

**QUINO CHECKERSPOT BUTTERFLY
FOCUSED SURVEY
FOR THE TULE WIND PROJECT**

McCain Valley, San Diego County, California

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Quino Checkerspot Butterfly Focused Survey

CONTENTS

1	INTRODUCTION.....	1
1.1	Background.....	1
1.2	Quino Checkerspot Butterfly	1
1.3	Study Purpose	2
2	METHODS	2
2.1	Habitat Assessment.....	2
2.2	Focused Surveys	8
3	RESULTS	12
3.1	Physical Setting.....	12
3.2	Vegetation Communities	13
3.3	Butterfly Species.....	16
4	DISCUSSION AND CONCLUSIONS	30
5	REFERENCES.....	31

APPENDICES

A	USFWS Agreement with Survey Approach
B	Wildlife Species List
C	Field Notes

TABLES

1	2008 Habitat Assessment Survey Summary	8
2	2009 Quino Checkerspot Butterfly (QCB) Survey Polygons	10
3	2009 QCB Schedule of Surveys and Environmental Conditions	10
4	Butterfly Species Observed in the Study Area	16
5	QCB Nectar Plants Observed in the Study Area	29

FIGURES

1	Regional Map.....	3
2	Vicinity and Focused Survey Areas.....	5
3	Focused Survey Area A	19
4	Focused Survey Area B	21
5	Focused Survey Area C	23
6	Focused Survey Area D	25
7	Focused Survey Area E.....	27

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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 conducted a habitat assessment for Quino checkerspot butterfly (*Euphydryas editha quino*) (QCB) in 2008 and a focused survey for QCB in 2009.

1.2 Quino Checkerspot Butterfly

QCB was listed as endangered under the Endangered Species Act in January 1997 (62 FR 2313–2322). 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 U.S. 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 6 miles southeast of the southeastern portion of the proposed study area.

QCB is in the Lepidoptera order, family Nymphalidae (brush-footed butterflies) and the subfamily Melitaeninae (checkerspots and fritillaries). 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, continuing as late as early May. The exact timing depends 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 1- to 2-month flight period. QCB larvae can live for several years by undergoing periods of diapause between plant growing seasons.

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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.

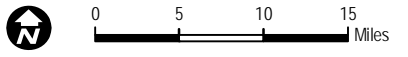
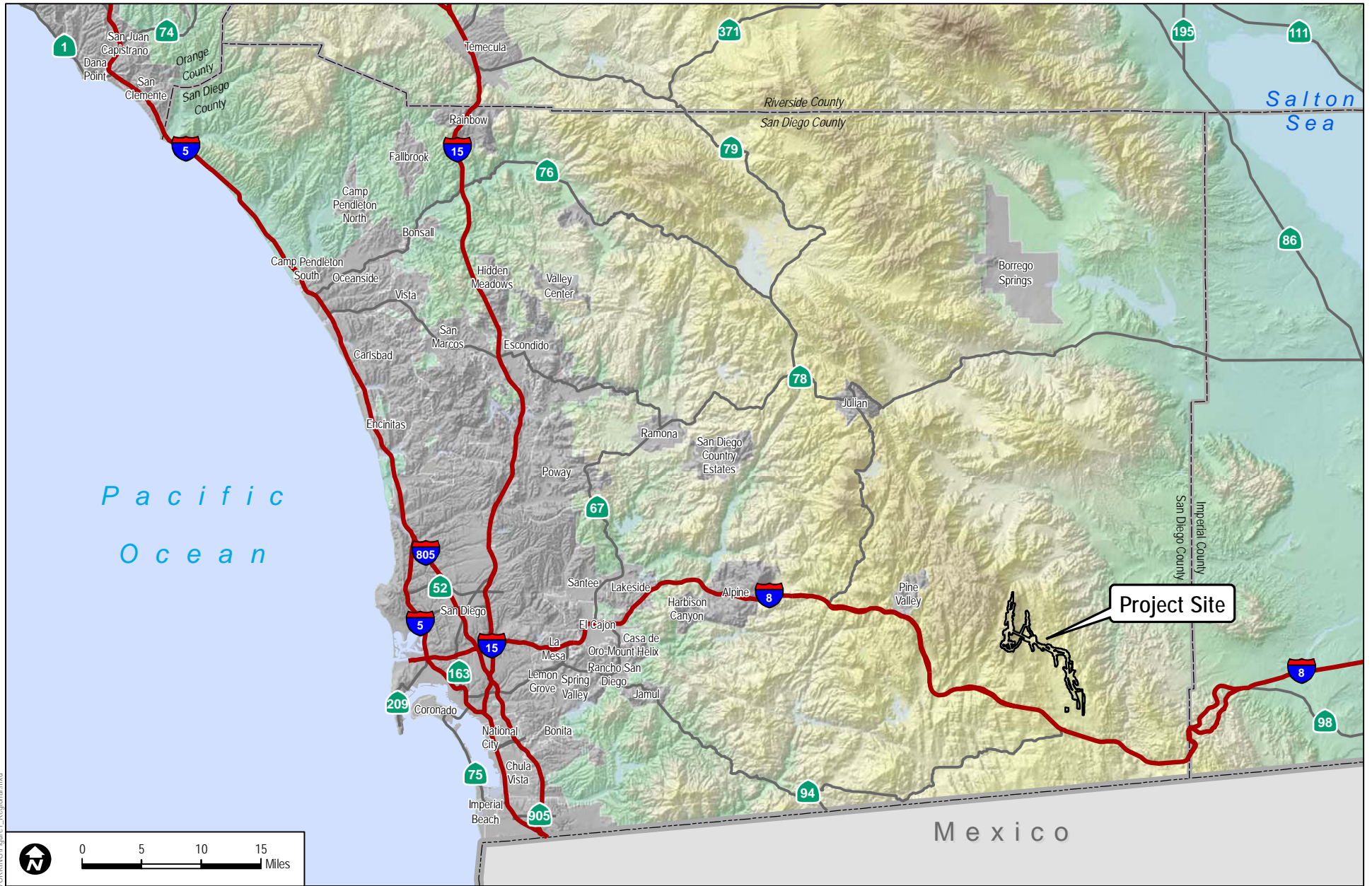
1.3 Study Purpose

The purpose of the 2009 study was to conduct a focused survey for QCB within the proposed project study area. Vegetation mapping and the suitable habitat analysis from the 2008 QCB habitat assessment were used in combination with an assessment of the current conditions in the revised project area to determine suitable habitat areas for the 2009 focused QCB survey. The methods for the focused survey were developed in concert with the USFWS and BLM and are described below.

2 METHODS

2.1 Habitat Assessment

A QCB habitat assessment and evaluation was conducted in 2008 for the anticipated “action areas” within portions of the proposed project site, which is where proposed project facilities and potential effects would be anticipated. A majority of the proposed action 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 the 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, and which were also within the USFWS-determined survey area. Therefore, Manzanita and Campo lands were not assessed. Within the study area, 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 occur 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 locations of all proposed alignments and facilities were based on geographic information system (GIS) data provided to Dudek by Iberdrola Renewables. The total 2008 habitat assessment study area included approximately 1,145 acres.



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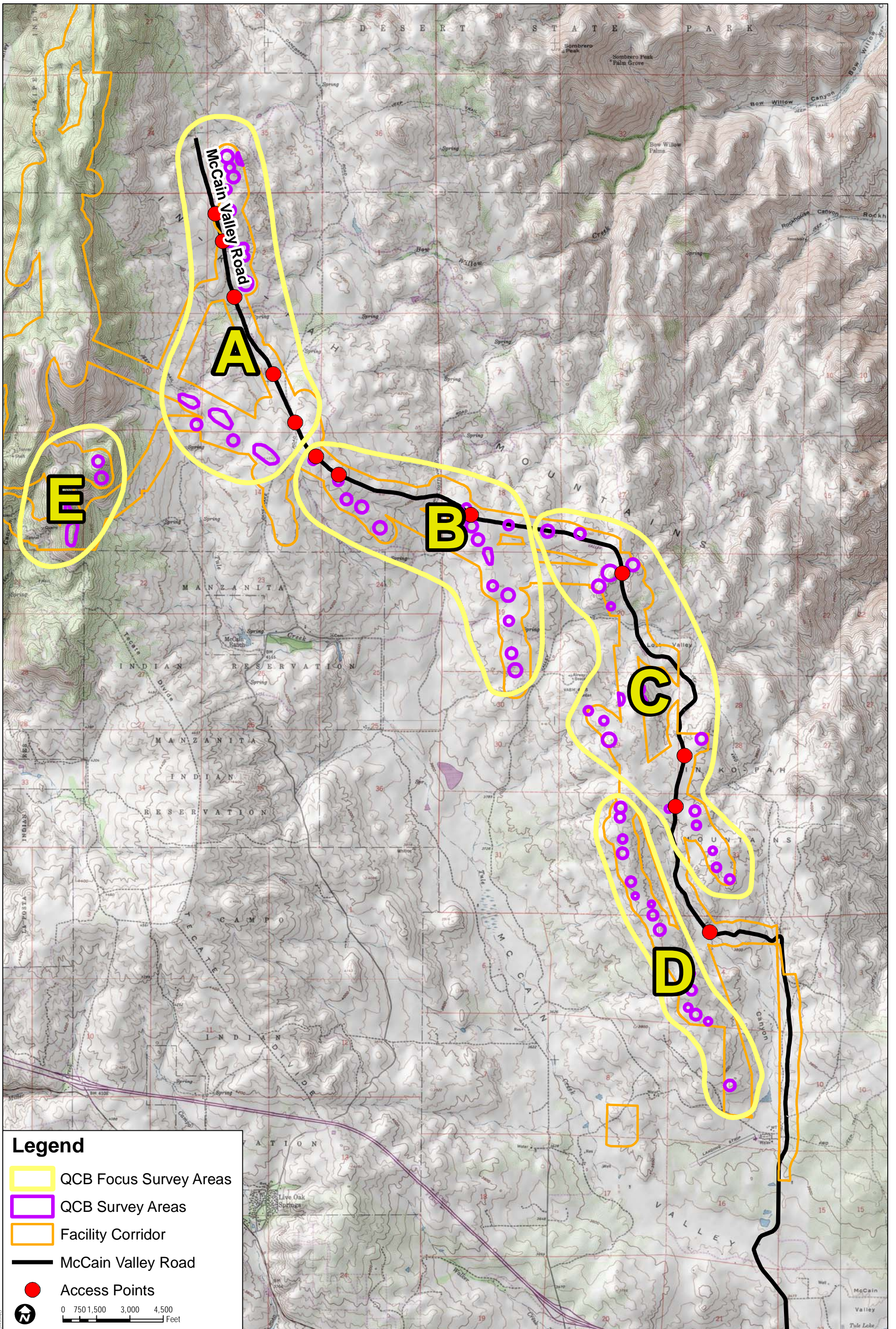
Tule Wind Project 2009 Focused QCB Survey

FIGURE 1
Regional Map

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Legend

- QCB Focus Survey Areas
 - QCB Survey Areas
 - Facility Corridor
 - McCain Valley Road
 - Access Points
 -
- 0 750 1,500 3,000 4,500 Feet

**Figure 2 - Vicinity and Index Areas
2009 QCB Survey Areas**

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Habitat assessment 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 agricultural 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 Global Positioning System (GPS) equipment. Based on the USFWS QCB survey protocol (2002), the target host plant species for this assessment included:

- Dot-seed plantain
- Woolly plantain
- White snapdragon
- Thread-leaved bird's beak
- Owl's clover.

