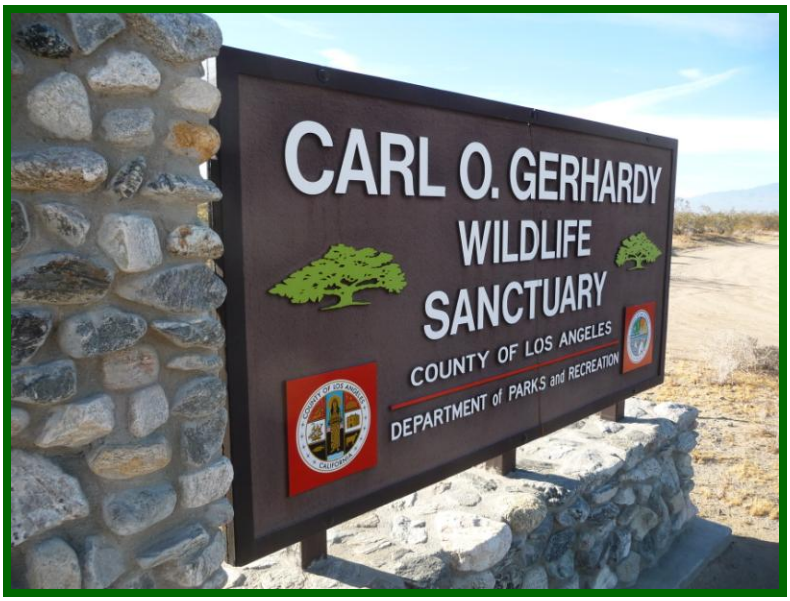
Mohave Ground Squirrel Trapping Results for Carl O. Gerhardy Wildlife Sanctuary, Los Angeles County, California

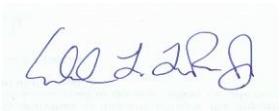


Prepared Under Permit Number 000973 for:

County of Los Angeles Department of Parks and Recreations
1750 North Altadena Drive,
Pasadena, California 91107
PH: (626) 398-5420
Cell: (626) 633-6948
Email: kbosell@parks.lacounty.gov
Contact: Kim Bosell, Natural Areas Administrator

Prepared by:

Edward L. LaRue, Jr.
(Permanent ID Number SC-001544)
Circle Mountain Biological Consultants, Inc.
P.O. Box 3197
Wrightwood, California 92397
PH: (760) 249-4948
FAX: (760) 249-4948
Email: ed.larue@verizon.net



Circle Mountain Biological Consultants, Inc.
Author and Field Investigator: Edward L. LaRue, Jr.

July 2014

Mohave Ground Squirrel Trapping Results for Carl O. Gerhardy Wildlife Sanctuary, Los Angeles County, California

1.0. INTRODUCTION

1.1. Purpose and Need for Study. Herein, Edward L. LaRue, Jr., the Principal Investigator under a Memorandum of Understanding (MOU) with the California Department of Fish and Wildlife (CDFW) (expires 4/30/2016), Scientific Collecting Permit Number SC-001544, reports results of trapping surveys to assess the presence of the state-listed, Threatened Mohave ground squirrel (MGS) (*Xerospermophilus mohavensis*) on the subject property. This study, which was completed on the Carl O. Gerhardy Wildlife Sanctuary (herein "Gerhardy" or "Sanctuary") in northeastern Los Angeles County (Figures 1 through 3), California is authorized under Permit Number 000973.

In recent decades, there have been very few MGS records in the desert region of northeastern Los Angeles County. In spite of protocol trapping efforts since 1998, the only confirmed MGS captures in Los Angeles County have been at several locations in a small area on Edwards Air Force Base (Leitner 2008). Northeastern Los Angeles County, especially the desert habitat surrounding the unincorporated community of Lake Los Angeles, has been identified as an important under-sampled area for the MGS (Leitner 2008, Figure 15). In May 2009, an MGS sighting with photographs in the Phacelia Wildlife Sanctuary (Jack Farley, Los Angeles County Dept. of Parks & Recreation) raised the possibility that the species might still be present on County properties in this area. The Mohave Ground Squirrel Technical Advisory Group (MGS TAG) has also identified northeastern Los Angeles County as a high priority for additional surveys (Phil Leitner, personal communication to LaRue).

Given this information, in March 2014 Circle Mountain Biological Consultants, Inc. (CMBC), for which I am one of two principals, secured six permits from the County of Los Angeles Department of Parks and Recreations (Department) authorizing us to perform exploratory trapping surveys for the MGS for a 10-year period (2014 through 2023) in the following County Parks: Alpine Butte Wildlife Sanctuary Park, Butte Valley Wildflower Sanctuary Park, Carl O. Gerhardy Wildlife Sanctuary Park, Mescal Wildlife Sanctuary Park, Phacelia Wildflower Sanctuary Park, and Thomas Payne Wildlife Sanctuary Park.

Access to study sites was made possible by permits issued by the Department. The permit fees were paid by California State University Stanislaus (CSU Stanislaus) using funding provided by a research grant from CDFW. This report, then, is written on behalf of the Department, CSU Stanislaus, and CDFW to provide them with the results of this investigation. It is intended to serve as a baseline study for the longitudinal monitoring of biological resources and habitat conditions within the Gerhardy Sanctuary. Therefore, in addition to trapping results, we also report common and uncommon plant and animal species. We also performed a standardized disturbance analysis of observable human impacts, which will allow the Department to keep track of changing habitat conditions during the 10-year study period.

Figure 1. Grid Location Map (DeLorme Topo USA® 10.0)

