

**QUINO CHECKERSPOT BUTTERFLY  
HABITAT ASSESSMENT  
FOR THE TULE WIND PROJECT**

**McCain Valley, San Diego County, California**

*Prepared for:*

**Iberdrola Renewables**

1125 NW Couch, Suite 700

Portland, OR 97209

Tel: (503) 796-7000

*Contact: Jen Bradford*

*Prepared by:*

**DUDEK**

605 Third Street

Encinitas, California 92024

Tel: (760) 942-5147

*Contact: Mike Howard*

**JUNE 2008**

# Quino Checkerspot Butterfly Habitat Assessment

---

## CONTENTS

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	Background.....	1
1.2	Quino Checkerspot Butterfly.....	1
1.3	Study Purpose.....	4
<b>2</b>	<b>METHODS.....</b>	<b>4</b>
<b>3</b>	<b>RESULTS.....</b>	<b>7</b>
3.1	Physical Setting.....	7
3.2	Vegetation Communities.....	8
3.3	Butterfly Species.....	11
<b>4</b>	<b>DISCUSSION AND CONCLUSIONS.....</b>	<b>17</b>
<b>5</b>	<b>REFERENCES.....</b>	<b>19</b>

## APPENDICES

- A Plant and Animal Species List
- B Field Notes

## TABLES

1	Project Survey Summary.....	7
2	Vegetation Communities in the QCB Habitat Assessment Study Area.....	8
3	Butterfly Species Observed in the Study Area.....	12
4	Quino Checkerspot Nectar Plants Observed in the Study Area.....	16

## FIGURES

1	Regional Map.....	2
2	Vicinity Map.....	3
3	Vegetation Index Map.....	5
4a–4f	Vegetation Communities.....	Map Pocket
5a	QCB Habitat Assessment.....	14
5b	QCB Habitat Assessment.....	15

# Quino Checkerspot Butterfly Habitat Assessment

---

## 1 INTRODUCTION

### 1.1 Background

Iberdrola Renewables (Iberdrola) is in the process of studying the potential to implement a wind energy project (the Tule Wind Project) in portions of the McCain Valley in eastern San Diego County, California. McCain Valley is located in southeastern San Diego County, approximately 60 miles east of the city of San Diego near the town of Boulevard (*Figure 1*).

The proposed Tule Wind Project (project) would include wind turbines, access roads, utility lines, and substations in the area. The proposed study area occurs on federally owned lands managed by the Bureau of Land Management (BLM), state-owned lands, and Native American owned lands within the Campo, La Posta, and Cuyapaipe Reservations (*Figure 2*).

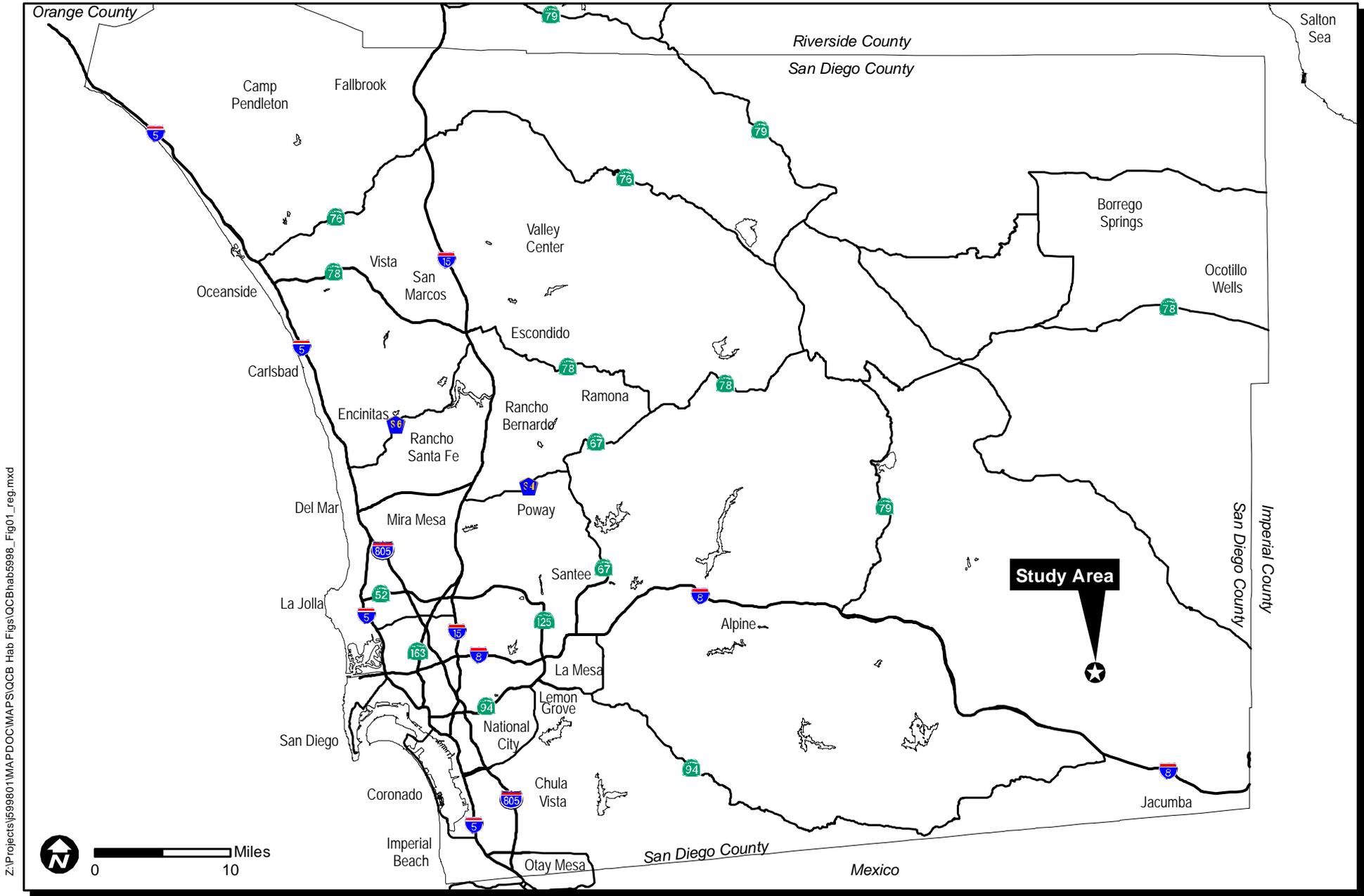
Dudek was requested to investigate the potential of the study area to support quino checkerspot butterfly (*Euphydryas editha quino*; QCB) and provide recommendations to Iberdrola.

### 1.2 Quino Checkerspot Butterfly

The Quino checkerspot butterfly was listed as endangered under the Endangered Species Act in January 1997 (USFWS 2003). Loss and degradation of habitat have been cited as the primary factors causing decline in this subspecies (Mattoni et al. 1997). In August 2003, the United States Fish and Wildlife Service (USFWS) completed the Recovery Plan for QCB. The recovery plan identified six recovery units that were delineated based on ecological and political factors. The Southeast San Diego Recovery Unit covers the southeastern portion of the proposed study area. The nearest documented occurrence of QCB is in the Jacumba Occurrence Complex, located approximately six miles southeast of the southeastern portion of the proposed study area.

The QCB is in the Lepidoptera family Nymphalidae (brush-footed butterflies) and the subfamily melitaeninae (checkerspots and fritillaires). QCB is a subspecies within the Edith's checkerspot species group and is differentiated from other subspecies in this group by a variety of characteristics, including size, wing coloration, and larval and pupal phenotype (Mattoni et al. 1997).

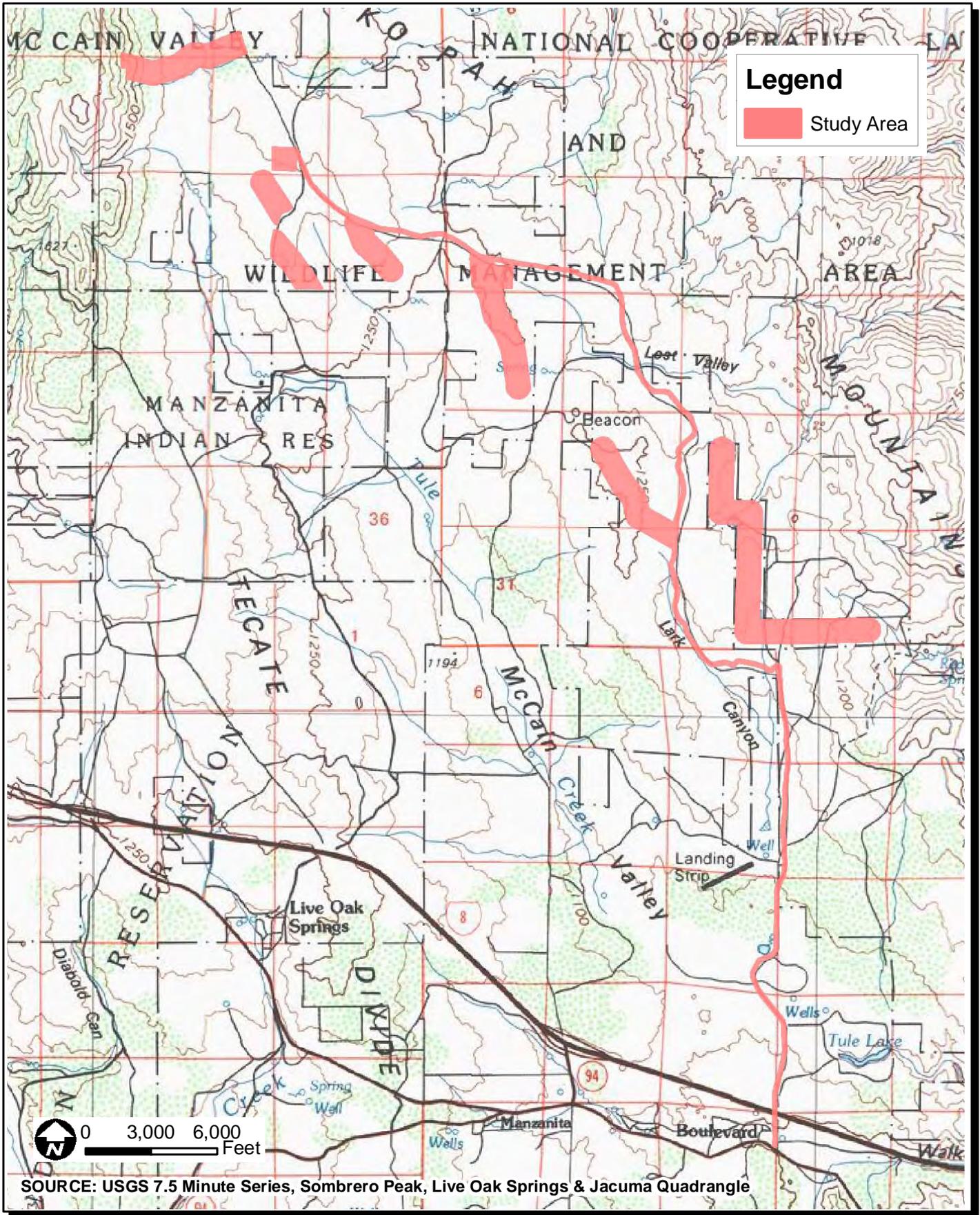
The QCB life cycle typically includes one generation of adults per year, with a flight period from late January to early March and continuing as late as early May. The exact timing is dependent on the weather conditions (Emmel and Emmel 1973; USFWS 2003). Females are generally fertilized on the day they emerge from pupae and lay (oviposit) one or two egg clusters per day for most of their 10- to 14- day life span. Adult emergence is staggered, resulting in a one to two month flight period. QCB larvae can live for several years by undergoing periods of diapause between plant growing seasons.



