's 2006 Interim

## Heather Rothbard

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, and USACE's June 2007 Rapano's Guidance Memorandum. Ms. Rothbard prepared the results of the JD in a technical report. The technical report includes a description of the project area drainage features including width, depth, substrate, vegetation characteristics, hydrology, and connectivity to the Agua Fria and New Rivers.

**Maricopa County Department of Transportation, Power Road and Guadalupe Road Bridge Expansion.** (ongoing, 012007025): Ms. Rothbard is monitoring construction activities for compliance with conditions of Clean Water Act Section 404 Nationwide Permit Numbers 12 and 14 and general conditions of Section 401 Water Quality Certification. Construction activities include widening the bridges that cross the floodway that flows underneath Power Road and Guadalupe Road. Ms. Rothbard's participation includes tri-weekly site visits and weekly reporting of site conditions.

**McEntire Joint National Guard Base, Base-wide Wetland Delineation, National Guard Bureau, Columbia, South Carolina.** (\$305,618, 276220102): Ms. Rothbard has conducted wetland delineation surveys of wetlands and other waters of the U.S. within the Common Installation Footprint per the methods described in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual at McEntire Joint National Guard Station in South Carolina. Her participation in these surveys included identifying plant species, determining soil color and texture, completing wetland data report forms, and reviewing the wetland delineation report.

**Section 404 Jurisdictional Delineation Shadow Ridge Subdivision, Millennia Investment Corporation, Mohave County, Arizona** (\$11,200, 7114003026): Ms. Rothbard is the environmental scientist/botanist for a Section 404 Jurisdictional Delineation for waters of the United States associated with the development of a 105 acre subdivision in the unincorporated town of Scenic, Arizona. AMEC was selected to assist the client in resolving Clean Water Act Section 404 violations that occurred when portions of the site were graded prior to issuance of a Section 404 permit. AMEC's services include field reconnaissance to identify and establish boundaries of Section 404 jurisdictional areas on the project site and identification of biological resources.

**Section 404 Permitting WACOG Air Industrial Park, AMEC Infrastructure/Lake Havasu City** (\$59,400, 6114003056): Ms. Rothbard is the environmental scientist/botanist for Clean Water Act Section 404 permitting services related to the development of an industrial park near the Lake Havasu City airport. AMEC's environmental services for this project include review of previous environmental documents for the project area, review of grant funding pathways to determine if NEPA documentation is necessary, and preparation of a Section 404 individual permit application. The Section 404 documentation will include verification of previously delineated limits of waters of the United States, an environmental assessment (EA) prepared in accordance with U.S. Army Corps of Engineers guidelines, and a compensatory mitigation and monitoring plan.

**Section 404 Jurisdictional Delineation, Florence Military Reservation, Pinal County, Arizona:** Ms. Rothbard completed a Section 404 Jurisdictional Delineation for waters of the United States, at 20 utility road crossings at Florence Military Reservation, using the U.S. Army Corps of Engineers guidelines for determining waters of the United States in arid regions.

**Section 404 Jurisdictional Delineation and Permitting, Prospectors Road, Pinal County, Arizona:** Ms. Rothbard served as environmental scientist/botanist for a Section 404 Jurisdictional Delineation and permit application associated with improvements to Prospectors Road in Apache Junction, Arizona. Ms. Rothbard's responsibilities included the field reconnaissance for the jurisdictional delineation, botanical survey, and production of a Section 404 Jurisdictional Delineation report and permit application.

## Heather Rothbard

### Botanical/Biological Surveys

**Palmdale Power Plant Biological Surveys, Palmdale, California.** (April 2008): Ms. Rothbard performed biological surveys in the right of way of a high voltage power line. These surveys included rare and sensitive plants, desert tortoise (*Gopherus agassizii*), and burrowing owl (*Athene cunicularia*) surveys.

**Noxious Weed Survey for Palo Verde-North Gila 500kV Conductor Maintenance Project, Arizona Public Service and BLM Yuma Field Office, Yuma to Gila Bend, Arizona** (May 2006): Ms. Rothbard managed and performed a noxious weed survey in the right of way of a high voltage power line. All plant identification, vegetative habitat determination, and technical writing was performed by Ms. Rothbard. The project received funding through Arizona Public Service however all data collection was performed on state and federal lands including BLM and the Yuma Proving Grounds.

**Rare Plant Survey of 6 Mow Areas for the Prescott 500kV Transmission Line Maintenance Project, Chino Valley Ranger District, Prescott National Forest, Arizona.** (Spring 2006): Ms. Rothbard managed and performed a plant survey for rare and sensitive plant species in the right of way of a high voltage power line. All plant identification, vegetative habitat determination, and technical writing was performed by Ms. Rothbard. The project received funding through Arizona Public Service however all data collection was performed on the Prescott National Forest.

**Rangeland Survey of the Roswell Grazing Allotment, BLM Roswell Field Office, New Mexico.** (Oct 2005): Ms. Rothbard performed plant identification, biomass determination, and species richness and diversity classification on grazing allotments in the Roswell, New Mexico area. Funding was provided by the BLM Roswell Field Office however the project was managed by Southwest Botanical Research, Chino Valley, Arizona.

**Arizona State University Central Arizona Project – Long-Term Ecological Research, Phoenix, Arizona.** (2004-2005): Ms. Rothbard performed arthropod collections and identification, native and non-indigenous plant identification, vegetation sampling and monitoring at over 32 sites in the Phoenix Metro Area. Funding was provided by the National Science Foundation however all work was managed and performed by the International Institute for Sustainability at Arizona State University.

### Environmental Site Assessments

**City of Phoenix On-Call Environmental Site Assessments and Biological Surveys** (2006, multiple projects): Ms. Rothbard is assisting in numerous Phase I Environmental Site Assessments for the City of Phoenix. For these projects, the City of Phoenix has asked that AMEC include requirements of the All Appropriate Inquiry Rule into the assessments. This contract involves properties associated with Light Rail Transit, the Community Noise Reduction Program, and Tres Rios. The properties include right-of-way in urban areas, undeveloped parcels, residential parcels, and agricultural land.

### Publications

Dierig, D.A., Tomasi, P.R., Dahlquist, G.H., **Dawson, H.K\***. [Measurements of \*Lesquerella\* Interspecific Hybrids and Parents.](#) Abstract 2003.

Dierig, D.A., Rodriguez, D., Foster, M.A., Grieves, C.M., **Dawson, H.K\***, Rodriguez, R. [Effects of Salinity on \*Lesquerella\* at Three Locations.](#) Agronomy Abstracts. 2003.

\*Dawson was Ms. Rothbard's married name at the time of publication.

**DESERT TORTOISE MONITOR AND BIOLOGIST  
RESPONSIBILITIES AND QUALIFICATIONS**

**DESERT TORTOISE MONITOR** -- Approved by the Fish and Wildlife Service to monitor project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol, report incidents of noncompliance in accordance with a biological opinion or permit, move desert tortoises from harm's way when desert tortoises enter project sites and place these animals in relocation areas preselected by authorized biologists or maintain the desert tortoises in their immediate possession until an Authorized Biologist assumes care of the animal. Monitors assist qualified biologists during surveys and often serve as "apprentices" under the biologist to acquire experience. Monitors are not authorized to conduct presence/absence or clearance surveys unless directly supervised by an authorized biologist; "directly supervised" means the authorized biologist is direct voice and sight contact with the monitor. A desert tortoise monitor must have thorough knowledge of desert tortoise behavior, natural history, and ecology, and demonstrated substantial field experience and training to successfully:

- handle desert tortoises
- relocate desert tortoises

**AUTHORIZED BIOLOGIST** – Approved by the Fish and Wildlife Service to conduct all activities described in the previous section for desert tortoise monitors, and to locate desert tortoises and their sign (i.e., conduct presence/absence and clearance surveys) and ensuring that the effects of the project on the desert tortoise and its habitat are minimized in accordance with a biological opinion or permit. An authorized biologist must have thorough knowledge of desert tortoise behavior, natural history, and ecology, and demonstrated substantial field experience and training to successfully:

- handle desert tortoises
- excavate burrows to locate desert tortoise or eggs
- relocate desert tortoises
- reconstruct desert tortoise burrows
- unearth and relocate desert tortoise eggs
- locate, identify, and record all forms of desert tortoise sign

**GENERAL DESERT TORTOISE BIOLOGIST/MONITOR QUALIFICATIONS STATEMENT**

This form should be used to provide your qualifications to handle desert tortoises during construction or other projects authorized under Sections 7 or 10 (HCPs) of the Endangered Species Act. If you seek approval to attach/remove/insert any devices or equipment to/into tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200. Supplemental information for the recovery permit application should be provided with the form, *Statement of Skills and Experience with Specialized Desert Tortoise Procedures* which is available from a U.S. Fish and Wildlife Service Field Office.

**1. Contact Information:**

<b>Name</b>	<b>Dennis Strong</b>
<b>Address</b>	<b>23143 Canyon Estates Drive</b>
<b>City, State, Zip Code</b>	<b>Corona, Ca. 92883</b>
<b>Phone Number(s)</b>	<b>(951) 316-9279</b>
<b>Email Address</b>	<b>Getulus20@aol.com</b>

2. **Date of Statement:** 1/23/06

3. **States in which authorization is requested (check all that apply):**

California     Nevada     Utah     Arizona

4. **if authorization is sought for desert tortoise work under a Biological Opinion (BO) or Habitat Conservation Plan (HCP), provide the following:**

<b>USFWS BO or HCP Number</b>		<b>Date:</b>
<b>Project Name</b>		
<b>Federal Agency</b>		
<b>Proponent or Contractor</b>		

5. **Specify project and/or activities anticipated that require authorization (e.g. capture/release, weigh, measure, attach and remove telemetry devices and other hardware, etc.). Specifically reference the relevant document and page numbers with authorizing statements (e.g., BO, page 19, terms and conditions 6, 7, and 8):**

6. **If you hold, or have held, any relevant state or federal wildlife permits, provide the following:**

<b>Dates</b>	
<b>Species</b>	
<b>State (specify) or Federal Permit Number</b>	
<b>Authorized Activities</b>	

7. **Education (provide up to three):**

<b>Institution</b>	<b>Dates attended</b>	<b>Major/Minor</b>	<b>Degree received</b>
1. California State University, Fullerton	1996	Biology	Master of Arts
2. California State University, Fullerton	1989	Biology	Batchelor's of Arts
3.			

<b>8. Desert Tortoise Training:</b>			
<b>Name/Type of Training</b>	<b>Dates (From/To)</b>	<b>Location</b>	<b>Instructor/Sponsor</b>
1. Attended class on the proper way to process and pit tag desert tortoises.	1995	Fort Irwin Army Base	Chambers Group Environmental Consultants
2. Attended the Desert Tortoise Council Workshop and observed a U.S. Fish and Wildlife Service approved demonstration of the appropriate way to trans-locate tortoise eggs out of harms way. Also observed a U.S. Fish and Wildlife Service approved demonstration of the appropriate way to construct artificial tortoise burrows.	1995 & 2003	Ridgecrest, Ca.	Desert Tortoise Council
3.			
4.			

**9. Experience** – Complete for each position held, attach additional sheets as necessary. Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave Desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g. if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5). Add more lines, as necessary.

<b>General Field Experience:</b>		
<b>Project Name &amp; Job Title</b>	<b>Dates (From/To)</b>	<b>Job Duties &amp; Responsibilities/ Skills Used or Acquired</b>
1. P.F. Net, Fiber Optic Environmental Compliance, 2473, AT&T Nexgen /Core, Los Angeles to San Diego To Blythe, CA Environmental Inspector and Resource Specialist - 2003	Oct. 2003	Responsibilities include inspection for environmental mitigation measure compliance, identification, delineation and monitoring of biological resources (including Desert Tortoise), wetlands and water crossings along a fiber optic right-of-way in Southern California.

Project Name & Job Title	Dates (From/To)	Job Duties & Responsibilities/ Skills Used or Acquired
<b>2. Larson Lane Gravel Pit Desert Tortoise Clearance, Las Vegas NV; Tortoise Handler – 2003</b>	<b>July 2003</b>	Helped survey the 640-acre gravel pit for desert tortoises and the subsequent removal and relocation. Helped supervise the team's salvage of over twenty desert tortoises
<b>3. Kern River Pipeline, Barstow CA; Field Crew Leader for Spread 9 – 2002, 2003</b>	<b>Oct. 2002 – May 2003</b>	<p>Responsible for overseeing 45 tortoise biologists and monitors over an 80-mile gas pipeline installation and was also a certified tortoise handler (USFW &amp; CDFG) for this spread.</p> <p>The following is a list of personal contributions to helping protect the desert tortoise on this project.</p> <ul style="list-style-type: none"> <li>• Personally helped construct four (4) Tortoise pens.</li> <li>• Personally removed 35 tortoise pens.</li> <li>• Personally monitored 40 tortoises Pens.</li> <li>• Personally walked two (2) tortoises From their pens.</li> <li>• Personally excavated and relocated one (1) tortoise from its burrow on the right of way to a new burrow safely off the right of way. Also monitored this tortoise for several days afterward as per biological opinion.</li> <li>• Personally moved seven (7) tortoises on an emergency basis.</li> <li>• Lead pre-construction surveys and personally found 15 tortoises, 403 burrows, 33 scats, and six (6) bones.</li> <li>• Personally salvaged one (1) starving and blind tortoise from the right of way. Helped rehabilitate and then return to the wild (as per direction of USFW, CDFG, BLM &amp; Project Biologist).</li> </ul>

Project Name & Job Title	Dates (From/To)	Job Duties & Responsibilities/ Skills Used or Acquired
<p><b>4. Fort Irwin Army Base, San Bernadino, Ca; Tortoise Handler</b></p>	<p>1995</p>	<p>- In 1995 while working with the Chambers Group at Fort Irwin, Ca. I received Desert tortoise training from Mr. Scott Rolands of the Chambers Group and personnel from Fort Irwin's Natural resources department. The training covered proper handling of Desert tortoise so as not to spread disease between humans and tortoises, and between tortoise populations. Other techniques learned included: total processing of Desert tortoises (i.e. capturing without inducing urination, measuring, weighing, sexing, checking general health, pit tagging, and re-releasing animals after processing). The Natural Resource Department at Fort Irwin also showed us a tortoise with Upper Respiratory Disease (URD) so we could learn first hand how to tell if a tortoise has active URD's. I saw and processed dozens of tortoises on this job. This project was commissioned by Fort Irwin in order to construct a habitat quality index based on several years of recapture data. We walk 100 % coverage surveys on the south end of the base and I personally walked over 100 miles of transects. The transects were walked in the spring and consisted of approximately 4 to 10 miles a day depending on how many tortoises had to be processed.</p>



**Total Field Experience Continued:**

**h. Number of telemetry devices you personally removed from wild, free-ranging desert tortoises (circle one for each size category);**

**<100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**>100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**i. Number of telemetry devices you personally removed from captive-held desert tortoises (circle one for each category);**

**<100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**>100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**j. Number of blood-withdrawal events that you personally conducted on wild, free ranging desert tortoises (circle one for each size category);**

**<100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**>100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**k. Number of blood-withdrawal events that you personally conducted on captive-held desert tortoises (circle one for each size category);**

**<100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**>100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**l. Experience conducting other procedures on wild, free-ranging desert tortoises;  
Specify type of procedure:** Weight, measure, sex, inspect health, relocate and pit tag.

**<100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**>100 mm carapace length:**

Zero      <10      10-50      50-100      100-200      >200

**Total Field Experience Continued:**

**m. Experience conducting other procedures on captive-held desert tortoises;  
Specify type of procedure:**

**<100 mm carapace length:**

<u>Zero</u>	<10	10-50	50-100	100-200	>200
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**>100 mm carapace length:**

<u>Zero</u>	<10	10-50	50-100	100-200	>200
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**n. Prior authorizations for desert tortoise under Biological Opinions or Habitat Conservation Plans (specify number, date, project name and location). Do not reiterate "general field experience" information:**

**10. List 3 references that can verify your field qualifications and skills:**

Name	Employer/Position	Address/Location	Phone Number	Email
1. Rick Goette	Applied Bio	4012 S Rainbow Blvd K192 Las Vegas, Nv. 89103	(702) 596-4346	Appliedbio@aol.com
2. Steve Ferrand	Nevada biological Consultants	P.O. Box 3 Searchlight, Nv. 89046	(702) 296-1616	Lizards@powernet.net
3. Jon Martin	Blue Zoo	Vancouver, Wa.	(360) 607-2843	

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

**Signed:** \_\_\_\_\_

**Date:** January 23, 2006 \_\_\_\_\_

# Attachment BIO-3

# John F. Green, B.Sc.

Wildlife Biologist

## **Professional summary**

Mr. Green has a broad background in field biology, including extensive experience with birds, mammals, reptiles, amphibians, insects, and plants. In Southern California, he has experience on sites in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Santa Barbara Counties and in Northern California and Nevada as well. Professional experience includes: general biological surveys for wildlife and plants; vegetation mapping; revegetation and revegetation monitoring; seed collecting; focused sensitive, threatened, and endangered wildlife and plant species surveys; monitoring for sensitive, threatened, and endangered species; sensitive species exclusion and relocation; small mammal trapping studies; and the preparation of documents and reports related to those projects.

## **Professional qualifications**

Scientific Collecting Permit #801133-03 California Department of Fish and Game  
Independent Investigator for Quino Checkerspot Butterfly on Federal Threatened/  
Endangered Species Permit #TE804203-6  
Independent Investigator for California Gnatcatcher on Federal Threatened/Endangered  
Species Permit, #TE785148-7 (surveys and nest monitoring)  
Independent Investigator for Least Bell's Vireo on Federal Threatened/Endangered  
Species Permit, #TE-054011-0 (nest monitoring)  
Independent Investigator for Southwestern Willow Flycatcher on Federal Threatened/  
Endangered Species Permit, #TE785148-7 (surveys and nest monitoring)  
Supervised Investigator for California Red-legged Frog on Federal Threatened/  
Endangered Species Permit # TE785148-7  
Supervised Investigator for Stephens' Kangaroo Rat on Federal Threatened/Endangered  
Species Permits #TE804203-5 and TE785148-7  
Supervised Investigator on Federal Threatened/Endangered Species Permit for San  
Bernardino Kangaroo Rat, #TE804203-5  
Supervised Investigator for Pacific Pocket Mouse on Federal Threatened/Endangered  
Species Permit # TE785148-7  
Subpermittee on Federal Bird Marking (Bird Banding) and Salvage Permit #23035-D  
Field Assistant on Memorandum of Understanding (MOU) from the California  
Department of Fish and Game for California Gnatcatcher, Palm Springs Pocket  
Mouse, Stephen's Kangaroo Rat, San Bernardino Kangaroo Rat, and Mojave  
River Vole.  
Wetland Delineation Training Certificate

## **John F. Green**

Desert Tortoise Council Certificate

Western Field Ornithologists Conferences 2002, 2003

The Desert Tortoise Council Surveying, Monitoring, and Handling Techniques Workshop  
2002

Identification of California Branchiopod Crustaceans Workshop (Fairy Shrimp and  
Tadpole Shrimp) 2002

Southern California Botanists Symposium - "Rare Plants in Southern California" 2002

California Native Plants Seed Collecting and Storage, Rancho Santa Ana Botanic  
Garden, Claremont 2002

Southern Willow Flycatcher Survey Training Workshop 2002

Desert Plants During the Non-Blooming Season, University of California Extension,  
Riverside 2002

Plant Identification and Ecology, University of California Extension, Riverside, 2002

Rapid Assessment Method Vegetation Training Workshop, California Native Plant  
Society, San Diego 2002

South Coast Missing Linkages Workshop, University of Redlands, Redlands 2002

Survey of the Major Plant Families of Southern California, Rancho Santa Ana Botanic  
Garden, Claremont 2002

The Grass Family: Identification and Ecology, Rancho Santa Ana Botanic Garden,  
Claremont 2002

Vegetation Program Releve Training, California Native Plant Society, San Diego 2002

Introduction to Bird Banding, University of California Extension, Riverside, 2001

Field Study of Birds: Spring, University of California Extension, Riverside, 2001

Field Study of Birds: Winter, University of California Extension, Riverside, 2001

Field Study of Birds: Fall, University of California Extension, Riverside, 2000

Learning California Bird Sounds Workshop, Audubon Society, Orange County 1998

Cuckoos, Woodpeckers, Doves, and Gallinaceous Birds of California-An  
Intermediate/Advanced Birding Skills Workshop, Audubon Society, Orange  
County 1998

Birding by Ear-An Intermediate/Advanced Birding Skills Workshop Audubon Society,  
Orange County 1997

Warbler Identification Workshop, Garrett and Dunn, Los Angeles Audubon Society 1997

Some Families of North American Waterbirds-An Intermediate/Advanced Workshop,  
Audubon Society, Orange County 1997

Birding by Ear-An Intermediate/Advanced Birding Skills Workshop Audubon Society,  
Orange County 1996

Sparrows, An Intermediate/Advanced Birding Skills Workshop, Audubon Society,  
Orange County 1996

Birding With Your Ears Workshop, Audubon Society, Orange County 1996

Gulls of California-An Intermediate/Advanced Workshop 1995

Birding With Your Ears Workshop, Audubon Society, Orange County 1994

Birding Workshop, Audubon Society, Orange County 1993

Shorebirds-An Intermediate/Advanced Workshop, Audubon Society, Orange County  
1992

Birding Workshop, Audubon Society, Orange County 1992

### **Education**

University of California Extension, Riverside, CA 2000-present (Certificate in Field  
Ornithology/Field Botany/Field Ecology Programs)

University of California, Riverside, CA 1991 (BS Entomology)

Fullerton College, Fullerton, CA 1989 (AA Biology)

## John F. Green

### Memberships

American Birding Association  
American Ornithologists' Union  
Association of Field Ornithologists  
California Native Plant Society  
Cooper Ornithological Society  
Desert Tortoise Council  
Western Field Ornithologists  
Wilson Ornithological Society  
Xerces Society (invertebrate biodiversity)

### Language

English

### Summary of core skills

#### General Biological Surveys

Mr. Green has performed numerous general biological surveys. Such surveys involve research on a project area to identify potential sensitive elements, field surveys on the site to identify all plants and wildlife possible, and preparation of a report on the results of that research and fieldwork. Such reports identify impacts, if any, which the project will cause, and recommends focused surveys and other mitigation measures as needed. Examples of a few such projects that have been prepared by Mr. Green include a survey at an oak woodland/riparian/coastal sage scrub/chaparral interface, including vegetation mapping, for a retention basin project; a survey in degraded coastal sage scrub for a wastewater treatment plant; a survey at the base of the Santa Rosa Mountains in Palm Springs for a golf course being constructed in a desert wash; a survey on sand dunes in La Quinta for a church construction project; a survey on former agricultural land in Indio for a housing development and a multiple species habitat conservation plan compliant series of surveys for a nine mile long power line project.

#### Desert Tortoise Monitoring and Surveying

Mr. Green has spent hundreds of hours monitoring and surveying for the threatened Desert Tortoise in both the Mojave and Colorado Deserts, including the performance of protocol presence-absence and clearance surveys. He has taken the workshop on Desert Tortoises offered by the Desert Tortoise Council, and gotten their certification. He has encountered and observed the Desert Tortoise in the field many times over the past fifteen years, while on both personal and professional desert visits. He is familiar with Desert Tortoise biology and ecology; with their Federal and State Threatened status; with the protocols for detecting them and their sign, and with the protocols for safely observing them.

#### Representative Projects

Cabazon Clearance Survey and Monitoring (Coachella Valley)  
Canyon Vista Survey (Coachella Valley)  
Coachella Canal Presence/Absence Survey – Remains found  
Coachella Water District Dike 4 Presence/Absence Survey  
Desert Dunes Presence/Absence Survey (Coachella Valley)  
Interstate 15 Presence/Absence Survey (Mojave Desert)  
Kangaroo Rat Study (East Mojave) – Numerous sightings of Desert Tortoise  
Kramer Junction Monitoring (Mojave Desert) – Multiple tortoises observed  
Mesquite, Nevada Presence/Absence Survey (abundant tortoise sign detected)  
The Crest Tortoise Presence/Absence Survey (Coachella Valley)  
Whitewater Hill Monitoring (Coachella Valley) – tortoise observed multiple days  
Yucca Valley Presence/Absence Survey (abundant sign and two tortoises detected)

## **John F. Green**

Victorville 2 Power Plant Presence/Absence Survey (sign and tortoises detected)

### **Mountain Plover Studies**

Mr. Green has participated in two statewide surveys for Mountain Plovers and in a 2002 census of the species in the entire Imperial Valley. Mountain Plover is a declining sensitive species that has been considered for federal listing.

### **Riverside County Breeding Bird Atlas**

The Breeding Bird Atlas project was an attempt to create a baseline on the status of breeding birds in Riverside County. During this effort, Mr. Green surveyed an area in Riverside County that included much of the Box Springs Mountains and northern Moreno Valley.

### **Partners in Flight/Birds in the Balance Avian Monitoring**

Partners in Flight is a cooperative effort between dozens of government, industry, and environmental entities united to promote bird conservation. One aspect of this effort is the establishment of several regularly scheduled point counts per year on a multi-year basis in numerous locations. The data collected is providing baseline data on bird populations over time. Mr. Green spent several years conducting point counts in Orange County, California for this effort.

### **Least Bell's Vireo Monitoring/Southwestern Willow Flycatcher Surveys**

Mr. Green spent the 2002-2006 breeding seasons monitoring a population of the threatened Least Bell's Vireo on the Santa Ana River in Riverside County. This study is part of a multi-year monitoring effort, which includes presence/absence surveys for the Southwestern Willow Flycatcher. The data collected has added to the evidence of the vireos' positive response to the recovery efforts that have been made on its behalf, and of the failure of the flycatcher to respond positively to those same efforts.

### **Kangaroo Rat Study in the East Mojave**

This study involved trapping and identifying many species of small mammals in addition to the three species of kangaroo rats involved. Monthly visits were made for four years and data was collected to establish longevity, abundance, health, and activity periods over time.

### **Revegetation/Restoration Monitoring**

Mr. Green has participated in revegetation efforts, including soil preparation, seed collection, seeding, planting, and long term monitoring. Sites where he has worked on this include: Cabazon and Whitewater in the Coachella Valley, following construction of wind farms; at Edwards Air Force Base restoring a burn site; Trona following mining operations; Vandenberg Air Force Base following bridge construction; and at Edwards Air Force Base using seeding, planting, and vertical mulching to close unwanted roads.