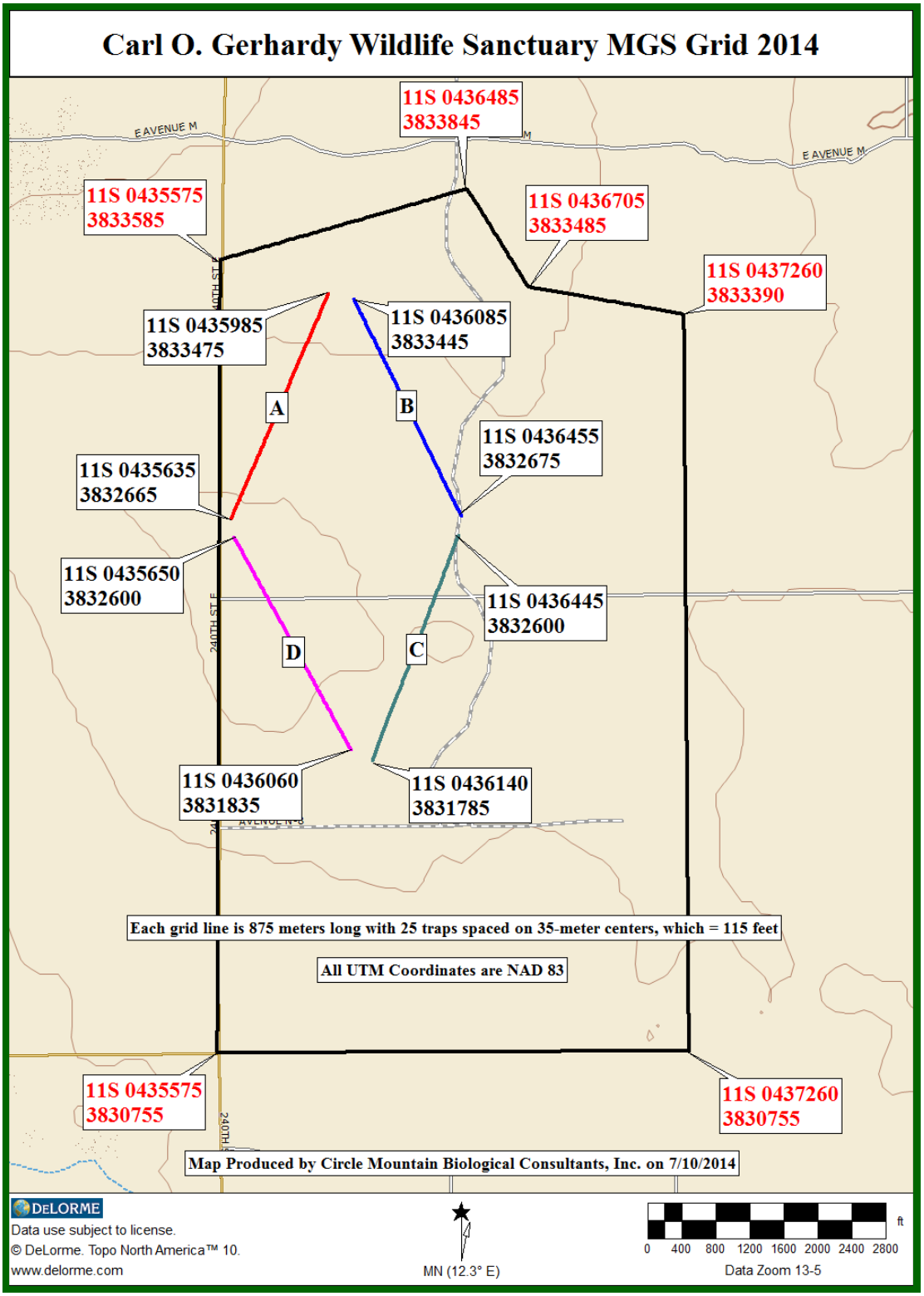
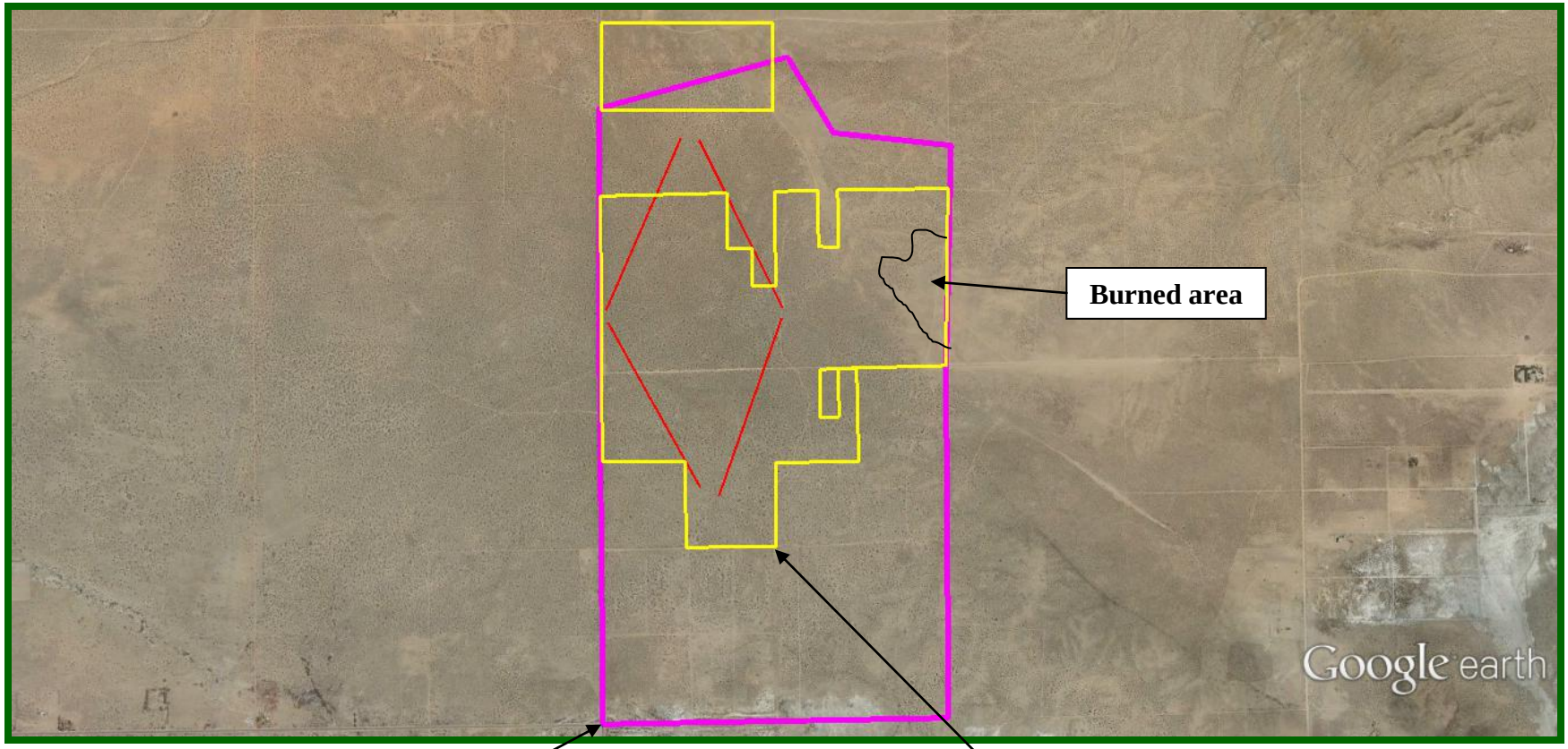
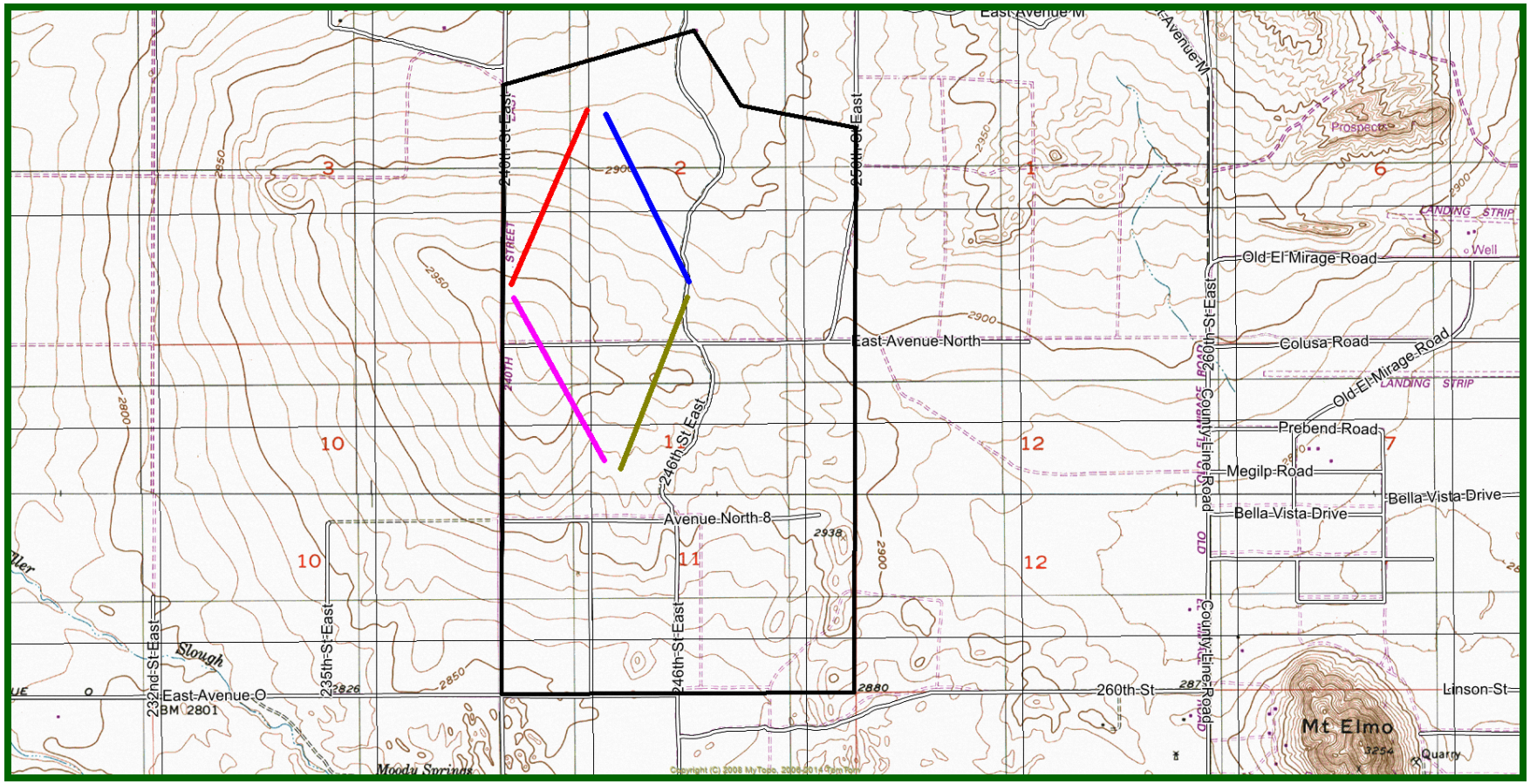