Z:\Projects\1599801\MAPDOC\MAPS\QCB\_Hab\_Figs\QCBHab5998\_Fig01\_reg.mxd

Tule Wind Project - Quino Checkerspot Butterfly Habitat Assessment  
**Regional Map**

**FIGURE**  
**1**



Z:\Projects\599801\MAPDOC\MAPS\OCB Hab Figs\OCBhab5998\_Fig02\_vic.mxd

Tule Wind Project - Quino Checkerspot Butterfly Habitat Assessment  
**Vicinity Map**

**FIGURE**  
**2**

# Quino Checkerspot Butterfly Habitat Assessment

---

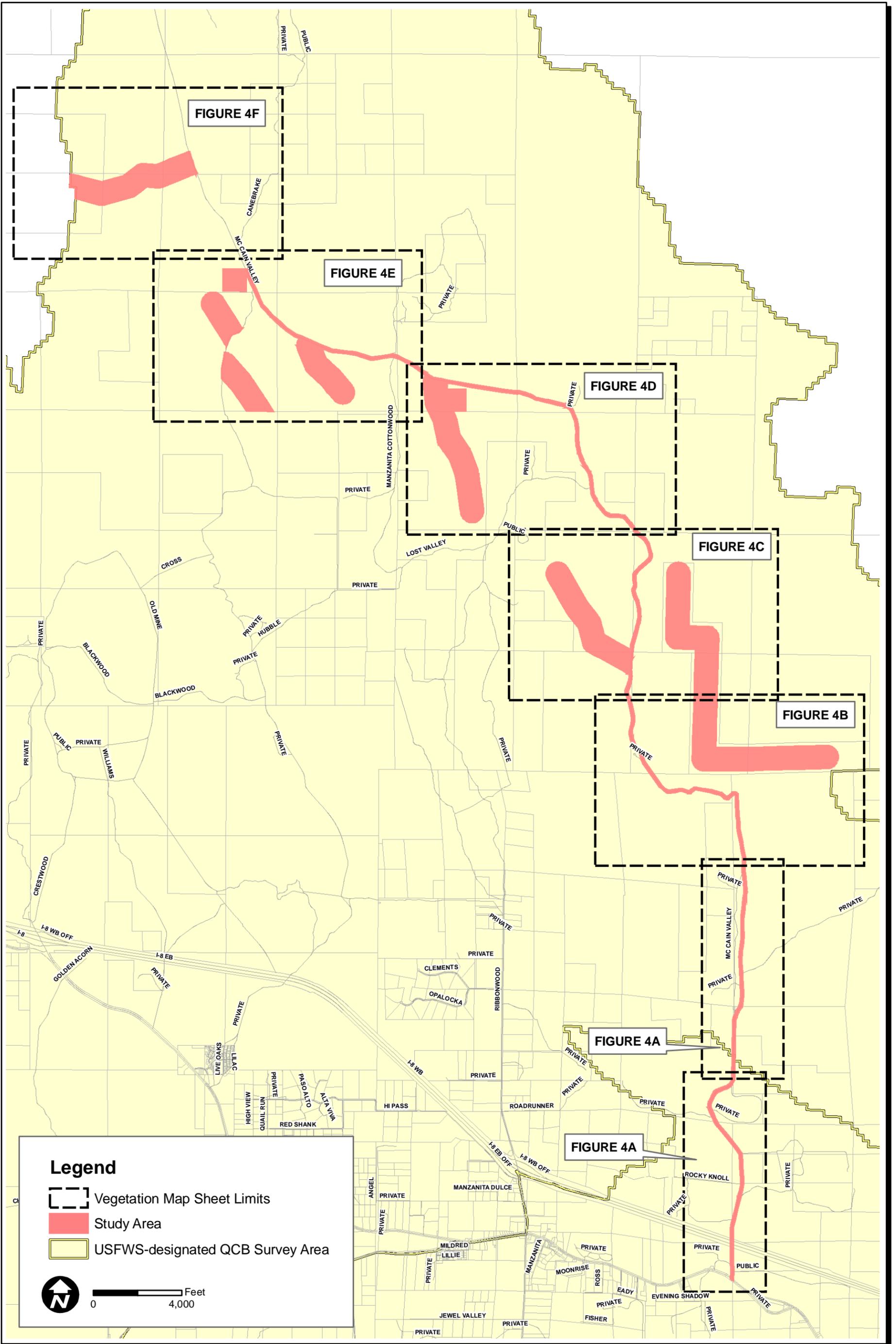
QCB females have been documented to oviposit eggs on five primary host plant species: dot-seed plantain (*Plantago erecta*), woolly plantain (*Plantago patagonica*), white snapdragon (*Antirrhinum coulterianum*), thread-leaved bird's beak (*Cordylanthus rigidus*), and owl's clover (*Castilleja exserta*). In some cases these plant species are important as secondary host plants, used as food sources by larval QCB. Numerous plants are used as nectar sources by QCB.

## 1.3 Study Purpose

The purpose of this study is to assess proposed project “action areas” (i.e., the area encompassing the proposed turbine alignment, access roads, utility lines, and substations) for the presence of suitable habitat for QCB. The assessment is designed to identify areas of suitable habitat where future focused Quino surveys may be necessary and to exclude areas that are not considered suitable to support the species.

## 2 METHODS

A QCB habitat assessment and evaluation was conducted for the anticipated “action areas” within portions of the proposed Tule Wind Project site, which is where proposed project facilities and potential effects are anticipated. A majority of the proposed actions areas occur within the USFWS-designated QCB survey area (USFWS 2003). Areas that are excluded from the USFWS-designated QCB survey area in this region include the upper elevations of the Cuyapaipe Indian Reservation and the upper elevations of the ridge east of Thing Valley. Therefore, these areas were not included in the study area for this QCB habitat assessment. The study area included only the portions of the proposed study area where access was permitted (as directed by Iberdrola Renewables), which included the Cuyapaipe lands, BLM lands, and state lands. Therefore, Manzanita and Campo lands were not assessed. Within the study area lands, surveys covered a 1,000-foot-wide corridor along proposed turbine and access road alignments. Approximately 10 linear miles of proposed turbines and access roads occurs within the required QCB survey area on Cuyapaipe, BLM, and state land. Additionally, the study area included two substation areas (20 acres each) and a 100-foot-wide survey corridor along approximately 10 linear miles of McCain Valley Road. The location of all proposed alignments and facilities was based on geographic information system (GIS) data provided to Dudek by Iberdrola Renewables on April 2, 2008. The total habitat assessment study area included approximately 1,145 acres and is illustrated in *Figure 3*.



Z:\Projects\599801\MAPDOC\MAPS\QCB Hab Figs\QCBhab5998\_Fig03\_index.mxd

Tule Wind Project - Quino Checkerspot Butterfly Habitat Assessment  
**Vegetation Index Map**

## Quino Checkerspot Butterfly Habitat Assessment

---

Field surveys were generally conducted in teams of two biologists. Meandering transects were followed along the length of the survey corridors. The teams mapped vegetation communities on aerial photograph based field maps (1 inch = 300 foot scale) in the field following the Terrestrial Vegetation Communities of San Diego County Based on Holland's Descriptions (Oberbauer 1996), which is a regional vegetation classification system based on Holland (1986). Vegetation communities were evaluated in the field to determine if areas could be excluded from meeting the requirements for focused QCB surveys (USFWS 2002). Excluded areas include:

- Orchards, developed areas, or small in-fill parcels largely dominated by non-native vegetation
- Active agriculture fields
- Closed-canopy forests or riparian areas, dense chaparral, and small openings (less than an acre) completely enclosed within dense chaparral.

For chaparral communities, the vegetation was further classified as "Open" or "Closed" to describe whether it met the "dense" definition used to exclude areas from focused QCB surveys. The USFWS QCB survey protocol (2002) defines "dense chaparral" as "vegetation so thick that it is inaccessible to humans except by destruction of woody vegetation for at least 100 meters."

