Appendix 5.2F
Desert Tortoise Survey Report

Presence/Absence Survey for the Desert Tortoise *(Gopherus agassizii)* and other Sensitive Wildlife on the proposed Hidden Hills Ranch Solar Energy Project, San Bernardino County, California

June 29, 2011

Prepared for:

CH2M HILL, Inc.

2485 Natomas Park Drive, Suite 600,

Sacramento, California 95833

Prepared by:

Sundance Biology, Inc.

179 Niblick Road, PMB 272

Paso Robles, California 93446

Mercy Vaughn • (928) 380-5507 manydogs10@aol.com Stephen Boland • (928) 380-8850 spboland@aol.com

EXECUTIVE SUMMARY

As recommended in the US Fish and Wildlife Service (USFWS) *Survey Protocol for any Non-Federal Action that may Occur within the Range of the Desert Tortoise, January 1992,* a desert tortoise *(Gopherus agassizii)* presence or absence survey was conducted on the proposed 3,280 acre Hidden Hills Ranch Solar Energy Project site, Inyo County, CA located 15 miles south of Pahrump, NV.

Three thousand, two hundred and eighty acres were surveyed for desert tortoises and tortoise sign. An additional 150 meter buffer (652 acres) outside the proposed project boundary was surveyed for burrowing owl. Five zone of influence (ZOI) transects were conducted around the project site out to one mile where suitable habitat occurred in order to establish the possible effect the project may have on nearby tortoise populations and determine other wildlife use.

A total of 15 tortoises, 1 shell-skeletal remains, 94 burrows, 18 scat events, and 9 sets of tortoise tracks were detected on the main project site, in the burrowing owl buffer zone, and while conducting ZOI transects. Since tortoises found within 150 meters of the site appear to be using the site they were included in the density estimate calculations. The total action area for the calculation is 3,932 acres (15.9 km^2). Density estimate for the action area is 0.9 tortoises per km^2.

Observations were recorded for Burrowing owl (*Athene cunicularia*) and its sign, and the American badger and other plants and wildlife that occur in the area.

Eight canid burrows were found with burrowing owl whitewash and/or pellets and feathers on the project site. One badger burrow and one canid burrow were found with burrowing owl sign in the ZOI.

Eleven badger burrows in fair to good condition were found on the project site. Another was found in the ZOI. There were no live animals observed.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ii

INTRODUCTION 1

METHODOLOGY 1

Habitat Delineation 1
Survey Methodology 1
ZOI Transects 2
Data Recorded 2
Weather 2
Biological Field Team 2

RESULTS 3

Survey Area 3
Desert Tortoise-Survey Area 3
Desert Tortoise-Zone of Influence 4
Other Sensitive Species 4

Burrowing Owl 4

American Badger 4

DISCUSSION 4

Desert Tortoise 4
Burrowing Owl 5
American Badger 5

MITIGATION RECOMMENDATIONS 6

Desert Tortoise 6
Burrowing Owl 7
American Badger 8

REFERENCES 8

LIST OF TABLES

Table 1.Desert Tortoise and Sign Locations 1

Table 2. Sensitive Species and Sign Lo per km^{2}cations 7

Table 3. Plant Species List 9

Table 4. Mammal Species List 14

Table 5. Reptile Species List 14

Table 6. Bird Species List 15

LIST OF FIGURES

Figure 1. Hidden Hills Ranch Solar Energy Project proposed site location, Inyo County, California 16

Figure 2. Hidden Hills Ranch Solar Energy Project Live Tortoise Sign, Inyo County, California 17

Figure 3. Hidden Hills Ranch Solar Energy Project Sensitive Species Sign Locations, Inyo County, California 18

Figure 4. Habitat photos, Hidden Hills Ranch Solar Energy Project proposed site and zone-of-influence, Inyo County, California. (Datum NAD 83 CONUS) 19

Figure 5. Desert tortoise and sign photos, Hidden Hills Ranch Solar Energy Project proposed site, Inyo County, California. (Datum NAD 83 CONUS) 21

Figure 6. Sensitive species photos, Hidden Hills Ranch Solar Energy Project proposed site, Inyo County, California. 22

Figure 7. Desert Tortoise Abundance/Density Estimates from Table 3 of USFWS Desert Tortoise Pre-project Survey Protocol, 2010 23

INTRODUCTION

This report addresses the results of a presence/absence survey for the desert tortoise on the proposed Hidden Hills Ranch Solar Energy Project site, Inyo County, California as well as other sensitive species. Potential desert tortoise habitat was delineated considering vegetation, elevation, and topography.