### **Location**

Riverside, California, USA

### **Employment history**

Biologist, AMEC Earth and Environmental 2001-present

President, John F. Green, Incorporated 1979-2001

Detection of Tephritid fruit flies, Supervisor, Department of Agriculture 1991-1996

Assistant (Entomology), University of California, 1991

### **Presentations / publications**

*North American Birds*, Riverside County editor, Fall 2002-present.

*Birds of the Season*, 1998-2005, published quarterly in the *Western Meadowlark*

## John F. Green

Birds and other Vertebrates of the Box Springs Mountains and Vicinity 1998, updated yearly for the Riverside County Parks Department's Box Springs Reserve Ornithological Considerations for Habitat Connectivity. Presentation at the South Coast Missing Linkages Workshop, University of Redlands, Redlands 2002  
Green, John F., David H. Headrick, and Richard D. Goeden 1993. Life History and Description of Immature Stages of *Procecidochares stonei* Blanc & Foote on *Viguiera* spp. in Southern California (Diptera: Tephritidae). *Pan-Pacific Entomologist* 69(1): 18-32.

### Detailed core skills

Mr. Green is experienced in visually and aurally identifying birds. He has spent thousands of hours in the field, both personally and professionally, studying birds in California. He has hundreds more hours of bird observations over most of the United States and in Canada, Costa Rica, Great Britain, Kenya, Madagascar, and Mexico. He has observed, surveyed for, and monitored for, sensitive bird species including Burrowing Owl, California Gnatcatcher, Least Bell's Vireo, and Southwestern Willow Flycatcher. He is the Riverside County editor for the journal *North American Birds*, which reports quarterly on trends in bird populations and occurrences. For over ten years he has participated in several count circles for the National Audubon Society's Christmas Bird Count program. For seven years he was the compiler of the Southeastern California Rare Bird Alert, which included quarterly summaries published in *The Western Meadowlark* newsletter and consultation on avian issues for articles in the *San Bernardino Sun* and the *Riverside Press-Enterprise* newspapers. Mr. Green also leads birding field trips for the Audubon Society. He has conducted personal and historical research to compile and maintain the bird section of a checklist of vertebrates of the Box Springs Mountains in western Riverside County.

Mr. Green has hundreds of hours of field study and identification of mammals as well. He spent four years assisting with a kangaroo rat and small mammal trapping study in the East Mojave. He has monitored in occupied habitat for the endangered Pacific Pocket Mouse on Camp Pendleton and for the endangered Stephens' Kangaroo Rat on the former March Air Force Base. He has assisted with trapping surveys in occupied habitat for sensitive species such as the Palm Springs Pocket Mouse, Northwestern San Diego Pocket Mouse, Los Angeles Pocket Mouse, San Diego Desert Woodrat, and for the endangered San Bernardino Kangaroo Rat, . He was a licensed County Agricultural Inspector Biologist in vertebrates while working for the Department of Agriculture. He has conducted personal and historical research to compile and maintain the mammal section for a checklist of vertebrates of the Box Springs Mountains in western Riverside County.

Mr. Green has independently spent thousands of hours over three decades observing and identifying reptiles and amphibians, both by sight and in the hand, especially in California and the Southwest. He is especially familiar with the reptile and amphibian species in Southern California. His time in the field has included numerous observations of threatened and endangered amphibians and reptiles, including Mountain Yellow-legged Frog, Red-legged Frog, and Desert Tortoise; and sensitive species including Western Spadefoot Toad, Colorado River Toad, Yosemite Toad, Western Pond Turtle, San Diego Horned Lizard, Mojave Fringe-toed Lizard, Belding's Orange-throated Whiptail, Coastal Western Whiptail, Silvery Legless Lizard, Rosy Boa, Ringneck Snake, and Mountain Kingsnake. He has conducted personal and historical research to compile and maintain a reptile and an amphibian section for a checklist of vertebrates of the Box Springs Mountains in western Riverside County.

## John F. Green

Mr. Green has spent thousands of hours of work in field entomology beginning over twenty-five years ago. He is skilled at identifying insects. He is permitted for, and has surveyed for and detected the federally listed endangered Quino Checkerspot Butterfly. He created school display and teaching collections for John A. Rowland High School and for Fullerton College. He has published a life history on one species of Tephritid fly. He taught insect information and appreciation workshops for the Fullerton Unified School District and for the City of Fullerton in Orange County. He assisted with an ant survey on the Santa Rosa Plateau in Riverside County, and discovered a previously unknown species there. He spent several years in the field detecting and identifying fruit flies and their hosts in Orange and Los Angeles Counties. He participated in the field on the study that brought the Ash Whitefly under control in Southern California. He also led educational tours at the Newport Back Bay Reserve in Orange County.

Mr. Green has spent hundreds of hours in the field studying California's native plants, surveying for them, landscaping with them, and revegetating with them. The majority of that time has been spent in important Southern California plant communities such as coastal sage scrub, chaparral, and cottonwood/willow/sycamore riparian areas. He identified and reported previously unknown relict populations of Yerba Santa in the Box Springs Mountains near Riverside, and of San Diego Ambrosia and Coastal Cholla in Temecula. Previously only two occurrences of San Diego Ambrosia were known in Riverside County, and Coastal Cholla was believed to have been extirpated in the county. The nearest known population of Yerba Santa was in the San Jacinto Mountains, about 20 miles away.

In addition to those species already mentioned, Mr. Green's time in the field has included many observations of sensitive, threatened, or endangered species and their sign such as the Black-flowered Figwort, Long-spined Spineflower, Nevin's Barberry, Palmer's Grappling Hook, Payson's Jewel-flower, San Diego Tarweed, Small Flowered Morning-glory, Vernal Barley, Coachella Valley Jerusalem Cricket, Yuma Clapper Rail, Snowy Plover, California Least Tern, Burrowing Owl, Loggerhead Shrike, Coastal Cactus Wren, Le Conte's Thrasher, Bighorn Sheep, San Diego Black-tailed Jackrabbit, and many others.

# Dave M Kajtaniak

Staff Biologist

## Professional Summary

Mr. Kajtaniak has over nine years of professional endeavors with publicly and privately owned organizations. To date, he has conducted professional biological and environmental assessment work throughout San Bernardino, Riverside, Imperial, Humboldt, Del Norte, and Siskiyou counties in California, Storey County, Nevada, as well as counties in northwest and southeast Ohio. Mr. Kajtaniak's work has focused on the research and management of Threatened, Endangered, and Sensitive Species of fish and plants in many different eco-regions. This has incorporated broad computer and mechanical skills to perform analyses and documentation within project-related assignments. His expertise has been derived from a formal education (BS in Field Biology) and extensive domestic field experience.

Professional experience includes playing a key role in the development and implementation of a state-wide, holistic approach for watershed assessments. Mr. Kajtaniak has served as the lead biologist supervising and managing biological compliance monitoring and sensitive species survey efforts for a variety of large-scale projects, conducting focused surveys and monitoring of a variety of endangered, threatened, and/or otherwise sensitive species, and performed wetland delineations in various habitats and regions. In addition to fieldwork, Mr. Kajtaniak authors environmental and biological assessments, wetland delineation reports, watershed assessments, habitat suitability evaluations for sensitive species, mitigation and revegetation plans, instream habitat improvement projects, and comprehensive field inventories of flora and fauna.

## Professional Qualifications

California Department of Fish and Game Scientific Collectors Permit #801280-03

Supervised Investigator for California Gnatcatcher on Federal Threatened/Endangered Species Permit, #TE785148-7 (survey activities)

Supervised Investigator for Least Bell's Vireo on Federal Threatened/Endangered Species Permit, #TE-054011-0 (survey activities)

Supervised Investigator for Southwestern Willow Flycatcher on Federal Threatened/Endangered Species Permit, #TE785148-7 (survey activities)

Supervised Investigator for California Red-legged Frog on Federal Threatened/Endangered Species Permit # TE785148-7 (survey activities)

Supervised Investigator for Stephens' Kangaroo Rat on Federal Threatened/Endangered Species Permits #TE804203-5 and TE785148-7 (survey activities)

Supervised Investigator on Federal Threatened/Endangered Species Permit for San Bernardino Kangaroo Rat, #TE804203-5 (survey activities)

Supervised Investigator for Pacific Pocket Mouse on Federal Threatened/Endangered Species Permit # TE785148-7 (survey activities)

Wetland Delineation Training Certificate

Desert Tortoise Council Certificate

## **Education**

**College of the Redwoods**, Eureka, CA  
Furthering education, Semester Units 11, January 2002 to April 2003

**Ohio University**, Athens, OH  
B.S. in Field Biology, November 1999

## **Seminars, Symposia, and Workshops**

Large Mammal Tracking Training – California Department of Fish and Game. August 23, 2006, Niland, CA.

Desert Tortoise Council Surveying, Monitoring & Handling Techniques Workshop. October 22 & 23, 2005, Ridgecrest, CA.

Wetland Training Institute, Inc (WTI) Wetland Delineation Course. July 25-29, 2005, San Diego, CA.

Survey of Major Plant Families of Southern California: Advanced Plant Identification Workshop. January, 2005, Rancho Santa Ana Botanic Garden, Claremont, CA.

Big Bear Fireshed Workshop. August, 2004, Fawnskin, CA.

Society of American Foresters: Evaluation of San Bernardino National Forest Conference. May, 2004, Lake Arrowhead, CA.

16<sup>th</sup>, 17<sup>th</sup>, 19<sup>th</sup>, 21<sup>st</sup>, and 24th annual California Salmonid Restoration Federation Conference: February and March 1998, 1999, 2001, 2003, & 2006 various locations in California.

## Memberships

Salmonid Restoration Federation – Alternate Board Member (June 2006 to Present)  
Pomona Valley Audubon Society – June 2005 to Present  
Friends of the Big Morongo Canyon Preserve 2004 to Present  
California Native Plant Society – Humboldt Branch 2001-2003

## Languages

English

## Detailed Core Skills by Project

### Domestic Water Development and Supply

**Coachella Canal Lining Project.** Currently serving as Lead Field Monitor for the biological monitoring of sensitive biological resources during the bypass canal construction phase. Duties include: development and implementation of large mammal monitoring plan, coordinating and scheduling monitoring activities, and ongoing discussion of biological issues with Coachella Valley Water District and construction engineers and contractors. I also contributed to the development and writing of the Environmental Protection Plan for the Coachella Canal lining project. Participated in revegetation efforts, including surveying and mapping Sonoran thorn woodland and seed collection.

**Fern Valley Water District.** Surveyed Fern Valley Water District's property to mark dead and dying stands of trees. Determined property boundaries and flagged in project site area. In addition to marking tree stands, area was surveyed for possible archaeological sites.

### Electrical Power

**Southern California Edison (SCE) DSP Projects.** Performed reconnaissance level flora and fauna and focused rare plant surveys along existing SCE powerlines in San Bernardino and Riverside Counties. Upon completion of surveys wrote biological assessment reports addressing any and all biological issues concerning proposed projects.

**SCE Bark Beetle Project.** Supervised and managed a crew of up to 5 field technicians for an eight month period conducting assessments in residential areas for dead and dying trees. This project, located in the mountain communities of the San Bernardino and San Jacinto mountains, involved recording dead and dying tree species, mapping surveyed areas, and imputing, organizing, and analyzing field data.

### Renewable Energy Resources

**Victorville 2 Hybrid Power Project, ENSR, Victorville, CA.** Conducted focused Desert Tortoise surveys, focused Burrowing Owl surveys, focused surveys for rare plants, focused trapping surveys for Mojave ground Squirrel, vegetation and sensitive species mapping, identification and delineation of jurisdictional water courses, and identifying potential mitigation strategies for a 400+ acre hybrid power plant site and associated transmission lines and pipeline easements. Regulatory agencies involved included California Energy Commission, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and California Department of Fish and Game.

#### U.S. Forest Service

**Klamath National Forest Road Surveys.** Conducted road / upslope watershed sediment delivery assessments following the U.S. Forest Service protocol. Inspected roads and road infrastructure features such as: culverts, water bars, and inboard drainages, in determining sediment delivery to fish bearing streams.

**Klamath National Forest Stream Surveys.** Performed California Department of Fish and Game in-stream structure evaluations in fish bearing tributaries of the Klamath River. These evaluations included an assessment of current stream conditions, fish habitat improvement structures, and recommendations and designs of future watershed improvement projects.

#### California Department of Fish and Game (CDFG)

**North Coast Watershed Assessment Program.** Integral role in a multiple agency effort that performed watershed assessments in Northern California (see employment history below).

**AmeriCorps Volunteer.** Assisted CDFG with their in-stream restoration program in northern California. Created and implemented watershed and in-stream restoration projects. Performed various Pacific salmon field inventories such as spawner surveys, juvenile snorkelling dives, downstream migrant trapping, and stream habitat surveys (see employment history below).

#### County Parks and Recreation

**Toledo Metroparks Ecosystem Restoration.** Performed ecological restoration of different habitats in the Oak Openings region of Northwest Ohio. Through the active restoration and management (controlled burns, eradication of non-native species, seed collection) of sand dunes, prairies, oak woodlands, and oak savannahs populations of endangered flora and fauna were increased as well as overall improvement in genetic diversity.

#### Private Timberlands

**Pacific Lumber's Stream Watershed Analysis.** Contributed to the fisheries portion of the Elk River Watershed Analysis in Humboldt County. This project entailed: snorkel dives for presence/absence of fish species, habitat typing all class one watercourses, determining end of anadromy, mapping fish distribution by species, and writing and editing stream reports.

#### Transportation and Infrastructure

**CalTrans State Route 138, Segments 10 & 11, CalTrans District 7, Los Angeles County, CA.** Assisted lead field biologist in the coordination of biological monitoring of the widening of two different, approximate 3-mile sections of State Route 138 in the vicinity of Pearblossom, Los Angeles County, CA. Duties included scheduling monitoring activities, conducting focused preconstruction/clearance surveys for rare plants, Desert Tortoise and Mojave Ground Squirrel, monitoring, supervision and inspection of exclusion fence installation. Other duties included meeting, communicating, and coordinating with CalTrans inspectors, and Granite Construction Company personnel.

**Cedar Canyon Fire.** Coordinated with timber crews of tree removal in Cedar Glen after the Cedar Glen Fire. On site supervision of tree cutting selection and marking of trees in burned residential areas.

#### **Education and Community Outreach**

**Trinidad Elementary School.** Taught science, specifically stream ecology and fisheries, based curriculums in schools from grades first through seventh, including organizing and leading a class field trip to a local fish hatchery.

**Community Events.** Participated in numerous community events aimed at improving environmental health and promoting public awareness. These included: Klamath River clean-up, Eureka Marsh Clean-up, Humboldt Bay Wildlife tree planting, Trinidad State Park non-native plant eradication, and Eureka food drive.

#### **Employment History**

**Staff Biologist / Ecologist, AMEC Earth & Environmental, Inc.: August 2004 – present**

Prepares environmental assessments (EA), biological assessments (BA), Wetland Delineations, and focused sensitive species' surveys and habitat assessments for both the public and private sectors. Conducts focused presence/absence surveys for rare and endangered flora and fauna including the Coachella Valley Milkvetch, Least Bell's Vireo, Burrowing Owl, Desert Pupfish, Santa Ana Sucker, Mojave Ground Squirrel, San Bernardino Kangaroo Rat, and Desert Tortoise. Serves as Lead Field Monitor for biological compliance monitor for large-scale construction projects.

**Forestry Technician, ACRT, Inc.: June 2004 – July 2004**

Performed environmental consultation with private landowners and homeowner's association concerning forestry management and fuels modification. This work entails the following: flagging project boundaries, mapping surveyed areas, identifying archeological sites, wildlife habitat, watercourses, and other pertinent landscape features, tree species identification, marking dead and dying tree stands, and organizing data inventory.

**Forestry Technician, Mason Bruce and Gerard, Inc.: August 2003 – April 2004**

Mr. Kajtaniak led a crew of field technicians surveying bark beetle infested trees throughout the San Bernardino National Forest. Some of my work duties included: cruise checking crew members for quality control, identifying infected trees, organizing and integrating data, and mapping surveyed areas. Mr. Kajtaniak also coordinated with logging crews directing tree removal within residential areas and private timberlands.

**Fisheries Biologist, Pacific States Marine Fisheries Commission: August 2001 – April 2003**

Mr. Kajtaniak was an integral part of a multi-agency collaborative team conducting watershed assessments on river systems in Northern California. He performed in-field and academic research, analytical analysis of historic and current field data and previous studies, and extensive technical writing and editing watershed assessment reports.

- Developed recommendations for habitat improvement, future monitoring studies, land-use activities, and the overall advancement of salmonid species.

- Participation in frequent multi-agency meetings and conferences conducting technical analysis and development of watershed assessment reports.
- Collected and integrated habitat inventory data, electro-fishing data, and other pertinent fisheries and watershed information.

#### Fisheries, Botanical, and Forestry Technician – Natural Resources Management Corp.: April 2000 – August 2001

Utilized multidimensional skills to perform field and office duties of these positions. Primarily I lead fisheries and botanical crews on species surveys of private timber and rangelands; completed fish habitat and plant species reports; participation in the development of timber harvest plans. Completion of these tasks included the following:

- Mapped fisheries information (fish distribution by species on Pacific Lumber Corporation basemaps, identified possible mitigation barriers, and access points for further field research).
- Proposed proper mitigation in accordance with state laws for "threatened" species of salmonids under the federal Endangered Species Act.
- Deciphered aerial photos to determine vegetation landscapes.
- Rare plant species field surveys and habitat assessments on timber harvest plans and appurtenant roads.
- Wetland identification.
- Determined slopes, possible methods of timber extraction, and mapped completed surveyed areas.

#### AmeriCorps Volunteer – Watershed Stewards Project: October 1997 – August 1999

As a member of the Watershed Steward's Project I conducted research and monitoring protocols pertaining to Pacific salmon species, created and implemented restoration projects throughout northern California, and integrated educational programs in various classroom and community settings. Some of my many tasks performed included:

- Wrote and reviewed project and site plans including required federal and state permits.
- Supervised California Conservation Corps crews and Humboldt State student volunteers on habitat restoration projects throughout years of service with AmeriCorps.
- Implemented watershed improvement projects such as riparian re-vegetation, stream bank stabilization using bio-engineering techniques, and cattle exclusion fencing.
- Conducted road / upslope watershed sediment delivery assessments following the U.S. Forest Service protocol.

#### Land Management Crew Member, Toledo Metroparks: June 1995 - September 1997

Performed ecological restoration of different ecosystems (prairie, oak savannah, oak woodland, and sand dunes) in the Oak Openings region to improve populations of Threatened and Endangered species and promote genetic diversity of native species of flora and fauna. Helped propose habitat management plans and implemented these plans through various projects. Field work included: determining range, distribution, and abundance of Threatened and Endangered species of plants, continuous inventorying

and monitoring of local flora, seed collection, prescribed burns, and non-native species eradication.

## **Grants and Publications**

### **Fisheries Grants 1998-1999**

Acquired over \$40,000 in grants funding California Conservation Corps fisheries restoration projects and work tools for California Department of Fish and Game's volunteer fisheries program.

Cannata,S. and **D.M. Kajtaniak** (2006). Redwood Creek watershed synthesis report, Assessments of anadromous salmonids and stream habitat conditions of the Redwood Creek Basin. California Resources Agency and California Environmental Protection Agency; Sacramento, California.



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# TED RADO

## BIOLOGICAL CONSULTING

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Threatened & Endangered Species Surveys  
Section 7 and Section 10(a) Permitting  
Habitat Conservation Plans  
NEPA/CEQA - CDFG 2081 Permitting  
Environmental Education Programs

Environmental Reports  
Regulatory Review  
Mitigation Planning  
Project Planning  
Construction Monitoring

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3144 Celeste Dr., Riverside, CA 92507 • Office (951) 369-8510

### *Ted Rado*

**Date of Birth:** January 10, 1952

**Current Address:** 3144 Celeste Drive  
Riverside, California 92507

**Telephone Number:** 951/369-8510

**Education:** San Jose State University  
B.A. Zoology - December 1974  
M.A. Biology - August 1977

### EXPERIENCE

- 1989-2004** Independent consulting biologist. Work has included field surveys, report preparation, and preparation of Habitat Conservation Plans and related documents. Projects have included oilfield actions, prison construction and permitting, wind energy, mining, pipelines, roads, and urban development.
- 1989-Mar 1990** Wildlife biologist. U.S. Bureau of Land Management, Riverside, California. Preparation of an EIS addressing regional control of ravens, assisting Area Offices with various projects affecting desert tortoises, and development of mitigation measures for the desert tortoise.
- 1984-1989** Wildlife Biologist. U.S. Fish and Wildlife Service, Endangered Species Office, Sacramento, California. Work included preparation of Section 7(a) biological opinions and development of conservation plans for regional Section 10(a) permit applications.
- 1981-1984** Wildlife Biologist. U.S. Bureau of Land Management, Barstow, California. Development and implementation of management plans for wildlife and sensitive habitats and review of many projects affecting desert wildlife.

- 1980-1981** Wildlife Biologist. U.S. Bureau of Land Management, Sacramento, California. Employed as an endangered species specialist for the Resources Division of the State Office. Duties included assisting both District and Field Offices state-wide with compliance with the Endangered Species Act.
- 1979-1980** Wildlife Biologist. U.S. Bureau of Land Management, Riverside, California. Employed as a member of the Desert Planning Staff developing a comprehensive management plan for 12 million acres of Federal lands in the California Deserts.
- 1975-1978** Seasonal Park Ranger. Conducted faunal inventories of Hovenweep National Monument (Utah-Colorado) and Fossil Butte National Monument (Wyoming). Work included systematic live-trapping of small mammals.

**Professional Organizations:**

American Society of Mammalogists  
Herpetologist's League  
Society for the Study of Amphibians and Reptiles  
Desert Tortoise Council

**Certifications:**

Certified biologist on lists for San Bernardino, Kern, Los Angeles, Orange, Ventura, and Riverside Counties, California  
Completed desert tortoise training workshop (1990) Completed Mohave ground squirrel workshop, sponsored by The Wildlife Society  
State small mammal live-trapping permit  
Authorized to live-trap Mohave ground squirrels  
Current State Memorandum of Understanding for handling the desert tortoise

**Partial List of Publications:**

- Rado, T.A. and P.G. Rowlands. 1981. A range extension and low elevational record for the Arizona ridgenose rattlesnake, Crotalus willardi willardi. Herp. Review. 1981:15-16.
- Rado, T.A. 1990. Results of the 1989 pilot raven control program. The Desert Tortoise Council: Proceedings of the 1990 Symposium.
- Rado, T.A. 1993. An overview of mitigation actions employed for selected endangered species in the San Joaquin Valley. Pp. 199-206. In: D. Williams, S. Bryne and T. Rado (eds.) Endangered and sensitive species of the San Joaquin Valley, California: a conference on their biology, management and conservation. 388 pp.
- Laudenslayer, W.F., K.B. Buckingham, and T.A. Rado. 1995. Mammals of the Deserts of California. In: J. Latting and P.G. Rowlands (eds.): The California Desert: An

Introduction to Natural Resource's and Man's Impact. California Native Plant Society. Pp. 373-396.

**Partial List of Projects:**

- 2004 **Southern Trails Pipeline Coating Inspection Project, San Bernardino, Riverside and Los Angeles Counties.** Did initial surveys, monitored during inspections, and prepared final report on project where pipeline coating inspections took place over 200 linear miles of line.
- 2004 **Frontier Homes Construction Project, Victorville.** Provided crew with environmental compliance training, conducted preactivity survey and monitored during land clearing for housing subdivision.
- 2004 **Hilton Gardens Inn Project, Victorville.** Preactivity survey, crew compliance training, site monitoring for large hotel construction site.
- 2004 **Bolthouse Farms Project, Los Angeles County.** Site survey and report. Also prepared long-term monitoring plan for wildlife.
- 2004 **Aster Villas and New Homes Housing Projects, Adelanto.** Assisted in site monitoring for compliance during construction. Burrowing owl and Mohave ground squirrel issue species.
- 2004 **Suncal McAllister Ranch Burrowing Owl Survey, Kern County.** Project surveys for burrowing owls and nesting sites for large-scale planned housing development southwest of Bakersfield.
- 2004 **Ajax Services Commercial Development, Adelanto.** Biological resource survey and report for planned commercial development.
- 2004 **Aquino Commercial development Site, Victorville.** Biological resources survey and report for planned commercial development.
- 2004 **March Air Force Base Bunker Inspection, Riverside County.** Monitored during soils tests of cleared weapons bunkers at the base. Emphasis on the Stephen's kangaroo rat.
- 2004 **Forecast Homes State 2081 Permit, San Bernardino County.** Prepared draft State 2081 (Endangered Species Permit) for proposed housing subdivision emphasizing the Mohave ground squirrel.
- 2004 **Whitewater Rock Mine, Riverside County.** Assisted in surveys of proposed mine expansion,

with emphasis on the desert tortoise and rare plants.

- 2004 **Moreno Valley Burrowing Owl Survey, Riverside County.** Completed burrowing owl survey of proposed subdivision site and prepared summary report for submittal to County for large consulting company.
- 2004 **Suncal Properties McAllister Ranch Project, Kern County.** Reviewed prior FEIR and data records for large property being considered for development southwest of Bakersfield. Also assisted in blunt-nosed leopard lizard inventory of this site.
- 2004 **Terrazas Mine, Riverside County.** Assisted in survey of mine expansion project along the western edge of the desert in central Riverside County. Emphasis on the desert tortoise and rare plants.
- 2004 **Airway Boulevard Extension Project, Kern County.** Road expansion survey in the western Mojave Desert. Emphasis on the desert tortoise.
- 2004 **San Joaquin Valley Landbank Project, Kern County.** Reviewed several potential sites in the valley as prospective mitigation "landbanking" sites for a large pipeline company.
- 2004 **Slate Range Communications Site, Inyo County.** Completed biological survey and prepared report for comm site near Death Valley.
- 2004 **Southern Nevada Water Authority Surveys, Clark County, Nevada.** Member of a team of biologists conducting surveys for a large company for the desert tortoise and rare plants over proposed water conveyance and storage system in southern Nevada.
- 2004 **Mohave Ground Squirrel Livetrapping Survey, 30-Acre Site in Victorville.** Completed systematic livetrapping survey using California Department of Fish and Game protocols.
- 2004 **Mohave Ground Squirrel Livetrapping Survey, 55-Acre Site in Adelanto.** Completed systematic livetrapping survey using California Department of Fish and Game protocols.
- 2004 **Mohave Ground Squirrel Livetrapping Survey, 10-Acre Site in Adelanto.** Completed systematic livetrapping survey using California Department of Fish and Game protocols.
- 2004 **Mohave Ground Squirrel Livetrapping Survey, 30-Acre Site in Lancaster.** Assisted in a systematic livetrapping survey using California Department of Fish and Game protocols.
- 2004 **Joshua Tree Land Development, San Bernardino County.** Assisted in systematic survey of

90-acre parcel bordering Joshua Tree National Park. Emphasis on the desert tortoise.