Within each vegetation community, Dudek recorded the plant species present, including known QCB host plants and nectar sources. If host plant species were encountered, the perimeter of the polygon was to be marked and recorded using GPS. Based on the USFWS QCB survey protocol (2002), the target host plant species for this assessment included:

- Dot-seed plantain (*Plantago erecta*)
- Woolly plantain (*Plantago patagonica*)
- White snapdragon (*Antirrhinum coulterianum*)
- Thread-leaved bird's beak (*Cordylanthus rigidus*)
- Owl's clover (*Castilleja exserta*).

Additionally, Dudek recorded all butterfly species observed in the field. Incidental observations of other wildlife species were also recorded.

QCB habitat assessments and focused QCB surveys are timed to correspond with the blooming period of the host plant species and the flight season of the adult QCB. For this QCB habitat assessment, all surveys were conducted during the appropriate period to detect the target host plant species identified above. Dudek based the field effort on regional species observations reported on the USFWS Carlsbad Field Office 2008 Season Quino monitoring information website (USFWS 2008). The nearest monitoring information this season for host plants was from Campo, where white snapdragon was beginning to sprout on March 11. Based on this

## Quino Checkerspot Butterfly Habitat Assessment

information and a reconnaissance visit to the area, the field data collection for the habitat assessment was scheduled from early to mid-April through mid-May. The 2008 flight season for adult QCB began in early March at lower elevations and in early April at higher elevations (the McCain Valley study area would be considered higher elevation). Adult QCB were observed in flight on April 20 at the Jacumba occurrence site. Surveys were conducted during a relatively average rainfall year. For the 2008 rainfall year (July 2007-June 2008), San Diego received approximately 7.25 inches of rain. Average precipitation for San Diego is approximately 10 inches per year. All surveys were conducted under mild conditions with sun to partial sun. Wind conditions varied from calm to 20 miles per hour. *Table 1* provides a summary of the survey effort for this project.

**Table 1**  
**Project Survey Summary**

Surveyor	QCB Permit No.	2008						
		4/14	4/22	4/24	4/30	5/2	5/8	5/14
David Flietner	TE-008031-0	X		X				
Anita Hayworth, Ph.D.	TE-781084-6					X		
Mike Howard	—		X		X	X	X	X
Paul Lemons	TE-051248-2	X		X				
Brock Ortega	TE-813545-6	X						
Travis Smith, Ph.D.	—	X	X		X			

### 3 RESULTS

#### 3.1 Physical Setting

The study area is primarily within the McCain Valley, which is a broad valley surrounded by the Laguna Mountains in the west and the In-Ko-Pah Mountains in the east. The terrain in the area ranges from valley bottoms to house-sized boulder-covered ridge lines. The elevation ranges across the study area from approximately 3,320 feet above mean sea level (MSL) at McCain Valley Road near Interstate 8 to approximately 4,400 feet above MSL along the northwestern portion of the study area above the Cottonwood Creek Campground.

The study area is crossed by several drainage systems within the Anza Borrego Hydrologic Unit. Tule Creek, Lark Canyon Creek, and Cranebrake Wash are the main drainages in the study area. In general, these drainages are intermittent water courses that are fed by numerous smaller ephemeral tributaries.

The soils in the study area are exclusively sandy granitic soils. The soils are characterized as loamy coarse sands and coarse sandy loams of the Kitchen Creek, La Posta, Mottsville, and Tollhouse soil series. These soils are derived from weathered granitic and granodiorite parent

# Quino Checkerspot Butterfly Habitat Assessment

material and are all somewhat excessively drained to excessively drained. Surveys of the study area verified the presence of only sandy granitic soils with no observed inclusions.

The BLM manages large portions of the study area. Land uses in these areas include grazing, camping, off-highway vehicle use, and hunting. Land uses on private lands and Native American tribal lands are generally grazing and rural residential.

## 3.2 Vegetation Communities

The study area is covered predominantly by chaparral and scrub vegetation communities. Chaparral communities include granitic chamise chaparral, red shank chaparral, semi-desert chaparral, granitic southern mixed chaparral, and scrub oak chaparral. Scrub communities included flat-topped buckwheat and big sagebrush scrub. Other vegetation communities occurring in the study area included coast live oak woodland, non-native grassland, southern coast live oak riparian forest, and southern willow scrub. Other land cover included field/pasture, disturbed habitat, and urban/developed. A description of these communities is provided below. *Table 2* provides a summary of the communities and acreages within the study area. The vegetation mapping for the study area is shown on *Figures 4a-4f* provided in the attached map pockets.

**Table 2**  
**Vegetation Communities in the QCB Habitat Assessment Study Area**

Vegetation Community	Community Code	Map Code	Acres
Big Sagebrush Scrub	35210	GBS	7.38
Coast Live Oak Woodland	71160	CLOW	17.96
Urban/Developed	12000	DEV	7.79
Disturbed Habitat	11300	DH	25.00
Field/Pasture	18310	AGR	0.34
Flat-Topped Buckwheat	37K00	BS	9.86
Granitic Chamise Chaparral – <i>Closed</i>	37210	CC-c	136.17
Granitic Chamise Chaparral – <i>Open</i>		CC-o	53.57
Granitic Southern Mixed Chaparral – <i>Closed</i>	37121	SMX-c	106.45
Granitic Southern Mixed Chaparral - <i>Open</i>		SMX-o	352.92
Non-Native Grassland	42200	NNG	0.57
Red Shank Chaparral	37300	RSC	13.52
Scrub Oak Chaparral – <i>Closed</i>	37900	SOC-c	6.02
Scrub Oak Chaparral – <i>Open</i>		SOC-o	67.49
Semi-Desert Chaparral	37400	SDC	337.24
Southern Coast Live Oak Riparian Forest	61630	ORF	2.07
Southern Willow Scrub	63320	SWS	0.66
<b>Total Acres</b>			<b>1,145.00</b>

<sup>1</sup>Total may not sum due to rounding

## Quino Checkerspot Butterfly Habitat Assessment

---

### ***Big Sagebrush Scrub (35210)***

Big sagebrush scrub is characterized as being a moderately open shrubland consisting predominantly of big sagebrush (*Artemisia tridentata* ssp. *tridentata*). Other species occurring within big sagebrush include flat-topped buckwheat (*Eriogonum fasciculatum* var. *polifolium*), goldfields (*Lasthenia californica*), and popcorn flower (*Cryptantha angustifolia*). It often occurs in or adjacent to floodplains and valley bottoms in the sandy transition to chaparral. Approximately 7.38 acres of big sagebrush scrub were mapped within the study area.

### ***Coast Live Oak Woodland (71160)***

Coast live oak woodland is an evergreen woodland dominated by coast live oak (*Quercus agrifolia*). The understory is typically made up of grassland, scrub, or chaparral species, and the community often intergrades with mixed chaparral (Holland 1986). In the study area, coast live oak woodland is generally an open canopy woodland typically occurring in valley bottoms or along drainage courses. Approximately 17.96 acres of coast live oak woodland were mapped within the study area.

### ***Urban/Developed (12000)***

Urban/developed generally refers to areas of highly modified lands, including urban development and roadways. In the study area, paved roadways are mapped as urban/developed. Approximately 7.79 acres of urban/developed were mapped within the study area.

### ***Disturbed Habitat (11300)***

Disturbed habitat refers to areas that have been permanently altered by previous human activity that has eliminated future biological value of the land for most species. The native or naturalized vegetation is no longer present, and the land lacks habitat value for sensitive wildlife. In the study area, disturbed habitat consists of graded areas and unpaved roads. Approximately 25.00 acres of disturbed habitat were mapped within the study area.

### ***Field/Pasture (18310)***

Field/pasture includes areas of low-intensity agriculture typically involving dry farming or livestock grazing. In the study area, a small area of field/pasture occurs along McCain Valley Road near Interstate 8 where livestock grazing occurs in a floodplain area. In general, this area is characterized by non-native grasses, including *Bromus* and *Hordeum* species, and non-native herbaceous species, including tumble mustard (*Sisymbrium altissimum*) and red-stemmed filaree (*Erodium cicutarium*). Approximately 0.34 acre of field/pasture was mapped within the study area.

### ***Flat-topped Buckwheat (37K00)***

Flat-topped buckwheat is a community dominated nearly exclusively by flat-topped buckwheat. This community is not described by Holland (1986) but is included in the San Diego County vegetation classification system in Oberbauer (1996). In the study area, this community is dominated by flat-topped buckwheat with occasional annual brome grasses, deerweed (*Lotus*

## Quino Checkerspot Butterfly Habitat Assessment

---

*scoparius*), and bare ground. This community may develop after fires or under heavy grazing. This community often intergrades with semi-desert chaparral. Approximately 9.86 acres of flat-topped buckwheat were mapped within the study area.

### ***Granitic Chamise Chaparral (37210)***

Granitic chamise chaparral is strongly dominated by chamise (*Adenostoma fasciculatum*) and is adapted to fire by stump sprouting. The herb layer is usually very sparse (Holland 1986). In the study area, chamise varied between approximately 50% to nearly 100% absolute cover, with a sparse herb layer of annual grasses and herbs. Other woody shrubs include cupleaf ceanothus (*Ceanothus greggii* var. *perplexans*), sugar bush (*Rhus ovata*), and Mexican manzanita (*Arctostaphylos pungens*). Approximately 189.74 acres of granitic chamise chaparral were mapped within the study area (53.57 acres open; 136.17 acres closed).

