

Appendix D-31

Small Mammal Trapping Results
December 2011

**SMALL MAMMAL TRAPPING RESULTS
FOR THE Alta East WIND ENERGY
PROJECT
KERN COUNTY, CALIFORNIA**

Prepared for:

CH2M Hill Engineers
155 Grand Avenue, Suite 800
Oakland, California 94612

Prepared by:

William J. Vanherweg
Certified Wildlife Biologist
1020 O'Connor Way
San Luis Obispo, CA 93405

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- 1 Total Number of Captures per Species per Grid

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- A California Department of Fish and Game Mohave Ground Trapping Protocol
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1 Introduction

Alta Windpower Development, LLC proposes to construct the Alta East Wind Project (project) in the Tehachapi region of southern California. Portions of the project would be located on land managed by the U.S. Bureau of Land Management and privately owned land under the jurisdiction of Kern County. William Vanherweg was contracted by CH2M HILL Engineers, Inc. (CH2M HILL) to conduct surveys for Mohave ground squirrel (*Xerospermophilus mohavensis*) and other special-status small mammals.

1.1 Project Description

The proposed development is a wind energy facility with a nameplate capacity rating of approximately 318 megawatts of wind turbine generation and includes ancillary facilities and supporting infrastructure. Up to 106 wind turbine generators would be installed. The project includes repowering a historical wind power project site north of State Route (SR) 58 on BLM lands and infilling existing wind facilities south of SR 58 in the area of Cameron Ridge. The project is located 2 miles west of the intersection of SR 58 and SR 14 in the Mojave Desert (Figure 1) and is within the Tehachapi Wind Resource Area (WRA) of eastern Kern County.

2 Environmental Setting

The project area falls within the Mojave Basin and Range ecoregion. This ecoregion is characterized by scattered, generally low-elevation mountains. Much of the land in this ecoregion is federally owned. Some areas have experienced severe wind and water erosion problems have been linked to extensive off highway vehicle (OHV) use, overgrazing and fire (USEPA, 2009). The climate in this ecoregion consists of the Mediterranean climate of hot, dry summers and moist, cool winters.

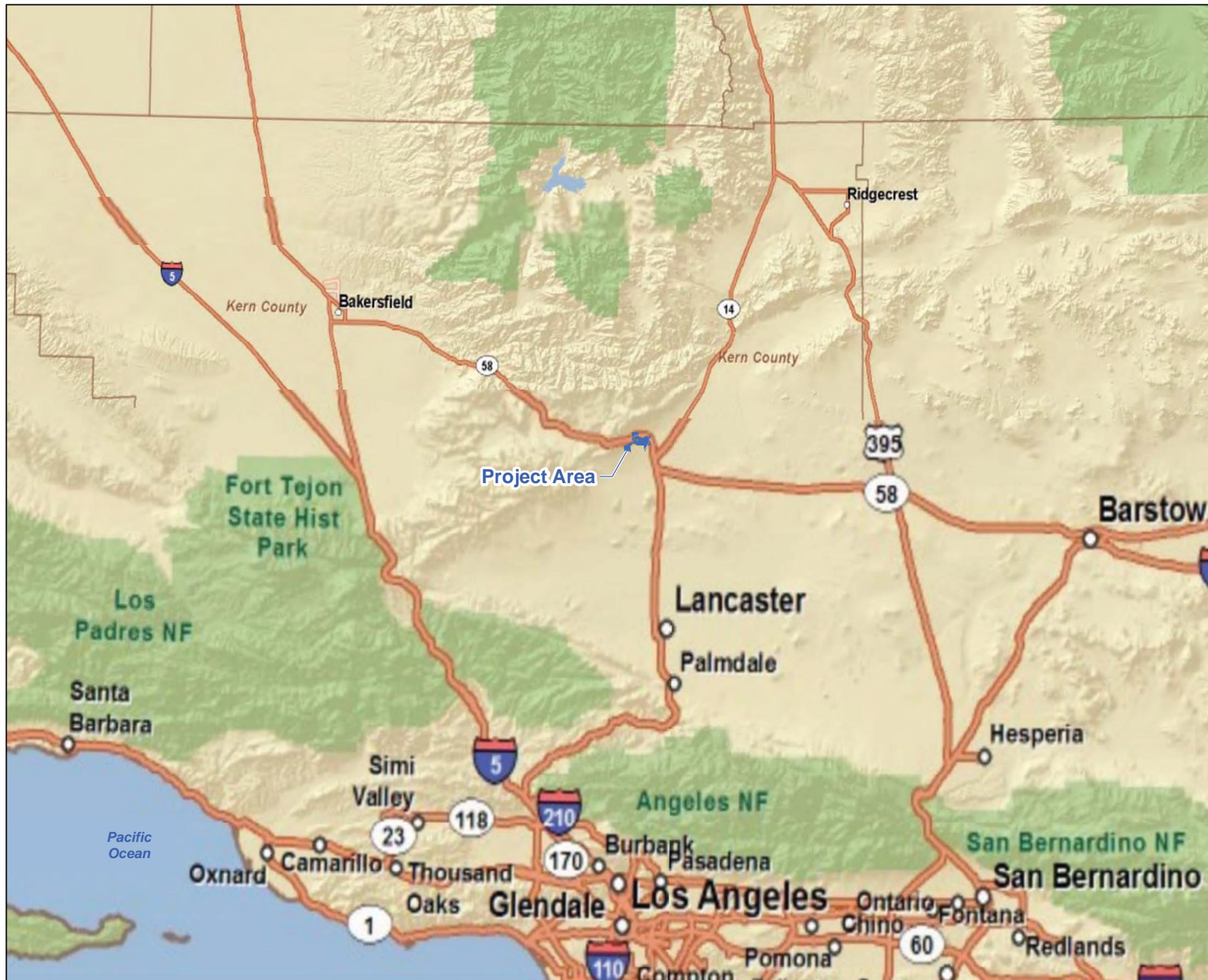
The elevation of the site ranges from approximately 3,000 to 4,400 feet above sea level.

2.1 Current Land Use

The project site exhibits light to heavy disturbance. Human disturbance influencing the project area includes: OHV use, urban/industrial development, scattered trash, and SR 58.

2.2 Vegetation

The project site is predominantly creosote bush (*Larrea tridentata*) scrub habitat with some Joshua tree woodland and mixed Mojave scrub.



LEGEND
 Project Area

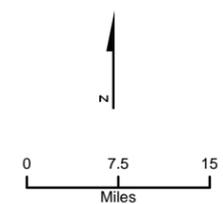


FIGURE 1
Project Vicinity Map
 Alta East Wind Project
 Alta Wind Energy Center Project

3 Special Status Mammals Natural History

A California Natural Diversity Database (CNDDDB) search was conducted for the project area and a ten mile buffer May 27, 2011. The following special-status small mammals were present in the CNDDDB search area: Mohave ground squirrel, San Joaquin pocket mouse (*Perognathus inornatus*), and Tehachapi pocket mouse (*Perognathus alticola*), and Tulare grasshopper mouse (*Onychomys torridus tularensis*). Based on a review of species' ranges for subspecies that appear in the database search, Tulare grasshopper mouse does not occur in the project area (Hall 1981). Tulare grasshopper mice are known only from west of the project site in the San Joaquin Valley and the Carrizo Plain. The subspecies that occurs in the project area is *O. t. pulcher* and is not considered a special status taxon (Hall 1981). Therefore, Tulare grasshopper mouse was not included in this investigation. This report addresses trapping for Mohave ground squirrel, San Joaquin pocket mouse, and Tehachapi pocket mouse.

3.1 Mohave Ground Squirrel

Mohave ground squirrels are approximately 8.5 - 9 inches in length and can be found in desert scrub habitats. Activity periods for this species vary and little is known about their reproduction (Ingles 1979). Their diet consists of seeds, vegetative parts of desert plants including fruits of the Joshua tree. Due to the aridity and high temperatures of its environment they are a diurnal species spending up to seven months underground. The Mohave ground squirrel is listed as threatened by the California Department of Fish and Game (CDFG). In October 2011, the U.S. Fish and Wildlife Service determined that listing of the Mohave ground squirrel under the federal Endangered Species Act is not warranted at this time. (76 Fed. Reg. 622144).

3.2 San Joaquin Pocket Mouse

The San Joaquin pocket mouse is relatively small with adults weighing 12-18 grams. Their pelage is light brown to cinnamon with white bellies. They are nocturnal and are rarely active when temperatures drop below 50° Fahrenheit. They mainly eat small seeds of grasses and forbs but have been known to eat cutworms (Best 1993). The species is generally associated with annual grassland and oak habitat (Laabs and Allaback 2002), but has also been captured in all desert scrub habitats, Joshua tree woodland, juniper woodland, and other higher elevation scrub habitats (Vanherweg personal experience). The San Joaquin pocket mouse is a state species of special concern, which does not confer any legal protections, but rather calls attention to a species that may be listed at some time in the future. Recent work by David Laabs and Mark Allaback indicate that the San Joaquin pocket mice found in the Tehachapi Mountains and western Mojave Desert, which includes the project area, are most likely a new taxon, the Mohave pocket mouse (*Perognathus* sp.).