Figure 2. Aerial Overview of Carl O. Gerhardy Wildlife Sanctuary (Google Earth)



Official Department website information available at the time the grid was chosen and established showed that the Sanctuary, depicted above as the pink line, was much larger than the actual boundaries. Afterwards, Kim Bosell provided maps showing the actual Sanctuary boundaries, which are shown as the yellow lines. It was fortuitous and completely by accident that most of the grid lines, which are shown in red, were situated within the actual Sanctuary boundaries, except the northern ends. As shown at the end of this report, a new grid configuration is depicted to keep the lines, should they be trapped again, within actual boundaries.

Figure 3. Grid Location on USGS Adobe Mountain and El Mirage 7.5' Quadrangles (Terrain Navigator)



The following location information is given for the Carl O. Gerhardy Wildlife Sanctuary:

Location: Township 6 North, Range 8 West, Sections 2 and 11, San Bernardino Base & Meridian

Quad map: U.S. Geological Survey Adobe Mountain and El Mirage 7.5' Quadrangles

UTM (NAD 83) coordinates at center of grid: 0436050 East, 3832650 North

Acreage of subject property: 547 acres±

1.2. Mohave Ground Squirrel Life History

Information. The MGS is approximately 20 to 23 centimeters (8 to 9 inches) in length, sandy-colored on top, lighter underneath, with a bi-colored (dark above, light below) tail flattened dorso-ventrally.

© Phil Leitner

The following information is published in various places (e.g., David Laabs' species account published in U.S. Bureau of Land Management 2005), and much of it was in the form of personal communication from Dr. Phil Leitner to LaRue. Following winters of sufficient rainfall [e.g., a minimum of about 7.5 centimeters (3 inches)], MGS emerge in February from dormancy, reproduce, and have a litter of up to nine young in late March to early April; they forego reproduction if there is less than about 3 inches of rainfall. If reproductive, they will remain active into the summer, with adults becoming dormant in June and July and juveniles as late as August; if there is no reproduction, adults will become dormant as early as late May. Their diet consists of seeds, leaves, flowers, and fruits of both annual and perennial plants; arthropods are occasionally taken. Their ability to overwinter depends on achieving a body weight of approximately 180 grams. The MGS is currently listed as Threatened by the California Fish and Game Commission; U.S. Fish and Wildlife Service (USFWS) has declined to list it federally following two petitions, the last of which was in 2005.

2.0. FIELD SURVEY METHODS

2.1. CDFW Standard Trapping Methods. Surveys were conducted, in part, according to the following recommended guidelines, with a few changes: California Department of Fish and Game (currently CDFW), Mohave Ground Squirrel Survey Guidelines (January 2003, revised in 2010). Whereas CDFW methods are intended for *protocol-level* surveys, the current study was more of an *exploratory* survey, so not all conditions were followed. In the following sections, the formal protocol-level method is given in regular font, followed by the implemented methodology shown in *italicized font* immediately following the particular prescription (for those measures that do not apply, "Not applicable" follows the prescription).

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*) [and, more importantly, round-tailed ground squirrel (*Spermophilus tereticaudis*)]. *Not applicable.*

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. *For this and all other surveys on County Parks, a single grid comprised of four gridlines was established.*

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. *This measure is not applicable, as none of the Parks is linear.*

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.

Given the exploratory nature of this study, we chose a more widespread configuration for the 100 Sherman live traps (see Figures 1 though 3). This pattern was chosen using aerial photographs to assess the least disturbed portions of the site. It was also configured to cover as much of the site as possible with proximate beginning and ending points to facilitate a circuitous trap check by a single person.

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^{o}F or 10^{o}C).

Dr. Leitner has established an exploratory method where a single grid is trapped for five consecutive days. As such, most of the above description does not apply to the current effort. Also, we would not have stopped had a MGS been captured, as we were interested in studying the demographics of the animals, and particularly their reproductive status. Actual dates are reported herein. In a few cases where temperatures exceeded 90°F, the traps were closed as per protocol.

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. *Not applicable.*

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^{o}F (32^{o}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^{o}F (32^{o}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.

Most of these prescriptions were followed as given, including the number of traps, use of shade structures, trap orientation, and bait type. As reported in the tables below, we did use some discretion as to the beginning and ending of a particular trap day.

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 [CDFW] office (see page 4) with the biological report on the project site. *This form and CMBC's comprehensive field data sheet are included at the end of this report in Appendix A. California Natural Diversity Data Base (CNDDB) forms were submitted as required.*

9. The Department [CDFW] 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. *Variations are given herein.*

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 [CDFW] 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. *Not applicable, as these sites are not intended for development.*

2.2. Project Specific Methods. The grid lines shown in Figures 1 through 3 were established in a clockwise manner, including Lines A, B, C, and D. Individual trap stations were numbered 1 through 25. Since the Gerhardy grid is mostly aligned along a north-south axis, the first trap station at the south end of each line was identified as station 1 and the stations at the north ends were identified as station 25. If an animal was trapped at the fourth station on Line C, for example, that encounter was recorded as C4. Although not required by CDFW methods, we marked each squirrel with a wide felt-tipped marker, first on the right rear flank and again on the left rear flank if trapped a second time; no new marks were applied after the second mark. If not identified as "Recap 1" or "Recap 2," all records are for new animals. Data for all trapped squirrels (and other species) were recorded at the station where they were caught, measurements taken (i.e., weight, sex, reproductive and capture statuses for squirrels), and then released. Abbreviations used in Table 1 for each species captured are defined following the table.