### ***Granitic Southern Mixed Chaparral (37121)***

Granitic southern mixed chaparral is a mixed assemblage of chaparral species with no clear dominant shrub species. In the study area, this community was further classified as closed or open to indicate shrub density. Perennial species common to this community include chamise, sugar bush, scrub oak (*Quercus berberidifolia*), Muller oak (*Quercus cornelius-mulleri*), holly-leaf redberry (*Rhamnus ilicifolia*), mountain mahogany (*Cercocarpus betuloides* var. *betuloides*), and Mojave yucca (*Yucca schidigera*). Herbaceous species include San Diego gilia (*Gilia diegensis*), popcorn flower, sandy-soil suncup (*Camissonia strigulosa*), desert beauty (*Linanthus bellus*), Lemmon's linanthus (*Linanthus lemmonii*), chia (*Salvia columbariae*), and goldfields. Approximately 459.37 acres of granitic southern mixed chaparral were mapped in the study area (352.92 acres open; 106.45 acres closed).

### ***Non-native Grassland (42200)***

Non-native grasslands are typically dominated by exotic, annual grasses of Mediterranean origin. Only a small portion of the study area supports non-native grassland, and it occurs in association with disturbed areas along McCain Valley Road. Common species include cheat grass (*Bromus tectorum*), red brome (*Bromus madritensis* ssp. *rubens*), slender wild oat (*Avena barbata*), Italian ryegrass (*Lolium multiflorum*), wild oat (*Avena fatua*), and sandy-soil suncup. Approximately 0.57 acre of non-native grassland occurs in the study area.

### ***Red Shank Chaparral (37300)***

Red shank chaparral is comprised on nearly pure stands of red shank (*Adenostoma sparsifolium*) (Holland 1986). This community is similar to chamise chaparral but is typically taller and somewhat more open (Holland 1986). In the study area, red shank chaparral intergrades with chamise chaparral and scrub oak chaparral. Like chamise chaparral, the understory in red shank chaparral is sparse and comprised of flat-topped buckwheat, annual forbs, and brome grasses. Approximately 13.52 acres of red shank chaparral occurs in the study area. All of the red shank chaparral is considered open.

## Quino Checkerspot Butterfly Habitat Assessment

---

### ***Scrub Oak Chaparral (37900)***

Scrub oak chaparral is a dense, evergreen chaparral up to 20 feet tall (Holland 1986). In the study area, this community is dominated by scrub oak and Muller's oak. Other occasional species in this community include chamise, red shank, and cupleaf ceanothus. The herb layer is similar to that of chamise chaparral and red shank chaparral communities. Approximately 73.51 acres of scrub oak chaparral occur in the study area (67.49 acres open; 6.02 acres closed).

### ***Semi-Desert Chaparral (37400)***

Semi-desert chaparral is relatively open with widely spaced shrubs and openings supporting annuals. This community is similar to mixed chaparral but occurring in areas with hotter, drier summers with colder winters. In the study area, this community is characterized by abundant rock outcrops. Semi-desert intergrades with flat-topped buckwheat and the other chaparral communities. Perennial species common to this community include flat-top buckwheat, silver cholla (*Cylindropuntia echinocarpus*), Mojave yucca, and Mormon-tea (*Ephedra californica*). Scattered occasionally throughout this community are other common chaparral shrubs, including sugarbush, mountain mahogany, and scrub oak. Annual species observed in the openings of this community include goldfields, red-stemmed filare, golden yarrow (*Eriophyllum confertiflorum*) thread-leafed eriastrum (*Eriastrum filifolium*), chia, desert beauty, Lemmon's linanthus, San Diego gilia, popcorn flower, and red brome. Approximately 337.24 acres of semi-desert chaparral occur in the study area. All of the semi-desert chaparral is considered open.

### ***Southern Coast Live Oak Riparian Forest (61310)***

Southern coast live oak riparian forest is a dense evergreen riparian community dominated by coast live oak. This community occurs along floodplains and drainages. In the study area, this community occurs in a single area where several drainages converge. In addition to coast live oak, this community supports arroyo willow (*Salix lasiolepis*) and big sagebrush. Approximately 2.07 acres of southern coast live oak riparian forest occur in the study area.

### ***Southern Willow Scrub (63320)***

Southern willow scrub is a dense, winter deciduous riparian community dominated by willows (*Salix* spp.). The understory is typically undeveloped due to the thickness of the canopy cover. Southern willow scrub is strongly associated with streams and floodplains. In the study area, this community occurs along the southern end of McCain Valley Road in a floodplain area near Interstate 8. This area supports a relatively open grouping of arroyo willow. Approximately 0.66 acres of southern willow scrub occur in the study area.

## **3.3 Butterfly Species**

No QCB were observed during these surveys. A total of 11 butterfly species were observed during the surveys. These species are listed in *Table 3*.

# Quino Checkerspot Butterfly Habitat Assessment

**Table 3**  
**Butterfly Species Observed in the Study Area**

Scientific Name	Common Name
<b>Hesperiidae</b>	<b>Skippers</b>
<i>Erynnis funeralis</i>	funereal duskywing
<b>Lycaenidae</b>	<b>Blue, Hairstreaks &amp; Coppers</b>
<i>Brephidium exile</i>	western pygmy blue
<i>Icaria acmon acmon</i>	acmon blue
<b>Nymphalidae</b>	<b>Brush-footed Butterflies</b>
<i>Euphydryas chalcedona</i>	Chalcedon checkerspot
<i>Junonia coenia</i>	buckeye
<i>Vanessa annabella</i>	west coast lady
<i>Vanessa cardui</i>	painted lady
<b>Peiridae</b>	<b>Whites and Orangetips</b>
<i>Anthocharis sara</i>	Sara orangetip
<i>Colias eurydice</i>	California dogface
<i>Pontia protodice</i>	common white
<b>Riodinidae</b>	<b>Metalmarks</b>
<i>Apodemia virgulti</i>	Behr's metalmark

## ***Quino Checkerspot Habitat Assessment***

Suitable habitat for QCB is considered to be dictated primarily by vegetation/vegetation structure, availability of host plants/nectar sources, and other abiotic factors such as terrain and soils (Mattoni et al. 1997, USFWS 2003). Preferred habitat for QCB is characterized by barren areas with low-growing vegetation, often within grasslands, disturbed areas, and sparse scrub and chaparral. Suitable habitat for QCB would support one or more of the host plant species and nectar sources. Nectar sources include primarily small annual plant species that flower at the same time as the flight season for the adult QCB and have been documented in Mattoni et al. (1997) and USFWS (2003). Additionally, QCB suitable habitat is typically characterized by soil crusts, referred to as cryptogamic or cryptobiotic crusts, which act to reduce plant cover favoring the host and nectar plants. QCB often occupies landscapes with topographic relief, such as near hills or ridgelines, which facilitates their social “hill-topping” behavior.

The QCB Recovery Plan designates recovery units for the species and provides additional area-specific information for each unit (USFWS 2003). The Southeast San Diego Recovery Unit is centered on the Jacumba Occurrence Complex. For this area, the Recovery Plan identifies “Habitat Considerations” for the species in this region. Occupied suitable habitat in the Jacumba area occurs in open juniper woodlands with clay soil lenses and *Plantago* host plant species.

## Quino Checkerspot Butterfly Habitat Assessment

---

### *Vegetation and Vegetation Structure*

Based on the published information on QCB suitable habitat, field observations of the vegetation communities in the study area, and the professional judgment of Dudek biologists, the following vegetation communities occurring within the study area are considered potentially suitable to support QCB based solely on vegetation and vegetation structure:

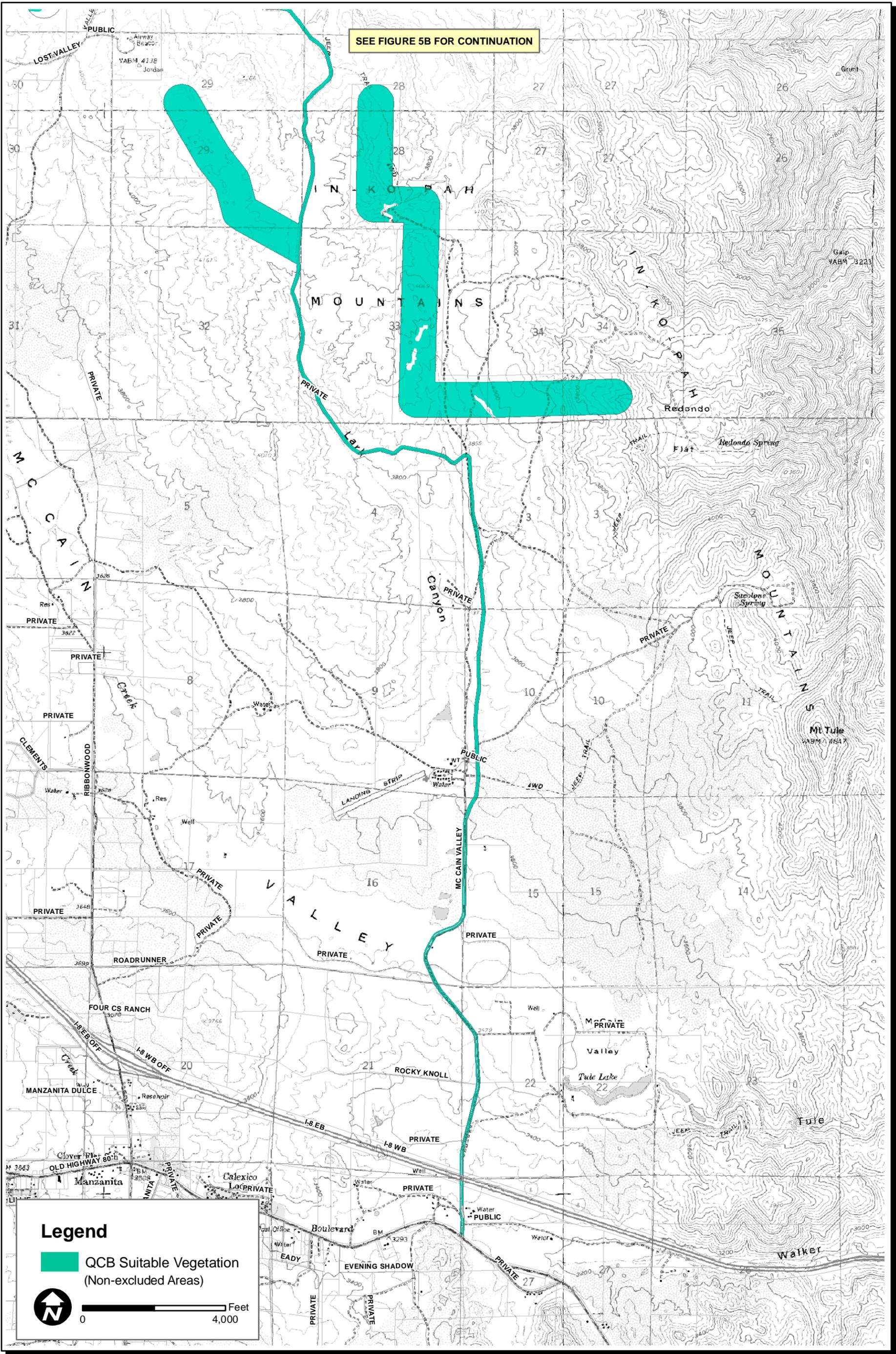
- Big Sagebrush Scrub
- Coast Live Oak Woodland
- Disturbed Habitat
- Field/Pasture
- Flat-Topped Buckwheat
- Granitic Chamise Chaparral – *Open*
- Granitic Southern Mixed Chaparral - *Open*
- Non-Native Grassland
- Red Shank Chaparral
- Scrub Oak Chaparral – *Open*
- Semi-Desert Chaparral
- Southern Willow Scrub.