The proposed project site is located in Inyo County, CA in the East Mojave Desert approximately 15 miles south of Pahrump, NV and approximately 40 miles west-southwest of Las Vegas, NV (Figure 1). The site is bounded by the California-Nevada state line to the northeast; Old Spanish Trails Highway (Tecopa Road) to the south; Rosie Avenue to the west, and the north edge of Section 16, T22N, R10E, SBBM. An additional 180 acre strip of land immediately adjacent to and west of Rosie Avenue in Section 20 is planned for use as a construction area. The total project site comprises 3,280 acres (5.1 mi^2) and occurs within Sections 15, 16, 20-23, 27, and 28 of Township 22N, Range 10E, SBBM (Figure 2). The site lies within the North-East Mojave: South Recovery Unit but does not lie within a Desert Tortoise Critical Habitat area or a Desert Wildlife Management Area (DWMA).

As per the California Energy Commission (CEC), California Department of Fish and Game (CDFG), and US Fish and Wildlife Service (USFWS) guidelines the proposed site (3,280 acres), a 150 meter buffer zone (652 acres), and five Zone-of-Influence transects out to one mile from the project boundary were surveyed for desert tortoises and tortoise sign as well as other species.

METHODOLOGY

Habitat Delineation

Delineation of the potential desert tortoise habitat was done prior to commencing the survey during a ground reconnaissance in April 2011. All typical vegetation communities used by desert tortoises throughout their geographic range were included in the survey area.

Survey Methodology

Surveys were conducted between 13 April 2011 and 18 May 2011. A team consisting of thirteen experienced desert tortoise biologists conducted the survey by walking a set of transects that covered the 3,280 acre main site, and the 650 acre burrowing owl (BUOW) buffer zone. Transect spacing was at 30 feet between transect centerlines, the standard width for desert tortoise presence/absence surveys. No more than five biologists surveyed together in a team, as larger team sizes decrease efficiency and accuracy.

A set of UTM coordinates establishing transect endpoints for virtual east-west transects were calculated for the main site BUOW buffer zone. This resulted in 514 transects

ranging from 0.38 to 2.95 miles in length. For navigation of transects Lowrance iFinder handheld global positioning system (GPS) units were used.

Each team was equipped with an iFinder GPS unit. One member of each team was responsible to navigate the center transect. When the end of each transect was reached, the team shifted five transects (for a five person team) and the navigator navigated the team center transect for the next trip.

Team members focused on a search area that included 15 feet on either side of them. The members of each team remained close to one another without leading or lagging in order to increase the precision of searching. When one member of the team stopped to investigate an observation, all members of the team stopped. Team members were instructed to search beneath every shrub.

ZOI Transects

ZOI transects were conducted in suitable tortoise habitat along all sides of the main project site at 200 meters, 400 meters, 600 meters, 1200 meters, and 1600 meters from the survey area perimeter. No ZOI transects were conducted south of the site due to private residences. The survey crew was asked to leave by several land owners on different occasions. Only the most experienced desert tortoise biologist conducted the ZOI transects.

Data Recorded

Any tortoise or large mammal burrows encountered that could potentially be used by tortoises were visually checked. When the end was not visible burrow entrances were gated with small sticks placed vertically in the soil at the entrance and checked periodically during the survey for tortoise activity. Very small burrows that could be potentially utilized by juvenile tortoises but are much more often rodent burrows were also visually checked when encountered. Only definitive tortoise sign was recorded with UTM locations and photographs.

All other wildlife and plant species encountered were also recorded. Sensitive species were recorded with UTM locations and photographs.

Weather

All surveys were conducted while air temperature was below 40°C measured approximately 5-cm from the soil surface in an area of full sun, but in the shade of the observer. Actual temperatures during the survey between 13 April 2011 and 18 May 2011 ranged from a low of 4.3°C at 630 AM on 01 May to 35.4°C in the afternoon on 06 May, 2011. Winds ranged from calm to 20 mph. One day of Rain on 10 May 2011 provided approximately 0.5” of rainfall.