3.3 Tehachapi Pocket Mouse

The Tehachapi pocket mouse is medium-sized for the genus, averaging (5.9 and 6.5 in.) in total length and 16-28 grams for females and males, respectively (Best, 1994). Little is known about the ecology of the Tehachapi pocket mouse. Other members of the genus are nocturnal granivores, foraging primarily on seeds of grasses, forbs and annuals, but also on leafy plant material and insects (Verts and Kirkland, 1988). Most other members of the genus exhibit seasonal hibernation (Verts and Kirkland, 1988). The Tehachapi pocket mouse occupies native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland and oak savannah (Williams et al., 1993). It constructs burrows in loose, sandy soils. The Tehachapi pocket mouse is a state species of special concern, which does not confer any legal protections, but rather calls attention to a species that may be listed at some time in the future.

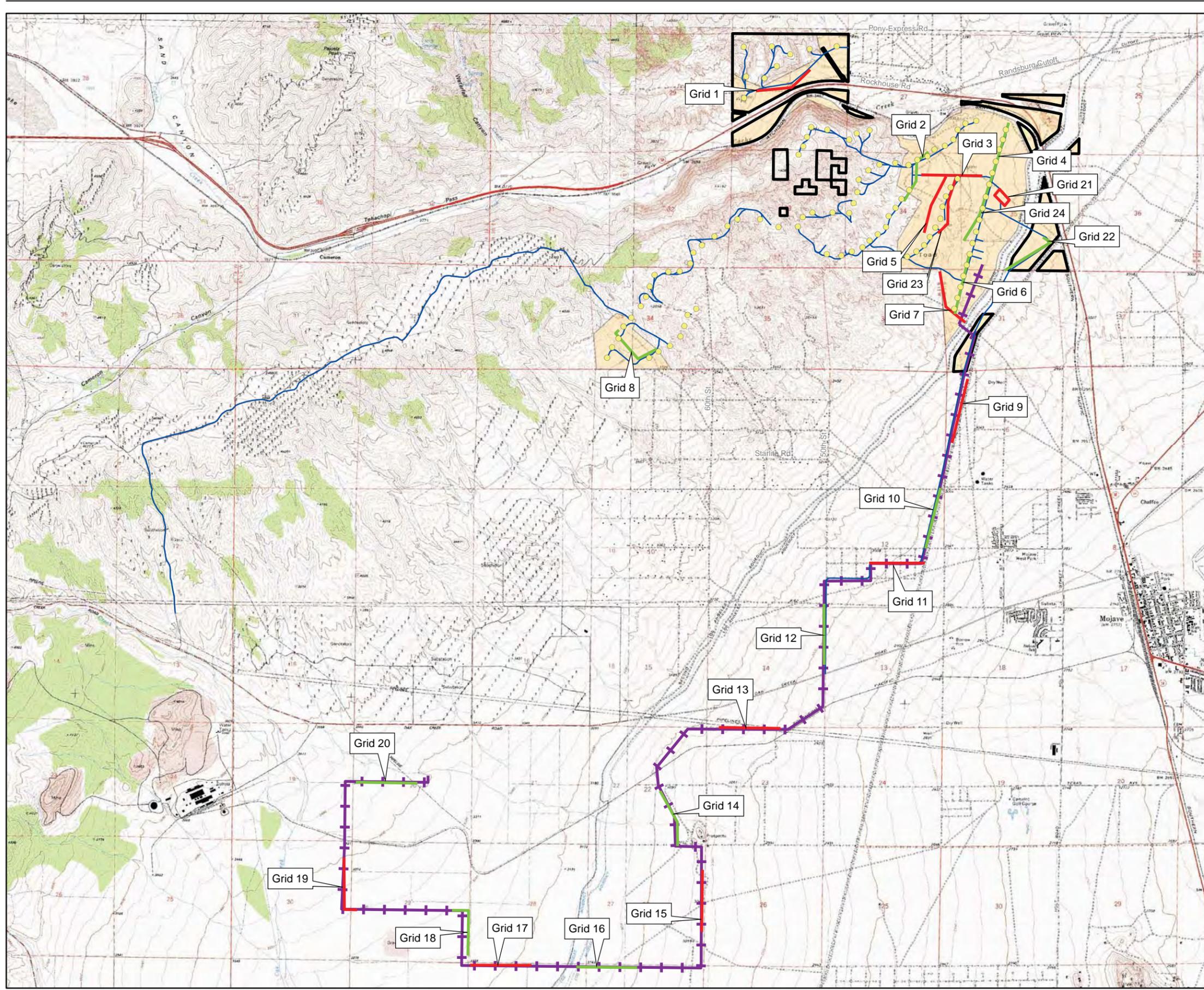
4 Methods

4.1 Mohave Ground Squirrel

Surveys for Mohave ground squirrels were consistent with the survey guidelines issued by CDFG (CDFG, 2003) (Appendix A). An evaluation of habitat suitability was conducted in June 2010 (Vanherweg 2010). In spring 2011, a map displaying suitable habitat and proposed trapping grids was submitted to Justin Sloan at CDFG for review. Twenty-four trapping grids were established along linear portions of the project including proposed turbine strings, transmission lines, access roads, and at a laydown area (Figure 2). The trapping grids along the proposed linear developments were arranged in 4 x 25 trap configurations, the laydown area had a 10 x 10 configuration, as per CDFG protocol. The first session of trapping was conducted between 15 March and 30 April, the second session between 1 and 31 May, and the third between 15 June and 15 July, per the CDFG protocol.

4.2 Other Special-status Small Mammals

Nocturnal trapping for Tehachapi pocket mouse and San Joaquin pocket mouse in appropriate habitats of the proposed project area (Figure 2) was conducted during May in some locations and August 2011 in others. We trapped one grid for each two miles of linear corridor and for each 160 acres of nonlinear project area. This level of trapping intensity is consistent with CDFG protocol for listed nocturnal small mammal species in the San Joaquin Valley.



LEGEND

- Proposed Wind Turbine Layout
- Proposed Access Roads
- Transmission Line
- Mohave Ground Squirrel Potential Habitat Area within the Project Boundary

Mohave Ground Squirrel Trapping Grid Line

- Grids 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21 & 23
- Grids 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 & 24
- Alta East Wind Energy Project Area

Notes:
 Trapping Grid lines were grouped by color for visual clarity only and do not represent any differences in method or approach.

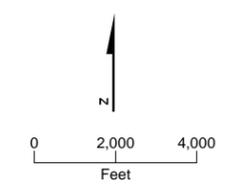


FIGURE 2
Mohave Ground Squirrel Trapping Grids
 Alta East Wind Energy Project
 Kern County, California

5 Results

No Mohave ground squirrels were captured during the three sessions of trapping. San Joaquin pocket mouse was captured during our diurnal trapping surveys. We captured one San Joaquin pocket mouse on grid 21 during our nocturnal trapping surveys. Table 1 contains the general results of the Mojave ground squirrel trapping survey. Habitat descriptions of each grid, daily weather conditions, and results of our diurnal and nocturnal trapping efforts can be found in Appendix B. Appendix C contains photographs of each grid.

Table 1. Total Number of Diurnal Captures per Species per Grid.

Total Captures Per Grid Per Species			
Grid	Mohave ground squirrel	White-tailed antelope squirrel	California ground squirrel
1	0	142	1
2	0	162	0
3	0	164	5
4	0	201	13
5	0	223	0
6	0	36	0
7	0	25	0
8	0	1	0
9	0	23	0
10	0	33	0
11	0	22	0
12	0	15	0
13	0	5	0
14	0	41	0

15	0	46	0
16	0	68	0
17	0	52	0
18	0	17	0
19	0	22	0
20	0	30	5
21	0	118	11
22	0	33	0
23	0	215	2
24	0	50	4

6 References

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Appendix A - CDFG Mohave Ground Squirrel Trapping Protocol

CALIFORNIA DEPARTMENT OF FISH AND GAME
MOHAVE GROUND SQUIRREL SURVEY GUIDELINES
(January 2003)