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

Quino Checkerspot Butterfly Focused Survey

reported on the USFWS Carlsbad Field Office 2008 Season QCB monitoring information website (USFWS 2008). The nearest monitoring information in 2008 for host plants was from Campo, where white snapdragon was beginning to sprout on March 11. Based on this 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 to 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
2008 Habitat Assessment 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, PhD	TE-781084-6					X		
Mike Howard	—		X		X	X	X	X
Paul Lemons	TE-051248-2	X		X				
Brock Ortega	TE-813545-5	X						
Travis Smith, PhD	—	X	X		X			

2.2 Focused Surveys

The focused survey area was determined through consultation between Iberdrola Renewables, the USFWS, BLM, and Dudek in a conference call on January 12, 2009. USFWS staff indicated that they would require a focused, protocol-level survey for QCB in “hilltop” areas only to determine if QCB adults are moving through the area. In response to this request, Dudek and Iberdrola compiled GIS data necessary to identify the QCB hilltop study area. This GIS data included:

- All proposed project components (i.e., turbines, transmission, substations, and access roads)
- A 1,000-foot-wide corridor surrounding all project components
- Detailed topographic contours at 5-foot intervals within the 1,000-foot-wide project corridor (flown July 2008)
- USFWS-defined QCB survey area boundaries (per the protocol)

Quino Checkerspot Butterfly Focused Survey

- 2007 1-foot resolution aerial imagery.

Two methods were used to identify the hilltops for the proposed study area:

1. The first method employed an automated GIS algorithm designed to select ridgelines from a raster-based digital elevation model (DEM) generated from the topography data. The objective of this approach was to define the ridges from which hilltops could be identified. This method was only partially helpful in identifying hilltops. The GIS model effectively identified the steep ridgelines and hilltops in the project area (primarily along the Tecate Ridge), but did not capture the more gently sloping hills and ridges of the lower valley where the majority of the project area occurs.
2. The second method involved overlaying the project corridors, topographic contours, and QCB survey area boundary on the aerial imagery and visually evaluating the topographic conditions of the entire project area that occurs within the QCB survey area. Dudek's lead QCB biologist, Brock Ortega, carefully reviewed the mapping data and identified the 70 hilltop areas to be covered by the focused surveys. No strict rules for steepness or elevation were used to define hilltops/ridges. As indicated by the proposed study area map (Figure 2), we believe we have captured all of the hilltops, regardless of steepness or gradient, in the study area.

It should be noted that the layout of the proposed project occurs almost entirely along ridgelines. The 70 identified hilltops cover the bulk of the proposed project area, and access to the hilltops was covered by foot along the approximately 12 miles of ridgelines. Therefore, the focused surveys of the hilltops also included visual surveys of the ridgelines between hilltops.

USFWS staff (Tannika Engelhard) reviewed the survey methodology and proposed survey area maps and confirmed USFWS agreement with the approach detailed above for the 2009 focused QCB survey (Appendix A).

The focused survey for QCB was conducted on the project site from March 17 through April 21, 2009, by Dudek biologists Anita M. Hayworth, PhD (Permit No. TE-781084-6), Brock A. Ortega (Permit No. TE-813545-5), Jeffrey D. Priest (Permit No. TE-840619-2), Kam J. Muri (Permit No. TE-051250-0), Tricia Wotipka (Permit No. TE-840619-2), Paul M. Lemons (Permit No. TE-051248-2) and Vipul R. Joshi (Permit No. TE-019949-0).

Based on the 2008 habitat assessment and an assessment of the site conditions during the first visit in 2009, approximately 225 acres of the study area were considered to be potentially suitable for QCB, as discussed in Section 3.3 below, and was surveyed for QCB in 2009. The site was divided into five survey polygons, each representing a single-day survey effort (Table 2). These survey areas were labeled A through E and assigned to Dudek's permitted biologists.

Quino Checkerspot Butterfly Focused Survey

The biologists were provided with 200-scale aerial photographs for mapping QCB and host plant populations. The survey maps included the limits of the proposed project, topography lines, survey area boundaries and suitable habitat polygons overlaid on an aerial photo. Binoculars (10×42; 8×50) were used to aid in detecting and identifying butterfly and other wildlife species. GPS units also were available for recording locations of QCB and host plant populations.

Table 2
2009 Quino Checkerspot Butterfly
(QCB) Survey Polygons

Survey Area	Acreage of Survey Area
A	65.3
B	45.4
C	72.4
D	41.9
E*	21.8

*Area E was excluded after the first visit due to a lack of suitable habitat.

The survey methodology consisted of slowly walking a meandering transect throughout all QCB potential habitat areas and ridgelines between hilltops within survey areas A through E. (Please note that Area E was excluded from the potential suitable habitat for QCB after the first visit was conducted, because the habitat consisted of dense chaparral over the entire area and a ridge composed of boulders.) This habitat was not considered suitable for QCB. The adult QCB surveys were conducted under generally favorable weather conditions: typically between the hours of 0900 and 1600, variable skies, 60°F to 80°F, and light breezes (Table 3). For each survey visit, the biologist recorded the survey conditions.

Table 3
2009 QCB Schedule of Surveys and Environmental Conditions

Survey Area	Date	Time	Range of Conditions			Personnel*
			Temperature Range (°F)	Percent Cloud Cover (% cc)	Wind (miles per hour (mph))	
<i>Week 1</i>						
A	3/19/09	0926–1530	70–75	60–0	1–5	KJM
B	3/20/09	0835–1435	69–82	0–0	4–6 to 9–12	TLW
C	3/19/09	0830–1430	64–76	0–0	2–8	VRJ
D	3/17/09	0825–1445	68–77	0–0	4–6 to 6–12	AMH

Quino Checkerspot Butterfly Focused Survey

Table 3 (Continued)

Survey Area	Date	Time	Range of Conditions			Personnel*
			Temperature Range (°F)	Percent Cloud Cover (% cc)	Wind (miles per hour (mph))	
E Excluded after this survey due to lack of suitable habitat.	3/18/09	1000-1600	65-80	0-0	0-4	BAO
<i>Week 2</i>						
A	3/25/09	1030-1430	72	0-0	4-10	VRJ
B	3/31/09	1030-1600	64-72	0-0	2-8	VRJ
C	3/28/09 Survey cancelled due to high winds	0930-1130	61-64	0-0	8-20 to 20 sustained with gusts to 50	AMH
C	3/29/09	1000-1615	62-63	0-0	8-15 to 5-15 with gusts to 20	AMH
D	3/25/09	0930-1630	62-80	0-0	1-7	BAO
<i>Week 3</i>						
A	4/3/09 Survey cancelled due to high winds	0930-1130	Not Recorded	Not Recorded	15-25 with gusts to 35	JDP
B	4/2/09	1230-1730	64	0-0	5-10 with gusts 12-15 to 6-9	KJM
C	4/1/09	0930-1530	62-79	40-10	8-13 with gusts to 15	TLW
D	4/1/09	1015-1600	54-68	0-0	3-9	KJM
<i>Week 4</i>						
A	4/7/09 Week 3 replacement survey	0930-1500	64-80	5-2	3-8 to 3-9 with gusts to 15	JDP
A	4/9/09	1035-1530	63-67	0-60	1-3 with gusts to 8 to 4-7 with gusts 8-12	PML
B	4/16/09	1105-1515	62-65	0-0	1-2 to 3-7	KJM
C	4/8/09	1130-1635	66-62	0-40	6-8 to 6-15	KJM
D	4/9/09	0900-1400	61-74	0-partly cloudy	8-11 with gusts to 13 to 4-6	TLW

Quino Checkerspot Butterfly Focused Survey

Table 3 (Continued)

Survey Area	Date	Time	Range of Conditions			Personnel*
			Temperature Range (°F)	Percent Cloud Cover (% cc)	Wind (miles per hour (mph))	
<i>Week 5</i>						
A	4/17/09	0825–1400	67–80	0–0	0–3 to 2–7	JDP
B	4/18/09	0840–1445	72–90	0–0	1–4 to 3–5 with gusts to 6–10	PML
C	4/21/09	0930–1540	81–93	0–5	2–4 with gusts 5–10 to 3–6 with gusts 7–12	PML
D	4/17/09	1015–1515	62–68	0–0	2–3 to 4–8	KJM
* AMH = Anita M. Hayworth, PhD (TE-781084-6) BAO = Brock A. Ortega (TE-813545-5) JDP = Jeffrey D. Priest (TE-840619-2) KJM = Kam J. Muri (TE-051250-0) PML = Paul M. Lemons (TE-051248-2) TLW = Tricia L. Wotipka (TE-840619-2) VRJ = Vipul R. Joshi (TE-019949-0)						

The methodology for mapping the QCB host plant locations and populations consisted of recording population locations during the survey or during periods when conditions were not appropriate for surveying for QCB (too cold or too windy). Aerial photographs of each survey area were provided to each biologist and the locations would have been recorded directly onto the 200-scale map or recorded using a GPS unit, if detected.