**2003 Questar Road Grading Survey, San Bernardino County.**

Conducted desert tortoise survey of 66 linear mile segment of pipeline maintenance road. Submitted summary report to company for agency review.

**2003 Conoco-Phillips Marsh Creek Repair Project, Alameda County.** Conducted survey of pipeline repair project near Mt. Diablo, with emphasis on the red-legged frog, Alameda striped whipsnake, California tiger salamander and western pond turtle. Discussed mitigation with company representative.

**2003 Shea Properties Project, Riverside County.** Conducted desert tortoise surveys of four separate sites in the Coachella Valley.

**2003 Atolia Comm Site Preactivity Survey, Kern County.** Conducted desert tortoise survey of communications site near Randsburg. Gave construction crew environmental compliance training. Assisted in tortoise-proof fence construction.

**2003 Desert Dunes Project, Riverside County.** Member of crew conducting surveys of proposed subdivision in the Coachella Valley. Emphasis on the desert tortoise, rare plants, Coachella Valley fringe-toed lizard, burrowing owl and Coachella round-tailed ground squirrel.

**2003 Metropolitan Water District Colorado River Aqueduct Repairs, San Bernardino County.** Member of team conducting preactivity surveys and monitoring during repairs of segment of the aqueduct in the Mojave Desert. Emphasis on the desert tortoise.

**2003 Tosco Kern Station Tank and Pipeline Demolition, Kern County.** Conducted site surveys and monitored as crew dismantled and removed equipment from facility in the Kern Oilfield. Emphasis on the San Joaquin kit fox and the Bakersfield cactus.

**2003 Coachella Water District Site Survey, Riverside County.** Worked as a member of a team conducting desert tortoise surveys of property near La Quinta, with emphasis on the desert tortoise.

**2003 Whitewater Canyon Alluvial Rock Quarry Site, Riverside County.** Worked as a member of a team conducting surveys of an approximately one-linear mile segment of Whitewater Canyon, with emphasis on the endangered arroyo toad.

**2003 Metropolitan Water District Patrol Road Maintenance, San Bernardino County, California and Clark County, Nevada.** Did preactivity surveys and monitoring during maintenance of existing patrol road segments in the eastern Mojave Desert, with emphasis on the desert tortoise.

**2003 Neuvo Buena Vista to E+M Pipeline Survey, Kern County.**

Worked as a member of a 4-person team conducting surveys of an approximately 15-linear mile pipeline segment in the southern San Joaquin Valley. Emphasis on many species, including the San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope squirrel, burrowing owl, giant kangaroo rat and Hoover's woolly-star.

**2003 California City Oasis Project, Kern County.** Worked as a member of a team conducting surveys of a proposed camping area on the northern edge of California City, with emphasis on several rare plants, the desert tortoise, Mohave ground squirrel and burrowing owl.

**2003 California City High School Site, Kern County.** Assisted in conducting surveys of a proposed high school site in California City. Prepared summary report. Emphasis on the desert tortoise, Mohave ground squirrel, burrowing owl, and rare plants.

**2003 California City Elementary School Site, Kern County.** Assisted in conducting surveys of a proposed elementary school site in California City. Prepared summary report. Emphasis on the desert tortoise, Mohave ground squirrel, burrowing owl, and rare plants.

**2003 MCAGCC Range 500 Tortoise Survey, San Bernardino County.** Crew supervisor conducting surveys of a variety of facility sites at Range 500 near Twentynine Palms. Data (including GPS coordinates) recorded and provided to primary contractor for the military project. Emphasis on the desert tortoise.

**2003 Hyundai Vehicle Test Site Tortoise Surveys, Kern County.** Team member conducting desert tortoise surveys within an approximately 2,000-acre area in the western Mojave Desert.

**2003 Coachella Canal Line Project Survey, Imperial County.** Crew supervisor conducting desert tortoise surveys along an approximately 33-linear mile segment of the Coachella Canal.

**2003 SCE Devers-West Transmission Line Survey, Orange and Riverside Counties.** Worked as a member of a team conducting general bio surveys along two 80-linear mile segments of existing transmission line right-of-way. Emphasis on a variety of listed and sensitive species.

**2002 Metropolitan Water District - Colorado River Aqueduct Repairs, San Bernardino County.** Member of team conducting preactivity surveys and site monitoring during repairs of sections of the aqueduct in the Mojave Desert.

- 2002 **Sempre Energy - Line 1080 Repair, Riverside County.** Member of team conducting preactivity surveys and site monitoring for desert tortoises during replacement of a six linear mile segment of natural gas pipeline in the Mojave Desert.
- 2002 **Questar Pipeline Spread 7 Construction, San Bernardino County.** Conducted preactivity surveys, did site monitoring and post-project compliance report for work over a 35-linear mile segment of pipeline in the eastern Mojave Desert. Emphasis on the desert tortoise.
- 2002 **BNSF Lateral Pipeline, San Bernardino County.** Conducted surveys, prepared report, did project monitoring and completed post-project monitoring report for pipeline supplying fuel to the BNSF railroad yard in Barstow. Emphasis on a variety of species, including the burrowing owl and the desert tortoise.
- 2002 **Questar Spread 3B Construction, San Bernardino County.** Conducted preactivity surveys, did site monitoring and post-project compliance report for work over a 35-linear mile segment of pipeline in the eastern Mojave Desert. Emphasis on the desert tortoise.
- 2002 **Sempre Energy Adelanto-Kramer Pipeline Project, San Bernardino County.** Worked as a member of a team conducting preactivity surveys and monitoring during the construction of a 36-inch trunk natural gas pipeline extending across the central Mojave Desert. Emphasis on the desert tortoise.
- 2002 **Kinder Morgan Energy Partners Draft Biological Evaluation, California and Nevada.** Reviewed and incorporated editorial comments and suggestions received on preliminary draft also written by myself addressing regional pipeline operations and maintenance and returned to company.
- 2002 **BNSF Lateral burrowing Owl Survey, San Bernardino County.** Completed a preactivity survey of a pipeline segment, with emphasis on checking a previously noted burrowing owl nesting site for signs of current activity.
- 2002 **Questar Pipe Line Cabazon Reroute Project, Riverside County.** Completed a preactivity survey of pipeline reroute segment, with emphasis on the desert tortoise and several sensitive species.
- 2002 **Questar Pipeline Spread 7 Construction, San Bernardino County.** Conducted preactivity surveys, did site monitoring and post-project compliance report for work over a 35-linear mile segment of pipeline in the eastern Mojave Desert. Emphasis on the desert tortoise.
- 2001 **Level 3 Fiber-optic Line, Victorville to Stateline Project.** Worked as a member of a team

conducting surveys and monitoring during placement of an approximately 200 linear mile segment of fiber-optic line in the Mojave Desert. Sensitive plants, Mohave ground squirrel and the desert tortoise were the principal species of concern.

- 2001 **Questar Pipe line Company Road Repairs, San Bernardino County.** Conducted surveys and monitored construction crew effecting repairs of pipeline maintenance road in the eastern Mojave Desert.
- 2001 **Tosco Polonio Pass Project, San Luis Obispo and Kern Counties.** Worked as a subconsultant conducting arroyo toad and California red-legged frog survey.
- 2001 **U.S. Borax Sensitive Plant Surveys, Kern County.** Worked as a team member conducting spring surveys around active portions of the mine for sensitive plants and the desert tortoise.
- 2001 **Metropolitan Water District Washout Repairs, Riverside and San Bernardino Counties.** Conducted surveys and monitored as construction crew repaired patrol road washouts from thunderstorm damage.
- 2001 **Metropolitan Water District Road Surveys, California and Nevada.** Conducted desert tortoise and sensitive species surveys over approximately 300 linear mile segment of the patrol road system in the Mojave Desert.
- 2001 **Ludlow Quarry Pit, San Bernardino County.** Conducted surveys and prepared report for 60-acre quarry pit for I-40 repairs, with emphasis on rare plants and the desert tortoise.
- 2001 **Southern Rubber Boa Survey, San Bernardino Mountains.** Conducted survey to look for and evaluate habitat of the southern rubber boa along a proposed water pipeline corridor.
- 2001 **Sands Project, San Bernardino County.** Conducted biological survey as a team member of Union Pacific Railroad sites slated for cleanup in the eastern Mojave Desert, with emphasis on the desert tortoise.
- 2001 **Atolia Communications Site, Kern County.** Conducted biological survey of comm site in the Mojave Desert and prepared summary report text.
- 2000 **Level 3 San Diego-Yuma Fiber-optic Line, San Diego and Imperial Counties.** Team member to parent engineering firm conducting surveys and monitoring of portions of line, with emphasis on sensitive plants and the endangered arroyo toad.

- 2000 **Level 3 Las Vegas-Stateline Fiber-optic Line, Clark County, Nevada.** Team member to parent engineering firm conducting surveys and monitoring of portions of line, with emphasis on the threatened desert tortoise.
- 2000 **Level 3 Fiber-optic Line, Corona Area, Riverside County.** Team member to parent engineering firm monitoring construction, with emphasis on riparian habitats.
- 2000 **Metropolitan Water District Desert-wide Operations and Maintenance Projects, California and Nevada.** Prepared draft biological evaluation report addressing ongoing operations and maintenance of Colorado River Aqueduct, access roads, transmission lines, pump stations and associated facilities on listed and sensitive species.
- 2000 **Metropolitan Water District Road Maintenance, Riverside and San Bernardino Counties.** Conducted surveys and prepared summary report addressing road maintenance over about 125 linear miles of facility roads. Environmental compliance training to staff.
- 2000 **Calnev Pipe Line Company Block Valve Survey, California and Nevada.** Conducted surveys and prepared report addressing maintenance work on four block valve sites in the Mojave Desert, with emphasis on the desert tortoise.
- 2000 **U.S. Borax Sensitive Plant Surveys, Kern County.** Team member conducting systematic surveys on outer edges of borax mine, with emphasis on several sensitive plants and the desert tortoise.
- 2000 **Glamis Imperial Project, Imperial County.** Reviewed text of proposed Federal mineral withdrawal surrounding mine and prepared summary text for company.
- 2000 **Glamis Imperial Project, Imperial County.** Reviewed text of final biological opinion for the mine site, and prepared summary text for the company.
- 2000 **TXI Quarry Site, San Bernardino County.** Team member conducting tortoise and sensitive plant surveys near Victorville.
- 2000 **Southern California Gas Company Line 173 Leak Survey, Kern County.** Conducted preactivity surveys of San Joaquin kit foxes, blunt-nosed leopard lizards and other listed and sensitive species.
- 2000 **Southern California Gas Company Desert Project Surveys, Riverside County and San Bernardino County.** Surveys of over 20 operations and maintenance projects proposed for calendar year 2000, in tortoise habitat areas for parent firm.

- 2000 **Southern California Gas Company, San Joaquin Valley Operations and Maintenance Project Surveys, Kern County.** Surveys of over 10 project sites in the southern San Joaquin valley slated for year 2000 work, with emphasis on several listed and sensitive plants and wildlife for parent firm.
- 2000 **Coalinga Cogeneration Project, Fresno County.** Annual check of cogeneration site and associated steam field service area for compliance with Section 10(a) permit prepared in 1990.
- 2000 **Questar Line 90 Endangered Species Habitat Correlations, California and Western Arizona.** Aerial photoanalysis review and ground-truthing to accurately map locations and extent of endangered species habitat along an approximately 285 linear mile pipeline segment extending through the Mojave Desert for a parent consulting firm.
- 2000 **ATT San Diego-Blythe Fiber-optic Surveys, Imperial and Riverside Counties.** Subconsultant and field crew supervisor to parent firm conducting systematic surveys of approximately 125 linear miles of fiber-optic line. emphasis on several listed plants in the Algodones Dunes (Pierson's milk-vetch, Algodones Dunes sunflower), flat-tailed horned lizard and the desert tortoise. Preparation of draft summary report for the parent firm.
- 1999 **Questar Pipe Line Company road Maintenance, San Bernardino County.** Conducted preactivity surveys and monitored during patrol road maintenance over 15-linear mile segment in the eastern Mojave Desert. Emphasis on the desert tortoise.
- 1999 **Needles Landfill Perimeter Fence Construction, San Bernardino County.** Conducted preactivity surveys and monitored during placement of a tortoise-proof fence around the perimeter of the Needles landfill.
- 1999 **Arroyo Toad Surveys, Summit Valley Ranch, San Bernardino County.** Lead biologist conducting surveys for the endangered arroyo toad in segments of Little Horsethief Creek and Horsethief Creek. Summary report completed.
- 1999 **U.S. Borax Desert Tortoise Surveys, Kern County.** Worked as a member of a team conducting systematic surveys of a portion of the mine for the desert tortoise.
- 1999 **Southern California Gas Company Desert Road Grading Maintenance, Riverside County.** Monitor during road maintenance along an approximately 40-linear mile segment of patrol road, with emphasis on the desert tortoise. For parent firm.

- 1999 **Southern California Gas Company, Belridge Oilfield Maintenance, Kern County.** Monitoring during pipeline corrosion repair in the San Joaquin Valley, with emphasis on the San Joaquin kit fox, San Joaquin antelope squirrel and the blunt-nosed leopard lizard. For parent firm.
- 1999 **Southern California Gas Company, Line 8090 Leak Repairs, Kern County.** Monitor during repairs of several pinhole leaks in the valley near Taft. Emphasis on the San Joaquin kit fox, Hoover's woolly-star, blunt-nosed leopard lizard, and San Joaquin antelope squirrel. For parent firm.
- 1999 **Questar Pipe Line Company, Habitat Mapping of Line 90 in California.** Mapping of habitats using aerial photos and ground-truthing of an approximately 250-linear mile segment of pipeline.
- 1999 **Questar Southern Trails Pipeline, California and Arizona Interconnects.** Field surveys of Topock Interconnect and Transwestern Interconnect sites, with emphasis on sensitive species and the desert tortoise.
- 1999 **Tosco PN10 Pipeline Project, Elk Hills, Kern County.** Crew member conducting preactivity surveys and monitoring during construction of a 20-linear mile pipeline at Elk Hills. Emphasis on several listed species, including the San joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, and Hoover's woolly-star.
- 1999 **Arroyo Toad Surveys, San Bernardino and Cleveland National Forests.** Worked as a member of a team conducting systematic surveys of several drainages for the endangered arroyo toad for the U.S. Forest Service.
- 1999 **Yellow-legged and Red-legged Frog Surveys, Cleveland and San Bernardino National Forests.** Worked as a member of a team conducting systematic surveys of several drainages for the endangered California red-legged frog and the yellow-legged frog for the U.S. Forest Service.
- 1999 **Metropolitan Water District Road Maintenance, San Bernardino County.** Surveys of approximately 100 linear miles of roads for desert tortoises and other sensitive species prior to road grading. Preparation of summary report.
- 1999 **Cima Pump Station, San Bernardino County.** Field surveys and report preparation

addressing construction and operation of a pipeline pump station in the eastern Mojave Desert.

- 1999 **Questar Line 90 Conversion, California-Western Arizona Segments.** Review of database records, selected field surveys, and preparations of two reports for presentation by a parent consulting firm to the Federal Energy Regulatory Commission for a 600-linear mile pipeline conversion from crude oil to natural gas transport.
- 1998 **Questar Pipe Project, San Bernardino and Riverside Counties.** Surveys and preparation of a draft report as a subconsultant to a larger firm.
- 1998 **Southern California Gas Company Road Maintenance, San Bernardino and Riverside Counties.** Monitoring of road grading for tortoises and other sensitive species in the Mojave Desert. Preactivity surveys and environmental compliance training of personnel.
- 1998 **Summit Valley Ranch Arroyo Toad Survey, San Bernardino County.** Surveys of two drainages for endangered arroyo toads, calculations of estimated population size using field-generated data. Summary report.
- 1998 **R Ranch Sensitive Plant Survey, Riverside County.** Sensitive plant survey of proposed development site in the San Jacinto Mountains.
- 1998 **Interstate 15 Mohave River Crossing Arroyo Toad Survey, San Bernardino County.** Surveys of river channel and banks at highway overcrossing for the endangered arroyo toad.
- 1998 **Hi Grade Plant Transects, San Bernardino County.** Survey member establishing baseline at mine site for later site restoration work.
- 1998 **Calnev Biological Assessment, Southern California-Nevada.** Continued development of project-wide permit allowing for operations and maintenance of interstate pipeline corridor in endangered species habitats.
- 1998 **Greenleaf II Reservoir Project, Orange County.** San Diego horned lizard habitat evaluation of small proposed reservoir site in Whittier.
- 1998 **Glamis Imperial Project, Imperial County.** Review of draft biological opinion for large-scale mining operation.
- 1998 **Aera Wastewater Line, Kern County, California.** Surveys for San Joaquin kit fox, blunt-nosed leopard lizard and other listed and sensitive species west of Bakersfield.
- 1998 **Valley Waste Project, Kern County.** Surveys for San Joaquin kit fox, blunt-nosed leopard

lizard and other listed and sensitive species west of Bakersfield.

- 1998 **Calspar Mine, San Bernardino County.** Site surveys and preparation of a summary report for a small-scale mining operation southeast of Barstow.
- 1998 **Temecula Wash Horned Lizard Monitoring, Riverside County.** Continued surveys and monitoring of release area for San Diego horned lizards.
- 1998 **Mesquite Mine, Imperial County.** Preactivity surveys of exploratory drilling area for desert tortoises.
- 1998 **Edwards Air Force Base Water Pipeline, Kern County.** Monitoring during trenching and placement of water pipeline near Phillips Lab area.
- 1998 **Edwards Air Force Base Homestead Wellsite Closures, Los Angeles and Kern Counties.** Monitoring during groundwater testing and well closure on the base.
- 1998 **Needles Landfill, San Bernardino County.** Desert tortoise monitoring during construction of perimeter landfill fence. Endangered species compliance training for staff.
- 1998 **ARCO Orion Project, California.** Surveys, monitoring, and endangered species compliance training during purging and monitoring of a 16-inch crude oil line in the Mojave Desert involving approximately 100 personnel.
- 1998 **ARCO Pipe Line Maintenance and Operations Projects, San Bernardino County.** Surveys, monitoring and reports for approximately 35 separate projects along a 150-linear mile segment of crude oil pipeline in the Mojave Desert.
- 1997 **Metropolitan Water District Road Maintenance, Nevada-California.** Surveys of 183 miles of maintenance roads in the Mojave Desert for sensitive species including the desert tortoise. Preparation of summary report for the agencies.
- 1997 **ARCO Pipe Line Operations and Maintenance Projects, Riverside and San Bernardino Counties.** Surveys, monitoring and report addressing approximately 40 separate projects over the calendar year.
- 1997 **Interstate Highway 15 Widening, San Bernardino County.** Member of team conducting desert tortoise and other sensitive species surveys along highway corridor between Victorville and Barstow.
- 1997 **Mountain Falls Survey, Riverside County.** Bio survey of proposed golf course site, including checks of spring area for sensitive amphibians including the red-legged frog.

- 1997 **Shadow Rock Amphibian Survey, Riverside County.** Combination of red-legged frog and arroyo toad survey of proposed golf course site near Palm Springs.
- 1997 **Victorville Landfill Survey, San Bernardino County.** Desert tortoise survey of proposed landfill expansion area.
- 1997 **La Quinta Traditions Golf Course, Riverside County.** Participated in survey of large golf course project site near Palm Springs.
- 1997 **Sunwest Sensitive Plant Survey, Riverside County.** Participated in surveys for several listed and sensitive plants on a large-scale sand and gravel operation.
- 1997 **Picacho Peak Exploratory Drilling, Imperial County.** Completed survey and prepared report addressing 15 exploratory drill holes for a proposed mining operation near Picacho Peak.
- 1997 **Airtouch Comm Sites, San Bernardino County.** Completed surveys and prepared report addressing the installation of six comm sites in the Mojave Desert.
- 1997 **Elk Hills Sensitive Plant Survey, Kern County.** Participated in a systematic survey over most of NPR-1 for listed and sensitive plants for the U.S. Department of Energy.
- 1997 **Western Geophysical Seismic Survey, Kern County.** Participated in surveys for T+E species in the Belridge Oilfield.
- 1997 **Big Morongo Canyon Pipeline Realignment, Riverside County.** Monitor during pipe realignment for the Southern California Gas Company.
- 1997 **Big Morongo Canyon Plant Survey.** Systematic survey of canyon and tributaries for the endangered triple-ribbed milk-vetch. Summary report for agencies.
- 1997 **CalWest Spring Floral and Revegetation Survey, riverside County.** Sensitive plant survey of large-scale sand and gravel operation.
- 1997 **Amboy Quarry Vegetation Transects, San Bernardino County.** Participated in the collection of baseline plant data to be used for later project monitoring and revegetation success.
- 1997 **Temecula Creek Coast Horned Lizard Relocation Study, Riverside County.** Participated in the capture, marking and release with subsequent monitoring of 10 San Diego horned lizards on to a rehabilitated project site.

- 1997 **Rand Mining Clearance Survey, Kern County.** Completed desert tortoise survey of approximately 40-acre portion of mine and prepared summary report.
- 1997 **American Girl Mine Drillsites, Imperial County.** Completed survey of approximately 15 exploratory drilling sites and prepared summary report.
- 1996 **AirTouch Cellular Comm Sites, Riverside County.** Completed survey of two cell phone comm sites and prepared summary report.
- 1996 **California City Golf Course, Kern County.** Participated in survey of approximately 1,200 acre area north of Highway 58 for desert tortoises and other listed and sensitive species.
- 1996 **ARCO Line 90 Rectifiers, San Bernardino County.** Completed initial surveys, monitoring and post-project report for the installation of 10 rectifiers in the Mojave Desert.
- 1995 **Eagle Mountain Landfill, Riverside County.** Reviewed court decision on landfill as it related to endangered and sensitive species. Prepared summary brief for client.
- 1995 **American Girl Mine, Imperial County.** Completed survey and report of buildout of ore processing area on mine.
- 1995 **Coalinga Cogeneration Company, Fresno County.** Completed annual endangered species compliance monitoring of cogeneration project in the Coalinga Oilfield.
- 1995 **Mendenhall Property Dispute, Washington County, Utah.** Assisted property owner in HCP area in negotiations with the U.S. Fish and Wildlife Service. Settled satisfactorily to both entities.
- 1995 **Southern California Gas Company, Kern County.** Provided deposition and expert witness testimony in California Superior Court on endangered species and the Endangered Species Act.
- 1995 **ARCO Pipe Line Monitoring, San Bernardino County.** Completed required reports, conducted preactivity surveys, on-site monitoring during projects, and preparation of year-end agency reports for approximately 60 different operations and maintenance projects.
- 1995 **Big Morongo Canyon Pipeline Realignment, Riverside County.** Completed initial site surveys and report addressing realignment of about two miles of exposed pipe in a riparian stream,. Also completed draft environmental assessment for the U.S, Bureau of

Land Management. Met with agencies to review endangered species and wetland permitting and protection measures. Developed environmental compliance guide specifically for project crew. Monitored site during project. Completed post-project evaluation and monitoring report.

1995 **Rand Water Pipeline Construction, Kern County.** Completed pre-project survey and project monitoring during construction of about two miles of 10-inch water pipeline across desert tortoise habitat.

1995 **Rand Project Clearance Surveys, Kern County.** Completed clearance of approximately 800 acres for the desert tortoise as a mitigation measure for the project EIS. Captured, marked and released 14 desert tortoises from the project site. Completed post-project monitoring report for agencies.

1995-96 **Calnev Pipeline Company, California-Nevada.** Preparation of draft biological assessment addressing ongoing operations and maintenance of over 250 miles of pipelines in the Mojave Desert. Meetings with agency staffs during preparation.

1994 **Southern California Gas Company Programmatic Permit.** Preparation of biological assessment addressing ongoing operations and maintenance over 1,100 miles of natural gas pipelines in the California Desert. Meetings with agency staffs during preparation.

1994-95 **Southern Nevada Water Authority, Las Vegas.** Preliminary scoping surveys for T+E species along various project alternative routes for the secondary system for the City of Las Vegas. Species included the desert tortoise, bearpaw poppy, sticky buckwheat, relict leopard frog, and arroyo toad.

1994-97 **Chemgold Imperial Project, Imperial County.** Conducted surveys of over 2,000 acre proposed mine site and associated road and transmission line corridors. Prepared biological assessment, assisted in the preparation of the project EIS/EIR. Monitored exploratory drilling of about 300 test holes on the site. Participated in negotiations with agencies on project compensation, incidental take limits and mitigation.

1994 **Line 90 Crude Oil Leak, San Bernardino County.** Monitored cleanup of crude oil leak in the Mojave Desert near Yucca Valley.

1994 **City of Bakersfield Northeast Sewer Trunkline Habitat Conservation Plan, Kern County.** Preparation of a multi-species HCP for buildout on north side of the city. Biological

assessment, draft biological opinion, and draft State 2081 permit for project.

1994 **Rand Mine, Kern County.** Preconstruction surveys, reports and monitoring of two mile pipeline through desert tortoise habitat.

1994-95 **Federal Highway Administration, Ft. Irwin Road Expansion, San Bernardino County.** Linear surveys, biological assessment, and draft biological opinion for desert tortoises and sensitive plants on a 2.8 linear mile climbing lane improvement through Pickhandle Pass. Construction monitoring.

1994 **Briggs Mine Project, Inyo County.** Completed desert tortoise survey of portion of mine site and prepared summary report.

1993 **Crude Oil Pipeline Recoat Project, San Bernardino County.** Completion of pipeline preactivity survey for the desert tortoise and other sensitive species. Preparation of associated report.

1993 **Unocal Endangered Species Compliance Training Course.** Preparation of materials and presentation of an endangered species course with Unocal employees in the San Joaquin Valley. Field review to identify species, sign, and to demonstrate survey methods as well.

1993 **Wheaton and Afton Regenerator Facility Survey, San Bernardino County.** Wildlife and sensitive plant survey and report preparation of two AT&T sites in the Mojave Desert.

1993 **Hectorite Mine Tortoise Clearance Survey, San Bernardino County.** Clearance survey of approximately 150-acre mine site in the central Mojave Desert.

1993 **Crude Oil Pipeline Segment Replacement, San Bernardino County.** Endangered species survey for Four Corners Pipe Line Company and report preparation.

1993 **Morongo Canyon Washout Survey, Riverside County.** Endangered species survey of crude oil pipeline washout in the Big Morongo Canyon Area of Critical Environmental Concern. Associated report preparation and development of site protection measures.