Based on the published information on QCB suitable habitat, field observations of the vegetation communities in the study area, and the professional judgment of Dudek biologists, the following vegetation communities occurring within the study area are not considered potentially suitable for QCB based solely on vegetation and vegetation structure:

- Urban/Developed
- Granitic Chamise Chaparral – Closed
- Granitic Southern Mixed Chaparral – Closed
- Scrub Oak Chaparral – Closed
- Southern Coast Live Oak Riparian Forest.

Based on vegetation and vegetation structure, the total acreage of suitable vegetation for QCB within the study area is 886.51 acres. The total acreage of vegetation excluded from suitable habitat for QCB within the study area is 258.49 acres. *Figures 5a–5b* show the suitable habitat areas and excluded areas of the study area.

SEE FIGURE 5B FOR CONTINUATION

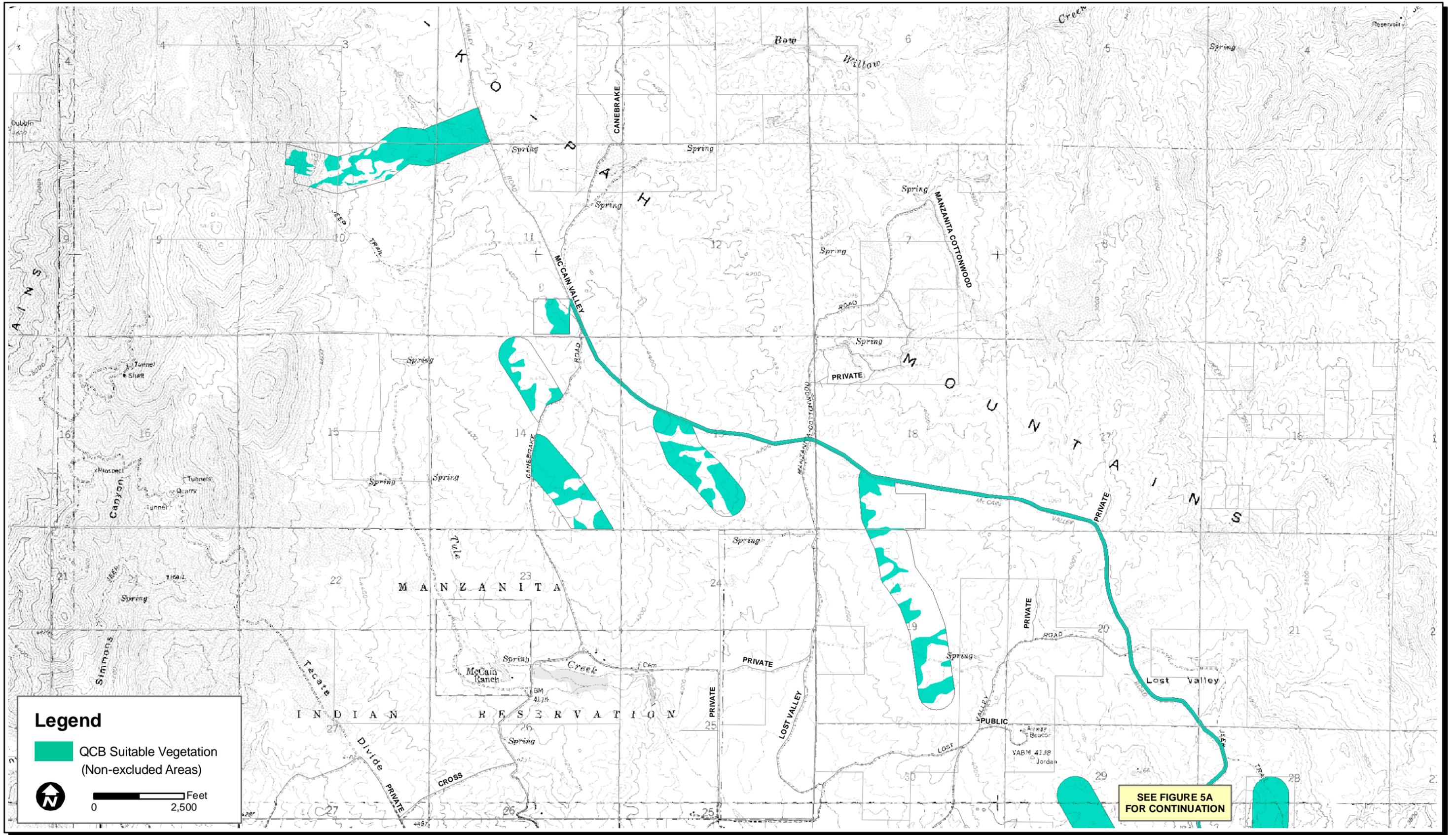


Z:\Projects\659801\MAPS\QCB Hab Figs\QCB Hab 5998\_Fig05A\_suitHab.mxd

Tule Wind Project - Quino Checkerspot Butterfly Habitat Assessment  
**QCB Suitable Vegetation**

**FIGURE 5A**

Z:\projects\599801\MAPDOC\MAPS\QCB Hab Figs\QCBhab5998\_Fig05B\_suthab.mxd



Tule Wind Project - Quino Checkerspot Butterfly Habitat Assessment  
**QCB Suitable Vegetation**

**FIGURE 5B**

# Quino Checkerspot Butterfly Habitat Assessment

---

## *Host Plants and Nectar Sources*

No host plants for QCB were observed in study area. The surveys were conducted during the appropriate season and during a period experiencing relatively typical normal rainfall; therefore, the species would have been detectable if present this season. The host plants are all annual species that may fluctuate in their presence and abundance from year to year but should have been observable given the phenology of other observed plant species in the area.

Numerous potential nectar source plant species were detected in the study area. *Table 4* provides a list of plant species observed in the study area that have been documented as nectar sources for QCB (Mattoni et al. 1997, USFWS 2003). Other plant species have the potential to serve as nectar sources for QCB, and a complete list of the plant species recorded in the study area is provided in *Appendix A*. The field notes from the habitat assessment are provided in *Appendix B*.

**Table 4**  
**Quino Checkerspot Nectar Plants Observed in the Study Area**

Scientific Name	Common Name
<b>STERACEAE</b>	<b>SUNFLOWER FAMILY</b>
<i>Lasthenia californica</i>	California goldfields
<b>BORAGINACEAE</b>	<b>BORAGE FAMILY</b>
<i>Cryptantha</i> spp.	popcorn flower
<b>FABACEAE</b>	<b>PEA FAMILY</b>
<i>Lotus scoparius</i>	deerweed
<b>HYDROPHYLLACEAE</b>	<b>WATERLEAF FAMILY</b>
<i>Eriodictyon trichocalyx</i> ssp. <i>trichocalyx</i>	Yerba Santa
<i>Phacelia</i> spp.	Phacelia
<b>LAMIACEAE</b>	<b>MINT FAMILY</b>
<i>Salvia columbariae</i>	chia
<b>ONAGRACEAE</b>	<b>EVENING PRIMROSE FAMILY</b>
<i>Camissonia bistorta</i>	suncup
<i>Camissonia strigulosa</i>	sandysoil suncup
<b>POLEMONIACEAE</b>	<b>PHLOX FAMILY</b>
<i>Gilia diegensis</i>	San Diego gilia
<i>Linanthus bellus</i>	desert beauty
<i>Linanthus lemmoni</i>	Lemmon's linanthus
<b>POLYGONACEAE</b>	<b>BUCKWHEAT FAMILY</b>
<i>Eriogonum faciculatum</i> var. <i>polifolium</i>	flat-topped buckwheat
<b>LILIACEAE</b>	<b>LILY FAMILY</b>
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	blue dicks

## *Abiotic Conditions*

In addition to vegetation/vegetation structure and host and nectar plants, soil characteristics are considered an important factor in habitat suitability for QCB. All soils in the study area are classified as loamy coarse sands or coarse sandy loams, and field observations verified these classifications. No clay lenses or other clay inclusions were observed in the study area. Additionally, no cryptogamic crusts were detected in the study area. The lack of clayey soils likely reduced the potential of the site to support host plants.

## Quino Checkerspot Butterfly Habitat Assessment

---

The terrain of the study area is characterized by valley bottoms and ridgelines with abundant rock outcrops. This terrain is conducive to “hill-topping” behavior.