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 ridgelines. The elevation ranges across the study area from approximately 3,320 feet above mean sea level at McCain Valley Road near Interstate 8 to approximately 4,400 feet above mean sea level 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.

Quino Checkerspot Butterfly Focused Survey

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 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.

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 include flat-topped buckwheat and big sagebrush scrub. Other vegetation communities occurring in the study area include coast live oak woodland, non-native grassland, southern coast live oak riparian forest, and southern willow scrub. Other land cover includes field/pasture, disturbed habitat, and urban/developed. A description of the communities present within the study area is provided below. The mapping of vegetation communities was conducted for the 2008 habitat assessment study area.

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*). Big sagebrush scrub often occurs in or adjacent to floodplains and valley bottoms in the sandy transition to chaparral.

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.

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.

Quino Checkerspot Butterfly Focused Survey

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.

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*).

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 scoparius*), and bare ground. This community may develop after fires or under heavy grazing. This community often intergrades with semi-desert chaparral.

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 from 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*).

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.

Quino Checkerspot Butterfly Focused Survey

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.

Red Shank Chaparral (37300)

Red shank chaparral is made up of 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 composed of flat-topped buckwheat, annual forbs, and brome grasses.

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.

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 occurs in areas with hotter, drier summers and colder winters. In the study area, this community is characterized by abundant rock outcrops. Semi-desert chaparral intergrades with flat-topped buckwheat and the other chaparral communities. Perennial species common to this community include flat-topped 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 filaree, golden yarrow (*Eriophyllum confertiflorum*) thread-leafed eriastrum (*Eriastrum filifolium*), chia, desert beauty, Lemmon's linanthus, San Diego gilia, popcorn flower, and red brome.

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.

Quino Checkerspot Butterfly Focused Survey

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.

3.3 Butterfly Species

No QCB individuals were observed during these surveys. A total of 21 butterfly, 1 moth, and 1 skipper species were observed during the surveys. Table 4 provides a list of invertebrates observed per survey week. A total 70 wildlife species was observed during the surveys, including 5 reptiles, 32 birds, 10 mammals, and 23 invertebrates. A complete list of wildlife species observed during the surveys is provided in Appendix B.

Table 4
Butterfly Species Observed in the Study Area

Week	Butterfly Species Observed
1	Pale swallowtail, Felder's orangetip, checkered (common) white, painted lady, Behr's metalmark, funereal duskywing, Sara orangetip, California ringlet, perplexing hairstreak, Harford's sulfur, sleepy orange, desert marble, chalcidon checkerspot, west coast lady, great purple hairstreak, cabbage white, and Edward's blue
2	Felder's orangetip, pale swallowtail, cabbage white, common white, Harford's sulfur, Chalcidon checkerspot, painted lady, west coast lady, perplexing hairstreak, Behr's metalmark, funereal duskywing, tiger moth, Sara's orangetip, desert marble, pearly marble, and white-lined sphinx moth
3	Behr's metalmark, painted lady, funereal duskywing, Felder's orangetip, pale swallowtail, buckeye, Harford's sulfur, desert marble, perplexing (green) hairstreak, pearly marble, and Sara's orangetip
4	Funeral skipper, checkered (common) white, Felder's orangetip, Harford's sulfur, pale swallowtail, painted lady, Behr's metalmark, cabbage white, pearly marble, western tiger swallowtail, acmon blue, southern blue, Sara's orangetip, California dogface, great purple hairstreak, and perplexing (green) hairstreak
5	Harford's sulfur, desert marble, Behr's metalmark, Felder's orangetip, funereal duskywing, painted lady, perplexing hairstreak, checkered (common) white, acmon blue, anise swallowtail, western tiger swallowtail, pale swallowtail, California dogface, striated queen, and great purple hairstreak

Quino Checkerspot Butterfly Focused Survey

Quino Checkerspot Butterfly 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 occupy 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.

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:

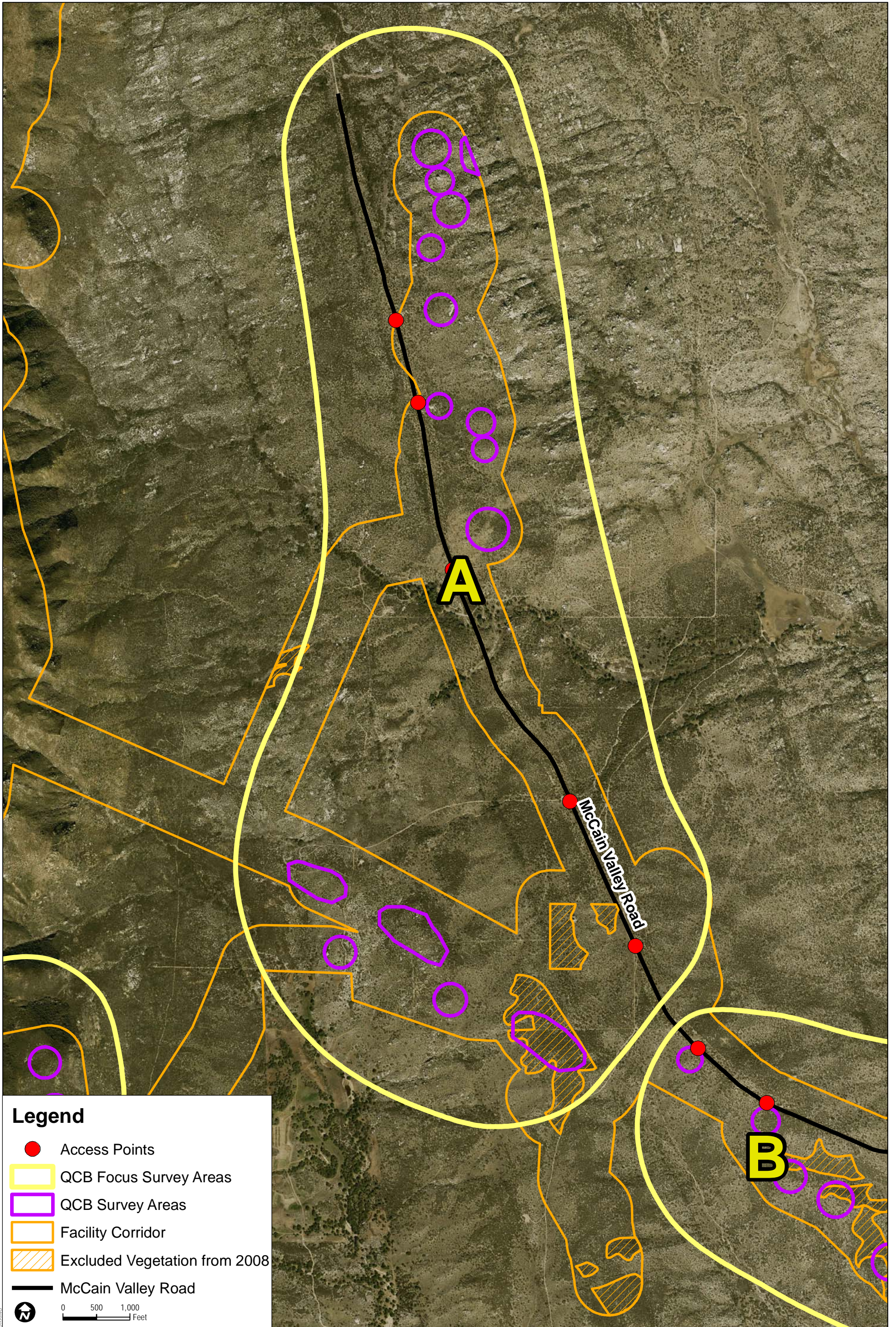
- Big sagebrush scrub
- Coast live oak woodland
- Disturbed habitat
- Field/pasture
- Flat-topped buckwheat
- Granitic chamise chaparral – *Open*
- Granitic southern mixed chaparral – *Open*
- Non-native grassland
- Red shank chaparral
- Scrub oak chaparral – *Open*
- Semi-desert chaparral
- Southern willow scrub.

Quino Checkerspot Butterfly Focused Survey

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 canopy*
- Granitic southern mixed chaparral – *Closed canopy*
- Scrub oak chaparral – *Closed canopy*
- Southern coast live oak riparian forest.

Based on vegetation and vegetation structure, and the methods developed for this study with the input from USFWS, the total acreage of suitable vegetation for QCB within the study area is 225 acres. Figures 3 through 7 depict the suitable habitat areas that were surveyed in 2009.