1993 **Rand Mine Project Survey, Kern County.** Systematic inventory of 2,000+ acre large-scale gold mine operation for plants and wildlife, emphasizing the desert tortoise and Mohave ground squirrel. Conducted with a crew of 5 biologists. Preparation of biological

assessment and development of associated draft State 2081 and Federal permits

- 1993 **Baltic Mine Project Monitoring, Kern County.** Desert tortoise compliance monitoring during site preparation of large-scale open pit gold mining operations. Completion of associated monitoring report.
- 1993 **Line 90 Road Maintenance Survey, San Bernardino County.** Survey of approximately 45-linear mile road alignment in the central Mojave Desert for desert tortoises and other sensitive species. Associated report preparation.
- 1993 **Four Corners Pipe Line Company (ARCO) Programmatic Permit, State of California.** Preparation of draft biological assessment addressing ongoing maintenance over 3,800 linear miles of crude oil lines encompassing 40% of California. Meetings with agency staffs. Ongoing project.
- 1993 **Northeast Bakersfield Sewer Trunkline, Kern County.** Field surveys of 13.9 mile alignment. Preparation of biological assessment and biological resources chapter for EIR.
- 1993 **Industrial Asphalt Quarry, San Bernardino County.** Desert tortoise surveys and report preparation. Monitoring.
- 1993 **Piute Tribe Project, Clark County, Nevada.** Participation in systematic desert tortoise surveys.
- 1993 **Oak Summit Project, San Bernardino County.** Livetrapping emphasizing the Los Angeles pocket mouse.
- 1993 **M.H. Whittier Lease Survey, Coalinga Oilfield, Fresno County.** Endangered Species survey and report.
- 1992 **Four Corners Pipe Line Maintenance, San Bernardino County.** Completion of preactivity survey of rewrap line segments for the desert tortoise. Preparation of State 2081 and draft Section 7 opinion. Monitor during project. Preparation of post-monitoring report for agencies.
- 1992 **Morongo Valley Pump Station, San Bernardino County.** Sensitive plant/wildlife survey. Preparation of summary report for county review.
- 1992 **Aerial Photoanalysis Monitoring, Fresno County.** Interpretation of pre- and post-construction photos for monitoring program on cogeneration project. Work also included San Joaquin kit fox survey of plant site. Preparation of monitoring report for submittal to agencies by company.

- 1992 **Gold Mining project, Kern County.** Preparation of biological assessment addressing open pit mine expansion in desert tortoise habitat.
- 1992 **Raptor Monitoring, SeaWest Windfarm, Kern County.** Periodic monitoring of large wind turbine project near Mojave, using standardized protocols developed by the California Energy Commission.
- 1992 **Portland Cement Mohave Ground squirrel Habitat Evaluation.** Evaluation of large aggregate mine site near Victorville, using CDFG protocols for habitat evaluation.
- 1992 **Victorville-Bakersfield Fiber-optic Line.** Assisted as project manager with surveys of 145 linear mile line for listed species with crew of 10 biologists. Meetings with agencies. Future preparation of State 2081 permit and Federal draft Section 7 opinion.
- 1992 **Adelanto Subdivision, San Bernardino County.** Desert tortoise/Mohave ground squirrel survey of subdivision.
- 1992 **I-5 Wastewater Treatment Plant, Kern County.** Preparation of state Endangered Species Management Permit.
- 1992 **Kern County Landfills, Kern County.** Assisted as field supervisor in T+E surveys of 15 major County landfill sites for plants and wildlife. Preparation of reports, meetings with agencies and future development of State 2081 and Federal 10(a) permits.
- 1992 **Lockwood Valley Subdivision, Ventura County.** Small mammal livetrapping survey, focusing on the Federal candidate Tehachapi pocket mouse.
- 1992 **Salt River Project, Quemado, New Mexico.** Vegetation transects for mining reclamation project.
- 1992 **California City Mohave Ground Squirrel Habitat Evaluation.** Evaluation using CDFG protocols for Mohave ground squirrel habitat.
- 1992 **Line 63 Relocation, Kern County.** Tehachapi slender salamander survey of proposed crude oil pipeline re-route south of Bakersfield.
- 1992 **Mountain High Water Line, Los Angeles County.** Small mammal livetrapping and plant survey of proposed 8-mile line segment.

- 1992 **Nipton Road Water Line, San Bernardino County.** Desert tortoise survey and monitor during construction.
- 1992 **Apple Valley Landfill, San Bernardino County.** Desert tortoise survey.
- 1992 **Griffin Subdivision, Kern County.** Preparation of draft Section 7 opinion addressing issuance of Section 10(a) permit for project.
- 1992 **Whitewater-Dillon Road Fiber-optic Line, Riverside County.** Sensitive species survey of 25-linear mile line.
- 1992 **PacBell Fiber-optic Line, Kern County.** Sensitive species survey of 2.8 linear mile line.
- 1992 **AT&T Road Maintenance, San Bernardino and Clark Counties.** Survey of 32-linear mile road segment and report preparation.
- 1992 **Ward Valley Cleanup Site, San Bernardino County.** Desert tortoise/sensitive plant survey, with report and employee training.
- 1992 **Barron Mine Project, Kern County.** Supplemental desert tortoise/sensitive plant survey.
- 1991 **Alpine Butte Subdivision, Los Angeles County.** Preparation of biota report for 160-acre subdivision.
- 1991 **Pipeline 63 Re-route, Kern County.** Biota survey and report for pipeline segment in Grapevine Canyon.
- 1991 **Four Corners Pipeline CPU Site Surveys, San Bernardino County.** Desert tortoise surveys for about 6-8 sites along a pipeline corridor in the eastern Mojave Desert.
- 1991 **Delano State Prison, Kern County.** Preparation for a site management and monitoring plan for endangered species.
- 1991 **Keene Ranch Project, Kern County.** Assistance during development of final EIR for project.
- 1991 **Yellow Aster Mine, Kern County.** Field surveys for desert tortoise and several expansion projects. Preparation of 2081 state Endangered Species Management Permit and draft biological opinion.
- 1991 **Mojave River Levee Project, San Bernardino County.** Desert tortoise survey near Barstow.

- 1991 **Lost Hills Wastewater Treatment Plant, Kern County.** Survey for listed wildlife and plant species.
- 1991 **Soda Lake Gold Processing, San Bernardino County.** Preparation of draft biological opinion for project.
- 1991 **Jasmin Development, Kern County.** Sensitive wildlife and plant survey of proposed 1,600-acre housing development near Bakersfield.
- 1991 **Excel Minerals Millsite, Kern County.** Sensitive wildlife and plant survey southwest of Bakersfield.
- 1991 **Van and Stowell Subdivision, Kern County.** Sensitive plant and wildlife survey near Frazier Park.
- 1991 **Coalinga Cogeneration Project, Fresno County.** San Joaquin kit fox survey of staging/laydown area.
- 1991 **M.H.Whittier Star Lease, Fresno County.** San Joaquin kit fox.sensitive plant survey of oilfield expansion project.
- 1991 **AT&T Repeater Hut Station, San Bernardino County.** Desert tortoise survey of 19 comm sites in the central Mojave Desert.
- 1991 **McGinnis Creek Timber Project, Humboldt County.** Survey for sensitive amphibians within 700-acre proposed timber harvest area.
- 1991 **Jess Ranch, San Bernardino County.** Habitat evaluation for the Mohave ground squirrel.
- 1991 **Texaco Landfill Cleanup, Kern County.** Endangered species survey of four separate landfill sites in the southwestern San Joaquin Valley.
- 1991 **SeaWest Wind Farm, Kern County.** Part of team undertaking raptor monitoring study of 300 turbines.
- 1991 **Kern River Pipeline, San Bernardino County.** Tortoise monitor during major natural gas pipeline construction project.
- 1991 **Granite Construction Company Quarry Site, Los Angeles County.** Wildlife and plant survey.
- 1991 **Whittier Station 18, Los Angeles County.** Sensitive plant and wildlife survey for the Southern California Gas Company.

- 1991 **Mtn High Ski Resort Pipeline, Los Angeles County.** Wildlife and plant survey and report.
- 1991 **Los Angeles Cellular Phone Comm Site, Riverside County.** Wildlife and plant survey and report.
- 1991 **Mid-set Cogeneration Pipeline, Kern County.** Survey form the San Joaquin kit fox, giant kangaroo rat and San Joaquin antelope squirrel.
- 1991 **Zion Lutheran Church Site, San Bernardino County.** Desert tortoise survey and report.
- 1991 **Open Pit Mine, Kern County.** Desert tortoise survey near Randsburg, with report.
- 1991 **Mine Ore Processing Site, Kern County.** Desert tortoise survey and relocation near Randsburg, with report.
- 1991 **PacTel Comm Sites, San Bernardino County.** Wildlife and plant surveys of 13 separate comm sites, with report.
- 1991 **Adair Engineering Project, Kern County.** San Joaquin kit fox and Tipton kangaroo rat study.
- 1991 **Mountain Mesa Kissach Property, Kern County.** General wildlife survey.
- 1991 **Line 90 Pipeline Project, San Bernardino County.** Desert tortoise surveys of two pipeline segments. Preparation of draft biological opinion and State 2081 permit for project.
- 1991 **Industrial Asphalt Project, San Bernardino County.** Desert tortoise survey.
- 1991 **South Needles Treatment Ponds, San Bernardino County.** Desert tortoise survey for the Southern California Gas Company.
- 1991 **Irvine Ranch, Orange County.** Survey of about 50,000 acres for sensitive wildlife species, emphasizing the orange-throated whiptail and San Diego horned lizard.
- 1991 **Mountain Investment Company Purchase, San Bernardino County.** Desert tortoise survey.
- 1990 **Fort Cady Mines, San Bernardino County.** Linear surveys for the desert tortoise and rare plants.
- 1990 **NL Hector Mines, San Bernardino County.** Linear transect surveys for desert tortoises and rare plants.

- 1990 **City of Barstow Landfill, San Bernardino County.** Linear transects for the desert tortoise.
- 1990 **Victorville Landfill, San Bernardino County.** Desert tortoise survey.
- 1990 **City of Lenwood Landfill, San Bernardino County.** Desert tortoise survey
- 1990 **Sitting Bull Developments, San Bernardino County.** Desert tortoise survey.
- 1990 **SeaWest Wind Energy Project, Kern County.** Project manager of team of biologists conducting survey of 1,500+ acre wind farm. Included small mammal livetrapping.
- 1990 **PG&E Line 300 Reinforcement, Barstow, California**  
Tortoise survey of pipeline right-of-way
- 1990 **PG&E Line 300 Reinforcement, Bakersfield, California**  
San Joaquin kit fox and blunt-nosed leopard lizard  
survey of pipeline right-of-way segment
- 1990 **DaCin Development, Beaumont, California**  
Sensitive species survey and mitigation plan for  
proposed 450-acre land sale.
- 1990 **Lake Success Reservoir Enhancement, Tulare County**  
Survey for San Joaquin kit fox and other listed  
species at reservoir site and associated Water  
District lands.
- 1990 **Lake Kaweah Reservoir Enhancement, Tulare County**  
Survey for San Joaquin kit fox, blunt-nosed leopard  
lizard, and other listed species at reservoir site  
and associated Water District lands.
- 1990 **Carl Jones Construction Company, Apple Valley, CA**  
Development of a Habitat Conservation Plan for a  
permit from the U.S. Fish and Wildlife Service to  
allow development on tortoise habitat.
- 1990 **Salinas River Cogeneration Project, Monterey County**  
Endangered species survey of plant site and  
adjacent steam field service area.

- 1990 **Sargent Canyon Cogeneration Project**, Monterey County  
Endangered species survey of plant site and adjacent steam field service area.
- 1990 **SoCal Gas 235 Pipeline Project**, Victorville, California  
Mohave ground squirrel records search of proposed pipeline corridor, extending from Newberry to Silver Lakes area.
- 1990 **Texaco Refinery Sumps Cleanup**, Bakersfield, California  
Survey of section of refinery for San Joaquin kit fox and other listed species.
- 1990 **Rancho Clarita Development**, Ventura County, California  
Wildlife survey of proposed development north of Los Angeles
- 1990 **McMillan Canyon Road Realignment**, San Luis Obispo County  
Endangered species survey of proposed highway realignment near the community of Shandon.
- 1990 **Gartner Subdivision**, Bakersfield, California  
Endangered species survey of proposed commercial subdivision in north Bakersfield area.
- 1990 **Shandon Properties**, San Luis Obispo County, California  
Endangered species survey of three parcels proposed for subdivision.
- 1990 **DeGennaro Development**, Riverside, California  
Preparation of Streambed Alteration Agreement for proposed development in Riverside affecting riparian stream.
- 1990 **Coalinga Cogeneration Project**, Fresno County, California  
Endangered species surveys and preparation of both State and Federal permits allowing for future development in endangered species habitat.
- 1990 **Rubidoux Sports Complex**, Riverside County, California  
Wildlife and plant surveys and preparation of Streambed Alteration Agreement for proposed sports development.
- 1990 **George Dube Subdivision**, Phelan, California  
Desert tortoise survey.

- 1990 **Woodridge Development**, Kern County, California  
Wildlife and plant survey of proposed 2,000-unit subdivision.
- 1990 **Silver Lakes Development**, San Bernardino County  
Desert tortoise survey.
- 1990 **Cushenberry Grade Sand and Gravel Quarry**, Lucerne Valley, California. Desert tortoise survey.
- 1990 **Excel Mineral Minesite and Millsite**, Kern County, California. Survey for San Joaquin kit foxes and other listed species.
- 1990 **Unocal Cleanup-Section 32G**, Kern County, California  
Endangered species survey, including San Joaquin kit fox, blunt-nosed leopard lizard, and giant kangaroo rat.
- 1990 **Apple Valley Subdivision**, Apple Valley, California  
Desert tortoise survey
- 1990 **Ridgecrest Golf Course**, Ridgecrest, California  
Preparation of a Habitat Conservation Plan and related documents for the City addressing future development in desert tortoise habitat.
- 1990 **Buttonwillow Race Circuit Course**, Kern County, California  
Surveys for Tipton kangaroo rats and other endangered species.
- 1989 **Chevron Industrial Complex**, Bakersfield, California  
San Joaquin kit fox survey.
- 1989 **China Grade Landfill**, Bakersfield, California  
Endangered species survey of proposed expansion of City landfill.
- 1989 **Triam Development**, Tehachapi, California. Wildlife and plant survey, focusing on sensitive species.
- 1989 **Salcido Construction Company Subdivision**, Tehachapi, California. Wildlife and plant survey, focusing on sensitive species.
- 1989 **Unocal Cleanup, NPR-2**, Kern County, California  
Endangered species survey for San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope squirrel, and giant kangaroo rat.

# Daryl Trumbo

## Wildlife Biologist

### Professional summary

Mr. Trumbo has 6 years of experience in environmental management, terrestrial ecology, marine ecology, and conservation biology in southern California, Baja California, and Costa Rica. He has been involved in all aspects of environmental review, ecological investigation of plants and animals, permitting, habitat evaluations, and resource agency coordination. Mr. Trumbo has experience working with a wide range of local laws including National Environmental Policy Act, California Environmental Quality Act, State and Federal Endangered Species Acts, Natural Community Conservation Planning Act, and California Coastal Act. He has been responsible for designing and implementing studies, collecting and analyzing data, and working with clients to achieve compliance goals. Mr. Trumbo has participated in and conducted research in wildlife movement, wildlife home range analysis, large and small scale habitat mapping, endangered/threatened wildlife species surveys, behavioral biology, spatial distribution of wildlife, and marine ecology.

### Education

BS, Biology, San Diego State University, San Diego, CA, 2003

### Additional training

Vegetation Rapid Assessment Protocol, California Native Plant Society, 2006

Phylogenetic Inference and Systematic Biology, San Diego State University Graduate Lab Course, 2005

Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council, 2005

International Conference on Ecology and Transportation, 2005

California Anostracan and Notostracan (Fairy Shrimp) Identification Class with Mary Schug Belk, 2005

Biology of the Rattlesnakes Symposium, 2005

San Diego County Sensitive Butterfly Workshop, 2004

Basic Wetland Delineation, Wetland Training Institute, 2004

Para-botanist Training, San Diego Natural History Museum, 2004

CEQA Workshop, Association of Environmental Professionals, 2004

Multiple Species Conservation Program Document Review and Preparation, County of San Diego, 2003.

Plants of San Diego County, San Diego Natural History Museum, 2003

Habitat Loss Permits, County of San Diego, 2003

## Daryl Trumbo

Invasive Plants School, County of San Diego, 2002

Natural Resource Laws and Regulations, UC San Diego Extension, 2002

### Memberships

World Wildlife Fund

Sierra Club

Natural Resources Defense Council

### Location

San Diego, California

### Languages

English (native)

Spanish (professional working proficiency)

### Summary of core skills

Mr. Trumbo has been the project manager for various environmental projects involving biological resource impacts, studies, and permits. He is currently a wildlife biologist for AMEC Earth & Environmental where he is primarily involved in sensitive and non-sensitive wildlife species surveys, reserve management, and habitat mapping/evaluations; but he also participates in other biological resource management duties such as restoration site management and monitoring, permitting, and sensitive plant surveys. Mr. Trumbo has also served as staff biologist in an environmental management office where his duties included giving biological guidance to environmental managers, administrators, and engineers; assessing biological impacts for construction projects; managing and participating in ecological studies on biological resources; coordinating with government resource agencies and non-profit organizations; and finding and assessing biological mitigation land. He has experience writing environmental documents consistent with the California Environmental Quality Act, the National Environmental Policy Act, the Federal and State Endangered Species Acts, and the San Diego Multiple Species Conservation Program. He has created presentations and led meetings with scientists, engineers, regulators, public administrators, and the general public.

Mr. Trumbo has also had experience in all aspects of ecological investigations research. He has designed ecological investigations on terrestrial and littoral zone wildlife species; collected many kinds of field data; field mapped and evaluated southern California habitats and plant communities; tracked wildlife by radio transmitter, tracks, and scat; conducted statistical analyses to test ecological hypotheses; written scientific reports detailing the results and implications of his studies; and presented his findings to public and scientific audiences.

### Areas of expertise

- Mammalogy
- Herpetology
- Invertebrate biology
- Wetland delineation
- Biological monitoring
- Ornithology
- Preparation of Biological Assessments
- Natural resources management plans
- Botanical surveys
- Geographic Information Systems (GIS)
- Research on natural resources-related topics

### Details by project

**Proposition 13, Dominguez Channel Hydrodynamic Modeling, Port of Los Angeles, Los Angeles, CA.** (2007, \$180,400, 4151001010) Part of AMEC team assisting the Port of Los Angeles with management of a State Water Resources Control Board (SWRCB)-funded Proposition 13 project. The Port was awarded \$1.2 million to complete a hydrodynamic and water quality study of the Dominguez Channel, an impaired water body on the 303(d) list. The model will be used to describe the transport of stormwater runoff and dry and wet weather waters through the channel and into the Los Angeles Harbor. The model will eventually be used to help develop TMDLs for the Dominguez Watershed and other local surrounding areas. AMEC also supported the Port in writing the QAPP that in turn was reviewed by the Los Angeles Regional Water Quality Control Board (RWQCB) and State

## Daryl Trumbo

Water Resources Control Board (SWRCB). AMEC is also participating in the water quality data collection, the Scientific Review Board (a select group of experts in the hydrodynamic modeling field who review the proposed study methods and model selection), as well as assisting the Port with all required reports to RWQCB and SWRCB.

**Exotic Weed Control Program, Marine Corps Base Camp Pendleton, CA.** (\$1,200,000, 2007, 32106090A) Biologist. Project objective is to organize all historical exotic weed treatment data collected on the Base since 1996 and creation of a spatially organized geodatabase that organized all data collected on the Base since 1996. Primary target weeds included *Arundo donax* and *Tamarix* spp. Edited annual report outlining and documenting all historical weed treatment data pertaining to many mitigation areas and conservation banks and results of these treatments as they related to regulatory permits obtained from the U.S. Army Corps of Engineers so that MCB could track their permit requirements by acreage treated over extended periods of time.

**Habitat Restoration, Petroleum Pipeline Construction Project, Kinder Morgan Energy Partners, L.P., Marine Corps Base Camp Pendleton, CA.** (Ongoing, \$1,985,510) Biologist for 26-mile pipeline restoration project. Habitats restored include coastal sage scrub, wetland, riparian scrub, riparian woodland, freshwater seep, oak woodland, sycamore grassland, native grassland, and thread-leaved brodiaea transplantation monitoring.

**Bullfrog Control Program, Kinder Morgan Energy Partners, L.P., MCB Camp Pendleton, CA.** (Ongoing, \$33,000) Assisted with development of program and fieldwork for control of bullfrogs in San Mateo Creek at Marine Corps Base Camp Pendleton for mitigation of impacts to the southwestern arroyo toad during construction of a pipeline. Sensitive species located during control program included southwestern arroyo toad, southwestern pond turtle, and California newt.

**INS Border Infrastructure Project, Specialty Biological Services, U.S./Mexico Border, CA.** (Ongoing, \$227,000, 322500006, 322500008) As part of the overall mitigation for project impacts related to proposed fencing, roads, lighting and other infrastructure, AMEC is planning and implementing wetland creation, restoration, and enhancement of over 5 acres of riparian wetlands in Spring Canyon. AMEC developed and successfully obtained agency approval of a detailed wetland mitigation plan for the project. Implementation of the mitigation program will begin in the fall of 2006. AMEC will oversee the landscape contractors during construction and installation of the wetland mitigation areas and is responsible for the 5-year monitoring of the site to ensure success of the mitigation.

**Water Quality Monitoring NPDES Permit Monitoring for University of California at San Diego, Scripps Institution of Oceanography, San Diego, CA.** (\$1,500,000, 01/2006 – 01/2011, 6151000200) Biologist for UCSD/SIO NPDES discharge monitoring program. As part of the AMEC team, Mr. Trumbo periodically collects and analyzes water and sediment samples from various oceanside and underwater locations where return seawater from numerous aquariums and stormwater are discharged. In addition, AMEC scientists are helping SIO conduct special studies to understand any potential impacts to the ecosystem within the ASBS.

**Biological Resources Constraints Report for the Proposed Discovery Lake Sediment Dredging Project, Moffat & Nichol, San Marcos, CA.** (2006, \$36,648) Developed a biological report for the client that involved an overview of local, state, and federal jurisdiction constraints of a proposed dredging project on species and habitats on-site. Additionally, performed a database search for potential sensitive species, gathered and organized relevant information relating to potential impacts and mitigation methods that the client could use to minimize these potential impacts. Aided in the mapping of various habitats on-site, and incorporated information regarding the need for future surveys.

**Chappo Post Fire Weed Management Project, MCB Camp Pendleton Environmental Security, Land Management Branch, Camp Pendleton, CA.** (2006; \$797,176, 321060094) Biologist as part of team responsible for monitoring the species diversity and vegetative cover of plants throughout a weed dominated post-fire landscape (137 acre site), and incorporating this information, directing the contractor to focus various weed management strategies where most appropriate. Other objectives include monitoring native plant recovery and tracking costs to determine efficient management

## Daryl Trumbo

techniques, qualitatively mapping exotic weed communities, quantitatively monitoring vegetation comeback, adding native seed to a major section of the site, assessing the costs and benefits associated with treatment activities, monthly progress reporting and annual reporting.

### **Biological and Botanical Resources Assessments, Southern California Edison, Riverside County, CA.** (12/2006, \$59,000, 6151000801)

Biologist for biological and botanical resources assessments for the proposed Valley-Ivyglen Transmission Line and Fogerty Substation. Documented the biological resources associated with construction of a new 115kV transmission line designed to improve reliability and meet projected electrical load requirements. Conducted biological habitat assessment surveys for sensitive plant species within 11 potential land parcels which will provide an overview of existing and potential sensitive plant resources within the project area, evaluate consistency with the MSHCP, and determine what focused sensitive species surveys or wetland/jurisdictional waters delineation may be necessary for further project review.

### **Frontier Homes Tract 17529 Wetland Permitting, Frontier Homebuilders, Inc., Hesperia, CA.**

(11/2006, \$41,452, 5554000211) Prepared applications to obtain a Section 404 Nationwide Permit from the U.S. Army Corps of Engineers, a Section 401 Water Quality Certification from the Regional Water Quality Control Board, and a Section 1600 Streambed Alteration Agreement from the California Department of Fish and Game. Conducted pre-application meeting with client, project engineer, and resource agencies to discuss potential project impacts and mitigation.

### **Mountain Vista Biological Studies, Desert Tortoise Surveys, Terra Nova Planning and Research, Yucca Valley, CA.**

(2005, \$21,000) Assisted in U.S. Fish and Wildlife Service protocol surveys for federally threatened desert tortoise on 500 acre site in Yucca Valley. Observed live adult desert tortoise, active desert tortoise burrows, scat, and desert tortoise shell remains.

### **Before-After-Control-Impact Wildlife Movement Study, Wildcat Canyon Road Enhancement Project, County of San Diego, Dept. of Public Works, CA.**

(09/2004, \$300,000; Construction: 2006 [estimated]) Project manager overseeing implementation of one year of pre-construction surveys for wildlife movement baseline data to determine the optimal locations for wildlife crossings and determine impacts to wildlife movement from a one mile passing lane. Study methodology included gypsum tracking stations, wildlife sign transects, camera stations, road-kill transects, and monthly reports for the Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Game). Responsible for all contact and coordination with the agencies.

### **Vernal Pool and Rare and Endangered Species Surveys, San Diego Air Force Station, San Diego County, CA.**

(2006, \$148,730; Construction: 2006) Wildlife biologist for services including conducting a California gnatcatcher habitat assessment, vernal pool and Quino checkerspot butterfly surveys.

### **Assessment of Vernal Pools and Vegetation Communities on the McClellan-Palomar Airport Properties, County of San Diego, Carlsbad, California.**

(2005, \$17,000) Surveyed 16 vernal pools for vernal pool indicator plants, mapped all upland and wetland vegetation communities, and recorded incidental wildlife species sightings on preserve lands under the San Diego County Multiple Species Conservation Program.

### **Biological Technical Report, Proposed San Elijo Lagoon Visitor Center Improvements Project, County of San Diego.**

(2005, \$12,000) Staff wildlife biologist involved in the data collection and preparation of a biological technical report to analyze and assess potential biological impacts for a County of San Diego project within a plant and wildlife preserve under the San Diego County Multiple Species Conservation Program. Key staff member in field mapping the habitats onsite, surveying the site for birds and other wildlife species, researching the applicable regulatory plans and requirements for this multi-jurisdictional area, compiling the data, and writing the report.