The primary land use potentially affecting habitat suitability for QCB in the study area is grazing. According to the Recovery Plan (USFWS 2003), grazing can have a positive or negative effect on habitat quality for QCB depending on timing, intensity, and duration. Grazing can result in the destruction of cryptogamic crusts and the spread of invasive plant species but can also reduce non-native plant cover in favor of host/nectar plants. Grazing has been a long-term land use throughout McCain Valley. Based on observations during this study, grazing intensity was relatively low. No cryptogamic crusts occur in the study area, so grazing does not affect this habitat factor. In general, the study area is characterized by native vegetation communities with no strong infestation of non-native species. Therefore, grazing in the study area is not considered to be a factor in determining habitat suitability for QCB.

Climatic conditions have the potential to affect the abundance of both adult QCB and habitat quality for QCB. The 2006-2007 precipitation levels in San Diego County were well below average, and conditions for QCB were suboptimal. This season (2007-2008) was a near average year for precipitation, and abundant adult QCB and good QCB habitat conditions were observed across the species’ range (USFWS 2008).

#### **4 DISCUSSION AND CONCLUSIONS**

Based on the results of this habitat assessment, the study area contains vegetation/vegetation structure potentially suitable to support QCB but lacks host plant species and appropriate soils. Although a large portion of the study area contains suitable vegetation, the lack of suitable soil characteristics in the study area (i.e., clays and crusts) substantially reduces habitat suitability for QCB. The sandy, decomposed granite substrate of the study area is not likely to support host plant species, and cryptogamic crusts are not commonly associated with these soil types. The study area does support a number of nectar sources; however, QCB will utilize a number of relatively widespread plants as nectar sources, and the presence of these species is not a strong indicator of suitable habitat.

Although this study constitutes only a habitat assessment and not a focused protocol survey for QCB, no QCB were observed in the study area during the assessment. A total of 14 person-days were spent conducting the habitat assessment. All biologists conducting the assessment were capable of identifying QCB, and four of the six biologists conducting this assessment were experienced and permitted QCB biologists.

Several other recent habitat assessments or focused protocol surveys for QCB have been conducted within or adjacent to the study area. These studies include:

## Quino Checkerspot Butterfly Habitat Assessment

---

- Quino Checkerspot Butterfly Habitat Assessment for BLM Lands Managed by the El Centro Field Office. BLM 2005.
- Focused Survey Report for the Quino Checkerspot Butterfly, Lark Canyon Study Site. Tierra Environmental Services 2006.
- Quino Checkerspot Butterfly Survey Report for the 94.5-acre Rough Acres Ranch Property. Dudek 2008.

The BLM QCB Habitat Assessment (2005) used similar methods as this study and covered 13,858 acres managed by BLM in the McCain Valley, Round Mountain, and Table Mountain areas. For the portions of the BLM assessment also covered under this assessment, the results are consistent. The BLM study found no QCB, no host plants, and numerous potential nectar source species. The nearest host plant species documented in the BLM assessment was in the far eastern areas of McCain Valley, approximately one mile east of McCain Valley Road. The Table Mountain and Round Mountain areas supported the highest abundance of host plants. Based on their assessment, eastern McCain Valley, Table Mountain, and Round Mountain were identified as the “highest QCB habitat potential.” None of the areas studied by the BLM assessment that occur in the study area for this assessment were identified as the “highest QCB habitat potential.”

The focused QCB survey of the Lark Canyon area covered approximately 2,624 acres centered on the Lark Canyon Vehicle Area along McCain Valley Road (Tierra 2006). The focused survey covered portions of the study for this habitat assessment. No adult QCB or larval host plants were detected during the focused survey. The survey was conducted during a below average rainfall year; therefore, the survey could not definitively conclude that the Lark Canyon area cannot support the species.

A focused QCB survey was conducted for an approximately 95-acre linear study area on private parcels between Ribbonwood Road and McCain Valley Road (Dudek 2008). The study area for this focused survey is approximately one mile north of Interstate 8. No adult QCB or larval host plants were detected during the focused survey.

In addition to these studies, a focused QCB survey was conducted in 2008 along an alignment alternative of San Diego Gas and Electric’s (SDG&E) proposed Sunrise Powerlink Project. The study area for this focused survey included portions of McCain Valley Road north of Interstate 8 and an east-west corridor across the valley toward the Laguna Mountains. The results of this focused survey are not yet available.

In conclusion, the potential for the study area to support populations of QCB is considered low. Within the study area, approximately 258.49 acres were excluded and would not require any future focused surveys for QCB. Focused protocol level surveys may be required by the USFWS for proposed activities in the 886.51 acres of non-excluded areas in the study area. However, the results of this assessment indicate that it is unlikely that QCB would occur in these areas.

# Quino Checkerspot Butterfly Habitat Assessment

---

Further, the required survey area may be refined and reduced pending discussion with the USFWS regarding modified survey methodology.

## 5 REFERENCES

- Bureau of Land Management (BLM). 2005. Quino Checkerspot Butterfly Habitat Assessment for BLM Lands Managed by the El Centro Field Office 2005.
- Dudek. 2008. Quino Checkerspot Butterfly Survey Report for the 94.5-acre Rough Acres Ranch Property, County of San Diego, California, Permit Nos. TE051250, TE840619. Submitted to the USFWS.
- Emmel, T.C. and J.F. Emmel. 1973. The Butterflies of Southern California. Natural History Museum of Los Angeles County, Science Series No. 26. 148pp.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency. October.
- Mattoni, R. Pratt, G.F. Longcore, T.R., Emmel, J.F., and George, J. N. 1997 The endangered quino checkerspot butterfly, *Euphydryas editha quino* (Lepidoptera: Nymphalidae). *Journal of Research on the Lepidoptera* 34:99–118, 1995(1997): 99–118.
- Oberbuaer, Thomas. 1996. Terrestrial Vegetation Communities of San Diego County Based on Holland's Descriptions.
- Tierra Environmental Services (Tierra). 2006. Focused Survey Report for the Quino Checkerspot Butterfly, Lark Canyon Study Site. Prepared for BLM, California Desert District Office. June 29.
- U.S. Fish and Wildlife Service (USFWS). 2002a. Quino Checkerspot Butterfly (*Euphydryas editha quino*) Survey Protocol Information. Carlsbad, California. February. 8 pp.
- USFWS. 2003. Recovery Plan for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). *Portland, Oregon. x + 179 pp.* August 11.
- USFWS. 2008. 2008 Season Quino Checkerspot Butterfly (*Euphydryas editha quino*) Carlsbad Fish and Wildlife Office Reference Site Information.  
<http://www.fws.gov/carlsbad/Rules/QuinoDocuments/Quino.htm/2008%20Quino%20monitoring%20info.htm>

**APPENDIX A**  
*PLANT AND ANIMAL SPECIES LIST*

**Appendix A**  
**Plant and Animal Species List**

---

**VASCULAR PLANT SPECIES**

**FERNS**

**PTERIDACEAE - BRAKE FAMILY**

*Pellaea andromedifolia* - coffee fern

**CONIFERS**

**EPHEDRACEAE - EPHEDRA FAMILY**

*Ephedra viridis* - mormon tea

*Ephedra californica* – desert tea

**ANGIOSPERMS (DICOTS)**

**ANACARDIACEAE - SUMAC FAMILY**

*Rhus ovata* - sugar bush

*Rhus trilobata* - skunkbrush

**APIACEAE - CARROT FAMILY**

*Lomatium dasycarpum* ssp. *dasycarpum* - woolly-fruit lomatium

**ASTERACEAE - SUNFLOWER FAMILY**

*Artemisia tridentata* ssp. *tridentata* – Big sagebrush

*Baccharis sergioloides* – desert baccharis

*Chaenactis stevioides* - desert pincushion

*Encelia californica* - California encelia

*Encelia farinosa* - brittlebush

*Ericameria* sp. - goldenbush

*Ericameria linearifolia* - interior goldenbush

*Eriophyllum confertiflorum* - golden yarrow

*Eriophyllum wallacei* – Wallace’s woolly sunflower

*Geraea viscida* – sticky geraea

*Gutierrezia californica* - California matchweed

*Lasthenia californica* - common goldfields

*Malacothrix californica* - California desertdandelion

*Uropappus lindleyi* - silver puffs

## Appendix A (Continued)

---

### **BORAGINACEAE - BORAGE FAMILY**

*Amsinckia menziesii* - rancher's fireweed  
*Cryptantha angustifolia* – popcorn flower  
*Pectocarya penicillata*- pectocarya  
*Plagiobothrys* sp. - popcornflower

### **BRASSICACEAE - MUSTARD FAMILY**

*Caulanthus heterophyllus* var. *heterophyllus* - San Diego jewelflower  
*Sisymbrium altissimum* - tumble mustard  
*Thysanocarpus laciniatus* - lacepod, fringedpod

### **CACTACEAE - CACTUS FAMILY**

*Cylindropuntia echinocarpus* – silver cholla

### **CRASSULACEAE - STONECROP FAMILY**

*Crassula connata* - pygmy-weed  
*Dudleya lanceolata* – lanceleaf dudleya

### **ERICACEAE - HEATH FAMILY**

*Arctostaphylos glandulosa* ssp. *zacaensis* - southern Eastwood manzanita  
*Arctostaphylos pungens* – Mexican manzanita

### **EUPHORBIACEAE - SPURGE FAMILY**

*Chamaesyce* sp. - spurge

### **FABACEAE - PEA FAMILY**

*Astragalus douglasii* var. *perstrictus* – Jacumba milkvetch  
*Lotus argophyllus* var. *argophyllus* - silver-leaf lotus  
*Lotus scoparius* - deerweed  
*Lupinus bicolor* - miniature lupine  
*Lupinus concinnus* - bajada lupine

### **FAGACEAE - OAK FAMILY**

*Quercus agrifolia* – coast live oak  
*Quercus berberidifolia* - scrub oak  
*Quercus cornelius-mulleri* – Muller's oak