1. Visual surveys to determine Mohave ground squirrel activity and habitat quality shall be undertaken the period of 15 March through 15 April. All potential habitat on a project site shall be visually surveyed during daylight hours by a biologist who can readily identify the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*).
2. If visual surveys do not reveal presence of the Mohave ground squirrel on the project site, standard small-mammal trapping grids shall be established in potential Mohave ground squirrel habitat. The number of grids will depend on the amount of potential habitat on the project site, as determined by the guidelines presented in paragraphs 4 and 5 of these guidelines.
3. For linear projects (for example, highways, pipelines, or electric transmission lines), each sampling grid shall consist of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) arranged in a rectangular pattern, 4 traps wide by 25 traps long, with traps spaced 35 meters apart along each of the four trap lines. At a minimum, one sampling grid of this type shall be established in each linear mile, or fraction thereof, of potential Mohave ground squirrel habitat along the project corridor.
4. For all other types of projects, one sampling grid consisting of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) shall be established for each 80 acres, or fraction thereof, of potential Mohave ground squirrel habitat on the project site. The traps shall be arranged in a 10 x 10 grid, with 35-meter spacing between traps.
5. Each sampling grid shall be trapped for a minimum five consecutive days, unless a Mohave ground squirrel is captured before the end of the five-day term on the grid or on another grid on the project site. If no Mohave ground squirrel is captured on a sampling grid on the project site in the first five-consecutive-day term, each sampling grid shall be sampled for a SECOND five-consecutive-day term. Trapping may be stopped before the end of the second term if a Mohave ground squirrel is captured on any sampling grid on the project site. If no Mohave ground squirrel is captured during the second five-consecutive-day term, each sampling grid shall be sampled for a THIRD five-consecutive -day term. The FIRST trapping term shall begin and be completed in the period of 15 March through 30 April. If a SECOND term is required, it shall begin at least two weeks after the end of the first term, but shall begin no earlier than 01 May, and shall be completed by 31 May. If a THIRD term is required, it shall begin at least two weeks after the end of the second term, but shall begin no earlier than 15 June, and shall be completed by 15 July. All trapping shall be conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures (<50°F or 10°C).
6. For projects requiring two or more sampling grids, capture of a Mohave ground squirrel on any grid will establish presence of the species on the project site. Trapping may be stopped on all grids on the project site at that time. For linear projects, very large project sites, project sites characterized by fragmented or highly-

heterogeneous habitats, or in other special circumstances, continued trapping may be necessary.

7. A maximum 100 traps shall be operated by each qualified biologist. Each trap shall be covered with a cardboard A-frame or equivalent non-metal shelter to provide shade. Trap and shelter orientation shall be on a north-south axis. All traps shall be opened within one hour of sunrise and may be closed beginning one hour before sunset. Traps shall be checked at least once every four hours to minimize heat stress to captured animals. When traps are open, temperature shall be measured at a location within the sampling grid, in the shade, and one foot (approx. 0.3 meters) above the ground at least once every hour. Traps shall be closed when the ambient air temperature at one foot above the ground in the shade exceeds 90°F (32°C). Trapping shall resume on the same day after the ambient temperature at one foot (approx. 0.3 meters) above the ground in the shade falls to 90°F (32°C) and shall continue until one hour before sunset. Suggested baits are mixed grains, rolled oats, or bird seed, with a small amount of peanut butter.
8. A qualified biologist shall complete the Survey and Trapping Form, which is found on page 5 of these guidelines. This biologist, or the lead agency for the project, shall submit the completed form to the appropriate Department office (see page 4) with the biological report on the project site.
9. The Department may allow variation on these guidelines, with the advance written approval of the appropriate regional habitat conservation planning office (see page 4). Such variations could include biologically-appropriate modification of the trapping dates or changes in grid configuration that would enhance the probability of detecting Mohave ground squirrels. Any variation which concerns trapping or marking methods must be incorporated into the MOU or permit that authorizes the work.
10. If a survey conducted according to these guidelines results in no capture or observation of the Mohave ground squirrel on a project site, this is not necessarily evidence that the Mohave ground squirrel does not exist on the site or that the site is not actual or potential habitat of the species. However, in the circumstance of such a negative result, the Department will stipulate that the project site harbors no Mohave ground squirrels. This stipulation will expire one year from the ending date of the last trapping on the project site conducted according to these guidelines.

**Appendix B – Trapping Grid Habitat
Descriptions, Daily Weather Conditions, and
Trapping Results**

Grid 1

Visual Surveys were conducted by: Greg Warrick

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS –*Bromus tectorum*, *Bromus madritensis.*, *Erodium cicutarium*,
Amsinckia sp.

DOMINANT PERENNIALS-, *Yucca brevifolia*, *Ephedra trifurca*, *Eriogonum fasciculatum*,
Ericameria sp., *Achnatherum sp.*, *Poa sp.*, *Hymenoclea salsola*,

OTHER PERENNIALS- *Juniperus californicus*, *Tetradymia spinosa*, *Encelia farinosa*, *Grayia spinosa*, *Krashnekovia lanata*, *Lycium andersonii*, *Yucca sp.*, *Opuntia sp.*, *Lepidospartum squamatum*, *Larrea tridentata*.

Elevation – Approx. 3,500 to 3,600 ft

Slope – 0% - 5%

Trapping conducted by: Greg Warrick

Grid 1**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS*	MGS*	AM	PM	AM	PM
4/11/2011	0638	42	0	0	90%	30%	5-10	10-15
	1514	65						
4/12/2011	0710	52	4	0	40%	CLEAR	10-15	10-15
	1500	71						
4/13/2011	0701	48	2	0	10%	20%	10-15	25-30
	1507	46						
4/14/2011	0639	42	1	0	CLEAR	5%	5-10	5-10
	1439	67						
4/15/2011	0643	49	3	0	5%	1%	0-5	5-10
	1457	72						

Second Sampling Term

5/24/2011	0600	51	11	0	5%	CLEAR	10-15	10-15
	1407	75						
5/25/2011	0603	58	18	0	CLEAR	CLEAR	15-20	20
	1606	77						
5/26/2011	0620	49	9	0	15%	10%	25-30	30-35
	1459	61						
5/27/2011	0612	55	13	0	CLEAR	1%	35-40	15-20
	1549	69						
5/28/2011	0630	53	11	0	15%	5%	35-40	20-25
	1445	65						

Third Sampling Term

7/05/2011	0609	69	5	0	5 %	30 %	5-10	5-10
	1028	90+						
7/06/2011	0620	71	24	0	10 %	10 %	0-5	0-5
	1026	90+						
7/07/2011	0602	79	18	0	80 %	30 %	0-5	5-10
	1114	90+						
7/08/2011	0609	80	11	0	40 %	20 %	10-15	5-10
	0915	90+						
7/09/2011	0603	78	12	0	CLEAR	CLEAR	10-15	10-15
	0937	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, **1 California ground squirrel captured 7/7/2011

Nocturnal Results – Totals

Peromyscus maniculatus – 70, *Peromyscus truei* – 4, *Dipodomys panamintinus* – 8, *Neotoma lepida* – 2, *Onchomys torridus* – 5, *Chaetodiuus californicus*- 5

Grids 2-5

Visual Surveys were conducted by: William Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS –*Bromus tectorum*, *Bromus madritensis.*, *Erodium cicutarium*,
Amsinckia sp.

DOMINANT PERENNIALS- *Larrea tridentata* *Yucca brevifolia*, *Ephedra trifurca*, *Eriogonum fasciculatum*, *Ericameria sp.*, *Achnatherum sp.*, *Poa sp.*, *Hymenoclea salsola*,

OTHER PERENNIALS- *Juniperus californicus*, *Tetradymia spinosa*, *Encelia farinosa*, *Grayia spinosa*, *Krascheninnikovia lanata*, *Lycium andersonii*, *Yucca sp.*, *Opuntia sp.*,
Lepidospartum squamatum.

Elevation – Approx. 3,200 to 3,300 ft

Slope – 0% - 5%

Trapping conducted by: William and Paul Vanherweg

Grid 2 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
3/31/2011	0700	61	4	0	0%	0%	0	0
	1500	85						
4/1/2011	0700	59	7	0	0%	0%	0	0-5
	1530	86						
4/2/2011	0700	61	7	0	30%	30%	0-5	5-10
	1600	73						
4/3/2011	0700	51	2	0	30%	0%	0-5	5-10
	1600	65						
4/4/2011	0700	48	5	0	0%	0%	0-5	0-5
	1530	72						

Second session

5/16/2011	0645	42	2	0	60%	100%	5-10	5-10
	1500	60						
5/17/2011	0700	48	7	0	80%	50%	5-10	0-5
	1530	62						
5/18/2011	0645	47	2	0	50%	10%	10-20	15-25
	1500	58						
5/19/2011	0645	53	1	0	0%	5%	0-5	5-10
	1530	66						
5/20/2011	0700	59	2	0	0%	5%	0-5	0-5
	1530	79						

Third session

7/5/2011	0600	73	13	0	10%	40%	0-5	0-5
	0930	90+						
7/6/2011	0600	73	22	0	10%	10%	0-5	0-5
	0945	90+						
7/7/2011	0600	75	40	0	80%	80%	0-5	0-5
	0945	90+						
7/8/2011	0600	79	24	0	30%	30%	5-10	0-5
	0900	90+						
7/9/2011	0600	79	24	0	0%	0%	0-5	0-5
	1530	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Grid 3 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
3/31/2011	0700	61	10	0	0%	0%	0	0
	1500	85						
4/1/2011	0700	59	8	0	0%	0%	0	0-5
	1530	86						
4/2/2011	0700	61	4	0	30%	30%	0-5	5-10
	0845	73						
4/3/2011	0700	51.7	3	0	30%	0%	0-5	5-10
	1600	65						
4/4/2011	0700	48	3	0	0%	0%	0-5	0-5
	1530	72						