Biological Field Team

The survey was managed by Stephen Boland and Mercy Vaughn. The biological team for the survey was as follows:

NAME	MAIN SITE and BUFFER ZONE	ZONE OF INFLUENCE
ADAM DRUMMER	X	
ALANA FROST	X	
AMANDA SCHEIB	X	X
CHRISTINE STIRLING	X	
CRAIG KNOWLES	X	
KIP KERMOIAN	X	X
MARCELLA WAGGONER	X	
MYLES TRAPHAGEN		X
PATTY KERMOIAN	X	X
RICH CRAWFORD	X	
SAGE CLEGG	X	
TERRY BAKER	X	
TIM HOCKIN	X	

RESULTS

Survey Area

The elevation of the main project site ranges between 2,580 and 2,680 feet above mean sea level. The entire survey area including ZOI's ranges in elevation from 2,550 to 2,790 feet and is characterized by creosote-bursage desert scrub vegetation in the eastern portions of the site transitioning into saltbush scrub towards the west (Figure 4). Shrub density is generally moderate to low. Geomorphology is middle to lower bajada with a westerly aspect and slope gradient of 1-3%. Soils are generally silty loam to clay soils. Desert pavement is common in the southwestern portion of the site. North, west, and south of the site is lower bajada grading into the playa at the low point in Pahrump Valley northwest of the site. East of the site are stabilized sand dunes and dissected bajada sloping up northeast to the Spring Mountains.

Human impacts include dirt roads around every ¼ section. Evidence of cattle and sheep grazing were found in the western and central portions of the site. Some areas in the central portion were denuded of vegetation due extensive grazing or previous clearing.

Desert Tortoise-Survey Area

Desert tortoise is listed as a threatened species by both State and federal governments (California Department of Fish and Game 2006b). On the main project site, 2 tortoises were detected as well as 1 shell-skeletal remain, 58 burrows, 12 scat events, and 6 sets of tracks (Table 1, Figure 2). All but three scat events occurred this year. The shell-skeletal remains were two to four years since time of death. It was an immature that appears to have been crushed.

Within 150 meters of the site (burrowing owl buffer zone) 6 tortoises, 15 burrows, 1 scat event, and 3 sets of tracks were found (Table 1, Figure 2). The scat event occurred this year.

Desert Tortoise-Zone of Influence

During surveys along the ZOI transects seven tortoises were located, 21 burrows, and 5 scat events. All but one scat event occurred this year (Table 1, Figure 2).

Other Sensitive Species

Two species of wildlife were identified on the project site listed as either a Species of Special Concern (SSC), Bird of Conservation Concern (BCC), or both (California Department of Fish and Game 2006a, USFWS 2002). These include the Burrowing owl, and the American badger (Table 2, Figure 3). These findings are discussed below. No sensitive plants were identified on the project site.

Burrowing Owl

The Burrowing owl is designated as a Bird of Conservation Concern by the USFWS (2002) and a Bird Species of Special Concern by the CDFG (2006a). Burrowing owls rely on existing burrows of other animals, which they modify for their own use. Seventy-seven canid complexes or single canid burrows were found on site. The presence of coyotes and kit fox on the site provide suitable burrows for burrowing owls. All sign observed was recorded which included birds and burrows with sign (i.e., whitewash droppings, feathers, and diagnostic pellets). Eight canid burrows were found with burrowing owl whitewash and/or pellets and feathers on the project site. One badger burrow and one canid burrow were found with burrowing owl sign in the ZOI. The proposed project may have direct impacts on the burrowing owl population on the site as burrowing owl sign was detected (Table 2, Figure 3).

American Badger

American Badger is listed as a priority three species of special concern (California Department of Fish and Game, 1986). Eleven burrows in fair to good condition were found on the project site. Another was found in the ZOI. There were no live animals observed. All badger sign is described below and listed in Table 2 and shown on Figure 3.

All plant, mammal, reptile and bird species observed during the survey were also recorded (Tables 2-5).

DISCUSSION

Desert Tortoise

The proposed Hidden Hills Ranch Solar Energy Project site lies within the geographic range of the desert tortoise. The habitat within the survey area as well as adjacent habitat is typical and suitable for desert tortoises. Juvenile through adult size classes were represented in the recent tortoise sign found in the survey area and in the ZOI.

Within the survey area recent sign was found throughout the site but was concentrated in the central and eastern portions of the project site predominantly in creosote bush scrub. Sign was scattered similarly in the ZOI with recent sign found mostly to the north

and east of the main site, predominantly in creosote bush scrub. One shell-skeletal remain was found on the eastern boundary of the project site.

Although most tortoises were found off the proposed project site, the abundance of burrows, recent scat, and tracks on site, and the close proximity (within 150 meters) of tortoises to the site indicate an active population using the site. This includes the tortoises found within 150 meters of the site. Evidence of tortoise activity diminished from east to west on the project site. There is currently a moderate to low density population of tortoises utilizing the project site. Evidence of reproduction, a juvenile tortoise near the site, suggests there is still a potentially viable population within the project area. Density estimates for tortoises using the site, were calculated from the Table 3 calculations from the USFWS Desert Tortoise Pre-project Survey Protocol 2010 Field Season (Figure 7). Since tortoises found within 150 meters of the site appear to be using the site they were included in the density estimate calculations. The total action area for the calculation is 3,932 acres (15.9 km^2). The estimates are as follows:

	ABUNDANCE	DENSITY
N =	13.8	0.9 per km^2
Lower 95%CI =	5.75	0.4 per km^2
Upper 95%CI =	33.02	2.1 per km^2

The proposed Hidden Hills Ranch Field Solar Project will have direct and indirect impacts on desert tortoises in the area. Since tortoises use the site, indirect impacts will occur through loss of habitat. Direct impacts could occur during construction of the solar site if a tortoise wanders onto the site.