In addition to determining if the MGS occurs at Gerhardy, we collected other biological baseline data that may be useful to the Department and CDFW. As such, Appendix B includes a cumulative list of plants observed during the study and Appendix C includes the animals observed. Assuming a given site will be trapped more than one year, the year is indicated (e.g., "14" for "2014") in the left margin. Photographs (see Figure 5 in Appendix D) were taken in the following order along the grid: Exhibit 1 = Grid Line A, from its beginning to its end; Exhibit 2 = Grid Line A, from its end to its beginning; etc. As such, a total of seven (excluding the south end of Grid Line B, facing northwest) photographs was taken within the grid following this pattern. Additional photographs were taken elsewhere within the Park, the locations of which are also shown in Figure 5. On 3 June 2014, I tallied observable human disturbances along the grid lines, including all human impacts observed within approximately 8 meters (25 feet) either side of the transect. On 2 June 2014, I surveyed a single meandering transect outside the grid lines to identify and map special status resources.

3.0. RESULTS

3.1. Site Description and Location. The following information was determined at the time the site was trapped.

Habitat Description: The site is vegetated by Mojavean creosote bush scrub with a sparse overstory of Joshua trees. With 16 tree, perennial shrub, grass, and succulent species observed, the site has a relatively high level of perennial diversity. Of the 45 plant species observed, only 7 (15%) are not native to California. There were no discernible washes within the trapping grid, nor are any USGS designated blueline streams shown on the Adobe Mountain or El Mirage 7.5' quadrangle maps (Figure 3). See Appendix A for all plants and Appendix B for all animals identified during the early June 2014 survey.

Dominant annuals: Desert dandelion (*Malacothrix glabrata*), coreopsis (*Coreopsis* sp.), and fiddleneck (*Amsinckia tessellata*) were the dominant annual plant species detected during the survey.

Dominant perennials: Creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), and Nevada joint-fir (*Ephedra nevadensis*) were the dominant perennials.

Other: The site is typical of a higher diversity Mojavean creosote bush scrub community. Other common, less dominant perennial shrubs include cheesebush (*Ambrosia salsola*), desert goldenhead (*Acamptopappus sphaerocephalus*), cottonthorn (*Tetradymia* sp.), rubber rabbitbrush (*Chrysothamnus nauseosus*), and Indian ricegrass (*Achnatherum hymenoides*).

At his long-term study sites in the Coso Range of China Lake Naval Air Weapons Station near the northern extent of the MGS range, Dr. Leitner has determined that winter fat (*Krascheninnikovia lanata*) and spiny hop-sage (*Grayia spinosa*) are important perennial plants for the feeding ecology of the MGS, particularly during dry years. On 2 June 2014, I tallied 254 winter fat shrubs and only 3 spiny hop-sage shrubs along the four grid lines, within approximately 8 meters (25 feet) either side of the transects surveyed. Winter fat is common enough that it is considered a dominant perennial species within the area trapped; it was also observed throughout the site along the meandering transects depicted in Figure 4.

Qualitative description of plant germination:

Land form: Desert plain with a few rises **Soil type:** Very sandy

Slope: 0-4% **Aspect:** Mostly northeast and southeast within the grid

Elevational range: 869 meters (2,850 feet) at the southwest corner up to 907 meters (2,975 feet) at the west-central boundary of the Sanctuary.

Total Acres Trapped: Although the Sanctuary is 547 acres±, assuming a grid length of 11,480 linear feet (3,500 meters) and an effective width of 150 feet (45 meters) either side of the grid line (300 feet or 90 meters), the total acres trapped is estimated to be approximately 80 acres (11,480 linear feet X 300 feet ÷ 43,560 square feet) of the 547-acre site.

Number of trap days (number of days x 100 traps): 500

Dates of trapping session: I sat up the grid on the evening of 5/31/2014 and proceeded to trap the site on 6/1/2014 through 6/5/2014. The traps were closed earlier than sunset on 6/4/2014 and 6/5/2014 when temperatures exceeded 90°F.

Trapping conducted by: Ed LaRue on 6/1, 6/2, 6/3, 6/4, and 6/5/2014; and Sharon Dougherty on 6/5/2014.

3.2. Other Special Status Species. As shown in Figure 4, four special status species were either observed or detected during the five-day survey in June 2014. These encounters occurred during surveys that were not as structured as the disturbance analysis described below (e.g., if I observed an elevated mound that may be the apron to a tortoise burrow, I inspected it rather than stay on a specific transect and record only objects within a certain distance).

Creosote bush rings greater than 10 feet in diameter are considered by San Bernardino County in their Development Code to be a protectable biological resource, as per Section 88.01.060(c) Regulated Desert Native Plants. As shown in Figure 4, 61 creosote rings (36 within the grid and 24 along the meandering transect) were observed and mapped. They are distributed throughout the surveyed portions of the site, and appear to be more common along Grid Lines A, C, and D with fewer along Grid Line B.

Loggerhead shrike (*Lanius ludovicianus*) is designated as a Bird Species of Conservation Concern by USFWS (2008) and as a California Species of Special Concern (CDFW 2014). Three loggerhead shrikes, including one pair and an individual bird, were observed during the five-day period, as mapped in Figure 4. There are both suitable nesting substrates in the many Joshua trees and suitable foraging habitats throughout the Sanctuary.

Burrowing owl (*Athene cunicularia*) is designated as a Bird Species of Conservation Concern by USFWS (2008) and as a California Species of Special Concern (CDFW 2014). The diagnostic regurgitated pellet of a burrowing owl was found at the inactive kit fox den described below and mapped in Figure 4.

Kit fox (*Vulpes macrotis*) is not designated by the USFWS but as a fur-bearing mammal, is considered a Fully Protected species by the CDFW. One inactive kit fox den was observed as mapped in Figure 4, and there are likely active dens in those areas not surveyed.

3.3. Observable Human Impacts. On 3 June 2014, I tallied observable human disturbances found within approximately 8 meters (25 feet) either side of the grid line and inclusive of the gaps between the ends of lines. The results of this method provide *encounter rates* for observable human disturbances. For example, if a single motorcycle trail was observed three times during the survey, it would be tallied three times (this relieves the observer from interpreting the same versus different objects). The intent of this exercise is to develop a baseline for human use on the site so that if it is trapped in subsequent years, a comparison may be made to see if those uses are increasing, decreasing, or remain unchanged.

TABLE 1. OBSERVABLE HUMAN DISTURBANCES FOR JUNE 2014

Debris and Litter	Vehicle Tracks	Domestic Dog Sign	Old Can Dump	Shot Gun Shells	Trails	Shooting Targets	Rifle Shells
122	16 cycle 1 truck	5	4	4	4	3	2

Based on two decades of performing disturbance analyses, I consider this site to be moderately disturbed by observable human impacts. There is a barren area along the east boundary that has resulted from a burn sometime in the past. Old and sparse scat of domestic sheep were found throughout the site indicating that it has been grazed a long time ago and only a short period.