Second session

5/06/2011	0630	56	1	0	0%	0%	0-5	0-5
	1530	86						
5/07/2011	0630	64	5	0	0%	0%	0-5	10-20
	1500	82						
5/08/2011	0630	54	5	0	50%	30%	10-15	15-20
	1530	62						
5/09/2011	0630	48	4	0	10%	10%	0-5	15-20
	1400	62						
5/10/2011	0630	50	6	0	1%	0%	0-5	10-15
	1530	72						

Third session

6/30/2011	0600	63	20	0	0%	0%	0-5	0-5
	1130	90+	1 CGS					
7/1/2011	0600	73	29	0	0%	0%	0	0-5
	1000	90+						
7/2/2011	0600	68	22	0	0%	0%	0	0
	0830	90+	1CGS					
7/3/2011	0600	76	16	0	10%	5%	0	0
	0815	90+	1 CGS					
7/4/2011	0600	77	28	0	10%	30%	0	0-5
	0930	90+	2CGS					

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS= California ground squirrel

Grid 4 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
3/26/2011	0700	42	0	0	50%	100%	5-10	10-20
	1500	52						
3/27/2011	0700	48	16	0	50%	5%	0-5	0-5
	1530	60						
3/28/2011	0700	51	13	0	5%	0%	0-5	0-5
	0845	62						
3/29/2011	0700	45	14	0	5%	60%	0-5	5-10
	1600	74						
3/30/2011	0700	47	12	0	10%	50%	0-5	0-5
	1530	79						

Second session

5/06/2011	0630	56	12	0	0%	0%	0-5	0-5
	1530	86						
5/07/2011	0630	64	9	0	0%	0%	0-5	10-20
	1500	82						
5/08/2011	0630	54	5	0	50%	30%	10-15	15-20
	1530	62						
5/09/2011	0630	48	3	0	10%	10%	0-5	15-20
	1400	62						
5/10/2011	0630	50	3	0	1%	0%	0-5	10-15
	1530	72						

Third session

6/30/2011	0600	63	26	0	0%	0%	0-5	0-5
	1130	90+	5 CGS					
7/1/2011	0600	73	23	0	0%	0%	0	0-5
	1000	90+	2 CGS					
7/2/2011	0600	68	18	0	0%	0%	0	0
	0830	90+	2 CGS					
7/3/2011	0600	76	15	0	10%	5%	0	0
	0815	90+	2 CGS					
7/4/2011	0600	77	32	0	10%	30%	0	0-5
	0930	90+	2CGS					

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS= California ground squirrel

Grid 5 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/5/2011	0700	58	7	0	0%	0%	0-5	5-10
	1500	77						
4/6/2011	0700	52	39	0	80%	0%	5-10	5-10
	1530	69						
4/7/2011	0700	43	34	0	0%	100%	10-15	15-20
	1400	53						
4/8/2011	0830	40	45	0	0%	100%	5-10	5-10
	1200	45						
4/9/2011	0830	40	54	0	0%	10%	0-5	15-20
	1500	52						

Second session

5/11/2011	0630	57	8	0	0%	0%	0-5	0-5
	1530	79						
5/12/2011	0630	62	6	0	0%	0%	0-5	0-5
	1530	88						
5/13/2011	0630	65	3	0	0%	80%	0	0-5
	1530	90+						
5/14/2011	0630	59	3	0	0%	10%	5-10	5-10
	1500	76						
5/15/2011	0630	40	2	0	50%	20%	5-10	15-25
	1500	60						

Third session

7/5/2011	0600	73	13	0	10%	40%	0-5	0-5
	0930	90+						
7/6/2011	0600	73	22	0	10%	10%	0-5	0-5
	0945	90+						
7/7/2011	0600	75	40	0	80%	80%	0-5	0-5
	0945	90+						
7/8/2011	0600	79	24	0	30%	30%	5-10	0-5
	0900	90+						
7/9/2011	0600	79	24	0	0%	0%	0-5	0-5
	0915	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Grids 6 and 7

Visual Surveys were conducted by: Gin Ingrahm

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS –*Bromus tectorum*, *Bromus madritensis.*, *Erodium cicutarium*,
Amsinckia sp.

DOMINANT PERENNIALS-, *Larrea tridentate*, *Yucca brevifolia*, *Ephedra trifurca*,
Eriogonum fasciculatum, *Ericameria sp.*, *Achnatherum sp.*, *Poa sp.*, *Hymenoclea salsola*,

OTHER PERENNIALS-, *Tetradymia spinosa*, *Encelia farinosa*, *Grayia spinosa*,
Krascheninnikovia lanata, *Lycium andersonii*, *Yucca sp.*, *Opuntia sp.*, *Lepidospartum*
squamatum.

Elevation – Approx. 3,000 to 3,200 ft

Slope – 0% - 5%

Trapping conducted by: Gin Ingrahm

First Sampling Term Grid #6								
DATE	TIME	TEMP ° air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
4/11/2011	630	41	10	0	95%	45%	0-5 w	5-10 w
	1530	67						
4/12/2011	645	52	7	0	20%	0%	5-10 w	10-12 w
	1545	69						
4/13/2011	650	47	4	0	10%	30%	10-15 nw	15-20 nw
	1550	55						
4/14/2011	650	45	9	0	5%	5%	0-5 var	5-10 w
	1550	68						
4/15/2011	640	43	6	0	5%	0%	0-5 se	5-10 w
	1550	75						
Second Sampling Term								
5/26/2011	600	51	26	0	50%	10%	0-5 w	0-5 w
	1530	69						
5/27/2011	600	54	25	0	5%	5%	0-5 w	5-10 w
	1500	76						
5/28/2011	600	54	12	0	60%	40%	5-10 w	5-10 w
	1500	70						
5/29/2011	930	49	8	0	40%	30%	20+ nw	20+ nw
	1415	55						
5/30/2011	600	47	16	0	0%	0%	5-10 w	0-5 w
	1530	77						
Third Sampling Term								
6/15/2011	530	73	10	0	0%	0%	5-10 w	0-5 w
	1015	90+						
6/16/2011	550	68	35	0	0%	5%	0-5 w	5-10 w
	1210	90+						
6/17/2011	530	65	51	0	20%	15%	0	0-5 sw
	1415	88						
6/18/2011	545	70	56	0	0%	0%	5-10 w	5-10 w
	1515	89						
6/19/2011	530	65	32	0	80%	0%	5-10 w	5-10 w
	1415	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

First Term Grid #7								
DATE	TIME	TEMP ^F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
4/18/2011	630	55	8	0	70%	60%	5-10 w	8-12 w
	1515	70						
4/19/2011	620	55	7	0	60%	15%	5-10 w	15-18 w
	1530	73						
4/20/2011	620	55	6	0	30%	40%	5-10 w	20+
	1530	74						
4/21/2011	620	54	1	0	35%	25%	10-15 w	15-20 w
	1530	67						
4/22/2011	620	51	3	0	0%	50%	0-5 w	10-15 w
	1600	68						
Second Sampling Term								
5/21/2011	545	60	4	0	20%	40%	5-10 w	5-10 w
	1530	81						
5/22/2011	615	59	9	0	0%	90%	0-5 w	10-15 w
	1500	80						
5/23/2011	550	53	10	0	45%	5%	5-10 nw	20+
	1520	66						
5/24/2011	615	51	12	0	25%	0%	5-10 w	5-10 w
	1530	76						
5/25/2011	600	62	7	0	0%	45%	0-5 w	10-15 nw
Third Sampling Term								
6/20/2011	530	64	45	0	0%	0%	0-5 w	0-5 ne
	1020	90+						
6/21/2011	540	73	28	0	0%	0%	0-5 w	0-5 se
	945	90+						
6/22/2011	530	79	47	0	0%	0%	0-5 w	0-5 w
	820	90+						
6/23/2011	530	77	63	0	0%	0%	0-5 w	5-10 w
	930	90+						
6/24/2011	540	71	76	0	0%	0%	5-10 w	5-10 w
	1150	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Grid 8

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

ANNUALS – *Erodium cicutarium*, *Amsinckia sp.*, *Bromus tectorum*, *Bromus madritensis.*,
Mentzelia sp., *Sphaeralcea sp.*,

PERENNIALS- *Hymenoclea salsola*, *Yucca brevifolia*, *Ericameria sp.*, *Eriogonum Sp.*,
Juniperus californicus, *Cylindropuntia sp.*, *Encelia farinosa*, *Ephedra sp.*

Elevation – Approx. 3,600 ft

Slope – 0% - 5%

Trapping conducted by: Alex Brown

Grid 8**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM		AM	
4/16/2011	0630	52.2	0	0	15%	4/16/2011	0630	52.2
	1000	54.2					1000	54.2
4/17/2011	0625	53.4	0	0	20%	4/17/2011	0625	53.4
	0830	54.6					0830	54.6
4/18/2011	0635	52.1	0	0	25%	4/18/2011	0635	52.1
	0845	50.7					0845	50.7
4/19/2011	0640	51.7	1	0	80%	4/19/2011	0640	51.7
	1030	62.2					1030	62.2
4/20/2011	0630	48.6	0	0	40%	4/20/2011	0630	48.6
	1845	53.1					1845	53.1

Second Sampling Term

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/20/2011	0615	59	2	0	10%	10%	10-20	30+
	1430	75.3						
5/21/2011	0620	57.8	1	0	15%	20%	15-20	30+
	1015	71.3						
5/22/2011	0615	55.6	1	0	10%	10%	10-15	30+
	1400	77.2						
5/23/2011	0600	52.3	2	0	80%	60%	25-30	30+
	0930	56.1						
5/24/2011	0600	50.3	1	0	50%	40%	0-5	30+
	1000	66.3						

Nocturnal Species Captured: Long-tailed Weasel, Deer mouse, Merriam's kangaroo rat, Panamint kangaroo rat.