In addition to loss of habitat, the tortoises located on site would have to be translocated to an appropriate area off site. The effectiveness of translocation of tortoises is still being researched. Both the translocated tortoises as well as the tortoises located on the recipient site could be affected. This effect could be minimized by translocation within the current home range of tortoises cleared from the site. The long-term use of the site may pose a risk to any tortoises wandering into the area if permanent tortoise proof fencing is not installed and maintained.

Burrowing Owl

The proposed project may have direct impacts on the burrowing owl population on the site. Burrowing owl sign was observed on site, and owls may have been nesting. They seem to be attracted to disturbed areas and are often found in fallow agricultural fields as well as native desert scrub. Burrowing owls rely on existing burrows of other animals, which they modify for their own use.

American Badger

The American badger occurs in open areas populated with small burrowing animals which are used as a primary food source. Though no live individuals were sighted during

the surveys, sign was observed on site. There is potential for direct impact if the burrow area is graded or heavy machinery is working close to the burrow location. Indirect impacts can occur through loss of habitat.

MITIGATION RECOMMENDATIONS

Desert Tortoise

The Project site lies within the Northeast Mojave (NEMO): South Recovery Unit. The site does not lie within any DWMA. Within the NEMO: South Recovery Unit but outside DWMAs (Category III), the lands delivered or equivalent fee is one acre of compensation land for every one acre disturbed.

In order to mitigate potential direct impacts, the following recommendations will help minimize the potential for "take" of tortoises during and after construction.

1). Develop a translocation plan for the desert tortoises onsite.

2). Develop a biological monitoring plan in consultation with the CEC, USFWS, BLM, and the CDFG. This plan would delineate all measures to be implemented prior to, during and post-construction, which would include but are not limited to the following measures:

a). All land surveying personnel prior to construction should be accompanied by an authorized desert tortoise biologist.

b). Permanent and or temporary tortoise-proof fencing (1"x 2" mesh hardware cloth) may need to be erected and maintained between the interface of the project area and any remaining desert tortoise habitat prior to initiating construction and clearance surveys for desert tortoises on site. The fence will prevent tortoises from wandering onto the site both during construction as well as during use of the facility. Ongoing maintenance of the fencing would be recommended with oversight by an authorized biologist. Fence installation should be monitored by a qualified tortoise biologist.

c). It is recommended tortoise clearance surveys be conducted at 15-foot intervals. It is recommended that two coverages without finding any tortoises or new tortoise sign be conducted prior to declaring any tortoise-proof fenced area clear of tortoises. All burrows that could provide shelter for a desert tortoise should be excavated prior to performing the clearance surveys. This includes small mammal burrows.

d). All construction and operations personnel should undergo desert tortoise awareness training.

e). After the tortoise-proof fence is erected, a qualified biologist(s) should remain onsite until all vegetation is cleared and, at a minimum, conduct site and fence inspections on

a bi-weekly basis throughout construction in order to maintain compliance with mitigation measures.

f). A qualified biologist(s) should be on site to survey for tortoises immediately in front of vegetation clearance activities in the event a tortoise was inadvertently missed during clearance surveys.

g). A biologist should remain on-call throughout construction in the event a tortoise wanders onto the site.

h). A raven management plan should be developed for the project site.

i). Post-construction reporting should be provided to all agencies within 90 days of completion of construction.

k). A biological monitor should escort every piece of equipment working on the ROW, lay-down areas, access roads, substations or any other project-related areas within tortoise habitat unless the area has been fenced, cleared of tortoises and vegetation has been removed.

l). A biological monitor should escort every project related vehicle onto the ROW, lay-down areas, access roads, substations or any other project-related areas within tortoise habitat unless the area has been fenced, cleared of tortoises, and vegetation has been removed.

m). A speed limit not to exceed 15 MPH should be posted and enforced along project access roads and ROW.

Burrowing Owl

Two alternatives exist for mitigation of this species.