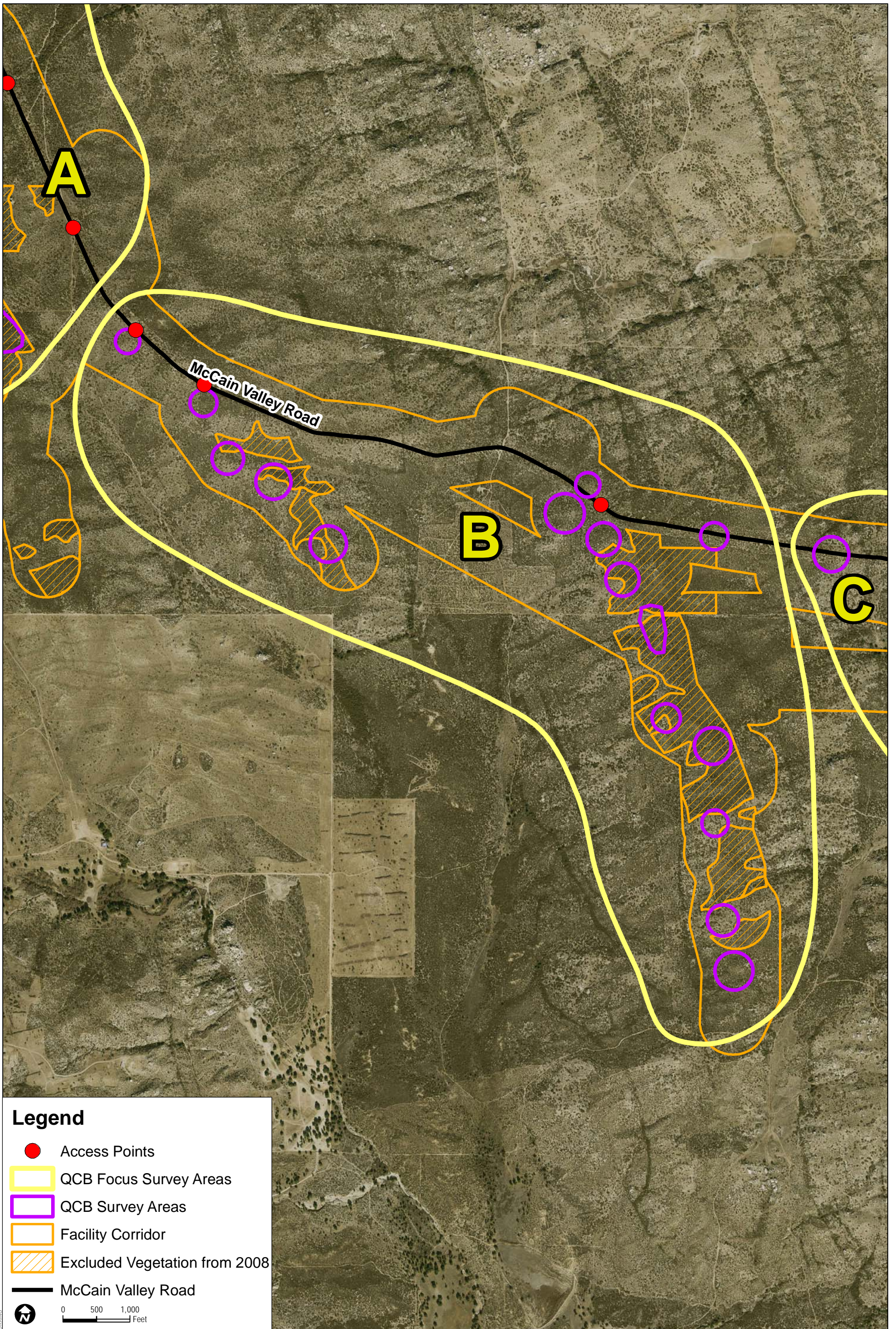
Legend

- Access Points
 - QCB Focus Survey Areas
 - QCB Survey Areas
 - Facility Corridor
 - Excluded Vegetation from 2008
 - McCain Valley Road
- N

0
500
1,000
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**Figure 3 - Focused Survey Area A
2009 QCB Survey Areas**

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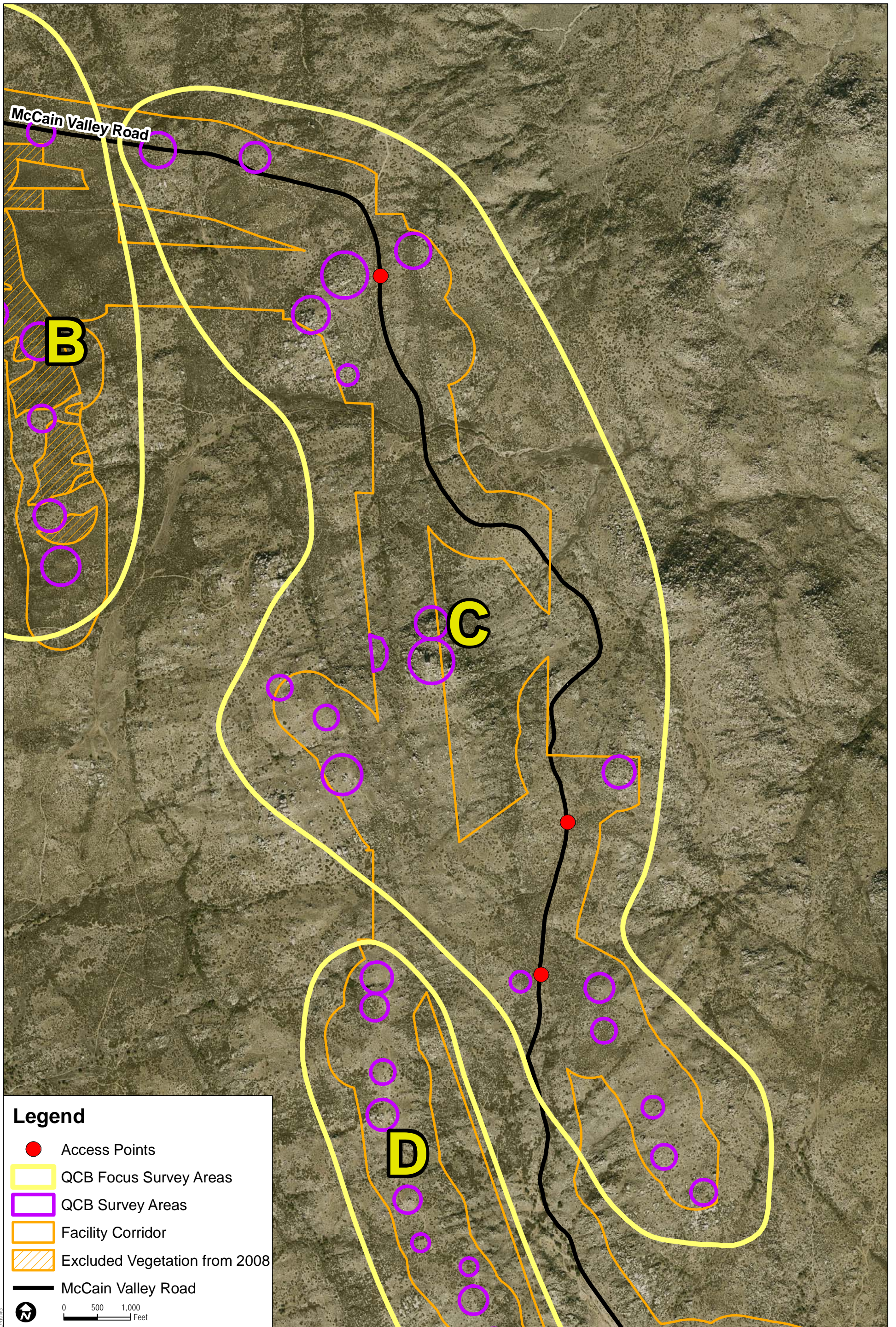


Legend

- Access Points
 - QCB Focus Survey Areas
 - QCB Survey Areas
 - Facility Corridor
 - Excluded Vegetation from 2008
 - McCain Valley Road
- 0 500 1,000 Feet

**Figure 4 - Focused Survey Area B
2009 QCB Survey Areas**

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Legend

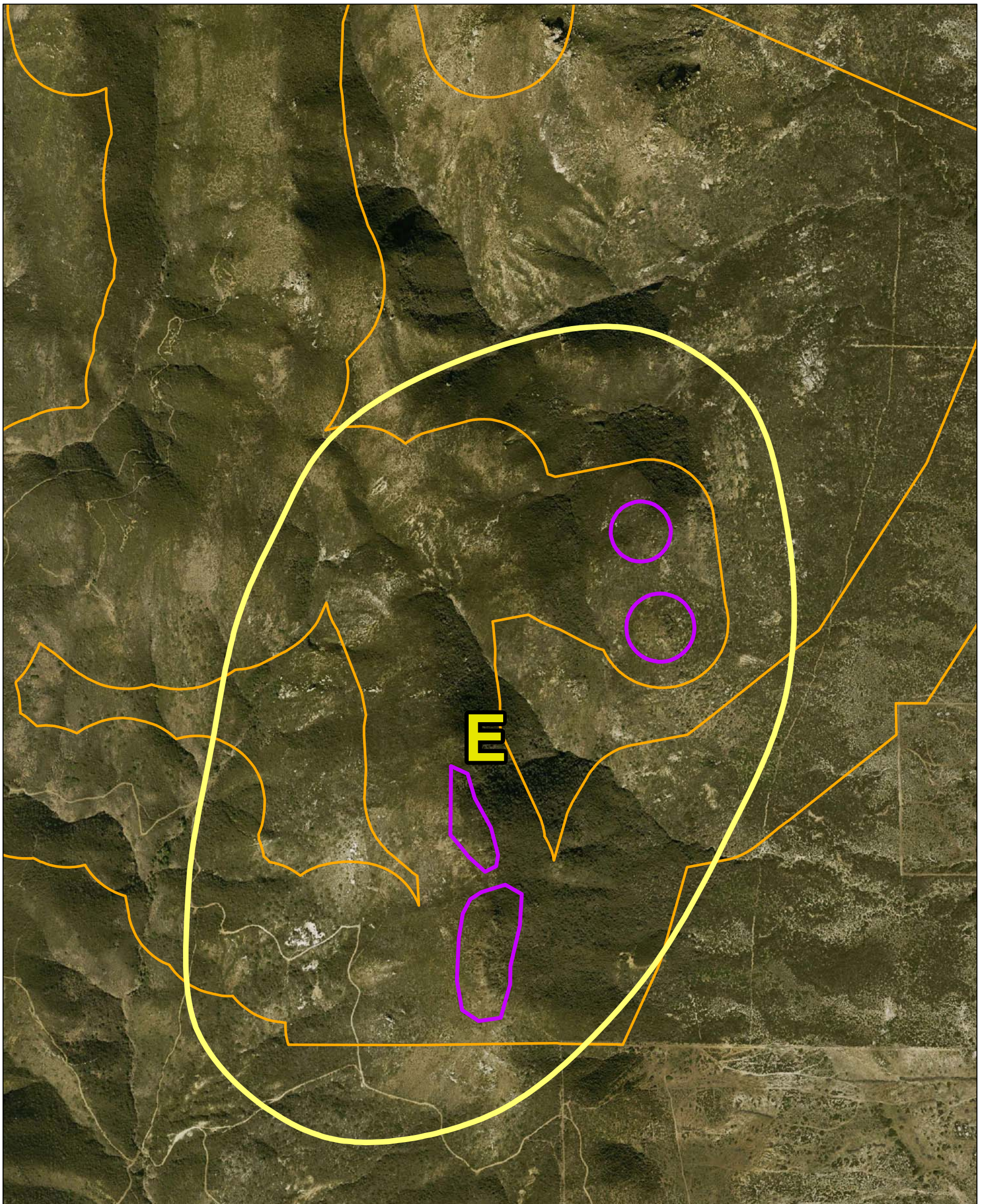
- Access Points
- QCB Focus Survey Areas
- QCB Survey Areas
- Facility Corridor
- Excluded Vegetation from 2008
- McCain Valley Road

0 500 1,000 Feet

**Figure 5 - Focused Survey Area C
2009 QCB Survey Areas**

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Legend

- Access Points
- QCB Focus Survey Areas
- QCB Survey Areas
- Facility Corridor
- Excluded Vegetation from 2008
- McCain Valley Road

0 500 1,000 Feet



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Quino Checkerspot Butterfly Focused Survey

Host Plants and Nectar Sources

No host plants for QCB were observed in the study area. The 2008 habitat assessment and 2009 focused surveys were conducted during the appropriate season and during a period experiencing relatively typical 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 they 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 5 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 listed in Table 5 have the potential to serve as nectar sources for QCB. The field notes from the focused survey are provided in Appendix C.