Third Sampling Term

DATE	TIME	TEMP °F air	CAPTURES			Cloud Cover		Wind speed (Mi/hr)	
			AGS	CGS	MGS	AM	PM	AM	PM
6/15/2011	0615	67.5	1	0	0	0 %	0 %	0-5	10-15
	1015	90+							
6/16/2011	0638	68.9	1	1	0	0 %	0 %	25-30	30+
	0930	84.2							
6/17/2011	0545	54.9	3	1	0	5%	0 %	20-25	30+
	1130	80.4							
6/18/2011	0545	61.2	8	2	0	0 %	0 %	20-25	30+
	1330	87.8							
6/19/2011	0625	63.4	2	5	0	60%	10 %	20-25	30+
	0915	72.5							

*AGS=antelope ground squirrel, CGS= California ground Squirrel, MGS=Mohave ground squirrel

Grids 9-12

Visual Surveys were conducted by: Gin Ingrahm

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS –*Bromus tectorum*, *Bromus madritensis.*, *Erodium cicutarium*,
Amsinckia sp .

DOMINANT PERENNIALS-, *Larrea tridentate*, *Yucca brevifolia*, *Ephedra trifurca*,
Eriogonum fasciculatum, *Ericameria* sp., *Achnatherum* sp., *Poa* sp., *Hymenoclea salsola*,

OTHER PERENNIALS-, *Tetradymia spinosa*, *Encelia farinosa*, *Grayia spinosa*,
Krascheninnikovia lanata, *Lycium andersonii*, *Yucca* sp., *Opuntia* spp., *Lepidospartum squamatum*.

Elevation – Approx. 3,000 to 3,200 ft

Slope – 0% - 5%

Trapping conducted by: Gin Ingrahm

First Term Grid #9								
DATE	TIME	TEMP ^F air/gnd	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
4/4/2011	700	42	5	0	0%	0%	5-10 n	0-3 w
	1530	72						
4/5/2011	700	52	8	0	35%	10%	0-5 sw	15-20 sw
	1550	75						
4/6/2011	645	50	6	0	100%	35%	13-15 w	18-22 w
	1600	68						
4/7/2011	645	41	2	0	15%	100%	20-25 nw	18-20 nw
	1445	50						
4/8/2011	950	43	0	0	5%	85%	5-10 w	10-12 sw
	1445	50						
Second Sampling Term								
5/11/2011	600	55	3	0	5%	5%	5-10 nw	0-5 w
	1515	84						
5/12/2011	600	58	2	0	0%	5%	0-5 w	0-5 se
	1530	87						
5/13/2011	600	58	4	0	0%	5%	0-5 w	0-5 se
	1530	87						
5/14/2011	600	56	2	0	0%	95%	10-15 w	5-10 w
	1515	84						
5/15/2011	700	48	1	0	65%	85%	0-5 w	5-10 w
	1600	54						
Third Sampling Term								
6/26/2011	540	71	34	0	0%	0%	5-10 nw	5-10 w
	1115	90+						
6/27/2011	540	72	48	0	0%	0%	5-10 w	0-5 e
	940	90+						
6/28/2011	540	71	45	0	0%	0%	5-10 w	5-10 sw
	1050	90+						
6/29/2011	540	58	104	0	0%	30%	0-5 sw	10-15 w
	1500	80						
6/30/2011	550	60	66	0	0%	0%	0-5 w	0-5 nw
	1350	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 13, *Dipodomys panamintinus* – 17, *Neotoma lepida* – 2

Firstst Term Grid #10								
DATE	TIME	TEMP ^F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
3/28/2011	645	47	3	0	35%	15%	0-5 w	15-20 w
	1510	58						
3/29/2011	700	48	8	0	45%	80%	0-2 n	18-20 sw
	1500	66						
3/30/2011	650	44	7	0	25%	80%	0-4 nw	0-2 var
	1530	78						
3/31/2011	650	54	7	0	5%	5%	0-4 nw	0-5 e
	1515	84						
4/1/2011	645	55	5	0	0%	0%	0-5 nw	5-8 nw
	1600	88						
Second Sampling Term								
5/6/2011	600	69	2	0	0%	0%	5-10 w	10-15 w
	1500	88						
5/7/2011	600	62	3	0	0%	0%	10-15 w	15-20 w
	1500	80						
5/8/2011	600	52	3	0	35%	50%	5-10 nw	15-20 w
	1445	66						
5/9/2011	700	46	1	0	40%	30%	15-20 w	20+
	1530	60						
5/10/2011	600	45	2	0	5%	30%	15-20 w	10-15 w
	1500	68						
Third Sampling Term								
7/1/2011	540	59	39	0	0%	0%	0-5 w	0-5 e
	1030	90+						
7/2/2011	540	70	40	0	0%	0%	0-5 w	0-5 e
	910	90+						
7/3/2011	540	70	16	0	5%	0%	0-5 w	0-5 se
	820	90+						
7/4/2011	540	72	37	0	20%	50%	0-5 sw	0-5 e
	920	90						
7/5/2011	540	72	45	0	25%	65%	0-5 w	0-5 se
	1000	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

First Term Grid #11								
DATE	TIME	TEMP ^F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
3/21/2011	1130	50	5	0	85%	45%	5-10 w	5-10 w
	1600	53						
3/22/2011	830	43	4	0	30%	20%	8-10 nw	5-10 w
	1630	56						
3/23/2011	730	40	2	0	90%	100%	0-5 nw	0-2 w
	1230	56						
3/24/2011	745	40	5	0	10%	95%	5-8 nw	10-15 nw
	1615	50						
3/25/2011	720	40	6	0	75%	80%	15-20 nw	15-20 nw
	1100	47						
Second Sampling Term								
5/1/2011	615	46	4	0	0%	0%	0-5 nw	0-5 ne
	1530	71						
5/2/2011	610	41	3	0	5%	0%	0-5 nw	0-5 w
	1530	76						
5/3/2011	605	61	0	0	0%	0%	5-10 nw	5-10 nw
	1545	87						
5/4/2011	610	50	1	0	0%	0%	0-5 nw	0-5 nw
	1600	87						
5/5/2011	610	56	1	0	0%	30%	0-5 w	0-5 w
	1430	90+						
Third Sampling Term								
7/6/2011	540	74	72	0	50%	10%	0-5 nw	0-5 sw
	1015	90+						
7/7/2011	550	78	58	0	85%	70%	5-10 w	0-5 w
	1050	90+						
7/8/2011	550	78	45	0	40%	25%	10-15 nw	10-15 nw
	915	90+						
7/9/2011	550	78	49	0	0%	0%	10-15 nw	5-10 nw
	945	90+						
7/10/2011	550	77	39	0	0%	0%	5-10 w	10-15 w
	940	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 8, *Dipodomys panamintinus* – 38, *Neotoma lepida* – 4

First Term Grid #12								
DATE	TIME	TEMP^F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)/Dir.	
			AGS	MGS	AM	PM	AM	PM
3/16/2011	1045	50	0	0	0%	0%	5-10 w	20-25 nw
	1400	63						
3/17/2011	1045	50	4	0	100%	50%	10 nw	20 nw
	1530	65						
3/18/2011	945	59	5	0	0%	90%	0-5 w	8-10 w
	1445	69						
3/19/2011	915	50	6	0	95%	100%	5 nw	8-10 nw
	1300	54						
3/20/2011	1400	49	0	0	100%	100%	10-15 w	10-15 w
	1600	50						
Second Sampling Term								
5/16/2011	600	41	2	0	100%	0%	0-5 w	5-10 w
	1515	64						
5/17/2011	630	46	3	0	80%	50%	0-5 sw	10-15 sw
	1500	67						
5/18/2011	610	46	2	0	70%	25%	5-10 w	20+ nw
	1510	58						
5/19/2011	600	47	0	0	10%	10%	5-10 w	15-20 w
	1515	65						
5/20/2011	600	55	2	0	0%	10%	5-10w	5-10 w
	1510	79						
Third Sampling Term								
7/11/2011	550	72	35	0	0%	0%	10-15 w	5-10 w
	1120	90+						
7/12/2011	550	67	88	0	0%	0%	10-15 nw	0-5 nw
	1340	90+						
7/13/2011	550	64	146	0	0%	0%	15-20 w	10-15 w
	1500	85						
7/14/2011	600	60	142	0	5%	0%	0-5 w	10-15 w
	1500	83						
7/15/2011	550	60	133	0	0%	5%	5-10 w	10-15 w
	1530	84						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

GRID 13

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia* sp., *Bromus madritensis*,
Eriastrum sp., *Baileya* sp., *Stephanomeria* sp.