- Avoidance: No disturbance should occur within 50 meters of occupied burrows during non-breeding season of September 1 through January 31 or within 75 meters during the breeding season (February 1 through August 31). A minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls. (CBOC, 1993)

- Mitigation for Impacts

On-site Mitigation

Passive relocation of burrowing owls is permitted on-site if impact to area is unavoidable. Passive relocation involves encouraging burrowing owls to relocate to natural or artificial burrows that are farther than 50 meters from the impact zone and are contiguous to a preserved 6.5 acre parcel of foraging habitat for each pair of relocated owls. Relocation of owls should be implemented during non-breeding season (September 1 through January 31).

Off-site Mitigation

If on-site mitigation is not feasible, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat and the site approved. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios.

- Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.
- Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.
- Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

Avoidance, passive relocation or active relocation should be considered to fulfill mitigation requirements. In order to mitigate direct impacts to burrowing owls it is recommended that construction activities not occur during the breeding season if any nests are in the area. Otherwise, nests should be avoided and construction activities approach no closer than 300 feet. If a passive relocation plan is preferred, it is recommended that the client repeat surveys 30 days prior to construction activities.

American Badger

In order to mitigate direct impacts to the American Badger, a qualified biologist should conduct focused pre-construction surveys of the project site no earlier than two weeks prior to construction activity. If potential dens are present on-site the following mitigation options should be employed;

1. If the qualified biologist determines that the burrows are inactive, these burrows should be hand excavated to prevent badgers from re-using the burrows during construction.
2. If burrows are determined to be active, an on-site passive relocation program, through which badgers are excluded from occupied burrows by installation of a one-way door in burrow entrances, monitoring of the burrow for one week to confirm badger usage has been discontinued, and hand excavation and collapse of the burrow to prevent reoccupation.

REFERENCES

California Department of Fish and Game. 2006a. California's plants and animals: Animal Species of Special Concern. Species lists published and updated by California Department of Fish and Game, Habitat Conservation Planning Branch. Dated 1 February 2006. Sacramento, CA.

California Department of Fish and Game. 2006b. State and federally listed endangered and threatened animals of California. Species lists published and updated by The Resources Agency, Department of Fish and Game, Habitat Conservation Division, Wildlife and Habitat Data Analysis Branch, California Natural Diversity Data Base. Dated January 2006. Sacramento, CA.

California Natural Diversity Database, Biogeographic Data Branch, Department of Fish and Game, September 01, 2007

Hickman, J. Editor. 1993. *The Jepson Manual: Higher Plants of California.* University of California Press. Berkeley, CA.

Holland, R. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game. Sacramento, CA.

Ingles, L. 1965. *Mammals of the Pacific States: California, Oregon, Washington.* Stanford University Press. Stanford, CA.

Jaeger, E. 1969. *Desert Wild Flowers.* Stanford University Press. Stanford, CA.

Munz, P. 1974. *A Flora of Southern California.* University of California Press. Berkeley, CA.

Tibor, D.P., ed. 2001. Inventory of Rare and Endangered Plants of California, 6th ed. California Native Plant Society, Sacramento, CA.

U.S. Fish and Wildlife Service. 2002. Birds of Conservation Concern. Division of Migratory Bird Management. Arlington, VA.

U.S. Fish and Wildlife Service. 2010. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). Carlsbad, CA

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	22cm wide, 1.5-2m deep, good condition, and end not visible.	599366	3984139	X						
Burrow	15cm wide, 0-.5m deep, fair condition, burrow under a *Lycium cooperi*, and end not visible.	597047	3984412		X					
Burrow	23cm wide, 0-.5m deep, poor conditions with annuals, and end visible.	597500	3983555	X						
Burrow	25cm wide, .5-1m deep, poor condition, and end not visible.	597540	3983599	X						
Burrow	19cm wide, 0-.5m deep, poor condition with debris in burrow, and end visible.	597601	3983622	X						
Burrow	15cm wide, 0-.5m deep, poor conditions with annuals, and end not visible.	597670	3983668	X						
Burrow	20cm wide, .5m deep, fair condition, no scat present, and annuals on runway.	597785	3985451	X						
Burrow	Adult inactive burrow with deteriorated conditions. Annuals growing in entrance to burrow.	597851	3986018	X						
Burrow	21cm wide, >2m deep, fair condition with annuals, SALTRA in mouth of burrow, and end not visible.	598557	3984196	X						
Burrow	18cm wide, .5-1m deep, fair condition with annuals, and end not visible.	598701	3983660	X						
Burrow	21cm wide, 1.5-2m deep, good condition, and end not visible.	598712	3983645	X						
Burrow	19cm wide, 0-.5m deep, fair condition with annuals on runway.	598734	3985391	X						
Burrow	15cm wide, .5-1m deep, fair condition with annuals, and end not visible.	598870	3983599	X						
Burrow	13cm wide, 0-.5m deep, poor condition with annuals, burrow under a LYCCOP, and end not visible.	598887	3984406	X						
Burrow	15cm wide, 0-.5m deep, poor condition with annuals, and end not visible.	598902	3984251	X						
Burrow	20cm wide, 0-.5m deep, good condition, and end not visible.	598907	3983478	X						
Burrow	15cm wide, .5-1m deep, fair condition with annuals, end not visible.	599042	3984400	X						
Burrow	28cm wide, .5-1m deep, fair condition, no scat present, and annuals on runway.	599046	3985176	X						
Burrow	17cm wide, 0-.5m deep, fair condition with annuals, partially collapsed, and no scat.	599096	3984683	X						
Burrow	15cm wide, 1.5-2m deep, poor conditions with annuals, and end not visible.	599143	3984281	X						
Burrow	30cm wide, 1-1.5m deep, active condition, and end not visible.	599260	3984090	X						
Burrow	8cm wide, 0-.5m deep, good condition, and end not visible.	599275	3983041	X						