### **Upland and Riparian Vegetation Community Mapping, U.S. Marine Corps Base at Camp**

**Pendleton.** (Ongoing, \$186,000) One of the primary biologists involved in large-scale field mapping, classification, and change analysis of all upland and riparian vegetation communities on the 250 square mile MCB Camp Pendleton. Duties performed included coordinating with the base resource managers; field mapping of vegetation communities, including photo interpretation; preparation and coordination of data for entry into a GIS database; 5-year vegetation change analysis; and report

## Daryl Trumbo

preparation. Data from this project will be incorporated as a GIS base layer at Camp Pendleton. Mapping requirements included a minimum mapping unit of one acre for upland areas and one quarter acre for riparian areas, and a mapping accuracy of 95 percent.

**Otay Water District Recycled Water Pipeline, Reservoir, and Pump Station Project, Lee & Ro, Inc., Chula Vista, CA.** (Ongoing, \$30,000,000; Construction: 09/2005) Linear construction project within County of San Diego, City of San Diego, and City of Chula Vista jurisdictions. Natural resource specialist responsible for preparing documentation to obtain a Section 404 Corps' Nationwide Permit, a Section 401 water quality certification, and a Section 1600 streambed alteration agreement for the project. In addition, performed a pre-construction burrowing owl habitat and presence/absence assessment within the project area and adjacent habitat. The burrowing owl assessment consisted of one habitat assessment survey and three presence/absence surveys according to survey protocol proposed by the Santa Cruz Predatory Bird Research Group. Wrote a report detailing the findings of the surveys that was submitted to the wildlife agencies.

**San Miguel Habitat Management Area and Otay Interconnect Pipeline, Otay Water District, Chula Vista, CA.** (2005, \$610,000) Wildlife specialist for services including management of preserve and conducting protocol surveys for Quino checkerspot butterfly, California gnatcatcher, and sensitive plants; monitoring of burrowing owl artificial burrow mitigation program, least Bell's vireo surveys, and invasive nonnative weed control program. Project included the design, implementation, monitoring, and maintenance of a 14-acre native grassland restoration and wetland/riparian restoration. Evaluated success of two restoration projects onsite, including horticultural (qualitative) and botanical (quantitative) monitoring methods.

Assisted in managing all aspects of the San Miguel Habitat Management Area, a dedicated biological reserve acquired by the Otay Water District for use as a mitigation bank for impacts associated with proposed District projects. Conducted monthly surveys to assess overall Reserve status. Evaluated success of two restoration projects onsite, including horticultural (qualitative) and botanical (quantitative) monitoring methods. Conducted protocol surveys for federally listed sensitive species Quino checkerspot butterfly, coastal California gnatcatcher, and least Bell's vireo. Conducted presence/absence surveys for burrowing owls within occupied habitat that contains artificial burrowing owl burrows. Made recommendations and coordinate with the landscape contractor to maintain and improve the habitat and artificial burrows for burrowing owl use. Assisted with rare plant surveys. Provided direction for landscape maintenance contractor to control nonnative weeds and improve habitats onsite. Prepared monthly status reports. Prepared annual reports for the Reserve, the burrowing owl habitat, the native grassland restoration area, and the Rickey Pond restoration area. Prepared 45-day reports for submittal to the U.S. Fish and Wildlife Service for Quino checkerspot butterfly, coastal California gnatcatcher, and least Bell's vireo.

**Cannon Road Extension Project Wetland Mitigation for Reach 1, City of Carlsbad, CA.** (2000, \$188,000) Evaluated present conditions of restoration project for temporary impacts associated with the construction of Macario Bridge in the city of Carlsbad. Monitor success of mitigation site, including horticultural (qualitative) and botanical (quantitative) parameters. Provided direction for landscape maintenance contractor. Generate monthly status reports. Generated annual reports.

**Cocklebur Vernal Pool Conservation and Restoration Plan, MCB Camp Pendleton, CA.** (Ongoing, \$160,000) Assisted in the development of a conservation plan for approximately 145 vernal pools associated with the Cocklebur Mesa Sensitive Area. Involved in habitat mapping, assessing vernal pool and upland resources, and developing a management plan that provides direction for short and long-term goals that will increase the value of the vernal pool habitat. Preliminary biological fieldwork included upland and vernal pool habitat mapping and vernal pool sensitive plant survey.

**Jurisdictional Waters and Wetland Delineation Report for the Landscape by Hiro, Inc. Site, Southern California Edison, County of Orange, Huntington Beach, CA.** (Ongoing, \$15,000) Participated in writing the Jurisdictional Waters and Wetland Delineation Report for a jurisdictional wetland delineation. Duties included researching pertinent regulations, historical research for the site, and a WETS analysis to quantitatively determine whether it was a wetter than normal rainy season.

## Daryl Trumbo

### Past professional experience

#### **Before-After-Control-Impact Wildlife Movement Study for the Wildcat Canyon Road Enhancement Project, County of San Diego, Department of Public Works, San Diego, CA.**

(Ongoing, \$210,000; Construction: 2005, \$15,000,000) Project manager overseeing implementation of one year of pre-construction surveys for wildlife movement baseline data to determine the optimal locations for wildlife crossings and determine impacts to wildlife movement from a one-mile passing lane. Study methodology included gypsum tracking stations, wildlife sign transects, camera stations, road-kill transects, and monthly reports for the Wildlife Agencies (U.S. Fish and Wildlife Service and California Department of Fish and Game). Responsible for all contact and coordination with the Wildlife Agencies.

**Opportunities and Constraints Report for the Sunnyside Equestrian Bridge, County of San Diego, Department of Parks and Recreation, San Diego, CA.** (2003, \$6,000; Construction: 2003, \$60,000) Performed initial study for equestrian bridge over the Sweetwater River and connecting trail, including identification and evaluation of habitats near the bridge site, potential for sensitive plant and wildlife species on-site, and recommendations for location of bridge and construction staging areas. Also recommended type of environmental documentation, permits, and mitigation necessary. Prepared report detailing the results.

**Wetland Permits for the Wildcat Canyon Road Enhancement Project, County of San Diego, Department of Public Works, San Diego CA.** (2004, \$50,000; Construction: 2005, \$15,000,000) Compiled all wetland impact information and completed permit applications for a Section 404, Nationwide Permit 14 from the U.S. Army Corps of Engineers, a 1601 Streambed Alteration Agreement from the California Department of Fish and Game, and a Section 401 Water Quality Certification from the Regional Water Quality Control Board. Managed and participated in a wetland mitigation site search and preparing Findings of Conformance with the Multiple Species Conservation Program. Identified and secured suitable wetland mitigation property and successfully negotiated and received all permits from the Resource Agencies. Responsible for all contact and coordination with the Resource Agencies during the permit acquisition process.

**Burrowing Owl Habitat Survey on the McClellan-Palomar Airport Property, County of San Diego, Department of Public Works, Carlsbad, CA.** (2003, \$4,000) Participated in a survey for burrowing owls, including potential burrows and sign, in conjunction with County of San Diego staff working on the San Diego Multiple Species Conservation Program. An approximately 210 acre parcel owned by the County of San Diego was surveyed visually for potential burrowing owl habitat, including focused transects within approximately 20 acres of potential burrowing owl habitat for sign of burrowing owl occupation. Reviewed and commented on letter report to the County of San Diego detailing the results of the survey.

**Olive Ridley Sea Turtle (*Lepidochelys olivacea*) Conservation Project, Asociacion Sudcaliforniana de Proteccion al Medio Ambiente y a la Tortuga Marina (ASUPMATOMA), Cabo San Lucas, BCS, Mexico.** (2002) Served as staff biologist, camp manager, Master's research assistant, and tour guide at a sea turtle research and conservation camp at Rancho Punta San Cristobal, near Cabo San Lucas. Collected and compiled nesting turtle field data for Master's student and Mexican government pursuant to Mexican permits for endangered species research. This data included nesting turtle weight and length, tagging nesting turtles, recording number of eggs, size of eggs, hatch success, and size of hatchlings. Prepared and gave presentations for public and scientific audiences. Responsible for coordination with other Mexican and American biologists.

### Past scholastic experience

**Behavioral Biology Research Practicum on Leaf-cutter Ants (*Atta cephalotes*), UC San Diego, Costa Rica.** (2001) Designed, collected all field data, statistically analyzed data, and reported on a behavioral study on relationship of trail clearing behavior to individual ant size for three colonies of leaf-cutter ants. Presented findings to a scientific audience.

**Home Range Analysis of the Red Diamond Rattlesnake (*Crotalus ruber*) within Variably Sized Habitat Patches, in San Diego County, UC San Diego, CA.** (2000) Tracked rattlesnakes by radio transmitter, collected spatial GIS data, collected individual measurement data (weight, length),

## Daryl Trumbo

collected blood samples, entered GIS data, and assisted in surgery to implant radio transmitters. Designed, collected field data, statistically analyzed data, and reported on an independent study on winter den characteristics of red diamond rattlesnake and the implications for conservation.

**Investigation of Niche Patterns in a Desert Lizard Community, U.C. San Diego, Anza Borrego Desert State Park, CA.** (2000) Performed transect sampling of desert lizard density, identified species, and characterized microhabitats. Analyzed diversity, niche widths, and niche overlaps using descriptive statistics. Used results to examine diversity patterns according to classical competition theory, as well as temporal trends in desert lizard abundance.

**Ecological Investigation of Spatial Patterns of Adult California Sea Hares (*Aplysia californica*) within Interconnected Tide Pools near Scripps Research Institute, UC San Diego San Diego, CA.** (2000) Designed, collected, and statistically analyzed field data, and reported on an ecological study of a population of sea hares to determine if the adults exhibit any spatial patterns and, if so, the reasons for the patterns (i.e., resource competition, mating behavior, predator avoidance, etc.).

**Population Size and Age Distribution Investigation of Blue-clawed Hermit Crabs (*Pagurus samuelis*) using Mark-Release-Recapture Techniques within Interconnected Tide Pools near Scripps Research Institute, UC San Diego San Diego, CA.** (2000) Performed stratified random sampling and used three different mark-release-recapture techniques (Lincoln-Petersen index, Schnabel method, and Bailey triple-catch method) to monitor a population of blue-clawed hermit crabs in the rocky intertidal zone. Analyzed population size, age distribution, and estimated survivorship.

### Employment history

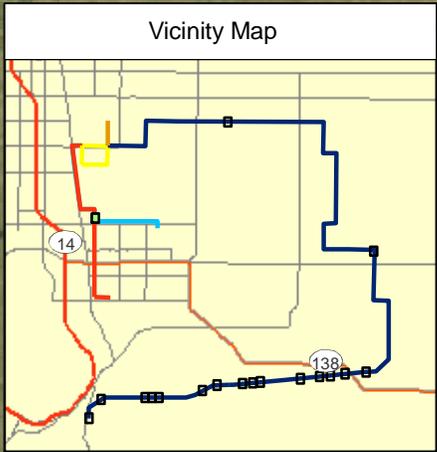
2004 - Present	Wildlife Biologist, AMEC Earth & Environmental, Inc.
2002 - 2004	Environmental Management Specialist/Staff Biologist, County of San Diego, Department of Public Works
2002	Tram Operator/Guide, San Diego Wild Animal Park
2001 - 2002	Staff Biologist, Non-profit Sea Turtle Research & Conservation Organization (ASUPMATOMA, Cabo San Lucas, BCS, Mexico)
2000	Research Assistant, U.C. San Diego, Dr. Ted Case's Laboratory, Jeff Tracey's Master's research on home range analysis of the red diamond rattlesnake ( <i>Crotalus ruber</i> )

### Presentations/publications

Trumbo, D. 2002. Presentation of 2001 Nesting Season Results of the Olive Ridley Sea Turtle (*Lepidochelys olivacea*) on Two Beaches in Cabo San Lucas, BCS, Mexico. Annual Sea Turtle Symposium, Loreto, BCS, Mexico.

Trumbo, D. 2003. Professional Biology Jobs, San Pasqual High School Career Day.

# Attachment BIO-5



Reclaimed Water Pipeline will be Bored and Jacked Under Drainage

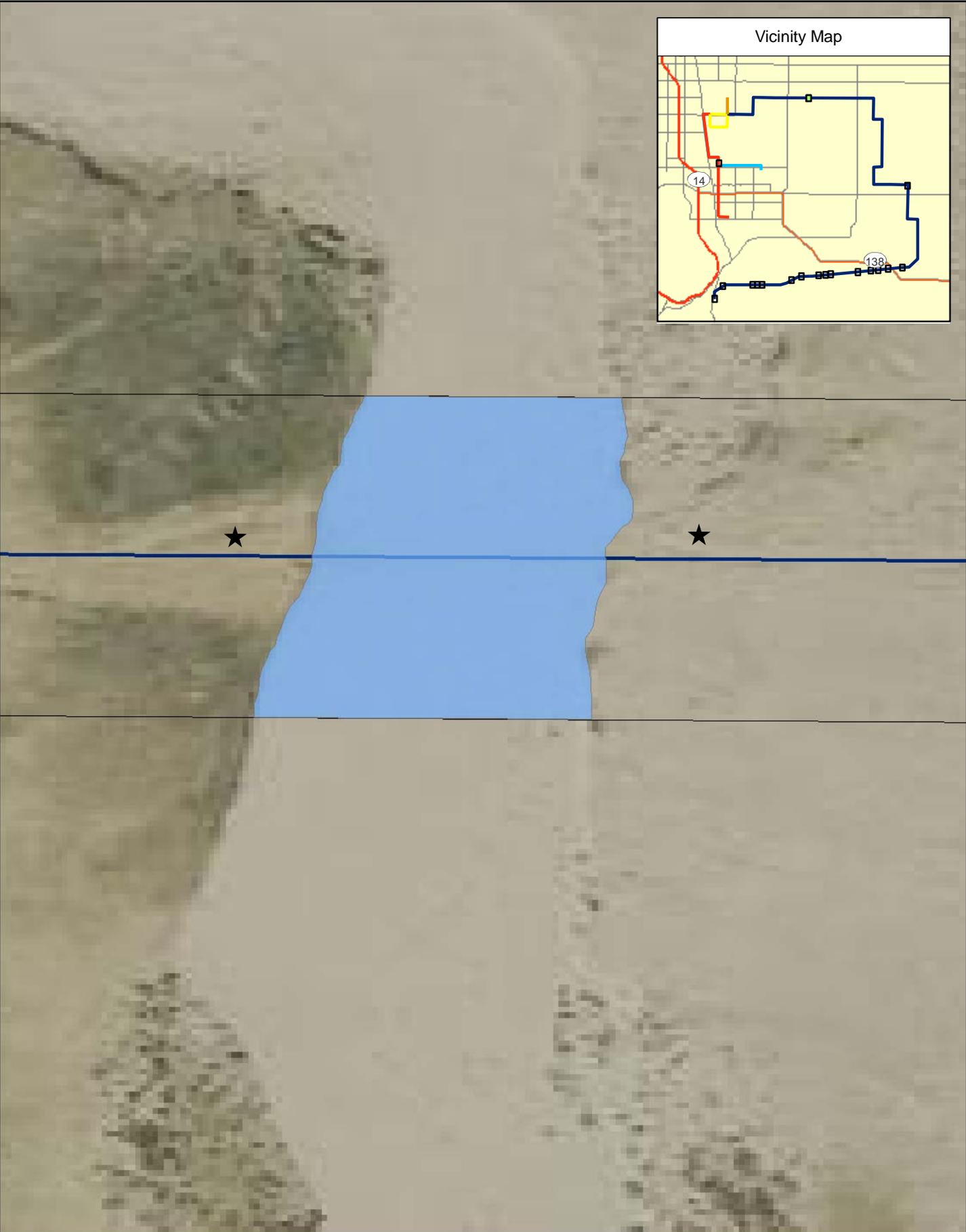
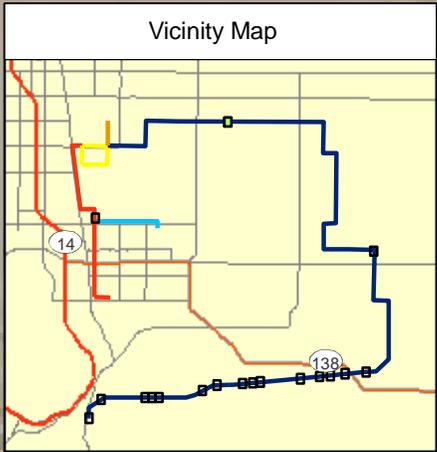
- Legend**
- Transmission Line
  - Reclaimed Water Pipeline
  - Natural Gas Supply Pipeline
  - Power Plant Site
  - Sanitary Wastewater Pipeline
  - ★ Transmission Tower
  - Waters of the State of California
  - Waters of the State & Waters of the U.S. (California Aqueduct)
  - 250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 1



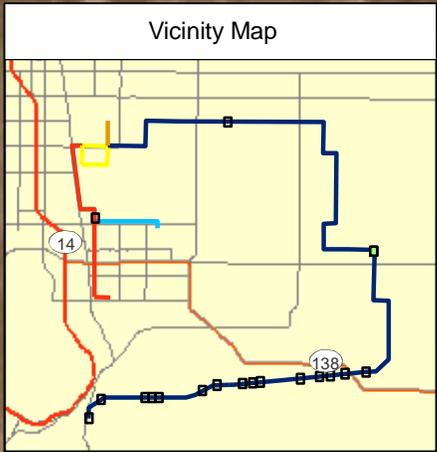
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 2



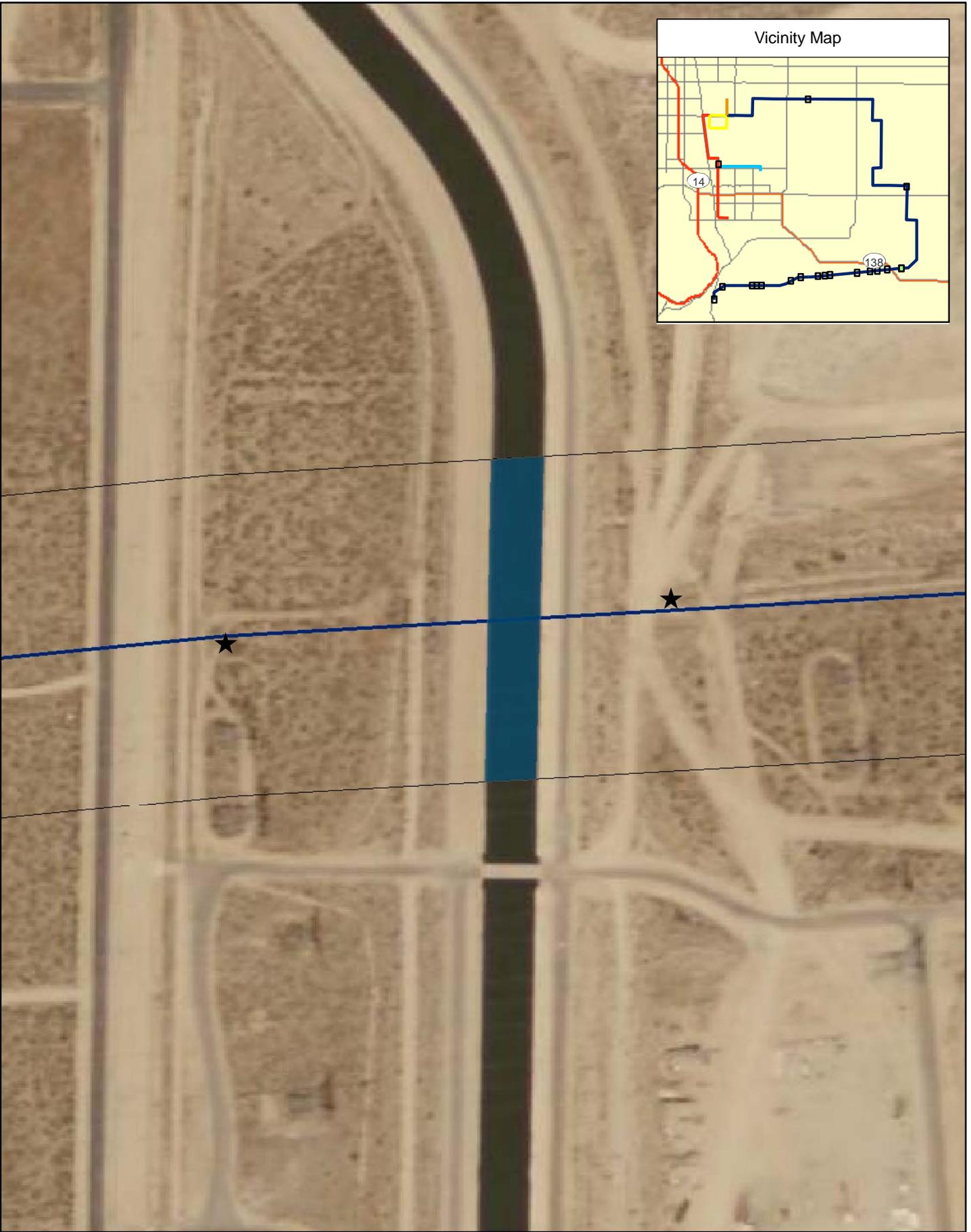
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 3



Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

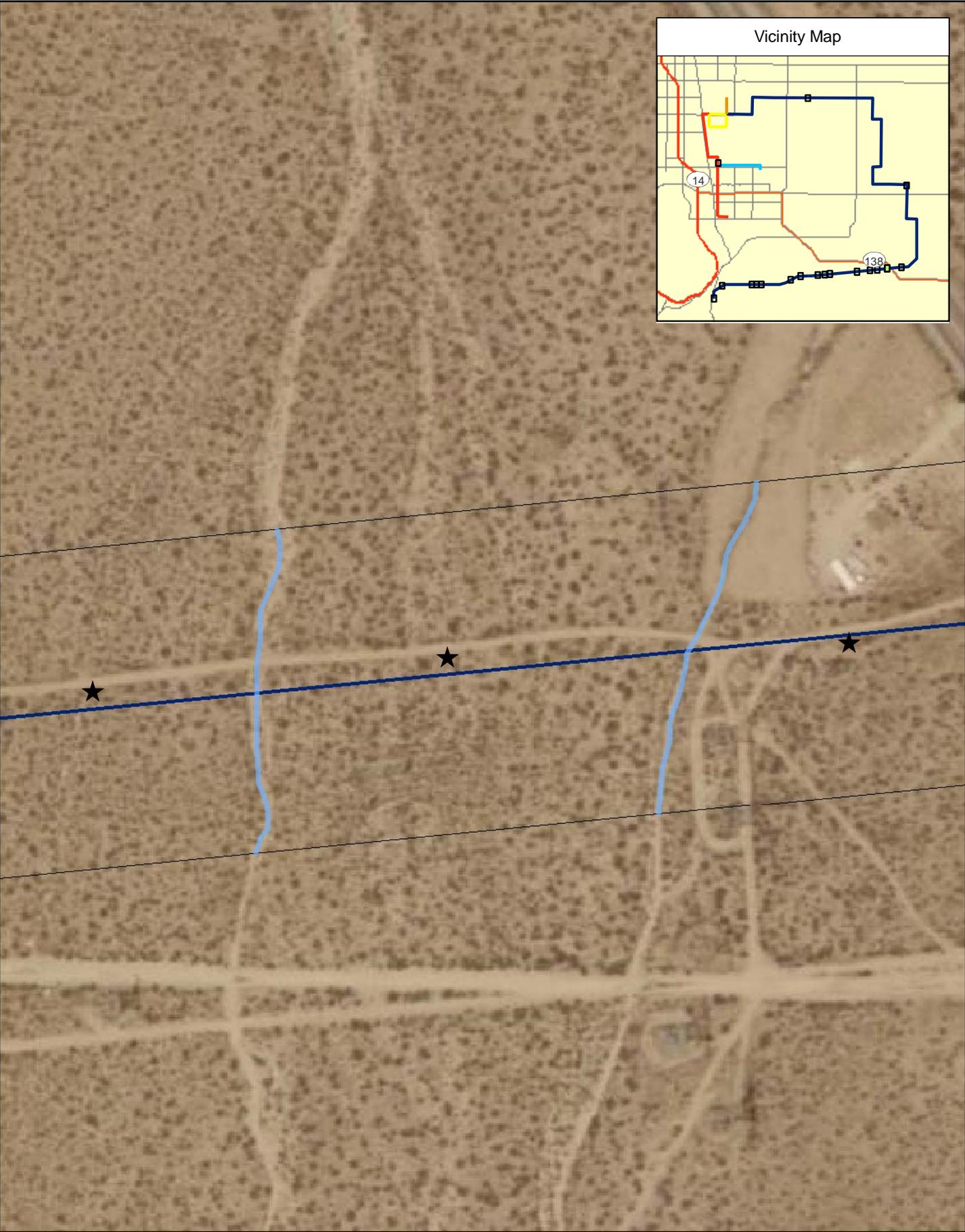
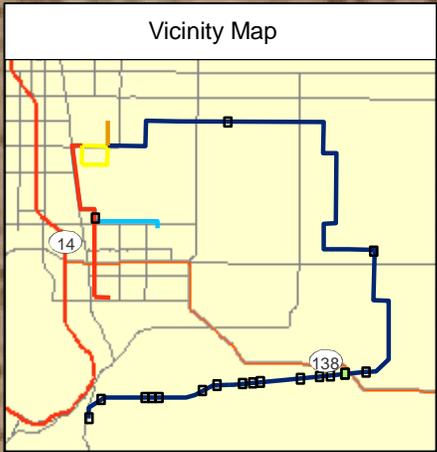
**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 4