DOMINANT PERENNIALS-, *Larrea tridentata*, *Hymenoclea salsola*, , *Ericameria* sp.,
Chrysothamnus nauseosus, *Eriogonum fasciculatum*

OTHER PERENNIALS- *Yucca brevifolia*, *Lycium andersonii*, *Lycium cooperi*, *Tetradymia spinosa*, *Krascheninnikovia lanata*, *Cylindropuntia* sp., *Encelia farinosa*., *Achnatherum* sp.,
Yucca brevifolia, *Ambrosia dumosa*, *Opuntia* sp.

Elevation – Approx. 2,900 to 3,100 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

---Family of burrowing owls (5 observed) residing at grid 13. Seen during session 3.

Grid 13**First Sampling Term**

DATE	TIME	TEMP °F	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
		air	AGS	MGS	AM	PM	AM	PM
4/11/2011	0800	50	1	0	60	70	0-5	0-5
	1400	69						
4/12/2011	0830	51	2	0	5	1	10-15	10-15
	1330	67						
4/13/2011	1100	47	1	0	30	30	30+	30+
	1230	50						
4/14/2011	0900	50	0	0	1	35	0-5	0-5
	1400	66						
4/15/2011	0830	51	1	0	15	15	15-20	20-25
	1500	73						

Second Sampling Term

DATE	TIME	TEMP °F	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
		air	AGS	MGS	AM	PM	AM	PM
5/12/2011	0615	56	22	0	0	0	10-15	15-20
	1500	88						
5/13/2011	0615	58	40	0	0	70	0-5	0-5
	1300	92						
5/14/2011	0615	52	54	0	40	15	0-5	5-10
	1500	80						
5/15/2011	1100	49	81	0	80	70	20-25	15-20
	1330	54						
5/16/2011	1000	50	59	0	70	50	5-10	15-20
	1345	60						

Third Sampling Term

DATE	TIME	TEMP °F	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
		air	AGS	MGS	AM	PM	AM	PM
7/11/2011	0530	69	32	0	0	0	0-5	0-5
	1000	90						
7/12/2011	0530	70	78	0	0	1	5-10	10-15
	1000	90						
7/13/2011	0545	60	148	0	0	5	15-20	5-10
	1330	88						
7/14/2011	0545	61	178	0	0	5	15-20	10-15
	1430	88						
7/15/2011	0545	64	122	0	0	1	5-10	10-15
	1430	92						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 51, *Dipodomys meriami* – 1, *Dipodomys panamintinus* – 52,
Neotoma lepida – 2, *Onchomys torridus* – 3

GRID 14

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia* sp., *Bromus madritensis*,
Eriastrum sp., *Xylorhiza tortifolia*, *Mirabilis* sp., *Chaenactis* sp., *Malacothrix glabrata*,
Loeseliastrum sp.

DOMINANT PERENNIALS- *Yucca brevifolia*, *Larrea tridentata*, *Krascheninnikovia lanata*,
Ericameria sp., *Eriogonum fasciculatum*

OTHER PERENNIALS- *Grayia spinosa*, *Lycium andersonii*, *Lycium cooperi*, *Tetradymia*
spinosa, *Cylindropuntia* sp., *Encelia farinosa*., *Achnatherum* sp., *Ephedra* sp., *Opuntia* sp.,
Hymenoclea salsola

Elevation – Approx. 3,000 to 4,000 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

**---Observed at grid 14, pair of Swainson's hawks hunting during sessions 1 and 2 ,
and barn owl in old growth Joshua tree.**

Grid 14**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
3/30/2011	0800	50	8	0	30	60	0-5	5-10
	1500	88						
3/31/2011	0715	52	9	0	5	5	0-5	0-5
	1500	83						
4/1/2011	0715	54	11	0	0	0	0-5	5-10
	1500	87						
4/2/2011	0700	52	6	0	60	40	5-10	10-15
	1430	77						
4/3/2011	0645	49	7	0	65	10	10-15	10-15
	1100	61						

Grid 14**Second Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/2/2011	0645	50	25	0	2	0	0-5	5-10
	1500	86						
5/3/2011	0630	53	37	0	0	0	0-5	5-10
	1530	85						
5/4/2011	0630	53	40	0	0	0	0-5	5-10
	1530	88						
5/5/2011	0615	57	28	0	0	0	0-5	10-15
	1330	91						
5/6/2011	0615	61	40	0	70	50	10-15	5-10
	1415	88						

Grid 14**Third Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
6/16/2011	0530	69	43	0	0	15	15-20	10-15
	1300	90						
6/17/2011	0530	66	51	0	30	30	0-5	15-20
	1300	90						
6/18/2011	0530	65	52	0	0	0	15-20	5-10
	1330	90						
6/19/2011	0530	66	62	0	70	0	5-10	15-20
	1400	91						
6/20/2011	0545	63	66	0	0	0	1-5	1-5
	1130	91						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel (Trap captures not recorded above include California ground squirrel (CGS), desert spiny lizard, desert woodrat and cactus wren).

GRID 15

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia* sp., *Bromus madritensis*,
Eriastrum sp., *Xylorhiza tortifolia*, *Loeseliastrum* sp., *Lasthemia californica*, *Mirabilis* sp.

DOMINANT PERENNIALS- *Yucca brevifolia*, *Larrea tridentata*, *Krascheninnikovia lanata*,
Eriogonum fasciculatum, *Hymenoclea salsola*

OTHER PERENNIALS- *Ericameria* sp., *Grayia spinosa*, *Lycium andersonii*, *Lycium cooperi*,
Atriplex sp., *Tetradymia spinosa*, *Cylindropuntia* sp., *Encelia farinosa*., *Achnatherum* sp,
Ephedra sp., *Opuntia* sp., *Ambrosia dumosa*

Elevation – Approx. 3,000 to 4,000 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

Grid 15**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/4/2011	0900	53	10	0	0	5	0-5	0-5
	1400	70						
4/5/2011	0800	51	19	0	20	25	0-5	5-10
	1500	75						
4/6/2011	0830	51	16	0	50	35	0-5	5-10
	1500	66						
4/7/2011	1000	49	1	0	25	90	5-10	5-10
	1230	50						
4/8/2011	1130	47	0	0	30	80	5-10	10-15
	1545	54						

Grid 15**Second Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/7/2011	0630	55	30	0	0	0	0-5	30+
	1400	86						
5/8/2011	0630	50	44	0	70	75	15-20	20-25
	1330	66						
5/9/2011	1000	50	68	0	40	65	10-15	10-15
	1530	59						
5/10/2011	0800	50	61	0	5	0	10-15	15-20
	1400	69						
5/11/2011	0715	51	71	0	10	0	10-15	10-15
	1415	77						

Grid 15**Third Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
6/21/2011	0545	72	66	0	0	0	0-5	0-5
	0930	90						
6/22/2011	0530	74	69	0	0	0	10-15	5-10
	0830	90						
6/23/2011	0545	73	81	0	0	0	10-15	10-15
	0900	90						
6/24/2011	0530	68	82	0	0	0	15-20	20-25
	1015	90						
6/25/2011	0530	67	71	0	0	0	20-25	10-15
	1045	89						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 7, *Dipodomys meriami* – 3, *Dipodomys panamintinus* – 23, *Neotoma lepida* – 8, *Onychomys torridus* – 3, *Perognathus longimembris*(7 grams) - 1

GRID 16

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia* sp., *Bromus madritensis*,
Eriastrum sp., *Xylorhiza tortifolia*, *Loeseliastrum* sp.

DOMINANT PERENNIALS- *Yucca brevifolia*, *Larrea tridentata*, *Krascheninnikovia lanata*,
Encelia farinosa., *Ephedra* sp.

OTHER PERENNIALS- *Ericameria* sp., *Grayia spinosa*, *Lycium andersonii*, *Lycium cooperi*,
Tetradymia spinosa, *Cylindropuntia* sp., *Achnatherum* sp., *Opuntia* sp., *Ambrosia dumosa*,
Eriogonum fasciculatum, *Hymenoclea salsola*, *Chrysothamnus nauseosus*

Elevation – Approx. 3,000 to 4,000 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

Grid 16**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/26/2011	0930	50	6	0	50	2	15-20	10-15
	1500	69						
4/27/2011	0700	51	22	0	2	15	0-5	10-15
	1500	77						
4/28/2011	0630	52	22	0	30	20	10-15	5-10
	1500	68						
4/29/2011	1045	50	9	0	0	0	25-30	10-15
	1400	66						
4/30/2011	0930	49	9	0	0	0	10-15	10-15
	1500	68						

Grid 16**Second Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/17/2011	0900	50	12	0	85	50	0-5	5-10
	1430	60						
5/18/2011	1200	50	29	0	35	40	30+	20-25
	1330	51						
5/19/2011	0800	49	39	0	30	20	5-10	20-25
	1400	62						
5/20/2011	0630	51	54	0	0	10	10-15	5-10
	1400	80						
5/21/2011	0600	58	58	0	50	45	10-15	10-15
	1415	87						

Grid 16**Third Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
6/26/2011	0545	70	46	0	0	0	20-25	10-15
	1130	90						
6/27/2011	0530	66	64	0	0	0	25-30	10-15
	1030	90						
6/28/2011	0530	68	55	0	0	0	10-15	5-10
	1100	90						
6/29/2011	0545	64	50	0	50	60	10-15	10-15
	1515	82						
6/30/2011	0530	60	55	0	10	0	5-10	5-10
	1030	90						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel (Trap captures not recorded above include California ground squirrel (CGS), desert spiny lizard, western whiptail, desert woodrat and cactus wren).