The disturbances observed along the grid lines are representative of the types of disturbances observed throughout the site along the meandering transect. Miscellaneous debris is the most commonly observed disturbance, with some moderate vehicle- and minor shooting-related impacts present. Most of the debris (97 of 122 pieces, or 80%) was comprised of windblown paper and plastic. The remaining debris included 17 soda cans, 4 balloons, and 6 pieces of glass. Four old can dumps were found on the far eastern portions of Grid Lines B and C.

Although only one truck track was observed, 16 motorcycle tracks were observed. Numerous tracks were observed on and adjacent to two motorcycle trails that enter the center of the Sanctuary from the west (see Exhibit 13). Compared to the other two sanctuaries trapped in 2014 (Phacelia and Butte Valley), this was the only one on which domestic dogs seem to be an issue. Five domestic dog digs were observed (see Exhibit 12), mostly along Grid Line A, and a pack of four dogs was observed within northern portions of the grid on the afternoon 6/3/2014.

3.4. Trapping Results.

The following table contains information about the dates and times of trapping; numbers and types of animals captured; and weather conditions during the five trapping days.

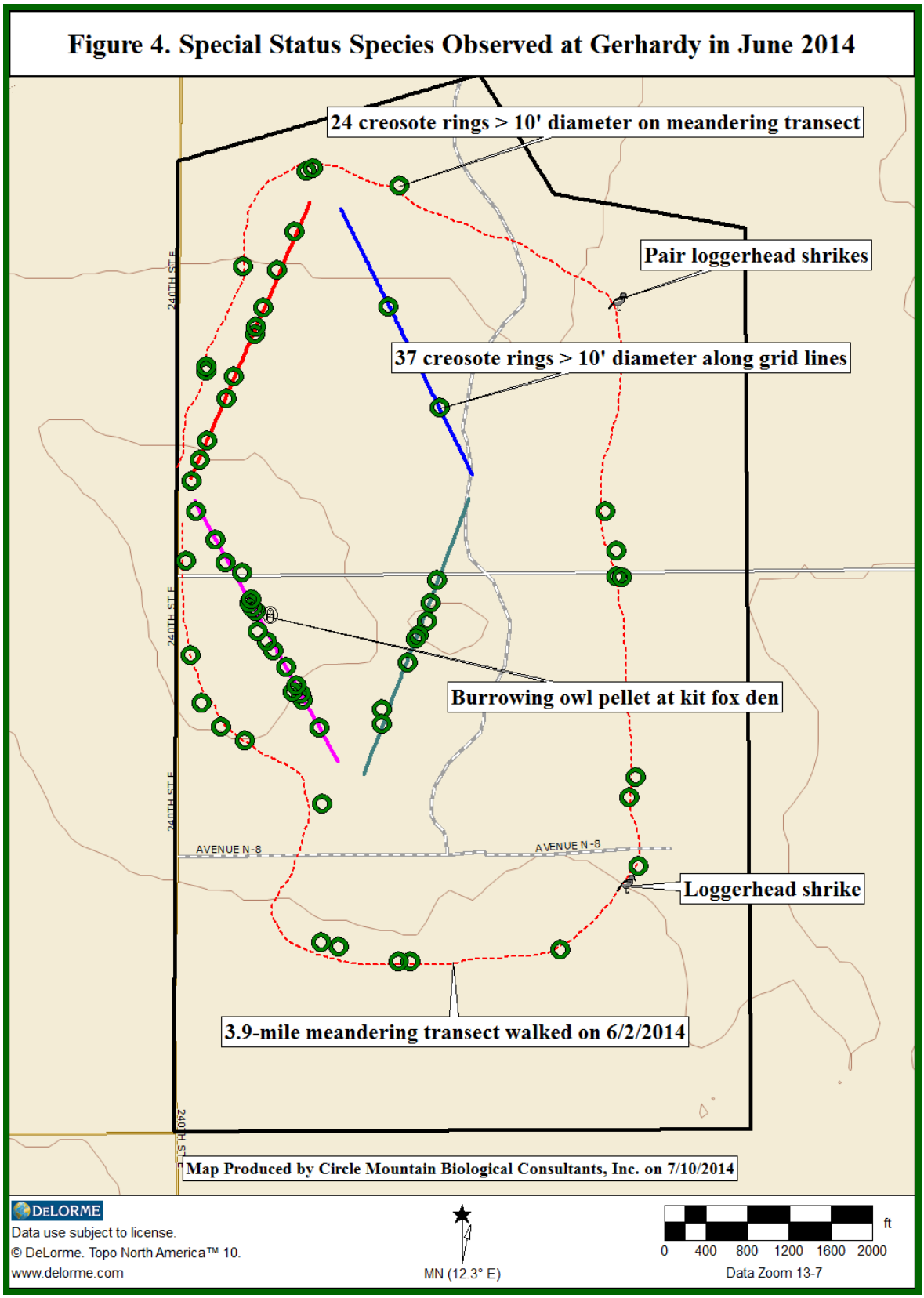
DATE	*TIME	**TEMP °F	CAPTURES			Cloud Cover		Max Wind speed (mi/hr)	
			AGS	MGS	***Other	AM	PM	**AM	PM
6/1/14	0600	56	24	0	1 WWTA	0%	10%	0-5	10-15
	1855	90+							
6/2/14	0600	56	21	0	1 WWTA 1 DSLI	0%	25%	0-5	10-15
	1910	81							
6/3/14	0610	55	21	0	0	0%	0%	0-5	10-15
	1915	84							
6/4/14	0605	52	23	0	0	0%	0%	0-5	5-10
	1640	90+							
6/5/14	0630	64	8	0	1 WWTA	0%	0%	0-5	5-10
	1630	90+							
5 Days	-	-	**97**	**0**	**3 WWTA 1 DSLI**	**0%**	**0 – 25%**	**0 – 5 mph**	**5 – 15 mph**

*- The upper times given in column 2 are when the first trap was opened each day, and the lower times indicate when the last trap was closed each day.

**- Air temperatures measured 12" above the ground in new shade and maximum wind speeds were measured by a hand-held Kestrel® device at the indicated times.

***- Abbreviations for all animals trapped given in the 6th columns include:
AGS = Antelope ground squirrel (*Ammospermophilus leucurus*)
DSLI = Desert spiny lizard (*Sceloporus magister*)
WWTA = Western whiptail (*Cnemidophorus tigris*)