Table 5
QCB Nectar Plants Observed in the Study Area

Scientific Name	Common Name
Asteraceae	Sunflower Family
<i>Lasthenia californica</i>	California goldfields
Boraginaceae	Borage Family
<i>Cryptantha</i> spp.	popcorn flower
Fabaceae	Pea Family
<i>Lotus scoparius</i>	deerweed
Hydrophyllaceae	Waterleaf Family
<i>Eriodictyon trichocalyx</i> ssp. <i>trichocalyx</i>	Yerba Santa
<i>Phacelia</i> spp.	phacelia
Lamiaceae	Mint Family
<i>Salvia columbariae</i>	chia
Onagraceae	Evening Primrose Family
<i>Camissonia bistorta</i>	suncup
<i>Camissonia strigulosa</i>	sandy-soil suncup
Polemoniaceae	Phlox Family
<i>Gilia diegensis</i>	San Diego gilia
<i>Linanthus bellus</i>	desert beauty
<i>Linanthus lemmonii</i>	Lemmon's linanthus
Polygonaceae	Buckwheat Family
<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	flat-topped buckwheat
Liliaceae	Lily Family
<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

Quino Checkerspot Butterfly Focused Survey

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.

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 both the abundance of adult QCB and habitat quality for QCB. The 2007–2008 and 2008–2009 precipitation levels in San Diego County were near average for precipitation, and abundant adult QCB and good QCB habitat conditions were observed across the species’ range (USFWS 2008, 2009).


4 DISCUSSION AND CONCLUSIONS

Based on the results of the 2008 habitat assessment and 2009 focused survey, no QCB or QCB host plants occur in the study area. 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.

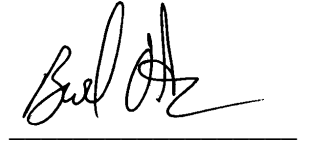
In conclusion, no QCB were observed in the study area during the 2008 habitat assessment or the 2009 focused survey for QCB. A total of 14 person-days were spent conducting the habitat assessment and 21 person-days were spent conducting the focused survey.

Quino Checkerspot Butterfly Focused Survey


The undersigned certify that the information in this survey report and attached exhibits fully and accurately represents the work of each individual permittee.



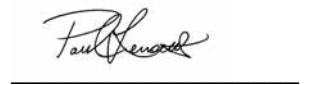
Jeffrey D. Priest
Permit No. TE-840619-2



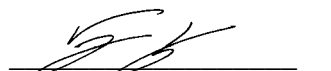
Brock A. Ortega
Permit No. TE-813545-5



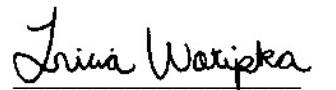
Anita M. Hayworth
Permit No. TE-781084-6



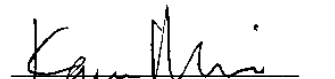
Paul M. Lemons
Permit No. TE-051248-2



Vipul R. Joshi
Permit No. TE-019949-0



Tricia L. Wotipka
Permit No. TE-840619-2



Kam J. Muri
Permit No. TE-051250-0

5 REFERENCES

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Quino Checkerspot Butterfly Focused Survey

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APPENDIX A
USFWS Agreement with Survey Approach

From: Tannika_Engelhard@fws.gov
Sent: Tuesday, February 17, 2009 4:46 PM
To: Mike Howard
Cc: Daniel_Steward@ca.blm.gov
Subject: RE: Proposed Study Area for Focused Quino Surveys of Hilltops for the Tule Wind Project

Hi Mike, thank you for the additional information on the proposed survey methodology. From the methodology outlined below, it's our understanding that Dudek will conduct focused protocol surveys for Quino on 70 hilltops (identified on the map you provided 1-27-09) in the proposed project area. During these protocol surveys of the hilltops, Dudek will also conduct visual surveys along the ridgelines between the hilltops in the proposed project area. We agree with this approach. Please contact me with any additional questions. Thanks, Tannika

Tannika Engelhard
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Fax 760-431-9624
Tannika_Engelhard@fws.gov

Save paper - think before you print.

Mike Howard <mhoward@dudek.com>

02/06/2009 09:23 AM

To "Tannika_Engelhard@fws.gov" <Tannika_Engelhard@fws.gov>
cc "Linehan, Andrew" <Andrew.Linehan@iberdrolausa.com>, Brock Ortega <bortega@dudek.com>
Subject RE: Proposed Study Area for Focused Quino Surveys of Hilltops for the Tule Wind Project

Tannika – Here is the process we used:

Process for identifying hilltops to establish the study area for the planned 2009 Focused Quino Checkerspot Butterfly surveys for the Tule Wind project, McCain Valley, California

In a conference call on January 12, 2009 between Iberdrola Renewables, the USFWS, BLM, and Dudek, USFWS staff indicated that they will require a focused, protocol-level survey for Quino in "hilltop" areas to determine if adult Quinos area moving through the area. In response to this request, Dudek and Iberdrola compiled GIS data necessary to identify the Quino Hilltop Study Area. This GIS data included:

- All proposed project components (i.e., turbines, transmission, substations, and access roads)
- A 1,000-foot-wide corridor surrounding all project components
- Detailed topographic contours at 5-foot intervals within the 1,000-foot-wide project corridor (flown July 2008)
- USFWS-defined Quino survey area boundaries (per the protocol)
- 2007 1-foot resolution aerial imagery

We utilized two methods to identify the hilltops for the proposed study area:

1. The first method employed an automated GIS algorithm designed to select ridgelines from a raster-based digital elevation model (DEM) generated from the topography data. The objective of this approach was to define the ridges from which hilltops could be identified. This method was only partially helpful in identifying hilltops. The GIS model effectively identified the steep ridgelines and hilltops in the project area (primarily along the Tecate Ridge), but did not capture the more gently sloping hills and ridges of the lower valley where the majority of the project area occurs.
2. The second method involved overlaying the project corridors, topographic contours, and Quino survey area boundary on the aerial imagery and visually evaluating the topographic conditions of the entire project area that occurs within the Quino survey area. Dudek's lead Quino biologist, Brock Ortega, carefully reviewed the mapping data and identified the 70 hilltop areas to be covered by the focused surveys. No strict rules for steepness or elevation were used to define hilltops/ridges. As you can see from the proposed study area map, we believe we have captured all of the hilltops, regardless of steepness or gradient, in the study area.

It should be noted that the layout of the proposed project occurs almost entirely along ridgelines. The 70 identified hilltops cover a bulk of the proposed project area and access to the hilltops will be via foot along the approximately 12 miles of ridgelines. Therefore, the focused surveys of the hilltops will also include visual surveys of the ridgelines between hilltops.

If you need any additional information on the methods for determine the study area, please let me know.

Mike Howard
Project Manager/Biologist

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From: Tannika_Engelhard@fws.gov [mailto:Tannika_Engelhard@fws.gov]
Sent: Thursday, February 05, 2009 12:46 PM
To: Mike Howard
Cc: Linehan, Andrew; Brock Ortega
Subject: RE: Proposed Study Area for Focused Quino Surveys of Hilltops for the Tule Wind Project

Hi Mike, can you give me more detail as to how the focused survey areas (hilltops) were delineated, including what specific parameters were used (e.g., elevation and slope limits, vegetation characteristics, etc...)? Thanks,
Tannika

Tannika Engelhard
Fish and Wildlife Biologist
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Carlsbad, CA 92011
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Fax 760-431-9624
Tannika_Engelhard@fws.gov

Save paper - think before you print.

Hi Mike, I received the proposed Quino study area map for the project. I'll discuss it with Alison and should be able to get back to you by early next week. Thanks, Tannika

Tannika Engelhard
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Fax 760-431-9624
Tannika_Engelhard@fws.gov

Save paper - think before you print.

Mike Howard
<mhoward@dudek.com>

To "Peggy_Bartels@fws.gov" <Peggy_Bartels@fws.gov>, "Tannika_Engelhard@fws.gov" <Tannika_Engelhard@fws.gov>

02/04/2009 11:13 AM

CC Brock Ortega <bortega@dudek.com>, "Linehan, Andrew" <Andrew.Linehan@iberdrolausa.com>

Subject RE: Proposed Study Area for Focused Quino Surveys of Hilltops for the Tule Wind Project

Peggy and Tannika – I wanted to confirm that you received the proposed Quino study area map for this project. We are hoping to get your approval of the study area soon and then plan to immediately submit our survey notification to you. The season may begin out there at the end of February and we want to be prepared to start when it does.

Thanks,
Mike.