### **GERANIACEAE - GERANIUM FAMILY**

\* *Erodium cicutarium* - red-stemmed filaree/storksbill

## Appendix A (Continued)

---

### **HYDROPHYLLACEAE - WATERLEAF FAMILY**

*Eriodictyon trichocalyx* ssp. *trichocalyx* - yerba santa

*Phacelia distans* – wild heliotrope

### **LAMIACEAE - MINT FAMILY**

*Salvia columbariae* – chia

### **NYCTAGINACEAE - FOUR O'CLOCK FAMILY**

*Mirabilis multiflora* var. *pubescens* – giant four o'clock

### **ONAGRACEAE - EVENING-PRIMROSE FAMILY**

*Camissonia strigulosa* – sandy-soil sun cup

*Oenothera californica* - California evening-primrose

### **OROBANCHACEAE - BROOM-RAPE FAMILY**

*Orobanche fasciculata* – clustered broom-rape

### **PAPAVERACEAE - POPPY FAMILY**

*Dendromecon rigida* - bush poppy

*Platystemon californicus* - cream cups

### **POLEMONIACEAE - PHLOX FAMILY**

*Eriastrum filifolium* – thread-leafed eriastrum

*Gilia diegensis* – San Diego gilia

*Linanthus bellus* – desert beauty

*Linanthus lemmonii* – Lemmon's linanthus

*Linanthus orcuttii* – Orcutt's linanthus

### **POLYGONACEAE - BUCKWHEAT FAMILY**

*Chorizanthe staticoides* - Turkish rugging

*Eriogonum fasciculatum* var. *foliolosum* – flat-topped buckwheat

*Eriogonum fasciculatum* var. *polifolium* – flat-topped buckwheat

*Eriogonum gracile* - slender buckwheat

### **PORTULACACEAE - PURSLANE FAMILY**

*Calyptridium monandrum* - pussypaws

## Appendix A (Continued)

---

### **RANUNCULACEAE - CROWFOOT FAMILY**

*Delphinium parryi* ssp. *parryi* - Parry's larkspur

### **RHAMNACEAE - BUCKTHORN FAMILY**

*Ceanothus cuneatus* var. *cuneatus* - buck brush

*Ceanothus greggii* var. *perplexans* – cupleaf ceanothus

*Ceanothus leucodermis* - chaparral whitethorn

*Rhamnus ilicifolia* – holly-leaf redberry

### **ROSACEAE - ROSE FAMILY**

*Adenostoma fasciculatum* – chamise

*Adenostoma sparsifolium* - redshank

*Cercocarpus betuloides* var. *betuloides* - mountain-mahogany

*Prunus fremontii* – desert apricot

### **SALICACEAE - WILLOW FAMILY**

*Salix lasiolepis* - arroyo willow

### **SCROPHULARIACEAE - FIGWORT FAMILY**

*Keckiella antirrhinoides* var. *antirrhinoides* -yellow bush-penstemon

*Penstemon centranthifolius* - scarlet bugler

*Penstemon spectabilis* - showy penstemon

### **SOLANACEAE - NIGHTSHADE FAMILY**

*Solanum umbelliferum* - blue witch

### **VISCACEAE - MISTLETOE FAMILY**

*Phoradendron villosum* - oak mistletoe

## ANGIOSPERMS (MONOCOTS)

### **JUNCACEAE - RUSH FAMILY**

*Juncus mexicanus* - Mexican rush

### **LILIACEAE - LILY FAMILY**

*Calochortus concolor* - goldenbowl mariposa lily

*Dichelostemma capitatum* ssp. *capitatum* - blue dicks

*Yucca schidigera* - Mohave yucca

## Appendix A (Continued)

---

### POACEAE - GRASS FAMILY

- \* *Avena fatua* – wild oat
  - \* *Avena barbata* – slender wild oat
  - \* *Bromus madritensis* ssp. *rubens* - foxtail chess
  - \* *Bromus tectorum* – cheat grass
- 
- \* signifies introduced (non-native) species

## Appendix A (Continued)

---

### WILDLIFE SPECIES - VERTEBRATES

#### REPTILES

##### IGUANIDAE - IGUANID LIZARDS

- Gambelia copei* – Cope's leopard lizard
- Phrynosoma coronatum* - coast horned lizard
- Sceloporus occidentalis* - western fence lizard
- Sceloporus orcutti* - granite spiny lizard
- Uta stansburiana* - side-blotched lizard

##### TEIIDAE - WHIPTAIL LIZARDS

- Cnemidophorus tigris* - western whiptail

##### COLUBRIDAE - COLUBRID SNAKES

- Salvadora hexalepis* - western patch-nosed snake

##### VIPERIDAE - VIPERS

- Crotalus* sp. - rattlesnake

#### BIRDS

##### CATHARTIDAE - NEW WORLD VULTURES

- Cathartes aura* - turkey vulture

##### ACCIPITRIDAE - HAWKS

- Buteo jamaicensis* - red-tailed hawk

##### PHASIANIDAE - PHEASANTS & QUAILS

- Callipepla californica* - California quail

##### COLUMBIDAE - PIGEONS & DOVES

- Zenaida macroura* - mourning dove

##### TROCHILIDAE - HUMMINGBIRDS

- Calypte anna* - Anna's hummingbird

##### TYRANNIDAE - TYRANT FLYCATCHERS

- Myiarchus cinerascens* - ash-throated flycatcher

## Appendix A (Continued)

---

*Sayornis nigricans* - black phoebe

*Tyrannus vociferans* - Cassin's kingbird

### **HIRUNDINIDAE - SWALLOWS**

*Petrochelidon pyrrhonota* - cliff swallow

### **CORVIDAE - JAYS & CROWS**

*Aphelocoma californica* - western scrub-jay

*Corvus brachyrhynchos* - American crow

*Corvus corax* - common raven

### **AEGITHALIDAE - BUSHTITS**

*Psaltriparus minimus* - bushtit

### **TROGLODYTIDAE - WRENS**

*Salpinctes obsoletus* - rock wren

### **SYLVIIDAE - GNATCATCHERS**

*Polioptila caerulea* - blue-gray gnatcatcher

### **TIMALIIDAE - LAUGHINGTHRUSH AND WRENTIT**

*Chamaea fasciata* - wrentit

### **MIMIDAE - THRASHERS**

*Mimus polyglottos* - northern mockingbird

*Toxostoma redivivum* - California thrasher

### **PARULIDAE - WOOD WARBLERS**

*Dendroica townsendi* - Townsend's warbler

*Wilsonia pusilla* - Wilson's warbler

### **THRAUPIDAE - TANAGERS**

*Piranga ludoviciana* - western tanager

### **EMBERIZIDAE - BUNTINGS & SPARROWS**

*Amphispiza bilineata* - black-throated sparrow

*Pipilo crissalis* - California towhee

*Pipilo maculatus* - spotted towhee

*Spizella atrogularis* - black-chinned sparrow

## Appendix A (Continued)

---

### **ICTERIDAE - BLACKBIRDS & ORIOLES**

*Icterus* sp. - oriole

### **FRINGILLIDAE - FINCHES**

*Carduelis psaltria* - lesser goldfinch

## **MAMMALS**

### **LEPORIDAE - HARES & RABBITS**

*Lepus californicus* - black-tailed jackrabbit

*Sylvilagus bachmani* - brush rabbit

*Sylvilagus audubonii* - desert cottontail

### **SCIURIDAE - SQUIRRELS**

*Ammospermophilus leucurus* - white-tailed antelope squirrel

*Spermophilus beecheyi* - California ground squirrel

*Tamias* sp. - chipmunk

### **MURIDAE - RATS & MICE**

*Neotoma lepida* - desert woodrat

### **CANIDAE - WOLVES & FOXES**

*Canis latrans* - coyote

### **FELIDAE - CATS**

*Felis concolor* - mountain lion

### **CERVIDAE - DEERS**

*Odocoileus hemionus* - mule deer

## Appendix A (Continued)

---

### WILDLIFE SPECIES - INVERTEBRATES

#### BUTTERFLIES AND MOTHS

##### HESPERIIDAE - SKIPPERS

*Erynnis funeralis* - funereal duskywing

##### PIERIDAE - WHITES AND SULFURS

*Anthocharis sara* – Sara's orangetip

*Pontia protodice* - checkered or common white

*Colias eurydice* - California dogface

##### RIODINIDAE - METALMARKS

*Apodemia mormo virgulti* - Behr's metalmark

##### LYCAENIDAE - BLUES, HAIRSTREAKS, & COPPERS

*Brephidium exile* – western pygmy blue

*Icaria acmon acmon* - acmon blue

##### NYMPHALIDAE - BRUSH-FOOTED BUTTERFLIES

*Euphydryas chalcedona* – Chalcedon checkerspot

*Junonia coenia* - buckeye

*Vanessa annabella* – west coast lady

*Vanessa cardui* - painted lady

**APPENDIX B**  
*FIELD NOTES*

4/14/08 Travis  
Brack  
Dove

# TULE WIND PROJECT

Onsite

0800

Skies: 0%cc

Wind: 0-2 mph

Temp: 74°F

1100

0%cc

4-6 mph

~82°F

Offsite

1300

0%cc

3-5 mph

85°F

Painted Lady

SCJA

\*Nectar Sources\*

\*Chia

\*Lupine sp.

\*Cryptantha sp (white flowers)

\*Goldfields

\*Butterweed

\*Desert Phacelia

\*Interior Goldenbush

Pontia Proterea

Behr's Metalmark

\*Goldfields

\*Orcutt linanthus

\*Tansy Mustard

Sera's Ct.