GRID 17

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia sp.*, *Bromus madritensis.*,
Eriastrum sp., *Loeseliastrum sp.*, *Chaenactis sp.*, *Stephanomeria sp.*, *Astragalus sp.*

DOMINANT PERENNIALS - *Yucca brevifolia*, *Larrea tridentata*, *Krascheninnikovia lanata*,
Encelia farinosa., *Ephedra sp.*

OTHER PERENNIALS - *Ericameria sp.*, *Grayia spinosa*, *Lycium andersonii*, *Lycium cooperi*,
Tetradymia spinosa, *Cylindropuntia sp.*, *Achnatherum sp.*, *Opuntia sp.*, *Ambrosia dumosa*,
Eriogonum fasciculatum, *Hymenoclea salsola*, *Chrysothamnus nauseosus*

Elevation – Approx. 3,000 to 4,000 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

Grid 17**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/21/2011	0645	50	8	0	40	40	20-25	10-15
	1400	70						
4/22/2011	0715	49	13	0	5	15	20-25	10-15
	1200	73						
4/23/2011	0700	50	11	0	20	20	10-15	10-15
	1500	67						
4/24/2011	0730	50	9	0	30	50	10-15	10-15
	1300	68						
4/25/2011	0730	50	11	0	70	50	10-15	5-10
	1400	71						

Grid 17**Second Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/22/2011	0600	57	50	0	40	50	5-10	15-20
	1500	77						
5/23/2011	0715	50	22	0	60	10	25-30	30+
	1500	72						
5/24/2011	0700	52	30	0	50	0	5-10	30+
	1500	72						
5/25/2011	0630	60	55	0	15	0	5-10	15-20
	1300	88						
5/26/2011	0745	50	49	0	40	30	20-25	20-25
	1300	70						

Grid 17**Third Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
7/6/2011	0530	75	48	0	5	15	0-5	0-5
	0930	90						
7/7/2011	0530	74	40	0	80	70	15-20	10-15
	0930	91						
7/8/2011	0530	70	51	0	65	25	15-20	10-15
	1000	90						
7/9/2011	0530	69	70	0	0	0	0-5	0-5
	1000	90						
7/10/2011	0530	71	49	0	unk	unk	unk	unk
	0940	90						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 9, *Dipodomys panamintinus* – 28, *Neotoma lepida* – 13,
Onychomys torridus – 9, *Perognathus longimembris* - 2

GRID 18

Visual Surveys were conducted by: Bill Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia* sp., *Bromus madritensis*,
Eriastrum sp., *Stephanomeria* sp., *Astragalus* sp.

DOMINANT PERENNIALS - *Yucca brevifolia*, *Larrea tridentata*, *Ephedra* sp., *Tetradymia*
spinosa, *Achnatherum* sp., *Ericameria* sp., *Hymenoclea salsola*

OTHER PERENNIALS - *Krascheninnikovia lanata*, *Encelia farinose*, *Grayia spinosa*, *Lycium*
andersonii, *Lycium cooperi*, *Cylindropuntia* sp., *Achnatherum* sp., *Opuntia* sp., *Ambrosia*
dumosa, *Eriogonum fasciculatum*, *Chrysothamnus nauseosus*

Elevation – Approx. 3,000 to 4,000 ft

Slope – 0% - 3%

Trapping conducted by: Chris Halley

Grid 18**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES*		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/16/2011	0700	50	1	0	20	20	10-15	10-15
	1500	67						
4/17/2011	0730	50	2	0	30	50	10-15	10-15
	1300	68						
4/18/2011	0730	50	3	0	70	50	5-10	5-10
	1400	71						
4/19/2011	0930	50	5	0	50	2	10-15	10-15
	1500	63						
4/20/2011	0700	51	6	0	2	15	0-5	10-15
	1500	77						

Grid 18**Second Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/27/2011	0700	50	31	0	5	10	15-20	15-20
	1300	74						
5/28/2011	0645	50	47	0	15	15	10-15	15-20
	1400	72						
5/29/2011	1500	50	8	0	75	30	20-25	25-30
	1530	53						
5/30/2011	0745	51	58	0	0	0	0-5	0-5
	1500	79						
5/31/2011	0645	52	54	0	30	30	5-10	5-10
	1330	79						

Grid 18**Third Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover(%)		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
7/1/2011	0545	63	24	0	0	0	5-10	0-5
	1030	91						
7/2/2011	0530	68	48	0	0	0	5-10	0-5
	0830	90						
7/3/2011	0530	70	29	0	0	0	5-10	0-5
	0845	91						
7/4/2011	0530	73	53	0	25	20	5-10	0-5
	0900	90						
7/5/2011	0530	70	38	0	40	40	0-5	5-10
	0930	90						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel (Trap captures not recorded above include California ground squirrel (CGS), desert spiny lizard, western whiptail, desert woodrat and cactus wren).

Grid 19

Visual Surveys were conducted by: Barbara M. Leitner

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia tessellata*, *Schismus sp.*, *Bromus tectorum*, *Bromus madritensis*

DOMINANT PERENNIALS- *Larrea tridentata*

OTHER PERENNIALS- *Hymenoclea salsola*, *Acamptopappus sphaerocephalus*, a few *Lycium spp.*, *Ephedra californica*

Elevation – Approx. 3,360 ft

Slope – 0=2 %

Trapping conducted by: Barbara M. Leitner

Grid 19**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS*	MGS*	AM	PM	AM	PM
3/21/2011	1000	42	1	0	15 %	35%	0-8	10-15
	1812	48						
3/22/2011	0840	44	7	0	3%	5%	4-6	2-4
	1832	56						
3/23/2011	0650	48	9	0	35%	100%	0-1	0-2
	1630	67						
3/24/2011	0745	40	3	0	5%	85%	0-1	5-8
	1844	53						
3/25/2011	0710	46	2	0	10%	10%	2	11
	1815	55						

Second Sampling Term

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/8/2011	0615	53	1	0	5%	10%	2	11
	1800	64						
5/9/2011	0650	44	1	0	5%	5%	7	5
	1920	61						
5/10/2011	0630	46	0	0	1%	1%	5	6
	1909	68						
5/11/2011	0630	53	2	0	2%	0%	2	3
	1900	80						
5/12/2011	0620	52	1	0	0%	0%	2	2
	1500	93						

Third Sampling Term

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
7/1/2011	0620	65.6	10	0	0%	n/a	0-1	n/a
	1039	95.0						
7/2/2011	0556	72.4	11	0	0%	n/a	0-2	n/a
	1038	94.6						
7/3/2011	0545	75.7	11	0	5%	n/a	0-2	n/a
	1057	99.1						
7/4/2011	0545		11	0				
	1105							
7/5/2011	0605	72.7	15	0	10%	n/a	0-1	n/a
	1225	95.8						

Other captures: California ground squirrels (12 captures). *AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Nocturnal Results – Totals

Peromyscus maniculatus – 7, *Dipodomys panamintinus* – 15, *Onchomys torridus* – 2

GRID 20

Visual Surveys were conducted by: Barbara M. Leitner

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS – *Erodium cicutarium*, *Amsinckia tessellata*, *Schismus sp.*, *Bromus tectorum*, *Bromus madritensis*

DOMINANT PERENNIALS- *Larrea tridentata*

OTHER PERENNIALS-Diverse assemblage of *Lycium cooperi*, *L. andersonii*, *Yucca brevifolia*, *Krascheninnikovia lanata*, *Acamptopappus sphaerocephalus*, *Senecio species*.