From: Mike Howard
Sent: Tuesday, January 27, 2009 2:42 PM
To: 'Peggy_Bartels@fws.gov'; Tannika_Engelhard@fws.gov
Cc: Brock Ortega; 'Linehan, Andrew'
Subject: Proposed Study Area for Focused Quino Surveys of Hilltops for the Tule Wind Project

Peggy and Tannika –

As we discussed on the phone this afternoon, this email (and the attached map) are a request for approval of the study area for focused Quino surveys for the Tule Wind Project. On January 12, 2009, we had a conference call to discuss your review of the 2008 Quino Habitat Assessment Report and to identify future survey requirements with regard to Quino. Based on your input, the USFWS has indicated that they will require focused protocol surveys for Quino on hilltop areas within the project area.

Dudek biologists have reviewed project-specific data, in conjunction with other relevant data including topographic contours and aerial imagery, to identify all hilltops within a 1,000-foot-wide project corridor surrounding all proposed project components (i.e., turbines, transmission, substations, and access roads). Portions of the proposed project area that occur outside of required Quino Surveys Areas (as defined by the USFWS) were not included (this includes the project area along Tecate Ridge). Based on this assessment, approximately 70 individual hilltops occur within the proposed project area and these hilltops are dispersed across approximately 12 linear miles of the valley. These 70 hilltops are outlined in purple on the attached map.

A focused survey for Quino will be performed in all identified hilltop areas of the non-excluded portions of the Tule Wind Project Area according to the USFWS protocol survey requirements for the species. The survey will consist of conducting a site visit to the identified hilltops once per week for a five-week period by a Quino-permitted biologist.

We request that the USFWS review the attached map and approve this study area for our Quino surveys. Upon your approval, we will submit a notification letter per the protocol.

Thank you,
Mike.

Mike Howard
Project Manager/Biologist

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APPENDIX B
Wildlife Species List

Appendix B Wildlife Species List

WILDLIFE SPECIES – VERTEBRATES

REPTILES

IGUANIDAE – IGUANID LIZARDS

Phrynosoma blainvillii – Blainville’s horned lizard

Sceloporus orcutti – granite spiny lizard

Uta stansburiana – side-blotched lizard

TEIIDAE – WHIPTAIL LIZARDS

Aspidoscelis tigris – tiger whiptail

VIPERIDAE – VIPERS

Crotalus oreganus – western rattlesnake

BIRDS

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura – turkey vulture

ACCIPITRIDAE – HAWKS

Accipiter striatus – sharp-shinned hawk

Buteo jamaicensis – red-tailed hawk

PHASIANIDAE – PHEASANTS AND QUAILS

Callipepla californica – California quail

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

CUCULIDAE – CUCKOOS AND ROADRUNNERS

Geococcyx californianus – greater roadrunner

TROCHILIDAE – HUMMINGBIRDS

Calypte anna – Anna’s hummingbird

Calypte costae – Costa’s hummingbird

Appendix B (Continued)

PICIDAE – WOODPECKERS

Colaptes auratus – northern flicker

HIRUNDINIDAE – SWALLOWS

Petrochelidon pyrrhonota – cliff swallow

CORVIDAE – JAYS AND CROWS

Aphelocoma californica – western scrub-jay

Corvus brachyrhynchos – American crow

Corvus corax – common raven

PARIDAE – TITMICE

Baeolophus inornatus – oak titmouse

AEGITHALIDAE – BUSHTITS

Psaltriparus minimus – bushtit

TROGLODYTIDAE – WRENS

Salpinctes obsoletus – rock wren

Thryomanes bewickii – Bewick's wren

SYLVIIDAE – GNATCATCHERS

Poliophtila caerulea – blue-gray gnatcatcher

TURDIDAE – THRUSHES AND BABBLERS

Sialia currucoides – mountain bluebird

TIMALIIDAE – LAUGHINGTHRUSH AND WRENTIT

Chamaea fasciata – wrentit

MIMIDAE – THRASHERS

Toxostoma redivivum – California thrasher

PARULIDAE – WOOD WARBLERS

Dendroica coronata – yellow-rumped warbler

EMBERIZIDAE – BUNTINGS AND SPARROWS

Amphispiza belli – sage sparrow

Amphispiza bilineata – black-throated sparrow

Appendix B (Continued)

Junco hyemalis – dark-eyed junco
Pipilo crissalis – California towhee
Pipilo maculatus – spotted towhee
Spizella atrogularis – black-chinned sparrow
Zonotrichia leucophrys – white-crowned sparrow

ICTERIDAE – BLACKBIRDS AND ORIOLES

Icterus parisorum – Scott's oriole

FRINGILLIDAE – FINCHES

Carpodacus mexicanus – house finch
Carduelis psaltria – lesser goldfinch

MAMMALS

LEPORIDAE – HARES AND RABBITS

Lepus californicus – black-tailed jackrabbit
Sylvilagus audubonii – desert cottontail

SCIURIDAE – SQUIRRELS

Ammospermophilus leucurus – white-tailed antelope ground squirrel

GEOMYIDAE – POCKET GOPHERS

Thomomys bottae – Botta's pocket gopher

HETEROMYIDAE – POCKET MICE AND KANGAROO RATS

Dipodomys sp. – kangaroo rat (sign)

MURIDAE – RATS AND MICE

Neotoma lepida – desert woodrat

CANIDAE – WOLVES AND FOXES

Canis latrans – coyote

FELIDAE – CATS

Felis concolor – mountain lion
Lynx rufus – bobcat

Appendix B (Continued)

CERVIDAE – DEER

Odocoileus hemionus – mule deer

WILDLIFE SPECIES – INVERTEBRATES

BUTTERFLIES AND MOTHS

SPHINGIDAE – SPHINX MOTHS

Hyles lineata – white-lined Sphinx

HESPERIIDAE – SKIPPERS

Erynnis funeralis – funereal duskywing

PAPILIONIDAE – SWALLOWTAILS

Papilio eurymedon – pale swallowtail

Papilio rutulus – tiger swallowtail

Papilio zelicaon lucas – anise swallowtail

PIERIDAE – WHITES AND SULFURS

Anthocharis sara sara – Pacific Sara orangetip

Abaeis nicippe – sleepy orange

Pieris rapae rapae – cabbage butterfly

Pontia protodice – checkered (common) white

Colias Eurydice – California dogface

Colias harfordii – Harford's sulfur

Euchloe hyantis – pearly marble

Euchlo lotta – desert marble

RIODINIDAE – METALMARKS

Apodemia mormo virgulti – Behr's metalmark

LYCAENIDAE – BLUES, HAIRSTREAKS, AND COPPERS

Atlides halesus estesi – great purple hairstreak

Callophrys dumetorum perplexa – perplexing (green) hairstreak

Icaria acmon acmon – acmon blue

NYMPHALIDAE – BRUSH-FOOTED BUTTERFLIES

Coenonympha californica californica – California ringlet

Danaus gilippus – striated queen

Appendix B (Continued)

Euphydryas chalcedona – Chalcedon checkerspot

Junonia coenia – buckeye

Vanessa annabella – west coast lady

Vanessa cardui – painted lady

Appendix B (Continued)

INTENTIONALLY LEFT BLANK

APPENDIX C
Field Notes

Week 1

0825
4-6 mph
Clear
20C

3/17/09 Anita
pi 2
Iberdrola area D

ROWR	Scott's oriole
BTSP	WCSP
WSTA	TOAH
CAQU	PLT
LORA	NOT
CATO	SPTD
CATH	RTHA - overhead

along rd in campground

Sara O'tip	### many
Ringlet	### 1
Berk's m. mark	# (many)
Blue sp (Sonoran?)	very light, bright
Common white	(several)
Perplexing green	###
Pale swallowtail	(hilltopping)
Funereal duskywing	Common
Painted lady	} maybe other duskywings
Lady sp.	
Hanford's	
- deep sulfur (sleepy orange)	
Desert Marble	~ many

week 1

Anita

p2 of 2

This along McCain Rd:

PLT1

NOFL

DEJU

YRWA

~~XXXX~~

TUVU

RTHA fly over

NO SCB

End:

2:45

6-12 mph

Clear

25C

Least blob by Rough Acres

Chalcedon III-III

Sara O'tip III many

Behr's - many

Sulfur Sp. - Sleepy Orange

Perplex - 3 - co-mingling!

blue-sp - small but

not pygmy

Desert Marble many

Quinto Checklist: spot General Form

Survey type: Habitat Assessment/Adult Survey

Week 1

Surveyor: Brian Ortega Date: 3/18/09 Site Visit No: 12 3 4 5 6 7 8 9 10 Area E

(mm/dd/yyyy)

Total site acres: _____ Site Name: Iberdrola Site Location: Area E

Time (24 hr)	Sky	Wind (Beaufort) mph	Temp (F or C)
Begin 10:00	clear/partcloudy/overcast/fog/drizzle/shower	<1 (1-3) 4-7 8-12 >12	65
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
13:20	clear/partcloudy/overcast/fog/drizzle/shower	<1 (1-3) 4-7 8-12 >12	85
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End 16:00	clear/partcloudy/overcast/fog/drizzle/shower	<1 (1-3) 4-7 8-12 >12	80

Total hours surveyed: 6.0
 Focused Survey Acres: _____ Elev Min: _____ ft Max: _____ ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c
None				

a. Larval or nectar resources. Identify species. b. Sparse = plants not touching; dense = plants touching. c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North open space Distance _____ ft./mile
 South " Distance _____ ft./mile
 East " Distance _____ ft./mile
 West " Distance _____ ft./mile

Chaparral over entire area - except for a narrow portion along ridge top. The ridge area is covered by boulders - This area should not be considered to be suitable due to chap. cover and boulders.