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	21cm wide, 1-1.5m deep, fair condition with Russian thistle in mouth of burrow, and end not visible.	599338	3984055	X						
Burrow	17cm wide, fair condition, and entrance collapsed.	599345	3981889	X						
Burrow	28cm wide, 1.5-2m deep, fair condition with annuals and SALTRA in entrance, 2 pieces of NTY scat outside burrow, and end not visible.	599352	3984197	X						
Burrow	25cm wide, 1-1.5m deep, active condition with tracks present, and end not visible.	599357	3984097	X						
Burrow	32cm wide, 0-.5m deep, fair condition, and end visible.	599406	3984263	X						
Burrow	25cm wide, >2m deep, fair condition, and end not visible.	599406	3984263	X						
Burrow	20cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	599406	3984263	X						
Burrow	23cm wide, 0-.5m deep, and poor condition.	599433	3984320	X						
Burrow	21cm wide, 0-.5m deep, fair condition with annuals present, and end not visible.	599564	3984199	X						
Burrow	26cm wide, 0-.5m deep, fair condition with annuals present, no scat present, and partially collapsed.	599568	3984701	X						
Burrow	34cm wide, +2m deep, active condition, can't see the back, no scat seen, 3 canid burrows in close proximity to tortoise burrow.	599614	3984786		X					
Burrow	19cm wide, 1.5-2m deep, fair condition with annuals and LARTRI branches in runway, and end not visible.	599641	3984471	X						
Burrow	32cm wide, 1-1.5m deep, active condition with tortoise tracks, 1 piece of NTY scat, can't see back of burrow.	599650	3984802		X					
Burrow	16cm wide, 1-1.5m deep, active condition, and am immature tortoise inside burrow.	599653	3984818	X						
Burrow	24cm wide, 0-.5m deep, fair condition, end visible, and burrow under a LYCCOP.	599714	3984319	X						
Burrow	32cm wide, 0-.5m deep, active condition, no scat. Another tortoise burrow next to this tortoise burrow.	599722	3984567	X						
Burrow	30cm wide, 1-1.5m deep, fair condition, no scat. Another tortoise burrow next to this tortoise burrow.	599722	3984567	X						
Burrow	14cm wide, .5-1m deep, good condition, and end visible.	599846	3982998	X						
Burrow	12cm wide, 0-.5m deep, fair condition, and end visible.	600015	3984263	X						
Burrow	17cm wide, 0-.5m deep, poor condition with annuals present, and end visible.	600221	3984078	X						
Burrow	25cm wide, 0-.5m deep, fair condition with annuals present, burrow under a LARTRI, and end visible.	600242	3983826	X						