Elevation – Approx. 3,450 ft

Slope – 0-2 %

Trapping conducted by: Barbara M. Leitner

Grid 20**First Sampling Term**

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS*	MGS*	AM	PM	AM	PM
3/27/2011	0815	45	2	0	5 %	2%	0-5	5-8
	1900	56						
3/28/2011	0655	45	3	0	3%	3%	5-12	7-8
	1900	60						
3/29/2011	0700	46	4	0	20%	30%	0-5	10
	1900	66						
3/30/2011	0700	51	7	0	30%	30%	0-1	0-1
	1845	82						
3/31/2011	0640	62	14	0	CLEAR	1%	0-1	0-1
	1800	80						

Other species captured: California ground squirrel (5), sagebrush lizard (3), kangaroo rat (1)

Second Sampling Term

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
5/26/2011	0550	48	7	0	0%	0%	10	8
	1925	63						
5/27/2011	0605	48	15	0	0%	0%	8	6
	1930	63						
5/28/2011	0603	48	15	0	5%	5%	10	10
	1916	69						
5/29/2011	1330	49	7	0	60%	50%	5	5
	1812	56						
5/30/2011	0720	48	17	0	CLEAR	CLEAR	7	5
	1930	77						

Other species captured: whiptail (1) California ground squirrel (9), Peromyscus species (1)

Third Sampling Term

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
7/6/2011	0550	77.7	9	0	0%	n/a	0-1	n/a
	1143	93.4						
7/7/2011	0550	74.9	16	0	10%	n/a	0-5	n/a
	1100	91.2						
7/8/2011	0553	75.2	16	0	30%	n/a	0-5	n/a
	1113	93.0						
7/9/2011	0548	74.0	20	0	0%	0%	0	n/a
	1210	95.4						
7/10/2011	0558	72.9	18	0	0%	n/a	0-1	n/a
	1055	92.6						

Other species captured: California ground squirrel (38 captures),*AGS=antelope ground squirrel, MGS=Mohave ground squirrel

Grids 21-24

Visual Surveys were conducted by: William Vanherweg

Results of Visual Survey: No MGS were observed

DOMINANT ANNUALS –*Bromus tectorum*, *Bromus madritensis.*, *Erodium cicutarium*,
Amsinckia sp.

DOMINANT PERENNIALS-, *Larrea tridentata* *Yucca brevifolia*, *Ephedra trifurca*, *Eriogonum fasciculatum*, *Ericameria sp.*, *Achnatherum sp.*, *Poa sp.*, *Hymenoclea salsola*,

OTHER PERENNIALS- *Juniperus californicus*, *Tetradymia spinosa*, *Encelia farinosa*, *Grayia spinosa*, *Krascheninnikovia lanata*, *Lycium andersonii*, *Yucca sp.*, *Opuntia sp.*,
Lepidospartum squamatum,.

Elevation – Approx. 3,200 to 3,300 ft

Slope – 0% - 5%

Trapping conducted by: William and Paul Vanherweg

Grid 21 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
3/20/2011	0700	40	3	0	20%	20%	0-5	5-10
	1600	62						
3/21/2011	0700	41	7	0	30%	5%	0-5	0-5
	1700	61						
4/22/2011	0700	46	3	0	80%	100%	0-5	5-10
	1500	53						
4/23/2011	0800	40	3	0	50%	80%	5-10	10-15
	1530	53						
4/24/2011	0700	43	5	0	20%	20%	10-15	10-15
	1500	54						

Second session

5/01/2011	0630	54	6	0	0%	0%	5-10	0-5
	1600	75						
5/02/2011	0630	50	3	0	0%	0%	0-5	0-5
	1600	76						
5/03/2011	0630	60	1	0	0%	0%	0-5	5-10
	1530	82						
5/04/2011	0600	57	0	0	0%	00%	0-5	0-5
	1530	87						
5/05/2011	0630	62	2	0	0%	0%	0-5	0-5
	1330	90+						

Third session

6/20/2011	0600	67	15	0	0%	0%	0-5	0-5
	1130	90+	1 CGS					
6/21/2011	0600	76	17	0	0%	0%	0-5	0
	1000	90+	1CGS					
6/22/2011	0600	80	21	0	0%	0%	0-5	0-5
	0830	90+	3 CGS					
6/23/2011	0600	80	14	0	0%	0%	0-5	0-5
	0815	90+	4 CGS					
6/24/2011	0600	76	18	0	0%	0%	5-10	5-10
	0930	90+	2 CGS					

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS=California ground squirrel

Nocturnal Results – Totals

Perognathus inornatus - 1, *Peromyscus maniculatus* – 12, *Dipodomys panamintinus* – 72, *Onchomys torridus* – 1

Grid 22 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/10/2011	0700	47	5	0	0%	0%	0-5	0-5
	1600	66						
4/11/2011	0700	48	9	0	100%	90%	0-5	10-15
	1700	66						
4/12/2011	0700	50	7	0	5%	0%	10-15	0-5
	1500	60						
4/13/2011	0800	48	6	0	5%	15%	0-5	25-30
	1530	58						
4/14/2011	0700	45	6	0	0%	80%	0-5	10-15
	1500	66						

Second session

5/06/2011	0630	65	13	0	30%	10%	0-5	0-5
	1400	76	3 CGS					
5/07/2011	0630	62	11	0	0%	0%	5-10	0-5
	1400	75	8CGS					
5/08/2011	0630	56	4	0	90%	0%	5-10	0-5
	1500	72	3CGS					
5/09/2011	0630	54	11	0	10%	0%	5-10	10-20
	1500	75	6 CGS					
5/10/2011	0630	59	2	0	0%	0%	0-5	5-10
	1300	90+	2CGS					

Third session

7/10/2011	0600	75	15	0	1%	0%	0-5	0-5
	0930	90+						
7/11/2011	0600	75	26	0	0%	0%	5-10	0-5
	0930	90+						
7/12/2011	0600	71	27	0	0%	0%	5-10	0-5
	1000	90+						
7/13/2011	0600	70	53	0	0%	0%	5-10	10-25
	1400	88						
7/14/2011	0600	70	57	0	0%	0%	5-10	10-15
	1430	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS= California ground squirrel

Grid 23 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/5/2011	0700	58	8	0	0%	0%	0-5	5-10
	1500	77						
4/6/2011	0700	52	2	0	80%	0%	5-10	5-10
	1530	69						
4/7/2011	0700	43	3	0	0%	100%	10-15	15-20
	1400	53						
4/8/2011	0830	40	1	0	0%	100%	5-10	5-10
	1200	45						
4/9/2011	0830	40	2	0	0%	10%	0-5	15-20
	1500	52						

Second session

5/11/2011	0630	57	6	0	0%	0%	0-5	0-5
	1530	79						
5/12/2011	0630	62	2	0	0%	0%	0-5	0-5
	1530	88	1 CGS					
5/13/2011	0630	65	1	0	0%	80%	0	0-5
	1530	90+						
5/14/2011	0630	59	3	0	0%	10%	5-10	5-10
	1500	76						
5/15/2011	0630	40	3	0	50%	20%	5-10	15-25
	1500	60						

Third session

6/25/2011	0600	75	18	0	0%	0%	0-5	0
	0945	90+	1 CGS					
6/26/2011	0600	75	42	0	0%	0%	5-10	5-10
	1130	90+						
6/27/2011	0600	75	34	0	0%	0%	0-5	0-5
	1000	90+	1CGS					
6/28/2011	0600	73	31	0	0%	0%	5-10	0-5
	0930	90+						
6/29/2011	0630	65	59	0	0%	5%	0-5	15-25
	1500	82						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS California ground squirrel

Grid 24 First session

DATE	TIME	TEMP °F air	CAPTURES		Cloud Cover		Wind speed (Mi/hr)	
			AGS	MGS	AM	PM	AM	PM
4/10/2011	0700	47	12	0	0%	0%	0-5	0-5
	1600	66	1 CGS					
4/11/2011	0700	48	13	0	100%	90%	0-5	10-15
	1700	66	1 CGS					
4/12/2011	0700	50	14	0	5%	0%	10-15	0-5
	1500	60	1 CGS					
4/13/2011	0800	48	5	0	5%	15%	0-5	25-30
	1530	58	1 CGS					
4/14/2011	0700	45	6	0	0%	80%	0-5	10-15
	1500	66						

Second session

5/06/2011	0630	65	8	0	30%	10%	0-5	0-5
	1400	76	2 CGS					
5/07/2011	0630	62	17	0	0%	0%	5-10	0-5
	1400	75						
5/08/2011	0630	56	4	0	90%	0%	5-10	0-5
	1500	72						
5/09/2011	0630	54	21	0	10%	0%	5-10	10-20
	1500	75						
5/10/2011	0630	59	13	0	0%	0%	0-5	5-10
	1300	90+						

Third session

7/10/2011	0600	75	26	0	1%	0%	0-5	0-5
	0930	90+						
7/11/2011	0600	75	40	0	0%	0%	5-10	0-5
	0930	90+						
7/12/2011	0600	71	43	0	0%	0%	5-10	0-5
	1000	90+						
7/13/2011	0600	70	42	0	0%	0%	5-10	10-25
	1400	88						
7/14/2011	0600	70	46	0	0%	0%	5-10	10-15
	1430	90+						

*AGS=antelope ground squirrel, MGS=Mohave ground squirrel, CGS= California ground squirrel

Appendix C - Photographs of Habitat at Each Trapping Grid



Grid 1



Grid 2



Grid 3



Grid 4



Grid 5



Grid 6



Grid 7



Grid 8



Grid 9



Grid 10



Grid 11



Grid 12



Grid 13



Grid 14



Grid 15



Grid 16



Grid 17



Grid 18



Grid 19



Grid 20



Grid 21



Grid 22



Grid 23



Grid 24