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts
 (circle) clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: _____
 BEWR SSAH lion tracks CATH desert cottontail
 bobcat-coyote scat SASP ROWR WWT
 CATO Mtn bluebird CORA side-blotched liz
 CCJA BCSP RTHA
 CARU WREN MODO

Week 1

NUMBER

7

Species Observed (larvae or adults)	Number	Comments
Swallowtail (<i>Papilio eurymedon</i>)	Dozens	
Anise Swallowtail (<i>P. zelicon</i>)		
West Tiger Swallowtail (<i>P. rutulus</i>)		
Sara Orange-tip (<i>Anthocharis sara</i>)		
Felder's Orange-tip (<i>A. oethusa</i>)	100's	
Cabbage White (<i>Artogeia rapae</i>)		
Sleepy Orange (<i>Eurema nicippe</i>)		
Common White (<i>Pantia protodice</i>)	XX 100's	
California Dogface (<i>Zarema euryclea</i>)		
Alfalfa Butterfly (<i>Colias eurytheme</i>)		
Harford's Sulphur (<i>C. harfordi</i>)		
California Ringlet (<i>Coenonympha californica</i>)		
Monarch (<i>Danaus plexippus</i>)		
Queen (<i>D. gilippus</i>)		
Herna's Checkerspot (<i>Euphydryx chalcedona herna</i>)		
Calcedon Checkerspot (<i>E. chalcedona calcedona</i>)		
Quino Checkerspot (<i>E. editha quino</i>)		
Gabb's Checkerspot (<i>Choridryx gabbii</i>)		
Leonia Checkerspot (<i>Thestalia leonia wrighti</i>)		
Mytila Crescent (<i>Phyciodes mytila</i>)		
Painted Lady (<i>Vanessa cardui</i>)	Lady sp. III III III XX	
West Coast Lady (<i>V. annabella</i>)		
Virginia Lady (<i>V. virginensis</i>)		
Red Admiral (<i>V. atalanta</i>)		
Buckeye (<i>Junonia coenia</i>)		
Mourning Cloak (<i>Nymphalis antiope</i>)		
California Sixes (<i>Adelpha bredoni californica</i>)		
Satyr Angleming (<i>Polygonia satyrus</i>)		
Loewen's Admiral (<i>Basifarchia loeweni</i>)		
Western Tailed Blue (<i>Everes carybula</i>)		
Southern Blue (<i>Glaucopsyche lygdamus australis</i>)		
Echo Blue (<i>Celastrina ladon echo</i>)		
Sonoran Blue (<i>Phloxes sonorensis</i>)		
Marine Blue (<i>Leptotes marina</i>)		
Axonon Blue (<i>Icaricia axonon</i>)		
Pygmy Blue (<i>Brephidium exilis</i>)		
Gray Hairstreak (<i>Strymon melinus</i>)		
Brown Elfin (<i>Incisalia augustinus</i>)		
Peopling Hairstreak (<i>Colophrys perplexa</i>)		
Get Purple Hairstreak (<i>Atlixer helenus</i>)		
Behr's Metalmark (<i>Apodemia morio virgulti</i>)	Dozens	
Wright's Metalmark (<i>Calophelis wrightii</i>)		
'blue sp. MEXICAL?	XXX 100's	

Furcifer dusky wing

100's

Herdrola/Tule Wind QCB
Area A

3/19/07

Kam Muni

0926 h: 70°F; 1-3 mph W; partly cloudy 60% cc
1530 h: 75°F; 2-5 mph W; 0% cc

A-1 133-3396

WSCI

Cry int?

orangepip □

Eco cic

dusky wing - *Picus? ?*
no white fringe
no pale brown FW patches
≠ funereal

purple fl □

Phacelia sp. □

Behys mm

white fly-by

1020h

WFEW BCSP

A-2 1055h

SPTO COXA

Phacelia sp. (bush)

gusts 5-7 mph

BJR WSCI

Cryptantha

Erodium

marble/white ::

sulphur (yellow) -

yellow fl ^{Brassicaceae} Apiciaceae

orangepip H

golden s/s

dusky wing :

Lafus sp. ^{truss yellow fls}
^{crinoid, fuzzy lvs}

orange/yellow
orange (bright (under)

TOP

dark/mottled

□ photos!

bright or mag

copper sp. ? ::

Week 1

(615-445)(189mi)

Iberdrola Survey Area 1b - QCB Surveys

3/20/09

TLW

S: 0835

clear skies

winds 4-6mph, gusts up to 12mph


69°F

E: 235

clear skies

winds 9-12mph

82°F

- SCJA - Scors orange tip
- CORA - Behr's metalmark
- LEGD - brownish-black butterfly w/ 4 greenish "••" on wings; nectaring on hawthorne-like flowers
- side-blotched lizard
- SPTO - cabbage white
- CATO - blue (squiggle dots + lines on wings) - Edwards blue
- UAT - perplexing hairstreak
- MODO - checkered white
- RAWR - wright's metalmark (?) (moth?)
- SCOR - bright yellow w/ red tinged dot; red tinged wing margins
- CAQU - pale swallowtail
- pearly marble
-  - steel gray
- orange

Week 2

Quick Checkspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: BAO Date: 3/25/09 Site Visit No: 10 3 4 5 6 7 8 9 10 Area D

Total site acres: _____ Site Name: Iberdrola Site Location: Area D

Time (24 hr)	Sky	Wind (Beaufort)	Temp (F or C)
Begin <u>0930</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>1-3</u> 4-7 8-12 >12	<u>62</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1630</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 1-3 <u>4-7</u> 8-12 >12	<u>80</u>

Total hours surveyed: 7
Focused Survey Acres: _____ Elev Min: _____ ft Max: _____ ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>None</u>					

a. Larval or nectar resources. Identify species. b. Sparse= plants not touching; dense= plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North open space Distance _____ ft./mile
 South " Distance _____ ft./mile
 East " Distance _____ ft./mile
 West " Distance _____ ft./mile

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
ectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: off-road activity

- CORA granite spiny liz.
- CAQU desert woodrat
- CATH antelope ground squirrel
- OATI bobcat scat/trhr
- BTJR kangaroo cut sign
- ROWR coyote trhr
- UREN RORU
- CATO TUVU
- BLSP
- mule deer

Week 2

Species Observed (larvae or adults)	Number	Comments
1st Swallowtail (<i>Papilio eurymedon</i>)	✓ H H 11	
Antio Swallowtail (<i>P. zellicoon</i>)		
West Tiger Swallowtail (<i>P. rutulus</i>)		
Sara Orangetip (<i>Anthocharis sara</i>)		
Felder's Orangetip (<i>A. cethura</i>)	✓ 100's	
Cabbage White (<i>Artogeia rapae</i>)	✓ 100's	
Sleepy Orange (<i>Borema niopis</i>)		
Common White (<i>Pontia protodice</i>)	✓ 100's	
California Dogface (<i>Zerene euryclea</i>)		
Alfalfa Butterfly (<i>Colias eurytheme</i>)		
Harford's Sulfox (<i>C. harfordi</i>)	✓ IIII	
California Ringlet (<i>Coenonympha californica</i>)	✓ X X	
Monarch (<i>Danaus plexippus</i>)		
Queen (<i>D. gilippus</i>)		
Henna's Checkerspot (<i>Euphydryas chalcedona hennae</i>)		
Calcedon Checkerspot (<i>E. chalcedona chalcedona</i>)	✓ 16 H III	
Quino Checkerspot (<i>E. editha quino</i>)		
Gabb's Checkerspot (<i>Cheridryx gabbii</i>)		
Lanina Checkerspot (<i>Thessalia lanina wrighti</i>)		
Mytila Crescent (<i>Phyciodes mytila</i>)		
Painted Lady (<i>Vanessa cardui</i>)	✓ 100's	
West Coast Lady (<i>V. annabella</i>)	✓ X X	
Virginia Lady (<i>V. virginensis</i>)		
Red Admiral (<i>V. atalanta</i>)		
Buckeye (<i>Junonia coenia</i>)		
Mourning Cloak (<i>Nymphalis antiopa</i>)		
California Sixes (<i>Adelpha bredovii californica</i>)		
Satyr Angleming (<i>Polygonia satyrus</i>)		
Lorquin's Admiral (<i>Basilarchia lorquini</i>)		
Western Tailed Blue (<i>Everszomyia</i>)		
Southern Blue (<i>Glaucopsyche lygdamus australis</i>)		
Echo Blue (<i>Celastrina ladon echo</i>)		
Sonoran Blue (<i>Philotas sonorensis</i>)		
Marino Blue (<i>Leptotes marina</i>)	Blue sp ✓	
Acmon Blue (<i>Icaricia acmon</i>)		
Pygmy Blue (<i>Drephalium exilis</i>)		
Gray Hairstreak (<i>Strymon melanos</i>)		
Brown Blin (<i>Inselmia angustior</i>)		
Perplexing Hairstreak (<i>Callophrys perplexa</i>)	✓ X	
Get Purple Hairstreak (<i>Ailides holosa</i>)		
Behr's Metalmark (<i>Apodemia normo virgulif</i>)	✓ 100's	
Wright's Metalmark (<i>Calophelis wrighti</i>)		
Blk duskywing (no white margin)	X X	

perplexing hairstreak - tttt tttt
 Sulphur Sp - 11
 Sun's orange tip - tttt tttt 1111
 checkered white - tttt tttt 1
 bel's metalmark - tttt tttt tttt 11
 tiger moth - tttt tttt 11
 pale swallowtail - tttt 11

UKS week 2

Wed 25 March 2009

1030
 4-7 mph
 0% clouds
 72°F

1430

4-10 mph

0%

72°F

bitterflies on ramp

1 Se Lola

Area A - starting notes

3/28/09

0930

61

Sunny/Clear/some
high wispy clouds
8-20 MPH (gusts)

Anita
McCain - Iberdrola

QCB survey

day 1

area

WREN

WSJA

CORA

JUVU - in flight

BTSP

HDFI

CATO

CATH

Skipper (like funeral) - several
Painted lady - several

Wind too high gusting
to 50 now, sustained
@ ~20

1130

64

Clear but high
wispy

3/29/09

Iberdrola Anita

1000

Area C

62

QCB

Clear

day 2

8-15 MPH

BTSP

BGGD

HOFI

CATH

WCSP

WSJA

CORA

CATO

BEWR

WRGN

CAQU

Perplex green II
duskywing (Pac?)

III II many

Painted lady

IIII I many

Harford's sulfur

Marble III

Behr's metalmark

IIIIIIII

Blue sp

End - 4:15 p.m.