Figure 4. Special Status Species Observed at Gerhardy in June 2014

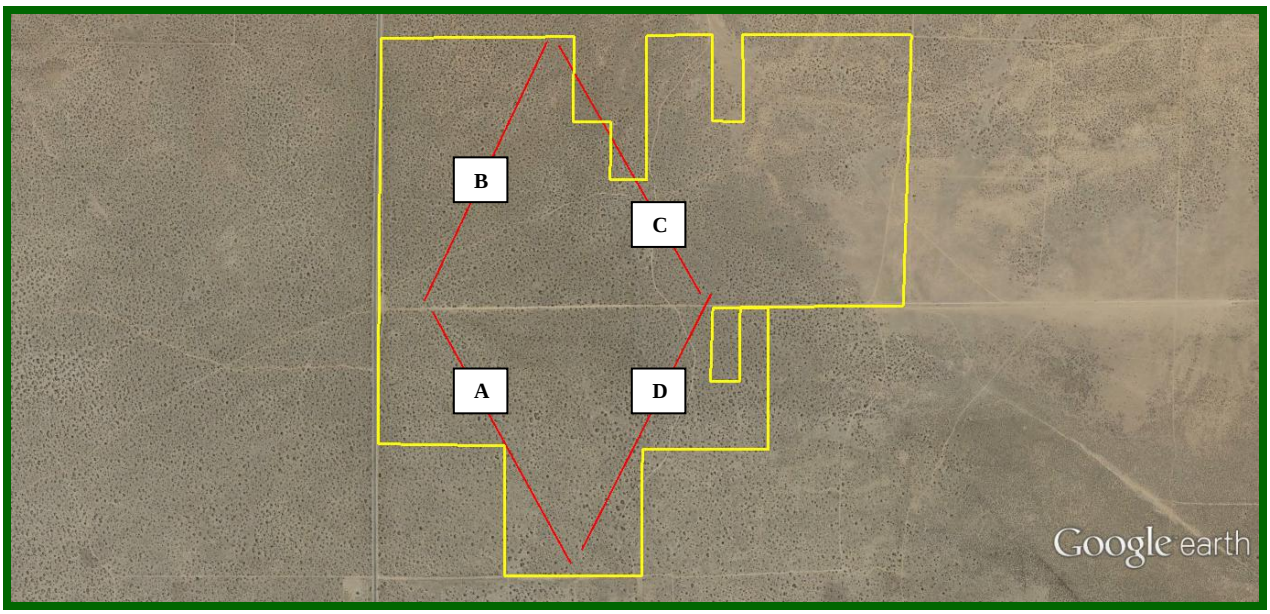


4.0. CONCLUSIONS

No Mohave ground squirrels were captured during the 2014 trapping effort. There are burned areas on the site that are only marginally suitable for the species.

5.0. RECOMMENDATIONS

There may be grid configurations that would be better suited to trap a given site. The grid locations shown below would effectively avoid burned areas while maintaining the 875-meter grid lengths needed to maximize trap placement throughout the site. It would also accommodate the entire grid now that the smaller Sanctuary area has been identified.



There is probably no way for the Department to manage either cross-country motorcycle use of the site or the presence of domestic dogs, which likely belong to nearby residents. Even so, these are the two current uses of the site that are ongoing and should be curtailed, if possible. It would also be advisable to remove the dumps near the junction of Grid Lines B and C, which may discourage future dumping in this area.

6.0. REFERENCES AND LITERATURE CITED

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7.0. ACKNOWLEDGEMENTS

This is a volunteer effort funded, in part, by CSU Stanislaus and CDFW to pay for Department permit fees. We are indebted to Dr. Phil Leitner for helping with the logistics, facilitating permit acquisition, and reviewing the early draft of this report. Thanks also to Dr. Scott Osborn and Justin Garcia of the CDFW for supporting this effort and expediting issuance of trapping permits. Natasha Robinson of the Department was very helpful and responsive in facilitating the issuance of the six permits. Finally, thanks to Sharon Dougherty for helping me trap and disassemble the grid.

APPENDIX A. CDFW SURVEY AND TRAPPING FORM

Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: Carl O. Gerhardy Sanctuary Property owner: L.A. County

Location: Township 6N ; Range 8W ; Section 2+11 ; ¼ Section _____

Quad map/series: Elmirage UTM coordinates: 436050E / 3832650N
GPS coordinates of trapping-grid corners

Acreage of Project Site: 547 Acreage of potential MGS habitat on site: 547

Total acreage visually surveyed on project site: +/- 95 acres Date(s): 6/2/2014
visual surveys

Visual surveys conducted by: Ed Lafve
names of all persons by date (use back of form, if needed)

Total acres trapped: 80 acres Number of sampling grids: 1

Trapping conducted by: Ed Lafve and Sharon Dougherty
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST 6/1-6/5/2014 SECOND _____ if required THIRD _____ if required

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)
Vegetation: dominant perennials: Larrea tridentata, Ambrosia dumosa, Ephedra nevadensis
other perennials: see report for full species list
dominant annuals: Malacothrix glabrata, Eucrypta sp., Amsinckia tessellata
other annuals: see report for full species list

Land forms (mesa, bajada, wash): Desert plain with low rises

Soils description: Very Sandy

Elevation: 869 to 907 meters Slope: 0 to 4%

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day)

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM

See report for all weather information

CUMULATIVE FIELD DATA SHEET OF SIGNIFICANT OBSERVATIONS

2014 Field Season **Page __ of __**

JOB #/NAME	DATE	DRIVE TIME	MILES	FIELD TIME	SURVEYORS
Carl O. Gerhardy	June 2014	TO FROM N/A	N/A	BEGIN END Variable	Ed Carlue Sharon Paynesty

WEATHER CONDITIONS (Start/End)	UTM (NAD 83) (circle starting corner)
TEMP: °F WIND X: ↑ N S E W CLOUD: % See Report	NE→ NW→ SE→ SW→
TEMP: °F WIND X: ↑ N S E W CLOUD: %	see Report

PERENNIAL PLANTS				ANNUAL PLANTS				BIRDS		HERP	MAM
LarTri	LycCoo			AmbDum	LonSem			CAVU		WWTA	AGS
AmbDum	SpaAmb			Coreop	EriLan			MODO		DESP	Bobcat
MucBif	ErgAlb			Sch sp.	ConThy			ATFC		CMLL	BTHA
EphNev	AstCan			UroLan	BriVir			CORA		SBLI	KRAT
KraLan	CroCal			IresPun	LepFig			HOLA			Coyote
GraSpi	EriFas			MulGra	BroCic			TBTSP			Kit Fox
AmbSem	LycAnd			BroTec	EriLan			LittOw	Photographs per Kat		
Acc Spi				BroRub	EriSup			VERP			OWRA
Tet sp.				AmbAlb	MicOcc			GOSH			
OenDel				MenAlb	SteEri			HOFI			
CylEch				CheTri	SalTra			LBWP			
RumHym				BroEri							
GnaPal				LesLem							
ChrMon				CynMic							

OBSERVABLE HUMAN DISTURBANCES

T#	East	North	OHV	Road	Dog	Dump	S Gun	Rifle	Target		
Creosote Bush Rings						Logger Head Shrike		Burrowing Owl			
436217	3833162	5875	2160	6708	1280	6892	3172(2)	5843/2206	Pellets @ Kit Fox Den		
6367	2867	5856	2189	6271	1248	6903	1469				
5765	2963	5828	2215	6235	1248						
5827	3086	5823	2276	6060	1291						
5830	3106	5813	2287	6010	1305						
5853	3163	5806	2299	6941	1521						
5893	3272	5811	2310	6708	1280						
5945	3384	5764	2357	6271	1248						
6356	2862	5736	2418	6235	1248						
6335	2295	5707	2485	6200	1291						
6326	2243	5651	2568	6010	1305						
6301	2201	5638	2658	6851	2561						
6292	2191	5602	2730	6882	2446						
6267	2121	5684	2774	6882	2369						
6192	1985	5741	2899	6898	2367						
6190	1943	5620	2425	6933	1783						
6009	1932	6013	1712	6915	1723						
5959	2015	5788	1898	5663	2975						
5955	2034	5719	1938	5684	2991						
5930	2039	5663	2007	5794	3283						
5942	2058	5633	2145	5982	3562						
5911	2110	6941	1521	6001	3568						

6254 / 3517

COMPLETED CNDDB DATA SHEETS

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 06/02/2014

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 3 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397
E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

3 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of Los Angeles Parks and Recreation
Quad Name: El Mirage Elevation: 880 meters
T 6N R 8W Sec 2/11, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy 2 meters meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: 436050 East, 3832650 North at center of grid

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

The site is vegetated by Mojavean creosote bush scrub with a sparse overstory of Joshua trees. With 16 tree, perennial shrub, grass, and succulent species observed, the site has a relatively high level of perennial diversity. Desert dandelion (Malacothrix glabrata), coreopsis (Coreopsis sp.), and fiddleneck (Amsinckia tessellata) were the dominant annual plant species detected during the survey. Creosote bush (Larrea tridentata), burrobush (Ambrosia dumosa), and Nevada joint-fir (Ephedra nevadensis) were the dominant perennials. The site is mostly flat with a few rises, 0 to 4% slope, with variable aspects.
Two birds were an apparent pair with a third individual observed elsewhere on site.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Private lands to the south have been bladed with dumping. Areas to the east have been burned.