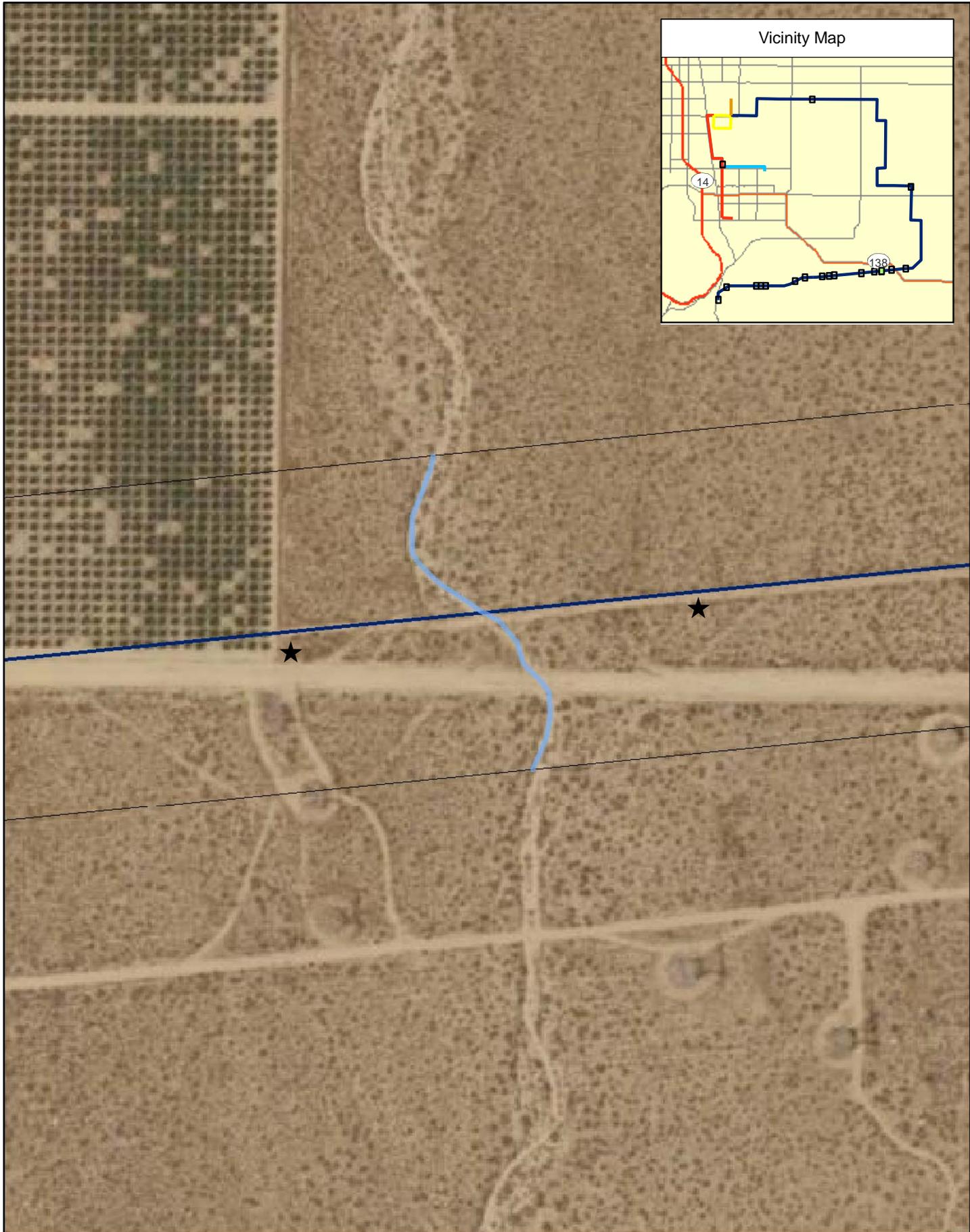
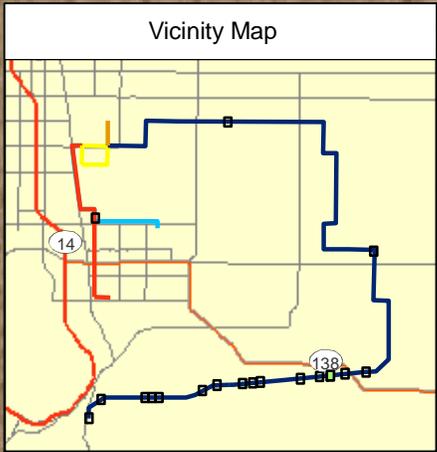
Legend	
Transmission Line	Transmission Tower
Reclaimed Water Pipeline	Waters of the State of California
Natural Gas Supply Pipeline	Waters of the State & Waters of the U.S. (California Aqueduct)
Power Plant Site	250 Foot Buffer
Sanitary Wastewater Pipeline	

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 5



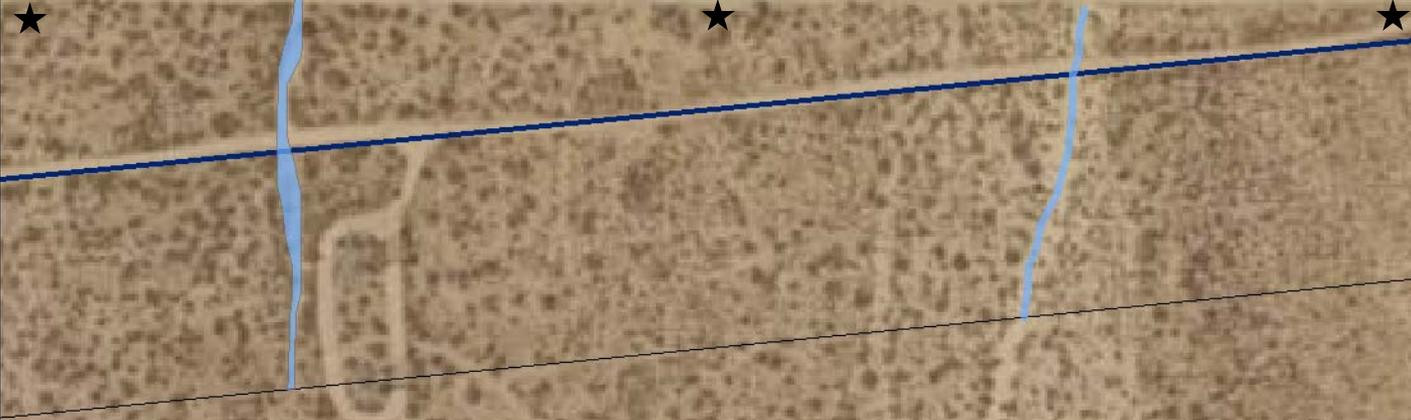
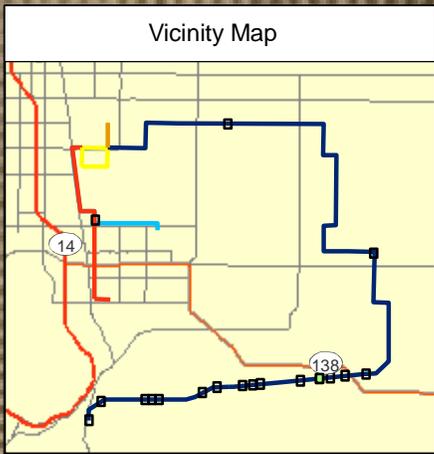
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 6



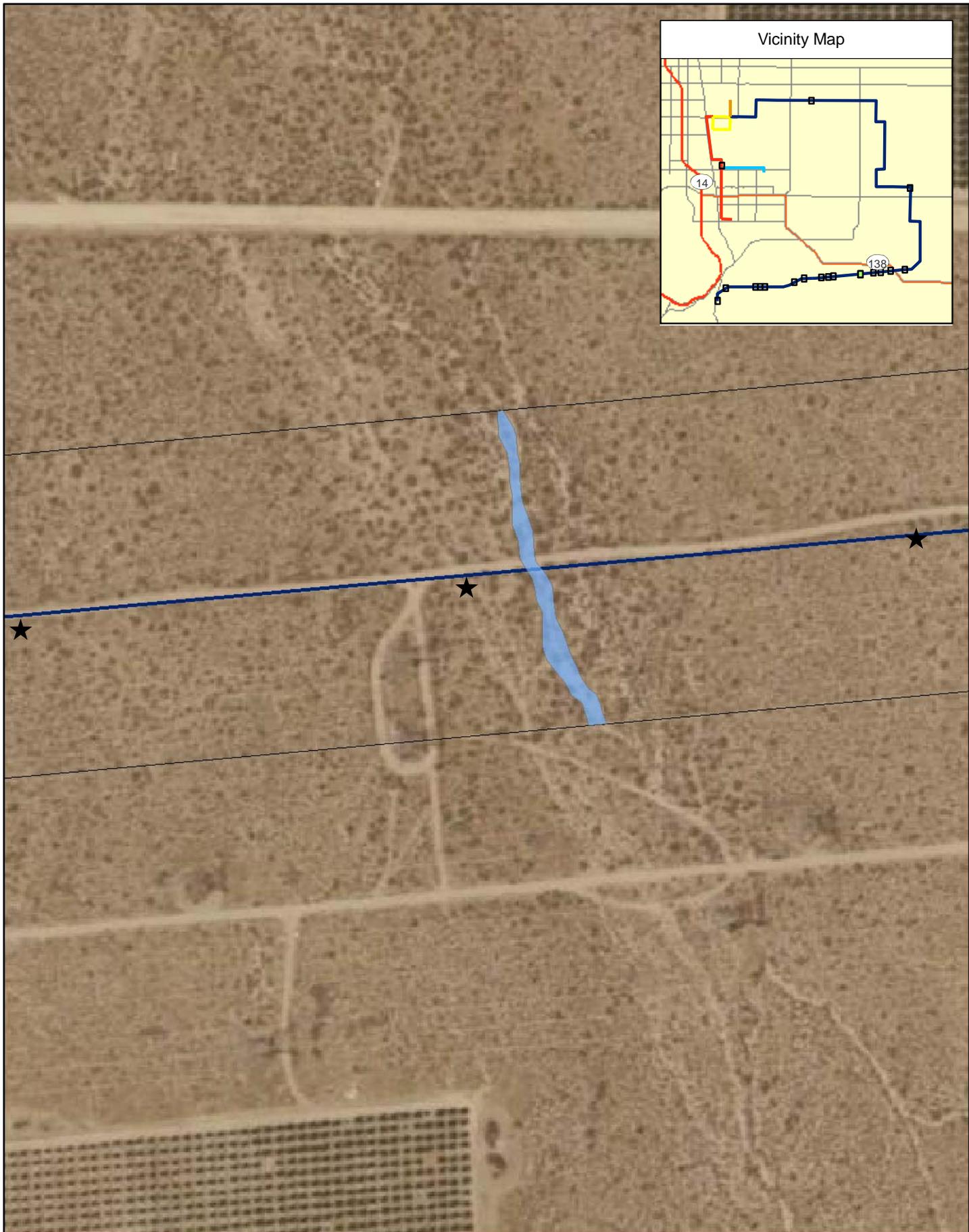
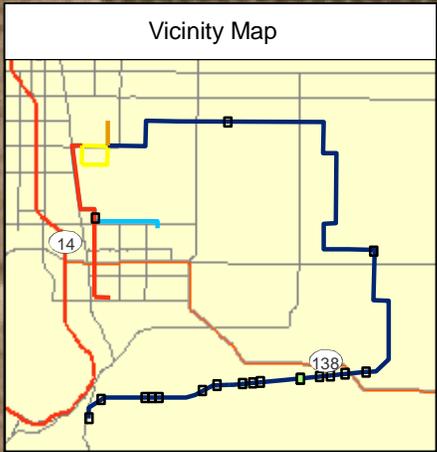
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 7



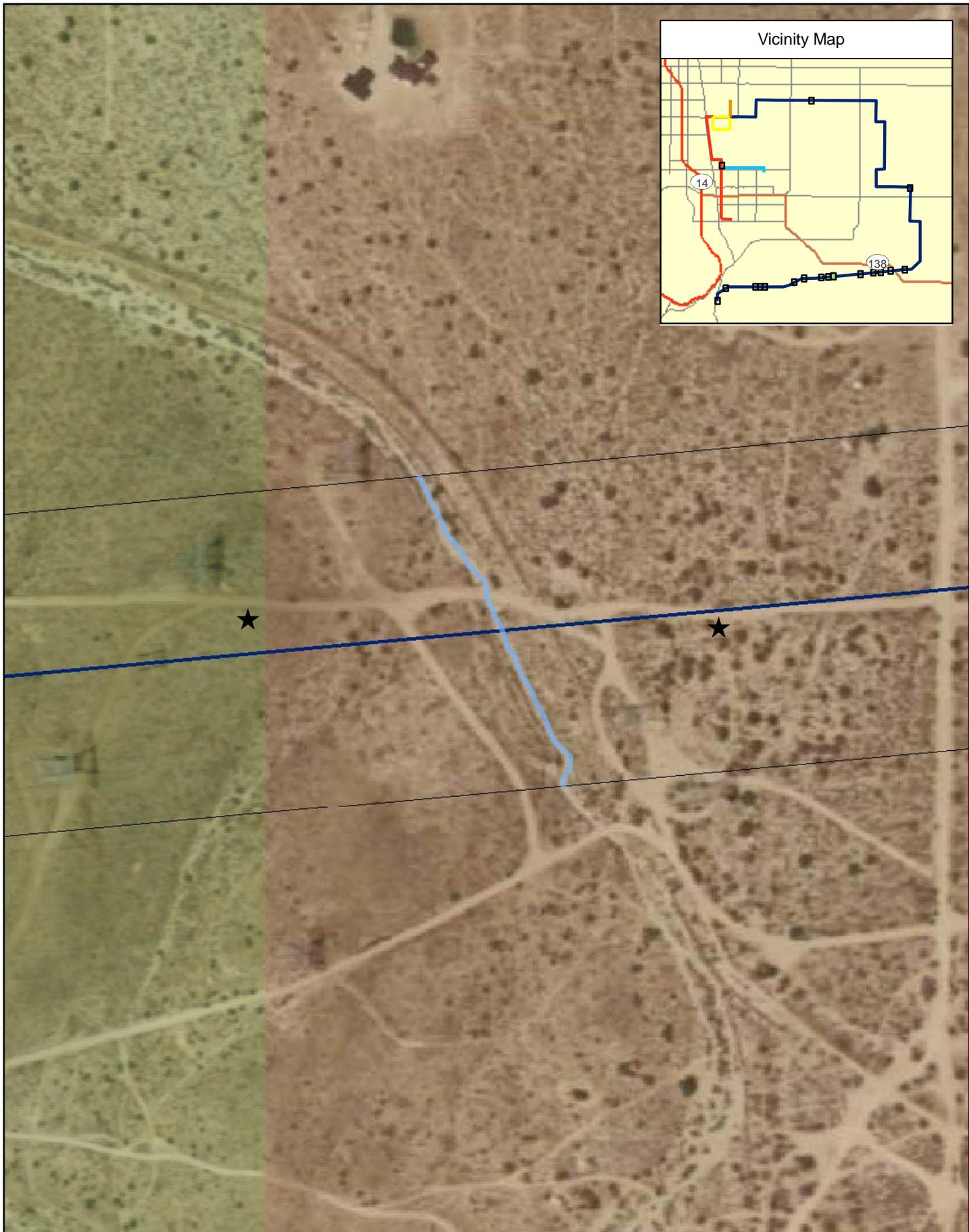
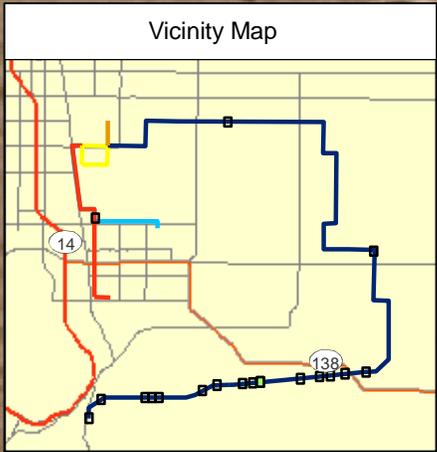
Legend	
Transmission Line	Transmission Tower
Reclaimed Water Pipeline	Waters of the State of California
Natural Gas Supply Pipeline	Waters of the State & Waters of the U.S. (California Aqueduct)
Power Plant Site	250 Foot Buffer
Sanitary Wastewater Pipeline	

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 8



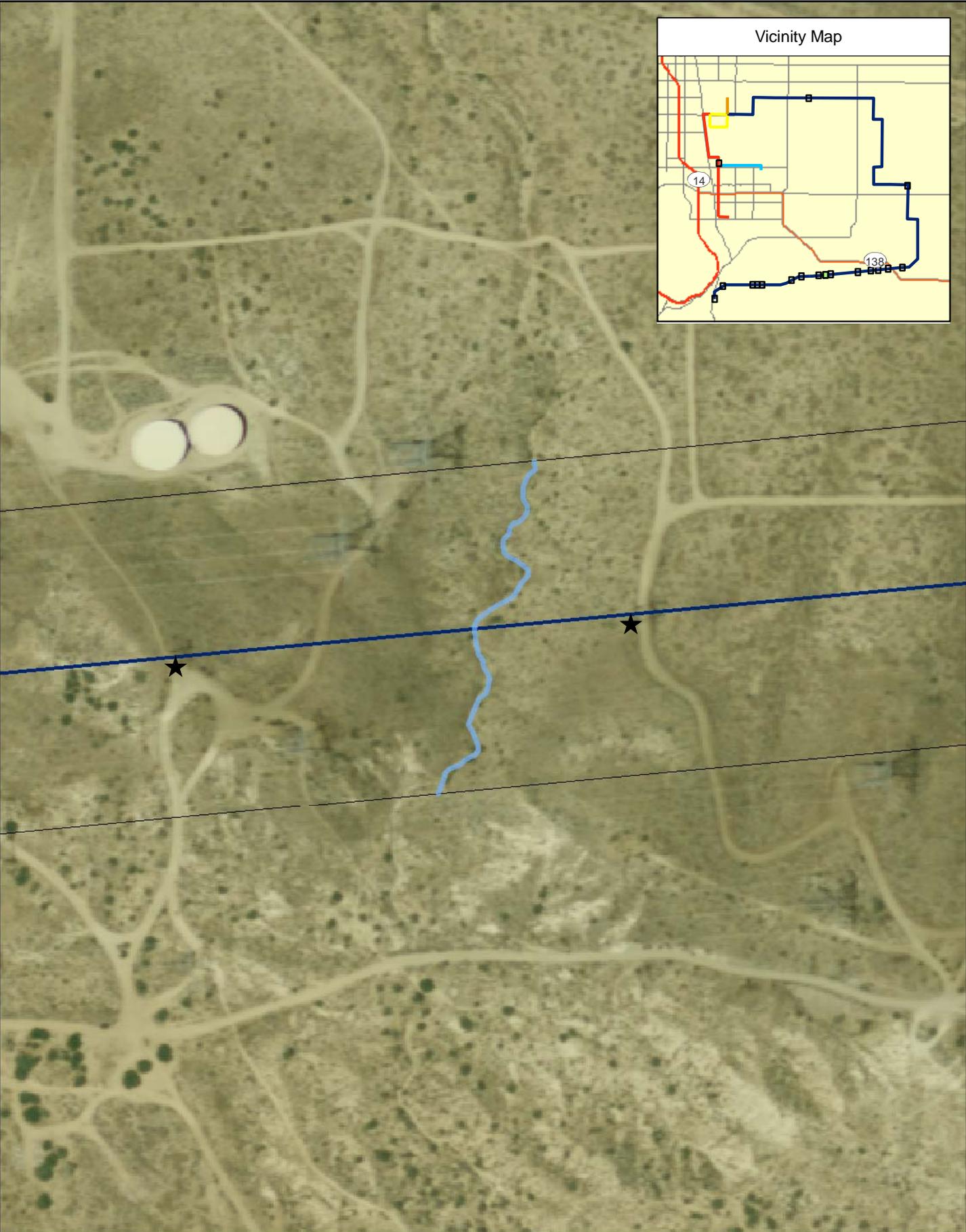
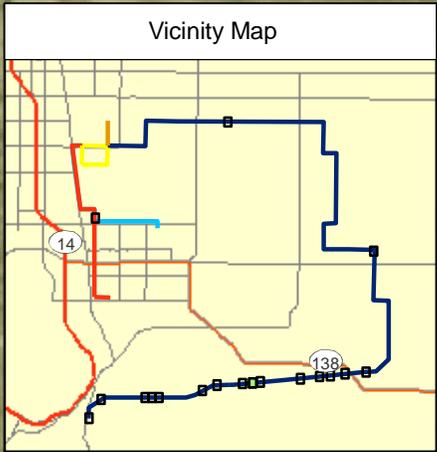
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure - 9



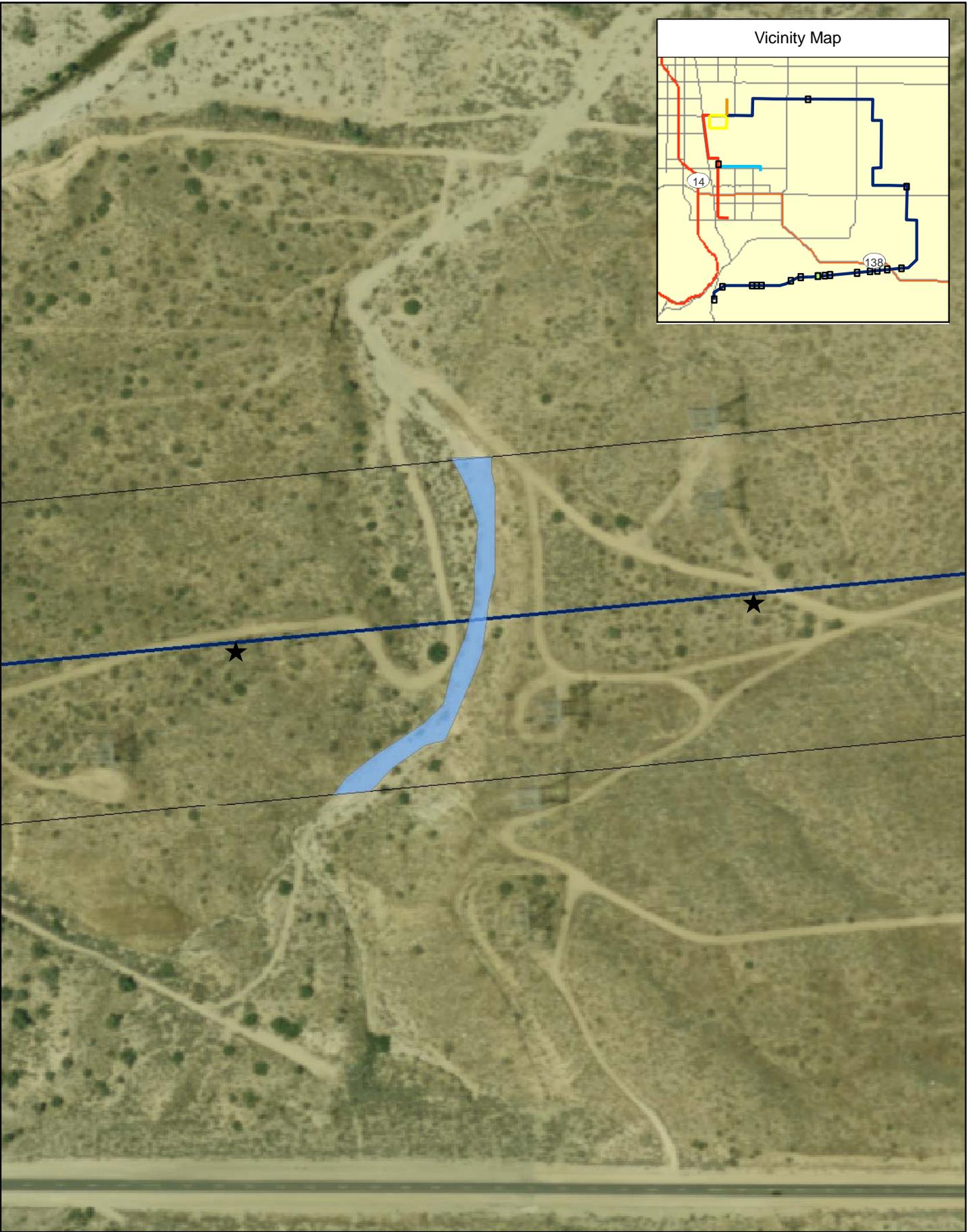
Legend	
Transmission Line	Transmission Tower
Reclaimed Water Pipeline	Waters of the State of California
Natural Gas Supply Pipeline	Waters of the State & Waters of the U.S. (California Aqueduct)
Power Plant Site	250 Foot Buffer
Sanitary Wastewater Pipeline	

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -10



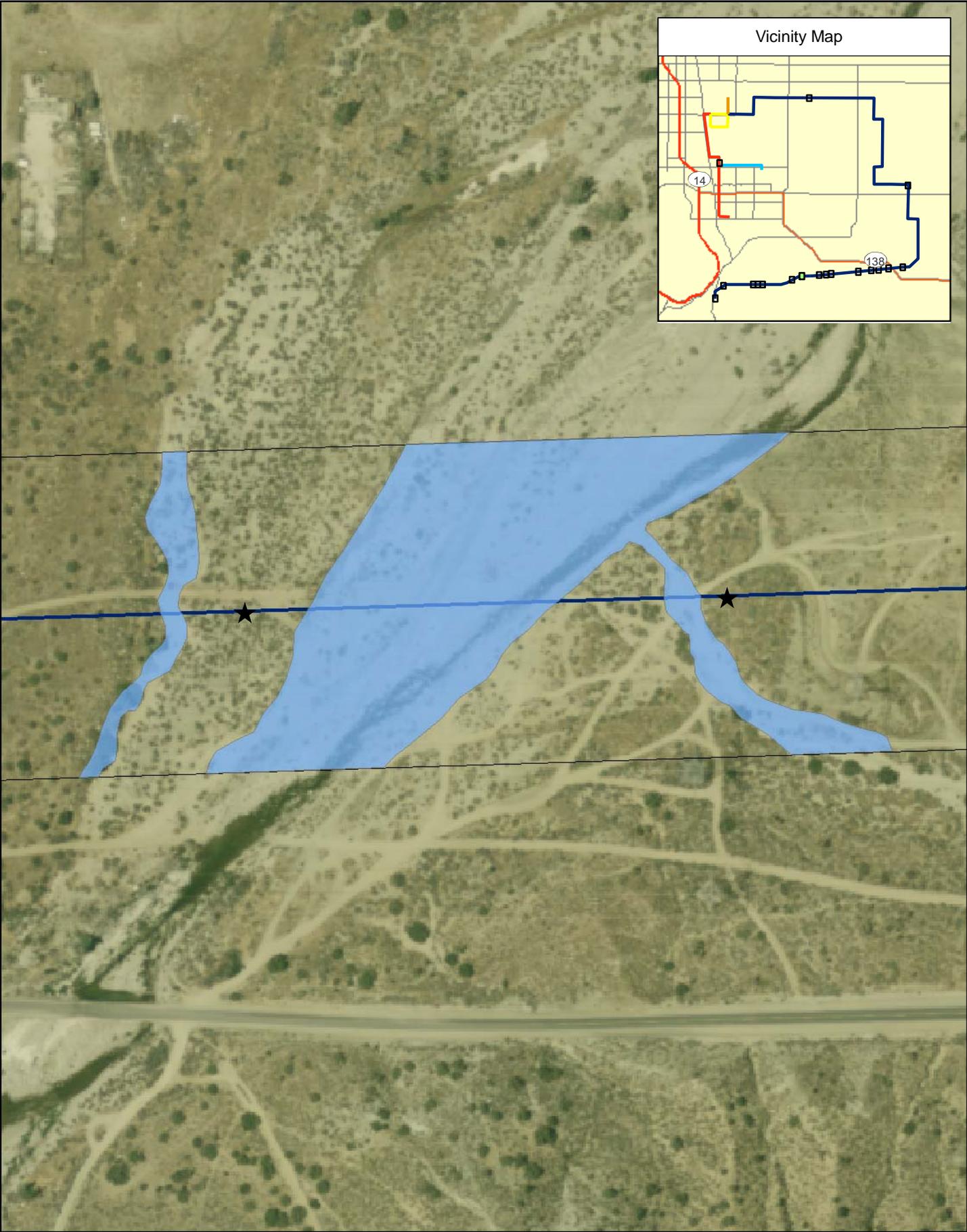
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -11