63

5-15 gusts to 20

Chap is sparse enough to not exclude.

[Handwritten scribble]

pink Swallowtail - 1
pearly marbles - ~~||||~~ |||| ||||
Sora's orange tip - ||||
tiger moth - |||| ||||
lady sp. - (|||)
Belt's metalmark - |||| ||||
perplexing hairstreak - |
sulphur sp. - 1

31 March 07
155 - 300
640 - 120
0800 - 15
2-6 mph 27 - pin
see map for distribution

Harold Area 8 - site 3

800-450-1818

800-450-1818

berdria OCB
Area D

4/1/09

Kam Mini

1015h: 54°F; 07.0 cc; 5-9 mph W

1100h: 58°F; 07.0 cc; 5-9 mph W

1235h: 65°F; 09.0 cc; 6-9 mph W

1600h: 66°F; 09.0 cc; 3-5 mph W

windy, but many
w/ plenty of flies
flying about, nesting.

COEA WSCI WOSP CATH? CATO ROWR SPTD

Behrs man

lady sp. (Hyby)

darkwing

orange tip

pale swallowtail

sulphur (Harford?)

buckeye

white/marble

blue sp.

green hairstreak

(8-6)(145mi)

Iberdrola 203 Surveys - Area C

4/1/09

TLW

S: 0930

E: 330

40% scattered clouds

10% CC

winds 12-13 mph (gusts to 15 mph)

winds 8-10 mph

62°F

79°F

RTHA

painted lady

perching hairstreak

Behr's metalmark

Sara's orangetip

pearly marble

Berdona QCB
Area B

4/2/09

Kam. Mus

12:30h: 64°F; 0.7% cc; 5-10 mph gusts 12-15 mph

17:20h: 64°F; 0.7% cc; 6-9 mph

TUVU WSC3 CAQU rabbit

bdare mm
Lutzomyia
oculogata?
white/middle

Phacelia sic?

Cryp id

Leot. ~~id~~ cal

Ant count?

Camponotus?

Crematogaster sp.

Erodium

canthalagium
fily tips?

4/3/09 Iberdrola (1a) QCB
0800 - 1300 ~~5 hr~~ miles: ~~165~~

@site: 0930 - 1130

st: winds 15-25 mph, gusting to 35
Not protocol conditions

END:

~~st~~ winds still 15-25, gusting to 35

Survey cancelled.

~~1 hr~~ 3 CE coord / scheduling

4-7-09 Iberola (1a)

0730-1630 (9hr)

@Site: 0930-1500

make-up for
high wind cancellations
last week

miles = 160

- ① St, 0930; W 3-8 gusts to 10-12; 5% CC; 64°F
- ② 1106; W 3-7; gusts - 10; 5% haze clouds in distance;
- ③ END: W 3-9 gusts to 15; 2% CC; 80°F @ ground
- ④ 1500

Sub. lizard

* CSW ~~SCJA~~ SCJA

CATO BTAR

Big Rattlesnake

So. Pac. w/ brown/green phase

po. sp. (no. XW)

SPTD (Gra. sp. 1/2)

Tuvu

or Great
Basin whiptail
(Double check)

Skinner sp. ♂

(dark like Fun. sp.
but no light bands
on rear of wings)

Check w. B.

Moth sp. ♀

(brown w/ white bands
& orange inner HW
when wings open)

Felder's OT ♂

Or. sulphur ♂

Fun. skip ♂

Pale SWT ♂

Parroted Lady ♂

Gher's mm ♂

Verdrola QCB, Area C

4/8/07

Kam Mui

1130h: 66°F; 0% cc; 6-8 mph W

1610h: 63°F; 40% cc; 6-15 mph W

1635h: 62°F; 40% cc; 6-15 mph

WCSJ black throat (line) sparrow CAQU CORA

SPTD West CATH

sparrow sp. woodrat sp. (mildew)

swallow sp. ETHA ground squirrel

orange tip

Behrs min

dusky wing

sulphur/cabbage

pearly marble

lady sp. (fly by)

tiger swallowtail

✓ arrow blue (outside survey area)

Las cal

Cry int

Erod cic

Lupinus sp.

Ericameria sp.

Amorpha

Conocephalus

Antirrhinum?

185 mi

4/9/09

PM

Visit 4 of 5

Iberdrola - QCB - Survey Area A

Onsite

Offsite

1035

1530

Skies: 0%cc

60%cc

Wind: 1-3 mph, 4-8 gusts

4-7, 8-12 gusts

Temp: 63°F

67°F @ 1315

62°F

SPTO

Nectar

Horned lizard

Popcorn flower

Painted lady II

Erodium

Common White II

Thaucha distans

YRWA

Ericameria

Fem. duskywing III III

linearidiana

Pale Swallowtail I

Cryptantha

Granite spiny liz

micrantha

Euro cabbage III

Crypt. hobpter

WREN

(over)

PML

2/9/09 continued...

Southern blue III
Sara's OT III Desert O.T.?
Behr's man III
Ch dogface IIII
Peer (pr)
Bobcat (scat)
Coyote (pr+scat)
Great Purple Hairstreak I
Green hairstreak II

Nectar
Limonium lemmingii
Limonium orcuttii
Layia glandulosa
(White layia)
~~Mentzelia~~ Mentzelia sp.
Ceanothus greggii
(Desert ceanothus)
Lupinus spars.
Eriophyllum lanosum
(Desert woolly daisy)

(7:15-4:15) (195mi)

Iberdrola GUB Surveys - Area D

4/9/09

TW

S: 0900

clear skies

winds 8-11 mph (gusts to 13mph)

61°F

E 200

hazy / partly cloudy

winds 4-6 mph

74°F

Belted metalmark

perplexing hairstreak

pearly marble

pale swallowtail

saras orange tip

sulphur dogface (check)

painter lady

ROWR

WCSP

CORA

ANHU

BTJA (jockrabbi)

TWU

Uerdrola QCB

4/16/09
(Area B)

Kam Mui

1105h: 62°F; 0%cc; 1-2 mph W

1300h: 68°F; 0%cc; 3-7 mph W

1515h: 65°F; 0%cc; 3-5 mph W

~~scribble~~

WREN SPTD RTHA

WSCJ TWIU

Les. cal Phac. sic?

Cry lat Anasidius

Chaenecto? Erodium fides

Salsia (chia?) Lotus G. sc

Eri. f. Coenocarpus

Eriocarpus Lupinus

whip bells white/yellow
stems

conchidogon
Lotus prostrate
yellow fls
green BS

sulphur

marble

belus mus

ovongetip

KSM 4/10/09

Area B cont'd

8775 CATD

W23

Androsynium

Behrs m

orangehip

crabapple

sulphur

paintad lady

green hairbreak

Las cal

dry int

10 Antirrhinum?

orangehip

Phacelia

Muticola?

Ericameria

chia

4/17/09 Thardola DCB (1A)

0630-1600

~~9/1/09~~

~~miles: 187~~

@ Site: 0825-1400

- (1) st: 0% CC; W 0-3; 67°F @ ground/shade
(2) 1230; W 0-6 + gusts to 8; 0% CC; 84°F
(3) END: 80°F @ ground; W 2-7; 0% CC
(4)

BGR	CAQU	Behr's mm
MOJO	NOFL	Behr's mm <input checked="" type="checkbox"/> E.
ATFL	SCJA	Feld. OT <input checked="" type="checkbox"/> :
HOFI	WREN	Check W <input checked="" type="checkbox"/> :
Neot (mid.)	*BTJR	Akron Blue :
Malc Dr (pr)	Coyde (pr/x)	Skipper sp <input checked="" type="checkbox"/> :
Gran. sp. hz.	TUVU	Painted Lady ..
SPTD	Uta st.	Anise swt .
LEGO	CATD	Tiger swt .
BUSH		

Horridola OCB
Area D.

4/17/09
week 5

Kama Muri

1015h: 62°F; 0%cc; 2-3 mph W

1515h: 68°F; 0%cc; 4-8 mph W

SPTD	MOOD	W/SCS	CATV	CATTI
CASU	W/SP	less w/it	COXA	

Behrs min

marble

orange tip

tips swt

printed lady

dark wing

green hairstreak

sulphur

Anise swt

has cat

Cry int

Lepidus

canthalaxia

Ericameris

Ameletia

Phacelia

PNL 4/18/09

Area B Bad Weather.
Iberdrola - QCB - Week 4 - Make up

Onsite

Offsite

0840

1445

Skies: 0% cc

0% cc

Wind: 1-4 mph

3-5, 6-10 gusts

Temp: 72°F

90°F (ground)

RTHA

Nectar

Behrs mm III 30+

Ericameria lin.

Common White 50+

Cryptantha

WREN

(forget me not)

SCJA

Linanthus kemm.

Pale Scaubtail III

Goldfields

Blue sp. 20+

Thaetia distans

(never saw one

Linanthus orcuttii

land to I.P.)...

Arabis sparsiflora

PML 4/18/68 continued

Painted lady III III

Fun. duskywing III III 20+

Sara's O.T. III III III

CA dogface 11

Strutted Queen?

↳ flyby's 20ft high...

CORA

SPTO

BT. Jackrabbit

Br rabbit

Nectar

Mentzelia sp?

(Annis?)

Ceanothus greggii

Chia

Tansy mustard

BFM 4/21/09

Iberdrola - QCB - Week 5 - Area C Body feathers
Onsite Make-up
0930 1540

Skies: 0%cc 5%cc
Wind: 2-4, 5-10 gusts 36, 7-12 gusts
Temp: 86°F 93°F ground

Fun duskywing ~~||||~~ ²⁰⁻³⁰ ~~||||~~ Nectar
Pale swallowtails ||| Same as
Blue sp? 20+ 4/18 notes...
Behr's mm 30-40
SEJA
Coyote (scat)
Green hairstreak |||
Sara't O.T. ~~||||~~ ~~||||~~ ~~||||~~ |||
Common White - 50+
CPRA

If found Please call

PML 4/21/09
continued

- RTHA
- WREU
- Great Purple Hairstreak 1
- Painted lady III III
- Br. rabbit
- Deer (pr)