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	18cm wide, .5-1m deep, fair condition with debris in burrow, end not visible.	600299	3982710	X						
Burrow	25cm wide, .5-1m deep, fair condition, front partially collapsed, burrow under a ATRCAN, and end visible.	600328	3984025	X						
Burrow	17cm wide, .5-1m deep, poor condition, burrow under a LARTRI, and end not visible.	600349	3983820	X						
Burrow	18cm wide, .5-1m deep, fair condition with annuals present, and end not visible.	600350	3983111	X						
Burrow	23cm wide, .5-1m deep, fair condition with annuals present, and end visible.	600381	3984162		X					
Burrow	28cm wide, 1-1.5m deep, fair condition with annuals, and end visible.	600601	3983011	X						
Burrow	32cm wide, 1-1.5m deep, poor condition with annuals present, and end not visible.	600634	3983377	X						
Burrow	28cm wide, >2m deep, fair condition with annuals, +3 scat NTY in burrow, and end not visible.	600668	3983640	X						
Burrow	30cm wide, 1-1.5m deep, poor condition, front of burrow collapsed, tunnel and back of burrow open, 1 piece of NTY scat outside burrow, and end not visible.	600702	3983396	X						
Burrow	28cm wide, 1.5-2m deep, fair condition with annuals present, and end not visible.	600736	3983631	X						
Burrow	29cm wide, >2m deep, fair condition with annuals present, +10 pieces of NTY scat outside and inside burrow, and end not visible.	600748	3983421	X						
Burrow	30cm wide, 1-1.5m deep, active condition with fresh tracks, + 6 pieces of TY/NTY scat inside and outside burrow, kit fox scat on mound, and end not visible.	600809	3983258	X						
Burrow	18cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	600849	3983494	X						
Burrow	34cm wide, 1-1.5m deep, fair condition with annuals, and end not visible.	601083	3982999	X						
Burrow	40cm wide, .5-1m deep, good condition with annuals but tracks present, NTY scat in burrow, and end visible.	601121	3982987	X						
Burrow	36cm wide, >2m deep, active condition with tracks present, and end not visible.	601181	3982411		X					
Burrow	35cm wide, 1-1.5m deep, fair condition with annuals present, NTY scat, and end not visible.	601429	3982334		X					
Burrow	18cm wide, 1-1.5m deep, active condition, and end visible.	601579	3983041		X					

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	32cm wide, >2m deep, good condition, NTY scat inside and outside burrow, and end not visible.	601731	3982494	X						
Burrow	19cm wide, .5-1m deep, fair condition with annuals present and debris in burrow, and end not visible.	601737	3982666	X						
Burrow	13cm wide, 0-.5m deep, good condition, and end not visible.	601738	3982699	X						
Burrow	16cm, 0-.5m deep, poor condition, partially collapsed in front, and end visible.	601757	3982708		X					
Burrow	26cm wide, 1-1.5m deep, active condition with male tortoise resting on mound of burrow. TY scat present and end not visible.	601788	3982307		X					
Burrow	19cm wide, 0-.5m deep, fair condition with annuals present, and end visible.	601888	3982688		X					
Burrow	31cm wide, .5-1m deep, fair condition, and end visible.	601934	3982297		X					
Burrow	16cm, 1-1.5m deep, active condition with tracks present, and end visible.	601940	3982586		X					
Burrow	37cm wide, .5-1m deep, fair condition with annuals present, and end visible. Next to another tortoise burrow.	602057	3982500		X					
Burrow	14cm wide, 0-.5m deep, poor condition, end visible, and next to another tortoise burrow.	602057	3982500	X						
Burrow	28cm wide, 1-1.5m deep, fair condition with debris in burrow, and end not visible.	602113	3982535		X					
Burrow	28cm wide, >2m deep, fair condition with annuals present, NTY scat, and end not visible.	602181	3982370		X					
Burrow	Good condition. Not recently used. Old scat (6+ pieces), NTY. Partially buried in dried soil.	556358	3987323						X	
Burrow	21cm wide, 1-1.5m deep, fair condition, 1 piece of TY scat in burrow, and end not visible.	596944	3984021			X				
Burrow	27cm wide, 0-.5m deep, good condition, and end visible.	599838	3984759			X				
Burrow	29cm wide, 0-.5m deep, good condition, and end visible.	599800	3984791			X				
Burrow	33m wide, 1-1.5m deep, fair condition with annuals, and end visible.	599612	3984953			X				
Burrow	32cm wide, 1.5-2m deep, active condition, tracks present, +2 pieces of NTY scat in burrow, and end not visible.	601652	3983071			X				
Burrow	31cm wide, >2m deep, good condition, +2pieces of NTY scat in burrow, and end not visible.	601711	3983011			X				
Burrow	26cm wide, 0-.5m deep, good condition, and end visible.	600682	3984236				X			
Burrow	20cm wide, 0-.5m deep, active condition, tracks present, and end visible.	600051	3984827				X			