**Legend**

- Transmission Line
- Reclaimed Water Pipeline
- Natural Gas Supply Pipeline
- Power Plant Site
- Sanitary Wastewater Pipeline
- ★ Transmission Tower
- Waters of the State of California
- Waters of the State & Waters of the U.S. (California Aqueduct)
- 250 Foot Buffer

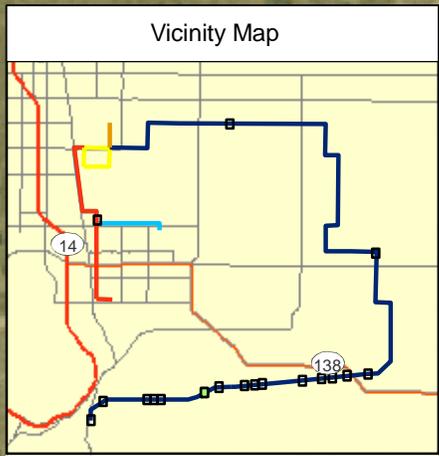
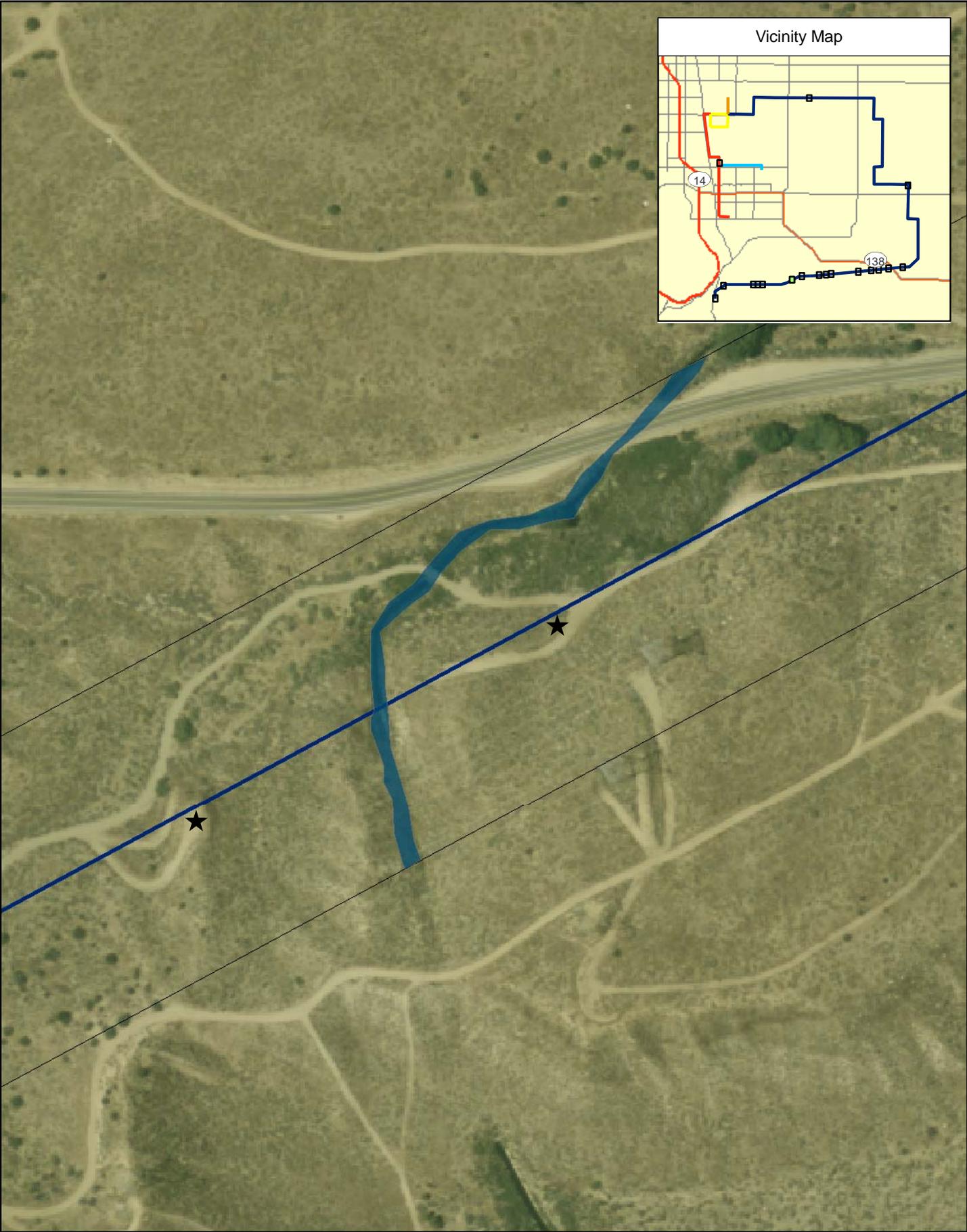
**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200      Feet      1:2,400

**Map Notes:**  
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 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -12





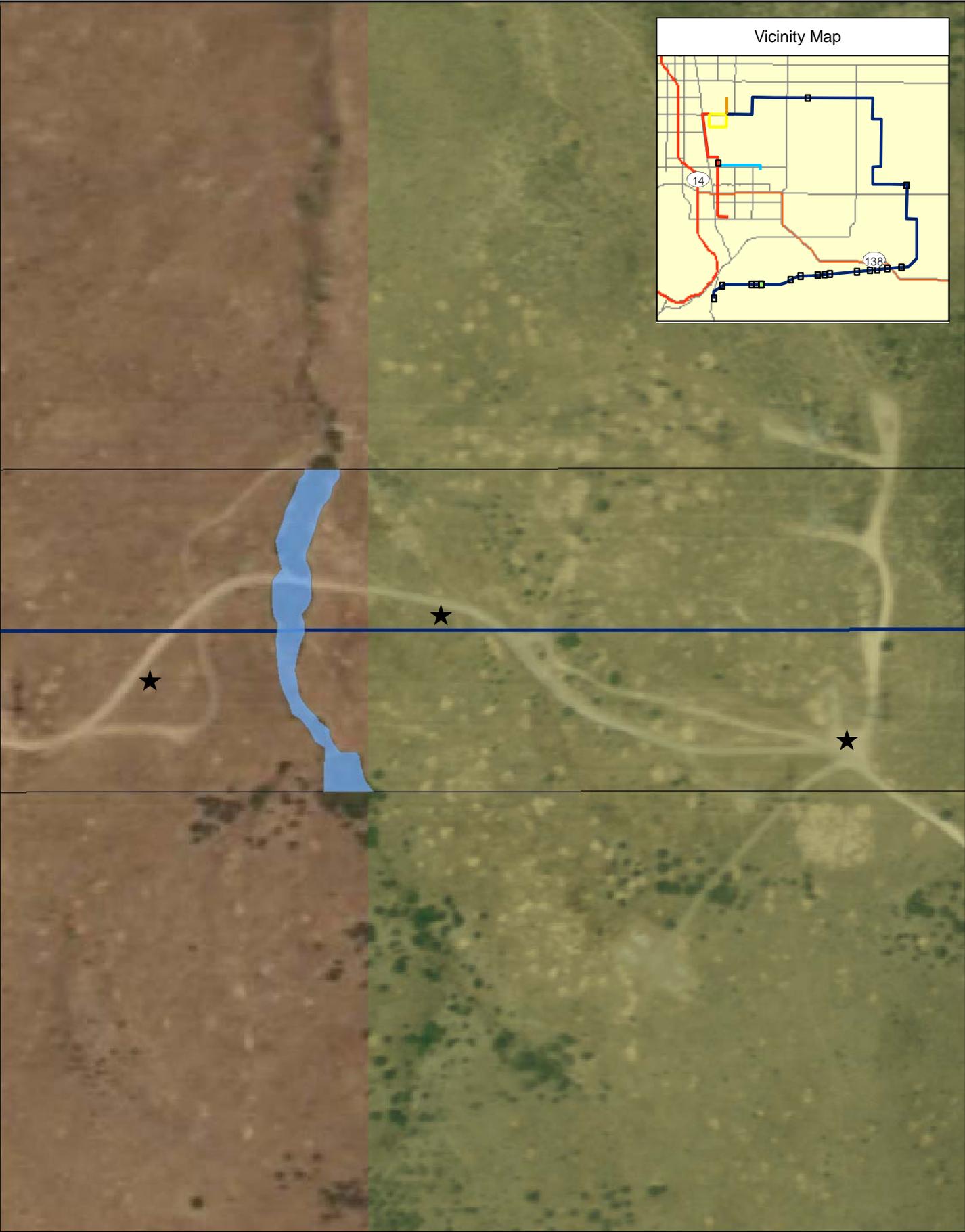
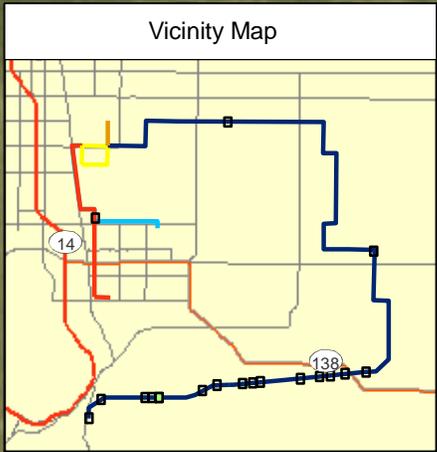
Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
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 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -13



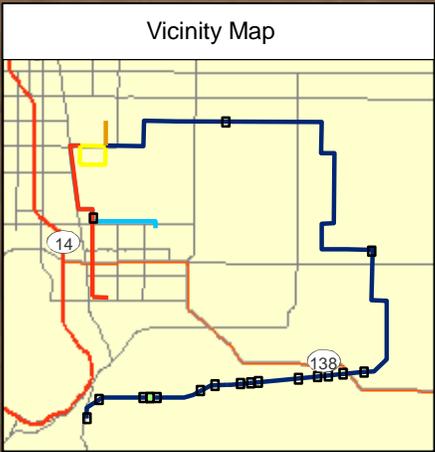
Legend	
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	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
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 Date: 09/12/2008

Figure -14



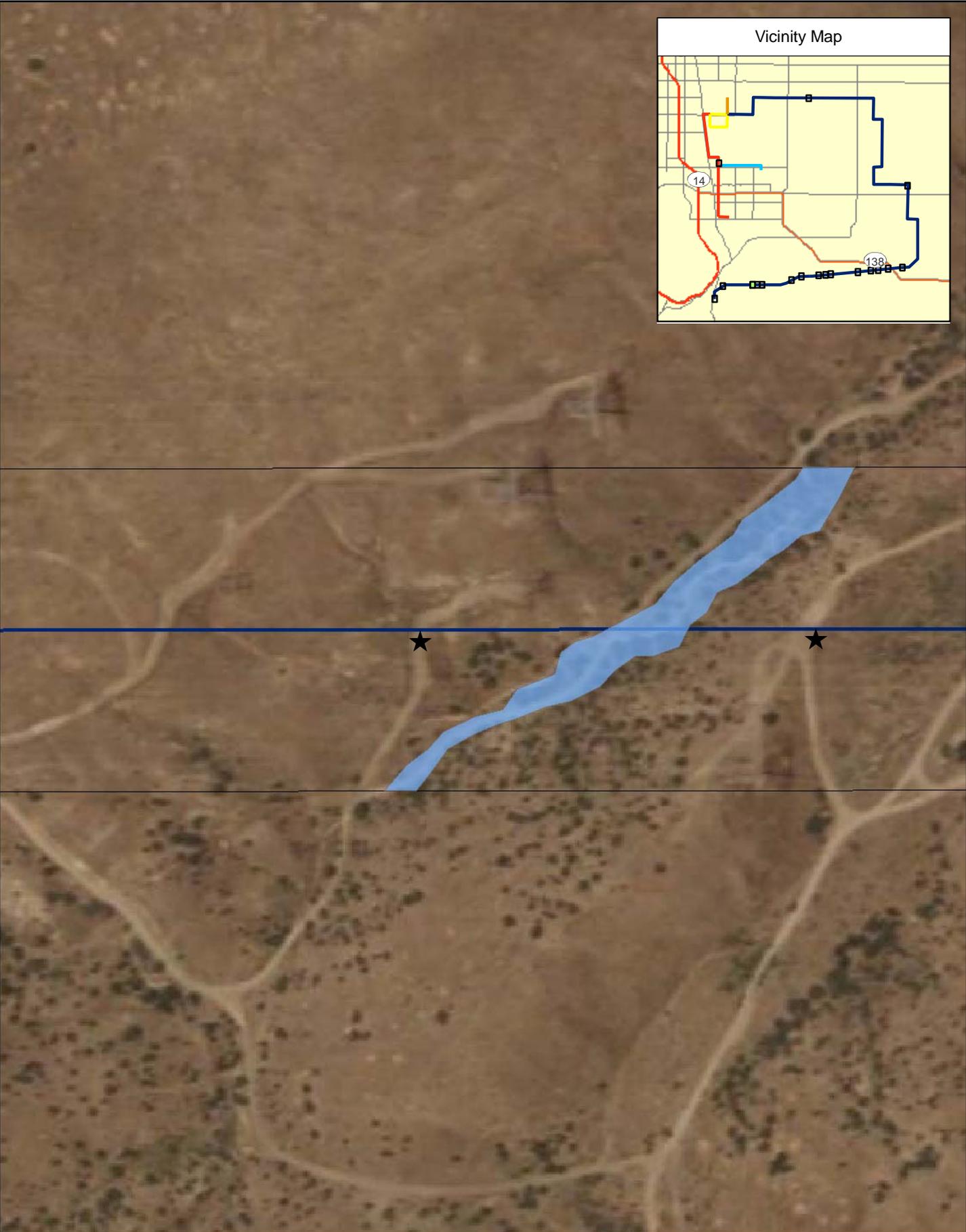
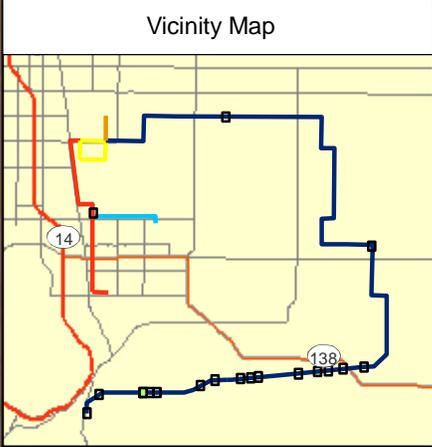
Legend	
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	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -15



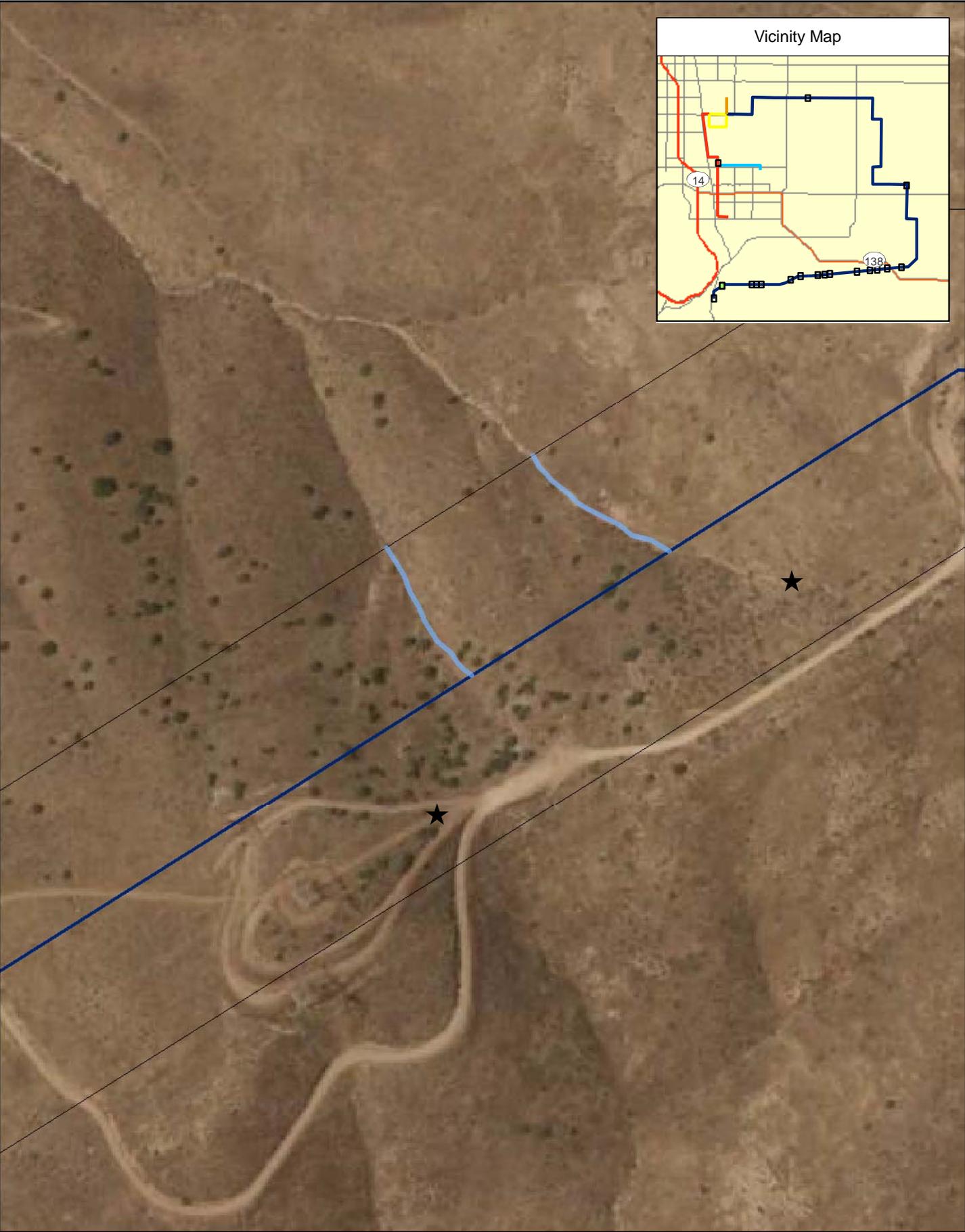
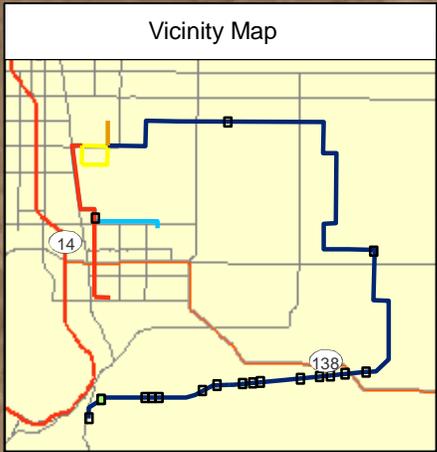
Legend	
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	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
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 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -16



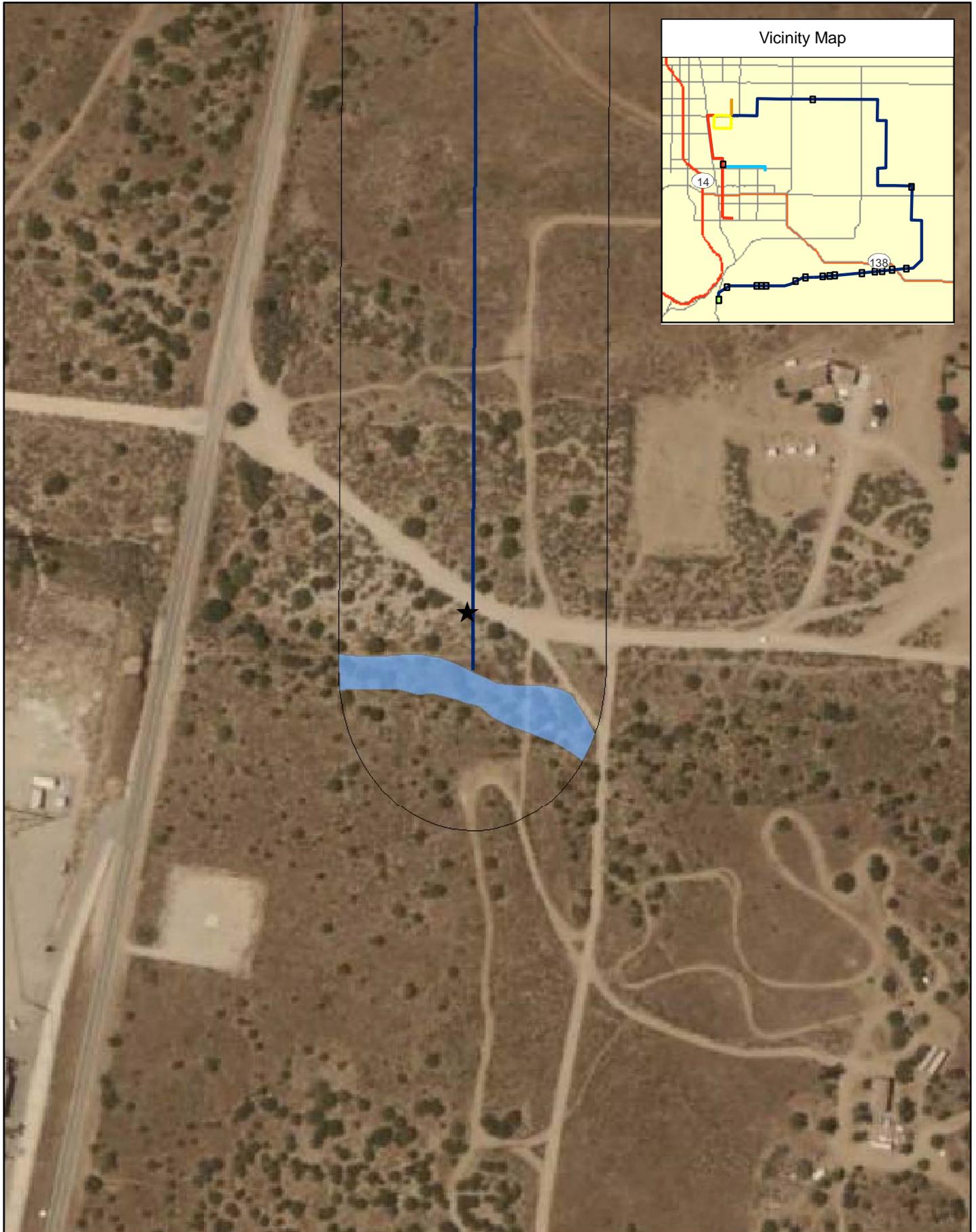
Legend	
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	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0 100 200 Feet 1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -17



Legend	
	Transmission Line
	Reclaimed Water Pipeline
	Natural Gas Supply Pipeline
	Power Plant Site
	Sanitary Wastewater Pipeline
	Transmission Tower
	Waters of the State of California
	Waters of the State & Waters of the U.S. (California Aqueduct)
	250 Foot Buffer

**Palmdale Hybrid Power Project**  
 Potential Jurisdictional Waters and  
 Approximate Transmission Tower Locations

0      100      200  
 Feet      1:2,400

**Map Notes:**  
 Projection: NAD 83, Zone 11  
 Path: G:\sdo8\bio\Palmdale\mxd\waters\_tl\_mb  
 Date: 09/12/2008

Figure -18

# Attachment BIO-7



## AGENCY CONTACTS

1. Ray Bransfield (June 2006)  
U.S. Fish and Wildlife Service (USFWS)  
Regarding desert tortoise surveys
2. Becky Jones (June 2006)  
California Department of Fish and Game (CDFG)  
Regarding special-status species in area
3. Connie Brown (September 2006)  
City of Palmdale, Division of Public Works  
Regarding Palmdale Native Desert Vegetation Ordinance
4. Rick York (June 2007)  
California Energy Commission (CEC)  
Regarding CEC survey guidelines
5. Dale Edwards (March 2008)  
CEC Environmental Protection Office  
Regarding CEC survey guidelines
6. John Farley (March 2008)  
L.A. County Wildflower and Wildlife Sanctuaries  
Regarding sanctuaries along Project routes
7. Carl Benz (April 2008)  
USFWS  
Regarding desert tortoise surveys
8. Kirk Larkin (July 2008)  
Regional Water Quality Control Board (RWQCB)  
Regarding impacts to isolated waters
9. Phuong Thinh (July 2008)  
U.S. Army Corps of Engineers (USACE)  
Regarding impacts to isolated waters
10. Richard Kite (July 2008)  
City of Palmdale  
Regarding Significant Ecological Areas
11. Soyong Choi (July 2008)  
L.A. County  
Regarding Significant Ecological Areas



12. Shirley Rivera (August 2008)  
U.S. Environmental Protection Agency (USEPA)  
Regarding PSD
13. Ray Bransfield (September 2008)  
USFWS  
Regarding BA
14. Phuong Trinh (September 2008)  
USACE  
Regarding jurisdictional waters permitting
15. Mary Dellavalle (September 2008)  
Lahontan RWQCB, 401 Certification Program  
Regarding jurisdictional waters permitting
16. Jamie Jackson (September 2008)  
CDFG  
Regarding jurisdictional waters of the State
17. Scott Harris (September 2008)  
CDFG  
Regarding biological resources for PHPP
18. Phuong Trinh (September 2008)  
USACE  
Regarding jurisdictional waters permitting



The following provides a description of a discussion between Wes Speake (Business Unit Manager) and Ray Bransfield (US Fish and Wildlife Service) in June 2006.

Ray Bransfield  
US Fish and Wildlife Service  
805 644-1766  
ray\_bransfield@r1.fws.gov

Topic: Desert tortoise surveys

Discussion: See attached email.

## Amalong, Matt L

---

**From:** Speake, Wes J  
**Sent:** Wednesday, June 07, 2006 2:00 PM  
**To:** Ray\_Bransfield@fws.gov  
**Cc:** Green, John F (Riverside); Egan, Tom  
**Subject:** RE: FW: Approvals for performing Desert Tortoise Surveys

Thanks Ray, That helps a lot. We plan on having all of surveys completed in the next two weeks.