Visible disturbances: Litter and debris, some motorcycle and truck use, with some shooting, and domestic dog digs (1 pack observed).

Threats: None

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)* Slide Print Digital
Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☐
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes☐ no☐

DFG/BDB/1747 Rev. 6/16/09

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 06/02/2014

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing owl

Species Found? ☐ Yes ☑ No — Only diagnostic pellets found (If not, why?)

Total No. Individuals none Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? ☑ no ☐ unk. (Yes, Occ. #)

Collection? If yes: _____ (Number) _____ (Museum / Herbarium)

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397
E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

3 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of Los Angeles Parks and Recreation
Quad Name: El Mirage Elevation: 880 meters
T 6N R 8W Sec 2/11, ___ ¼ of ___ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T___ R___ Sec ___, ___ ¼ of ___ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy 2 meters meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ ***OR*** Geographic (Latitude & Longitude) ☐
Coordinates: 436050 East, 3832650 North at center of grid

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

The site is vegetated by Mojavean creosote bush scrub with a sparse overstory of Joshua trees. With 16 tree, perennial shrub, grass, and succulent species observed, the site has a relatively high level of perennial diversity. Desert dandelion (Malacothrix glabrata), coreopsis (Coreopsis sp.), and fiddleneck (Amsinckia tessellata) were the dominant annual plant species detected during the survey. Creosote bush (Larrea tridentata), burrobush (Ambrosia dumosa), and Nevada joint-fir (Ephedra nevadensis) were the dominant perennials. The site is mostly flat with a few rises, 0 to 4% slope, with variable aspects.
Diagnostic regurgitated burrowing owl pellets were observed at an inactive kit fox den.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use: Private lands to the south have been bladed with dumping. Areas to the east have been burned.

Visible disturbances: Litter and debris, some motorcycle and truck use, with some shooting, and domestic dog digs (1 pack observed).

Threats: None

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)* Slide Print Digital
Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☐
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☐ no ☐

DFG/BDB/1747 Rev. 6/16/09

APPENDIX B. PLANT SPECIES DETECTED

The following plant species were identified on-site during the trapping survey described in this report. Those plant species that are protected by State ordinances are shown in red font and signified by "(SC)" following the common name.

GNETAE	GNETAE
Ephedraceae	**Joint-fir family**
14 *Ephedra nevadensis*	Nevada joint-fir
ANGIOSPERMAE: DICOTYLEDONES	DICOT FLOWERING PLANTS
Amaranthaceae	**Amaranth family**
14 **Amaranthus albus*	White tumbleweed
Asteraceae	**Sunflower family**
14 *Acamptopappus sphaerocephalus*	Desert goldenhead
14 *Ambrosia dumosa*	Burrobush
14 *Ambrosia (Hymenoclea) salsola*	Cheesebush
14 *Chaenactis fremontii*	Desert pincushion
14 *Chrysothamnus nauseosus*	Rubber rabbitbrush
14 *Coreopsis* sp.	Coreopsis
14 *Lessingia lemmonii*	Lemmon's lessingia
14 *Malacothrix glabrata*	Desert dandelion
14 *Nicolettia occidentalis*	Nicolettia
14 *Stephanomeria exigua*	Milk aster
14 *Tetradymia* sp.	Cottonthorn
Boraginaceae	**Borage family**
14 *Amsinckia tessellata*	Fiddleneck
14 *Cryptantha micrantha*	Forget-me-not
Brassicaceae	**Mustard family**
14 **Descurainia pinnata*	Tansy
14 *Guillenia lasiophylla*	California mustard
14 *Lepidium flavum*	Peppergrass
Cactaceae	**Cactus family**
14 *Cylindropuntia (Opuntia) echinocarpa*	Silver cholla (SC)
Chenopodiaceae	**Goosefoot family**
14 *Atriplex canescens*	Four-winged saltbush
14 *Grayia spinosa*	Spiny hop-sage
14 *Krascheninnikovia (Eurotia) lanata*	Winter fat
14 **Salsola tragus*	Russian thistle
Euphorbiaceae	**Spurge family**
14 *Chamaesyce (Euphorbia) albomarginata*	Rattlesnake weed
14 *Croton californicus*	Croton

Geraneaceae	**Geranium family**
14 **Erodium cicutarium*	Red-stemmed filaree
Loasaceae	**Stick-leaf family**
14 *Mentzelia albicaulis*	Little blazing star
Malvaceae	**Mallow family**
14 *Eremalche exilis*	Trailing mallow
14 *Sphaeralcea ambigua*	Desert mallow
Onagraceae	**Evening-primrose family**
14 *Oenothera deltoides*	Devil's lantern
Polemoniaceae	**Phlox family**
14 *Eriastrum* c.f. *sapphirinum*	Woolly star
14 *Gilia latiflora*	Broad-flowered gilia
14 *Loeseliastrum (Langloisia) schottii*	Loeseliastrum
Polygonaceae	**Buckwheat family**
14 *Centrostegia thurberi*	Thurber's spineflower
14 *Eriogonum fasciculatum*	California buckwheat
14 *Eriogonum viridescens*	Buckwheat
14 *Rumex hymenosepalus*	Wild rhubarb
Solanaceae	**Nightshade family**
14 *Lycium andersonii*	Anderson's box-thorn
14 *Lycium cooperi*	Peach thorn
Zygophyllaceae	**Caltrop family**
14 *Larrea tridentata*	Creosote bush
ANGIOSPERMAE: MONOCOTYLEDONES	MONOCOT FLOWERING PLANTS
Liliaceae	**Lily family**
14 *Yucca brevifolia*	Joshua tree (SC)
Poaceae	**Grass family**
14 *Achnatherum (Oryzopsis) hymenoides*	Indian ricegrass
14 **Bromus madritensis* ssp. *rubens*	Red brome
14 **Bromus tectorum*	Cheat grass
14 **Schismus* sp.	Split-grass

* - indicates a non-native (introduced) species.
c.f. - compares favorably to a given species when the actual species is unknown.

Some species may not have been detected because of the seasonal nature of their occurrence. Common names are taken from Beauchamp (1986), Hickman (1993), Jaeger (1969), and Munz (1974).

APPENDIX C. ANIMAL SPECIES DETECTED

The following animal species were detected during the general biological inventory described in this report. Special status animal species are shown in red font and signified by "(SC)" following the common names.