Aemon Blue

Cd. Ragwort

Deer (pr)

Br. Rabbit (sc)

01-44214235

4/14/02

5998

780-89

0830-1315

7 mph - 3 mph

clear

PPM McCoin Valley

wind farm

QCB assessment

RTHA

MOO

Bonus of ~~skippers~~ skippers MOO's

SCJA

CORA

Painted lach ~~|||||~~ ~~|||||~~ ~~|||||~~

C970

TUVU

BCSP

GAQU

CGS

western fence liz

grayish gray liz

mule deer

desert woodrat

desert cottontail

horned lizard

Chis meadow ~~|||||~~ ~~|||||~~ ~~|||||~~ ~~|||||~~ ~~|||||~~

'Cha ~~|||||~~ ~~|||||~~ ~~|||||~~

antelope gis

SPTO

ROWR

CATH

BTH sparrow

NOME

curly scat

Rhus desert

Muellers oak

Bleeders

Chia

erodium

Desert Apricot

SOC + desert apricot com

open w/ Rock outcrops

+ eriodium under stone

w 30% bare dg.

fern

boulder areas have a lot of openings between them

QCB ok

cattle bones old sheep + cattle droppings

a few lg ants seen

~~Q.C. or Q.C.?~~

Sheep tracks some or?

orange 11

Communist 11

captured 3 skippers

4/22/08

PPM Energy  
CCD & Nutrient Assessment

Neck

JMH  
TS  
SUN  
0-30cm  
62P

Map 3

Group of 2 Turkeys

- Otay Mesa  
very  
etc  
to Anita  
A

SOC

CC

Q. berb  
Ceanothus  
Eriofase  
Gilia  
Cryptantha  
Ceanothus  
Arctostaphylos  
Eriophyllum

Chamise

Soils  
Decom.  
granite

Berea viscidosa

Eriogonum  
scrub

OR

open Chaparral

Eriofase  
Chamise  
Q. ber  
Brom mad ruber

Open Patches

Gilia  
Cryptantha  
Ceanothus  
Lupinus  
Chica  
Plagiobothrys  
Fragaria  
Castilleja cal  
Phacelia  
Ceanothus

EXUS

or  
21?

Wildlife

Horned Lizard  
Squirrel  
Rattlesnake  
Deer

Jackrabbit

Painted Lady  
White

Neotoma sp.

Turkey Vulture

Savanna Oriole

Rattlesnake

Black-tailed

SMX

Ceanothus  
Overbush

Chamise

Arctostaphylos

Eriogonum

Wickiup

Cercocarpus

Substation #1

Erio Scrub

Open Mixed Chap

Cream puffs

Cercocarpus Chaparral

- evidence of grazing

Group of Three

So of NCTM

Open So Mixed Chap

- evidence of grazing

→ Inclusion of

DG Soils

Erio Scrub

↳ from grazing?

SMX

open Patches

Wholly lupine

Lupinus

Lupinus leucum

Cryptantha

Big Bush

Alga

Phacelia

Wholly Safflower

Cercocarpus

- Q. borb

- Chamise

- Arcto

- Cholla

- Yucca sp.

- Rhus ovata

- Eriogonum

- E. phacelia

Closed - Semi Closed (70-80%)  
CC

- Chamise

- Arcto

- Rhus ovata

- Eriophyllum

- Cryptantha

Ceanothus

Substation # 2

4/25/08

Closed Canopy (70-80%)

CC

- Unmanned \*
- Rms over
- R herbar

BM  
JHT  
JP  
Calm  
BP



4/24/08

w/DF

Road Survey - I-8 → N

Boulevard = QCB Hob. Assess.

Onsite

0820

Skies: 0%cc

Wind: 2-5 mph

Temp: 63°F

Offsite

1440

0%cc

2-5 mph

82°F

WETA

CLSW - Nests in 1st undercrossing.

BLPH

NOMO

Painted Lady

WEK 1

Common white

Behr's mm.

Buckeye

Nectar

Goldfield

Lupine

Erodium c.

Ericameria

Golden Yarrow

Cryptantha

Scarlett Tanager

Thoselia cren.

Amsinckia menz.

If found Please call

4/24/88 cont'd

Solanum umb. (Blue witch)  
Penstemon centro (Scarlett beglar)  
Chia  
Orcutt Linnanthus  
Blue Licks

Wildlife

Blue sp.  
CAGU  
B.T. jack rabbit  
Bt rabbit  
Ch gr. squirrel  
Sara's O.T

4/30/08

PPM: ENERGY

JMH  
TS  
SUN

OCB Habitat Access

9:30AM -  
3:30PM  
10-25mph  
54-64°

- ① Access Road  
Up From  
Cottonwood  
Creek (COMPENSON)
- ② Group of Two  
North of  
MANZANITA
- ③ Access Roads  
to these  
Two Sets
- ④ Checked Access  
to Upper BAR

- Photos taken
- Travis took species notes
- Soils same. No host  
plants observed.

---

*Ceanothus leucodermis*  
*Delphinium purpureum*

1/30/02

Access Point at Col. Co. Camp.

Desert Wash Scrub

Baccharis  
Art trail  
Cilia  
Crotalaria  
Lupine

Upland scrub

Art trail  
Silver cholla  
Eriogonum  
Mimulus  
Castilleja <sup>Penstemon</sup>  
Crotalaria  
Desmodium cal.  
Rhus occidentalis

Mixed Chap

Cercocarpus  
Ephedra  
Scrubs oak  
Desert Peach (?)  
Phacelia  
Eriophyllum  
Eriogonum  
Cream cup  
Cholla  
Bromes  
Crotalaria  
Lupine  
Polypodium  
Eriogonum  
Yucca  
Chia  
Tan or Mustard  
Chenopium  
Dusky Pansy  
Bush Poppy  
Chorizanthe

5/2/08

Anita  
DINA  
WIM  
SUN  
Sangh  
Poz

PPM ENERGY

UPPER PRR

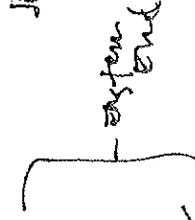
QCB Habitat + RSCSS

- Enkelia
- Brom. mead rufous
- Desert Pines hair
- Eriogonum
- Limn. ballus
- Anolla
- Lotus scop
- Ceanothus
- Phacelia
- Limn. lemn
- Cryptantha
- Eriogonum
- Monardella
- Cerco carpis
- Quercus
- Polygomon
- Silver leaf Totus

Open Semi Desert Campground

Main SPPS

- Desert Beach
- Anolla
- Monardella
- Eriogonum
- Brom. mead rufous
- Lotus scop
- Bengel + Pichu sin
- Enkelia



Jack rabbit



Hayworth 5/2/08

Quince wise -

this segment is all  
open chp. with annuals  
& patches of opening  
with low herbs.  
lots of flowers

Common White

→ Sandy soils, no crust  
NO host plants so  
fat. Nectar sources  
for butterflies.

(almost) to where  
"Drinking you feel eye"  
check

black-throated sparrow

Hayworth - 5/2/08

area w lots of cactus  
but none of the  
crust.

So far - all inclusion  
areas, no exclusion areas

EGO

Funeral  
Woadaway Skipper

Mixed Open Chap  
easy to walk between

Shubs: some  
openings even  
area w glassy  
flat spots then  
open soil too

Ben's metal work

SPTD

checkered white

CAKIL - ~~or~~

CAKI

MORO

Chaludon (@ pool)

Hayworth 5/2/08

bleeding West from girded.  
pad - chamise starts -  
still open however

then little band of  
Oak scrub - also  
still open & easily  
traversable however  
windy & needing a lot  
of maneuver to get  
thru. Not closed.

leopard lizard type <sup>Cooper's</sup>  
fast, big head <sup>leopard</sup>  
<sub>leopard</sub>

Sarah's Orange tip

Ammon blue  
APFL

Dowl - could it be brown?

Buckeye ♂ 1066 ♀  
W SCOA  
HOPI  
CATH  
Dowl SP

Hayworth 5/2/08

Squirrel:  
♂ TAN

chip mark

307 P.M. end time

25 C

4MPH

Clear

→ Scrub oak band could probably  
be excluded but it's still  
open, but it's tall. It's just  
a narrow band so doesn't  
make much difference. And otherwise  
I wouldn't exclude anything  
else in this reach. Overall - no host  
plant, no soil crust, some nettles.  
Seems kind of unlikely for GCB  
given how other occupied sites look.

5/8/08  
FAM Emergency  
Upper PAR Parcels

North-South Corridor

QCB Habitat Assessment

5/8/08  
0-3 MPH  
SUN  
000  
9:30 AM  
JMT

Plants  
- see other notes  
- listing on lyneus  
Pectocarya - spiky  
Eriogonum  
Astragalus - collected  
- large, yellow  
Penst spect  
Yellow dianthus  
Chamaesyce  
Parnassia (alt) (offsite)  
Ordnancy fusciculata  
Salix lasiokepis

Wildlife  
Cotton White  
Scrub Jay  
Wren Tit  
Am Crow  
Mo Do  
Anna's Hum  
Quail  
Townsend's Warbler  
RT H  
CA Thrasher  
Hummer Lc  
Larkio FAST  
Wren al  
1 Tanager spots /  
Strips  
Keenel 1? ?  
Patch vanced  
Snake  
Rimmed Lady  
Behrs MCH  
Vireo Vuffone  
Des Cottontail  
Gr. Spiny LIZ

5/14/08

JMH

9:30AM  
D-3 mph

66°  
SUN

PPM ENERGY

Upper Section

of  
UPPER RAR PARCELS

OCB HABITAT ASSESS

3PM

70°

5-7 mph

Painted lady  
Pygmy blue  
CO white  
Scrub Jay

PTH  
Ann Crow  
Towhee - Cal.  
Leopard lizard

Quail  
MO Dove

Ash-throated Fly

Raven  
Bluegray gnatcatcher  
Black-throated JK  
Side-scooped Wg  
Giantic Sperm Lr

concolor

Calochortus sp.  
Dudleya sp.  
Encelia califera

Eriogonum sp  
Malacothrix  
californica  
Mirabilis multiflora