Wes

-----Original Message-----

**From:** Ray\_Bransfield@fws.gov [mailto:Ray\_Bransfield@fws.gov]  
**Sent:** Wednesday, June 07, 2006 1:55 PM  
**To:** Speake, Wes J  
**Subject:** Re: FW: Approvals for performing Desert Tortoise Surveys

Wes,  
I don't have any problem with you conducting the surveys outside of the 'activity period' recommended in our survey protocols. I have a couple of caveats to go along with this agreement:

1. Be sure that surveyors are well qualified and that they know they are looking for sign because they are more likely to see sign than tortoises when tortoises are less active.
2. Given that this was not a particularly good year for tortoise activity, you may want to do the surveys sooner than later; if limited sign is present, you want to see it before it goes away.
3. The report of the surveys should be meticulously prepared, given that you would be surveying when tortoises are more difficult to detect in an area of extremely low density (if any are present). Remember that you are trying to prove a negative.
4. Last but not most, please discuss with CDFG. I have copied Becky Jones from CDFG on this email.

Ray

"Speake, Wes J"  
<wes.speake@amec.com>

06/06/2006 08:37 AM

To  
<ray\_bransfield@fws.gov>  
cc  
Subject  
FW: Approvals for performing Desert Tortoise Surveys

I forgot to drop the R1. Thanks Ray

**From:** Speake, Wes J  
**Sent:** Monday, June 05, 2006 4:36 PM  
**To:** ray\_bransfield@r1.fws.gov  
**Subject:** Approvals for performing Desert Tortoise Surveys

Ray,  
Thanks for speaking with me last week regarding our project in Palmdale.  
Attached is a map of the project site, minus any linears (the exact routes haven't been identified to date). Since the project is subject to CEC review they will want us to get a Ok to conduct these surveys outside of the "activity period". Thanks for your help and I look forward to hearing back from you soon.

Wes J. Speake  
Business Unit Manager  
Riverside Environmental Services

AMEC Earth and Environmental, Inc.  
3120 Chicago Avenue, Suite 110  
Riverside, California  
USA 92507  
Tel: (951) 369-8060 Ext 102  
Cell (951) 906-8626  
Fax:(951) 369-8035

wes.speake@amec.com  
<http://www.amec.com/earthandenvironmental/>

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(See attached file: Palmdale Site Survey Area March 15, 2006.pdf)



The following provides a description of a discussion between Tom Egan (AMEC Senior Ecologist) and Becky Jones (CDFG) in June 2006.

Becky Jones  
CDFG  
661-285-5867  
dfgpalm@adelphia.net

Topic: Special-status species for Palmdale Hybrid Power Project

Discussion: Coordinated with Becky Jones regarding surveys for special-status species.



The following provides a description of a discussion between John Green (AMEC Wildlife Biologist) and Connie Brown (City of Palmdale Landscape Architect) in September 2006.

Connie Brown  
City of Palmdale  
661-267-5265  
cbrown@cityofpalmdale.org

Topic: Palmdale Native Desert Vegetation Ordinance

Discussion: See attached email.

## Amalong, Matt L

---

**From:** Connie Brown [cbrown@cityofpalmdale.org]  
**Sent:** Tuesday, September 12, 2006 1:07 PM  
**To:** Green, John F (Riverside)  
**Subject:** RE: Your request

**Attachments:** Joshua Tree Movers.pdf



Joshua Tree  
Movers.pdf

Here you go :)c

-----Original Message-----

**From:** Green, John F (Riverside) [mailto:john.f.green@amec.com]  
**Sent:** Tuesday, September 12, 2006 12:54 PM  
**To:** Connie Brown  
**Subject:** RE: Your request

Connie,

Thanks for the quick reply. Could we also have the list of approved Joshua Tree movers?

Thanks,

John

-----Original Message-----

**From:** Connie Brown [mailto:cbrown@cityofpalmdale.org]

**Sent:** Tuesday, September 12, 2006 11:31 AM  
**To:** Green, John F (Riverside)  
**Subject:** Your request

<<Joshua Procedures.pdf>> <<Joshua Tree Evaluators.pdf>>

<<Nativeplantordinance repaired.doc>>

Here is the ordinance, our procedures and the evaluators who are presently on our list. If you are wanting to use someone, else, I need to know their qualifications, and they need to have a City of Palmdale Business license. Let me know :)c

Connie L. Brown  
Sr. Engineering Landscape Technician  
Phone: 661-267-5265  
FAX: 661-267-5262  
38250 N. Sierra Highway  
Palmdale, Ca. 93550

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## Amalong, Matt L

---

**From:** Connie Brown [cbrown@cityofpalmdale.org]  
**Sent:** Tuesday, September 12, 2006 11:31 AM  
**To:** Green, John F (Riverside)  
**Subject:** Your request

**Attachments:** Joshua Procedures.pdf; Joshua Tree Evaluators.pdf; Nativeplantordinance repaired.doc



Joshua  
Procedures.pdf



Joshua Tree  
Evaluators.pdf



Nativeplantordinanc  
e repaired....

<<Joshua Procedures.pdf>> <<Joshua Tree  
Evaluators.pdf>> <<Nativeplantordinance repaired.doc>>

Here is the ordinance, our procedures and the evaluators who are presently on our list.  
If you are wanting to use someone, else, I need to know their qualifications, and they  
need to have a City of Palmdale Business license.  
Let me know:)c

Connie L. Brown  
Sr. Engineering Landscape Technician  
Phone: 661-267-5265  
FAX: 661-267-5262  
38250 N. Sierra Highway  
Palmdale, Ca. 93550



The following provides a description of a discussion between Arrie Bachrach (ENSR) and Rick York (CEC Biologist) in June 2007.

Rick York  
CEC  
916-654-5139

Topic: Recommended Biological Resources Field Survey Guidelines for Large Solar Projects

Discussion: See attached email.

## Amalong, Matt L

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**From:** Amalong, Matt L  
**Sent:** Thursday, June 14, 2007 3:16 PM  
**To:** Bachrach, Arrie; Speake, Wes J  
**Cc:** Head, Sara  
**Subject:** RE: CEC Staff Bio survey guidance

This is consistent with what has been done (maybe not exactly, but very close) and what will be done. The proposal, which should be revised when all of the project specs have been identified and confirmed, will be updated to reflect these latest requirements.

Matt

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**From:** Bachrach, Arrie [mailto:ABachrach@ensr.aecom.com]  
**Sent:** Thu 6/14/2007 4:26 PM  
**To:** Speake, Wes J; Amalong, Matt L  
**Cc:** Head, Sara  
**Subject:** CEC Staff Bio survey guidance

Wes/Matt -

FYI. I was in a meeting with the CEC the other day on another project and I received the attached from CEC Biology Staff (Rick York).

This is all in the context of the new land-intensive solar projects, protocol survey requirements for special status species and the new CEC siting regs. Staff feel that some additional guidance is needed beyond the regs, which is what this is intended to provide. Their basic thrust is that they do not want to conflict with established protocols for bio surveys, but CEC requirements go beyond what the protocols require (e.g., the CEC wants information out to one mile from the site boundary and the DT survey protocol's "Zones of Influence" do not require transects that far out. They want to be sure that AFC preparers understand what they (CEC Staff) are looking for. This is still "draft", but is still of interest because of the source.

Take a look at this and let us know if you see any issues here for us (i.e., is what we have done/are doing at Palmdale is consistent with what the CEC says here?).

Thanks.

Arrie



The following provides a description of a discussion between Matt Amalong (AMEC Wildlife Biologist) and Dale Edwards (CEC Environmental Protection Office) in March 2008.

Dale Edwards  
CEC Environmental Protection Office  
916-654-5139  
dedwards@energy.state.ca.us

Topic: Recommended Biological Resources Field Survey Guidelines for Large Solar Projects

Discussion: We discussed the DRAFT survey guidelines and how they pertained to the Palmdale Hybrid Power Project. Guidelines were discussed for the power plant site, linear facilities, and all associated buffers.



The following provides a description of a discussion between Matt Amalong (AMEC Wildlife Biologist) and John Farley (CEC Environmental Protection Office) in March 2008.

John Farley  
Regional Park Superintendent  
L.A. County Wildflower and Wildlife Sanctuaries  
661-944-6881  
jfarley@parks.lacounty.gov

Topic: L.A. County Wildflower and Wildlife Sanctuaries

Discussion: We discussed the locations of Wildflower and Wildlife Sanctuaries in L.A. County that may be crossed by the Project. John Farley sent me maps showing their locations.

## **Amalong, Matt L**

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**From:** John Farley [jfarley@parks.lacounty.gov]  
**Sent:** Friday, March 28, 2008 4:27 PM  
**To:** Amalong, Matt L  
**Subject:** Wildlife Sanctuaries  
**Attachments:** Sanctuary Map-sml file.BMP; Alpine Butte & Butte Valley-sml file.BMP; Jackrabbit Flat-sml file.BMP

Matt,  
I tried to send these earlier, apparently the files were too large. I'll try again,  
Jack

John(Jack)Farley  
Regional Park Superintendent  
Wildflower and Wildlife Sanctuaries  
Office 661-944-6881  
Fax 661-944-6924



The following provides a description of a discussion between Matt Amalong (AMEC Wildlife Biologist) and Carl Benz (US Fish and Wildlife Service) in April 2008.

Carl Benz  
US Fish and Wildlife Service  
805 644-1766  
Carl\_Benz@fws.gov

Topic: Desert tortoise surveys

Discussion: Discussed the Zone of Influence (ZOI) transects around the power plant site. Resolved to not conduct surveys in heavily built-up/urbanized areas.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Kirk Larkin (Colorado River Basin Regional Water Quality Control Board) on July 23, 2008.

Kirk Larkin  
Regional Water Quality Control Board- Colorado River Basin Region  
401 Certification Program  
760-776-8964  
klarkin@waterboards.ca.gov

Topic: RWQCB methods of regulating impacts to isolated waters of the State of California.

Discussion: Kirk Larkin stated that the RWQCB regulates impacts to isolated waters of the State of California under the Porter Cologne Water Quality Control Act. Water quality issues related to impacts to waterways are normally addressed during 401 Water Quality Certification for impacts to jurisdictional waters of the United States requiring Clean Water Act Section 404 permitting. Impacts to waters of the State that are not jurisdictional waters of the United States would be addressed under a Construction General Permit, State General Waste Discharge Order, or Waste Discharge Requirements, depending upon the level of impact and the properties of the waterway.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Phuong Trinh (U.S. Army Corps of Engineers-Los Angeles District Regulatory Staff) on July 23, 2008.

Phuong Trinh  
U.S. Army Corps of Engineers-Los Angeles District  
Project Manager-Los Angeles County  
213-452-3372  
phuong.h.trinh@usace.army.mil

Topic: The jurisdictional status of desert washes and dry lakes in western Mojave Desert near Palmdale and Edwards Air Force Base.

Discussion: Phuong Trinh stated that desert washes flowing into dry lakebeds such as Rosamond Lake and Buckhorn Lake on Edwards Air Force Base, and other intrastate desert washes that do not connect to a Traditionally Navigable Waterway or do not, themselves, have a connection to interstate or foreign commerce, were removed from federal jurisdiction under the Clean Water Act as a result of the 2001 U.S. Supreme Court decision in the *Solid Waste Agency of Northern Cook County v. Corps (SWANCC)*. These waters are "isolated" and not regulated by the U.S. Army Corps of Engineers under the Clean Water Act.



The following provides a description of a discussion between Stephanie Hsia (ENSR environmental specialist) and Richard Kite (August 1, 2008).

Richard Kite  
City of Palmdale Planner  
City of Palmdale Planning Department  
(661)-267-5293

Topic: Applicability of Significant Ecological Areas (SEA) for transmission lines

Discussion: Richard Kite stated that Project transmission lines, which run through the SEA in the City of Palmdale, would not have to go through the SEA regulatory process because the CEC process would address any biological impacts resulting from the Project.



The following provides a description of a discussion between Stephanie Hsia (ENSR environmental specialist) and Soyong Choi (July 31, 2008).

Soyong Choi  
Los Angeles County Planner  
Los Angeles Department of Regional Planning  
(213) 974-6411

Topic: Applicability of Significant Ecological Areas (SEA) for transmission lines

Discussion: The applicability of the SEA review process for the Project's transmission lines that run through SEAs in Los Angeles County was discussed. Soyong Choi stated that if the transmission line is constructed and owned by a public utility, then it does not need to go through the LA Regional Planning permitting process. If it is owned by a public utility, the Project will go through the Public Utilities Commission (PUC) permitting process.



The following provides a description of a discussion between Sara Head (ENSR) and Shirley Rivera (USEPA) in September 2008.

Shirley Rivera  
USEPA, Region 9, Air Permits Office  
415-972-3966  
Rivera.Shirley@epamail.epa.gov

Topic: Palmdale PSD Application

Discussion: See attached email.

**From:** Rivera.Shirley@epamail.epa.gov  
**Sent:** Friday, August 22, 2008 1:48 PM  
**To:** Head, Sara  
**Cc:** Hamel, Richard  
**Subject:** RE: Palmdale (PHPP): PSD Application

Sara,

Thanks for response. Confirming that it will be a stand-alone PSD application (vs. CEC AFC cobbled together).

So to address items you brought up -

**a) Victorville format** - Because Anita was the lead and I had served in an advisory role after she had already begun the permit/AAQIR development, I am not as familiar with "front matter" (i.e., application) as I am with the "back matter" (i.e., permit, AAQIR). I will check in with Anita over the coming weeks.

**b) EPA forms** - Correct, we do not have specific forms or the like-kind.

**c) ESA & BA** - For clarification, it is EPA's responsibility - as the federal agency - to conduct/initiate any consultation with the USFWS. It is not the Applicant's role to conduct the Section 7 related activities; however, it is the information that you all provide to us that allows us to do the requisite review, etc. Also, as an example, I see from the Victorville formal consultation letter that there was a "designated non-Federal representative" made. Whether this occurs for your project would be determined by EPA, discussions with USFWS and you all.

Based on a recent PSD permit action that I had completed a couple of months ago, here is what I understand regarding the submittal of a BA -

**1) No effect** - EPA will have to provide documentation and basis for a "no effect" conclusion. If in fact this can happen without a BA, there would have still to be something for us to review/consider to arrive at such conclusion. (This is based on a discussion I had with an USFWS office in AZ.)

**2) May affect or not sure of affect** - A BA would need to be provided. At that time, we would review the BA and initiate whatever consultation (i.e., formal, informal) may be needed with USFWS. Consultation would not be initiated by you all, however, you all would/could be kept in the loop.

As an example - and I am not necessarily saying to submit your information in this manner ... just wanted to give you a recent example ... With regards to a BA, for a project I have where the Applicant chose to use portions of the CEC AFC, the Applicant provided the following CEC sections:

- Project Description
- Biological Resources

(However, for you all, if you chose to go this route, please note that the sections to include would be dependent on how the AFC was pulled together; other sections may contribute to fulfilling the necessary elements of a BA for which we could review and could provide to the USFWS). For this other project I have where we are working with the Sacramento Field Office for a San Joaquin Valley-located proposed project, we did end up submitting to them the above mentioned section for the review/preparation of the USFWS's Biological Opinion.

It appears you all believe that there may be no effect and will be in discussions with the USFWS. Please do make note of the contact person(s) because we will still have to fulfill our Section 7 obligations.

=====

Have a good weekend,

- Shirl

-----  
Shirley F. Rivera  
T: (415) 972-3966 | F: (415) 947-3579 | Rivera.Shirley@epa.gov  
U.S. EPA, Region 9, Air Permits Office (AIR-3) | 75 Hawthorne St., San Francisco, CA 94105

"Head, Sara" <SHead@ensr.aecom.com>

To Shirley Rivera/R9/USEPA/US@EPA, "Hamel, Richard"  
<rhamel@ensr.aecom.com>

08/22/2008 11:55 AM

cc

Subject RE: Palmdale (PHPP): PSD AQ modeling protocol

Hi Shirley -

We will be submitting a separate stand alone application (like we did for Victorville). We will address PM and PM2.5 from the start rather than needing to follow-up with supplements like we did for Victorville.

Otherwise, you can let me know if you have any other format observations about the Victorville application that we should incorporate into Palmdale. It's my understanding that EPA Region 9 doesn't have any specific application forms or anything like that.

At this point we do not impact federal endangered species, so we won't need to do formal Section 7 consultation. We are getting guidance from USFWS on informal consultation, but at this point, we do not expect to need to provide EPA with a Biological Assessment.

Depending on where we stand with USFWS (i.e., confirm that no BA is needed), we may be able to submit the PSD application next week. Otherwise, it will be early Sept.

Thanks for your input.

Sara

---

**From:** Rivera.Shirley@epamail.epa.gov [mailto:Rivera.Shirley@epamail.epa.gov]  
**Sent:** Fri 8/22/2008 12:37 PM  
**To:** Hamel, Richard; Head, Sara  
**Cc:** Bohnenkamp.Carol@epamail.epa.gov  
**Subject:** Palmdale (PHPP): PSD

Richard (and Sara),

I left a v/m msg for you yesterday. I have been assigned the PSD permit project for Palmdale Hybrid Power Project.

To date, I have received from my Manager, Gerardo Rios, the Aug 6, 2008 "*Class I and Class II Protocol Submittal for Palmdale Hybrid Power Project*" that includes text and a CD. I will forward this to Carol Bohnenkamp's attention (as well as retain a copy of the text portion of your submittal). Other than this information, I will await the formal PSD permit application submittal.

**CEC INFO ...** I note that you all have filed with the CEC (08-AFC-9) on August 4.

<http://www.energy.ca.gov/sitingcases/palmdale/index.html>

I sent an e/m to John Kessler to let him know my contact information (as well as the project name typo on the "Applicant's Documents" link); he has confirmed receipt of the info.

So for the purposes of when you all are going to be submitting the formal PSD application - some items to consider:

**a) Project Contacts** - Below is my contact information. I will see who else in our Permits Office would be interested in providing additional support. And as you may know, Gerardo Rios is the Chief of our Office. When the PSD portion kicks-off, I'll pull contact info together regarding our folks.

**b) September submittal?** - When you all know the submittal date (and timeframe), please let me know. As with your circumstances on other project activities and commitments, I (and others in our office) have similar competing project activities.

**c) PSD Application format & content** - I am interested in knowing if you all plan to submit the PSD application as a:

- 1) PSD standalone application (that may be comparable to AFC-filed info) **\*\*OR\*\***
- 2) compiled sections of the AFC filing that would be intended to fulfill our PSD application requirements.

Please let me know either way. In particular, if you plan to go for 'option 2', it would be convenient for streamlining of my review to have the following:

- **Cross reference** - Cross reference the AFC sections with those parts of our Pt 52.21 requirements you are fulfilling (e.g., additional impacts analysis for soils and vegetation may be a mix of the air quality section, biological resources, etc.)

- **Data adequacy checklist** - Given you all have submitted on August 4, depending on when you'll have resolved the data adequacy stage and when the PSD application will be submitted, a copy of the data adequacy checklist would be helpful, e.g., references to pages, subject matters outlined, etc.

**d) Endangered Species Act (ESA), Section 7** - Just a reminder that we should receive the Biological Assessment so that we may initiate our ESA, Section 7 activities.

Look forward to working w/you all, and have a good weekend!

Best regards,

- Shirl

-----  
Shirley F. Rivera

T: (415) 972-3966 | F: (415) 947-3579 | [Rivera.Shirley@epa.gov](mailto:Rivera.Shirley@epa.gov)

U.S. EPA, Region 9, Air Permits Office (AIR-3) | 75 Hawthorne St., San Francisco, CA 94105



The following provides a description of a discussion between Wes Speake (Business Unit Manager) and Ray Bransfield (US Fish and Wildlife Service) on September 8, 2008.

Ray Bransfield  
US Fish and Wildlife Service  
805 644-1766  
ray\_bransfield@r1.fws.gov

Topic: Biological Assessment (BA) Requirements for Palmdale Hybrid Power Plant.

Discussion: Ray Bransfield stated that the USFWS would require a BA; however it was USFWS discretion as to the level of detail and contents of the BA. Since the surveys for the desert tortoise were negative he would like to see the following:

- A very short BA that simply had a project description, location of project site and all linears
- Results Section
- Conclusion and Determination of Effect
- Include Attachments of Biological Reports prepared for the AFC

He also indicated that he would attend a coordination/progress meeting with the project proponent, consultants, and the other agencies.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Phuong Trinh (U.S. Army Corps of Engineers-Los Angeles District Regulatory Staff) on September 17, 2008.

Phuong Trinh  
U.S. Army Corps of Engineers-Los Angeles District  
Project Manager-Los Angeles County  
213-452-3372, phuong.h.trinh@usace.army.mil

Topic: Jurisdictional waters permitting.

Discussion:

Nick Ricono stated:

- We are doing preliminary assessments of permitting requirements for the Palmdale Hybrid Power Plant Project.
- Preliminary designs are not available yet, but project proponent has stated that the project would be designed to avoid all waterways.
- Preliminary Jurisdictional Determination (JD) Report was written including each waterway crossing.
- An additional assessment would be conducted based on preliminary design to insure avoidance.
- Asked Phuong if some information could be submitted to show avoidance and provide information that no permits were needed.

Phuong Trinh replied:

- A project proponent can submit for an Approved JD from the USACE based on information provided in the Preliminary JD. This can be done for multiple waters or individual waters as needed or requested by the project proponent.
- Approved JD requests can be made prior to an application, or as part of an application for a permit.
- Approved JDs require Approved Jurisdictional Determination Forms to be filled out completely and attached to the document.
- Waterways that have already been documented as Non-Jurisdictional based on previous assessments (i.e., Little Rock Wash and Rock Creek) would be able to be approved in an abbreviated process.
- The project proponent can always assume a waterway IS jurisdictional and submit for a permit if impacts are to occur. Such permit applications will be processed without an Approved JD.
- As long as the project does not result in the loss of greater than 0.5 acre of waters of the U.S., a 404 Permit could be obtained under Nationwide Permit 12 for utility line activities. Anything larger would require an Individual Permit. Permit Notification would require a project description (including design drawings), purpose and need, information on the impact (volume, type, reason), delineation of wetlands (if wetlands occur), description of other resources (i.e., endangered species, historic resources), minimization or mitigation measures proposed to limit/compensate for unavoidable impacts.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Mary Dellavalle (Lahontan Regional Water Quality Control Board) on September 17, 2008.

Mary Dellavalle  
Lahontan Regional Water Quality Control Board  
401 Certification Program  
14440 Civic Drive, Suite 200  
Victorville, CA 92392  
760-241-6583

Topic: Jurisdictional waters permitting.

Discussion:

Discussed the permitting process for 401 Certification (required for impacts to waters of the US) and for Waste Discharge Requirements (WDR) (required for impacts to waters of the State). Asked if there is a preliminary process to discuss avoidance of impacts and get approval from RWQCB for a project that avoidance has occurred.

Responses from Ms. Dellavalle included:

- The RWQCB normally comments on preliminary design information during the CEQA process. A project proponent (especially for large projects) may schedule a meeting to discuss proposed project impacts and avoidance of impacts based on preliminary designs.
- If unavoidable impacts will occur to a water of the US or water of the State, an application for 401 Cert. or WDR is required. The same application can be used for multiple waterways, including both waters of the US and State. A table should be included that identifies waterway's jurisdictional status and description of impact for each. Permit fee is based on RWQCB Dredge and Fill Fee Calculator.
- Impact to waters thought to be only waters of the State would require an Approved JD from the USACE, or at least a formal letter from the USACE stating they agree with the proponent's jurisdictional determination, for any waters that would be impacted by the Project.
- Application for 401 Certification (and/or WDR) requires a project description (including design drawings), description of existing waters, delineation of extent of waters of the US and/or waters of the State, dredge and fill information, impact avoidance and minimization measures, compensatory mitigation measures, CEQA compliance, listed species information, and past and future proposals by the applicant.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Jamie Jackson (CDFG) on September 17, 2008.

Jamie Jackson  
California Department of Fish and Game - Region 5  
4949 Viewridge Avenue  
San Diego, CA 92123  
(626) 296-3430

Topic: Jurisdictional Waters of the State

Discussion:

Discussed the permitting process for Streambed Alteration Agreements related to the Palmdale Hybrid Power Project passing over, and in relatively close proximity to jurisdictional waters of the State.

Ms. Jackson responded with a request that the project proponent submit a Streambed Notification Package that can be reviewed for avoidance and minimization measures, and should include design drawings and site photos along with project description information. CDFG will make a field visit if needed and make a determination as to whether a Streambed Alteration Agreement is needed.

If CDFG is satisfied that no significant alteration of waters of the State will occur, they will provide a letter stating that no Agreement is necessary. If they determine that there is a potential for significant impacts, CDFG will process the Agreement.



The following provides a description of a discussion between Matt Amalong (AMEC Wildlife Biologist) and Scott Harris (CDFG Biologist) on September 18, 2008.

Scott Harris  
CDFG  
626-797-3170  
spharris@dfg.ca.gov

Topic: Biological Resources for Palmdale Hybrid Power Project

Discussion:

Mr. Harris's comments included:

- Confirmed that AMEC followed survey protocols for burrowing owl (CDFG, CBOC) and desert tortoise (USFWS, CEC).
- Expressed concern regarding the spacing of transects (30 feet) for botanical surveys, stating that some plants can be missed. He will have a CDFG Botanist look at the methods.
- Confirmed that PHPP had a Mohave ground squirrel habitat assessment.
- Expressed concern regarding the City of Palmdale's Native Desert Vegetation Ordinance, stating that it was inadequate.
- Recommended contacting the CDFG Waters specialist (Jamie Jackson: (626) 296-3430) and arranging a site visit with appropriate AMEC personnel (Nick Ricono).
- Recommended a site visit with AMEC.

Mr. Harris will review AMEC's BRTR and provide comments as soon as possible.



The following provides a description of a discussion between Nick Ricono (AMEC permitting specialist) and Phuong Trinh (U.S. Army Corps of Engineers-Los Angeles District Regulatory Staff) on September 18, 2008.

Phuong Trinh  
U.S. Army Corps of Engineers-Los Angeles District  
Project Manager-Los Angeles County  
213-452-3372  
phuong.h.trinh@usace.army.mil

Topic: Jurisdictional waters permitting.

Discussion:

Called for confirmation of availability for pre-application meeting regarding the PHPP.

Ms. Trinh confirmed that USACE is available for pre-application meetings to discuss Project designs, avoidance measures, and permitting process if avoidance is not possible. Applicant can coordinate meeting to include CDFG, RWQCB, and other interested parties.