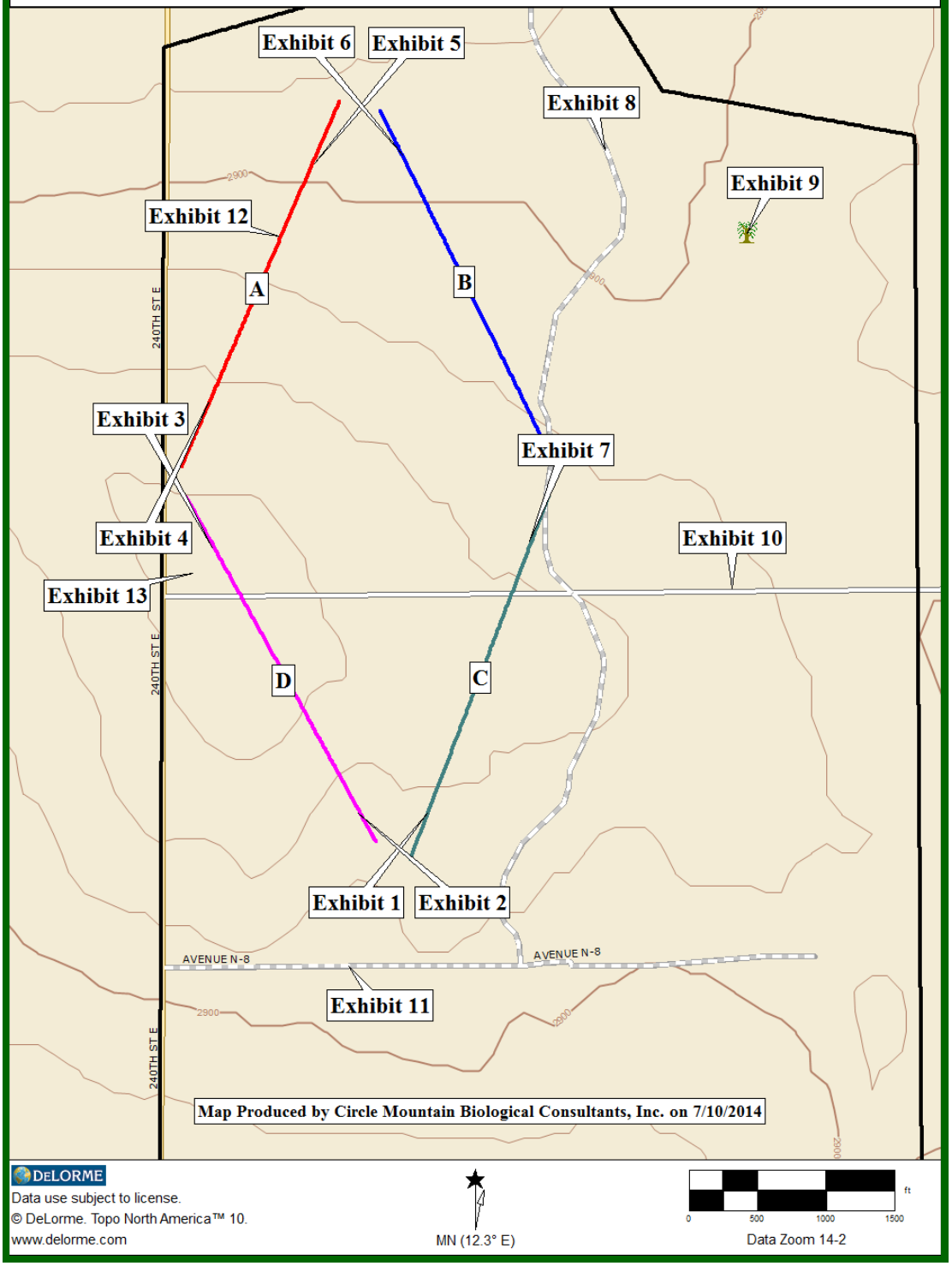
REPTILIA	REPTILES
Iguanidae	**Iguanids**
14 *Dipsosaurus dorsalis*	Desert iguana
14 *Gambelia wislizenii*	Long-nosed leopard lizard
14 *Sceloporus magister*	Desert spiny lizard
14 *Uta stansburiana*	Common side-blotched lizard
Teiidae	**Whiptails**
14 *Cnemidophorus tigris*	Western whiptail
AVES	BIRDS
Columbidae	**Pigeons and doves**
14 *Zenaida macroura*	Mourning dove
Strigidae	**Typical owls**
14 *Bubo virginianus*	Great horned owl
14 *Athene cunicularia*	Burrowing owl (SC)
Picidae	**Woodpeckers**
14 *Picoides scalaris*	Ladder-backed woodpecker
Tyrannidae	**Tyrant flycatchers**
14 *Myiarchus cinerascens*	Ash-throated flycatcher
Alaudidae	**Larks**
14 *Eremophila alpestris*	Horned lark
Corvidae	**Crows and jays**
14 *Corvus corax*	Common raven
Remizidae	**Verdins**
14 *Auriparus flavipes*	Verdin
Troglodytidae	**Wrens**
14 *Campylorhynchus brunneicapillus*	Cactus wren
Laniidae	**Shrikes**
14 *Lanius ludovicianus*	Loggerhead shrike (SC)

Emberizidae	**Sparrows, warblers, tanagers**
14 *Amphispiza bilineata*	Black-throated sparrow
Fringillidae	**Finches**
14 *Carpodacus mexicanus*	House finch
MAMMALIA	MAMMALS
Leporidae	**Hares and rabbits**
14 *Lepus californicus*	Black-tailed hare
Sciuridae	**Squirrels**
14 *Ammospermophilus leucurus*	Antelope ground squirrel
Heteromyidae	**Pocket mice**
14 *Dipodomys* sp.	Kangaroo rat
14 *Dipodomys merriami*	Merriam kangaroo rat
Cricetidae	**Rats and mice**
14 *Neotoma lepida*	Desert wood rat
Canidae	**Foxes, wolves and coyotes**
14 *Canis latrans*	Coyote
14 *Vulpes macrotis*	Kit fox (SC)
Felidae	**Cats**
14 *Lynx rufus*	Bobcat

Nomenclature follows Stebbins, *A Field Guide to Western Reptiles and Amphibians* (2003), third edition; Sibley, National Audubon Society, the Sibley Guide to Birds (2000), first edition; and Ingles, Mammals of the Pacific States (1965), second edition.

APPENDIX D. PHOTOGRAPHIC EXHIBITS

Figure 5. Locations of Photographic Exhibits Taken at Gerhardy in June 2014



Locations of the 13 exhibits on the next 7 pages are shown in Figure 5.

Exhibit 1. View from Station C1, facing northeast.

Exhibit 2. View from Station D25, facing northwest.

Exhibit 3. View from Station D1, facing southeast.

Exhibit 4. View from Station A1, facing northeast.

Exhibit 5. View from Station A25, facing southwest.

Exhibit 6. View from Station B25, facing southeast.

Exhibit 7. View from Station C25, facing southwest.

Exhibit 8. View of extensive bare area to the northeast (see Figure 5), facing southeast.

Exhibit 9. A loggerhead shrike was observed in this very large Joshua tree.

Exhibit 10. One of many mature winter fat shrubs found at Carl O. Gerhardy Sanctuary.

Exhibit 11. This bladed area does not show up on the April 2013 aerial photograph in Figure 2, and is just south of the Sanctuary.

Exhibit 12. One of the domestic dog digs observed within the grid.

Exhibit 13. Motorcycle damage near the west-central entrance to the Sanctuary.