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrow	28cm wide, 1-1.5m deep, active condition, tortoise in tunnel face out, and end not visible.	600938	3984267					X		
Burrow	24cm wide, 0-.5m deep, fair condition with annuals, front of burrow partially collapsed, and end visible.	600996	3984229					X		
Burrow	19cm wide, 0-.5m deep, poor condition with annuals, front of burrow partially collapsed, and end visible.	601488	3983736					X		
Burrow	20cm wide, 0-.5m deep, fair condition with annuals present, debris in burrow, and end visible.	595965	3987798							X
Burrow	20cm wide, .5-1m deep, fair condition with annuals, debris in burrow, and end not visible.	596102	3987795							X
Burrow	31cm wide, >2m deep, good condition, +2pieces of NTY scat in burrow, and end not visible.	596526	3987794							X
Burrow	19cm wide, .5-1m deep, active condition, tracks present, and end not visible.	596601	3987798							X
Burrow	34cm wide, 1-1.5m deep, good condition, +4 pieces of TY and NTY scat inside and outside burrow, and end not visible.	597580	3987788							X
Burrow	30cm wide, 1-1.5m deep, good condition, caliche burrow, 3 pieces of NTY scat in burrow, +5 pieces of NTY scat outside burrow, debris in burrow, and end not visible.	601562	3985045							X
Burrow	40cm wide, 1-1.5m deep, good condition, caliche burrow, debris in burrow, 2 pieces of TY and NTY scat, end not visible.	601564	3985045							X
Burrow	14cm wide, .5-1m deep, good condition, and end not visible.	601871	3984757							X
Burrow	33cm wide, .5-1m deep, fair condition with annuals, +2pieces of scat in burrow, and end visible.	602246	3984424							X
Carcass	> 2 years old. ~110mcl. Unknown cause of death possibly crushed; long fractures across carapace and plastron	601539	3982832	X						
Scat		598922	3983187	X						
Scat	1 piece of this year's.	599210	3984228	X						
Scat	2 pieces of this year's scat.	599312	3984246	X						
Scat	This year's.	599440	3984041	X						
Scat	2 pieces of this year's scat.	599479	3984218	X						
Scat	This year's.	599647	3984032	X						
Scat	Tortoise scat, NTY	599670	3984639	X						
Scat	This year's.	599692	3984023	X						
Scat	1 piece of not this year's scat.	599694	3984221	X						
Scat	This year's.	599795	3984282	X						
Scat	Not this year's.	600768	3983492	X						

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Scat	This year's.	601164	3982529	X						
Scat	This year's.	601518	3983043		X					
Scat	1 piece of this year's scat.	600328	3984834					X		
Scat	2 pieces of not this year scat.	597110	3987391						X	
Scat	1piece of this year's scat.	596048	3987795							X
Scat	1 piece of this year's scat found next (1m) to a smaller piece of scat.	596170	3987787							X
Scat	1 piece of this year's scat found next (1m) to a larger piece of scat.	596170	3987787							X
Tortoise	Female basking next to LARTRI	599641	3983970	X						
Tortoise	Immature tortoise in burrow resting. Burrow width 16cm.	599653	3984818		X					
Tortoise	Juvenile tortoise in open walking.	599795	3984557		X					
Tortoise	Male tortoise found resting next to a *Larrea tridentata*. Followed tracks outside project boundary and found tortoise. Close to ZOI transect.	599854	3984829			X				
Tortoise	Male tortoise resting in open.	600314	3981313		X					
Tortoise	Tortoise resting under cover of LARTRI.	600349	3981341		X					
Tortoise	Male resting in open.	601454	3982425	X						
Tortoise	Female tortoise walking in open	601545	3983074		X					
Tortoise	Male tortoise resting on mound of burrow.	601788	3982307		X					
Tortoise	Male tortoise walking/eating, walked under shade of shrub(Lycium cooperi)	595970	3987334							X
Tortoise	Immature tortoise walking in open.	600030	3984830				X			
Tortoise	Adult tortoise in burrow tunnel facing out.	600938	3984267					X		
Tortoise	Adult tortoise under cover of shrub (LARTRI) with another adult tortoise. The other tortoise is a male and was pushing this tortoise.	597125	3987381						X	
Tortoise	Male tortoise under cover of a shrub (LARTRI) with another tortoise. This tortoise was pushing the other tortoise.	597125	3987381						X	
Tortoise	Male tortoise resting under cover of LARTRI.	603615	3981879							X
Tortoise tracks	Tracks from smaller tortoise, possible immature.	599890	3984456		X					
Tortoise tracks	Adult tortoise tracks.	599557	3984682	X						
Tortoise tracks	Adult tortoise tracks.	599722	3984739		X					
Tortoise tracks	Adult tortoise tracks.	599774	3984724		X					

Table 1.Desert Tortoise and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Tortoise tracks	Tortoise tracks	599864	3984578		X					
Tortoise tracks		599909	3984299	X						
Tortoise tracks	Not this years.	600812	3983224	X						
Tortoise tracks		600813	3983143	X						
Tortoise tracks		601518	3983043	X						

(Datum NAD 83 CONUS)

Table 2. Sensitive Species and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Badger burrow	Steep burrow in good condition. .5-1m deep.	597520	3985625	X						
Badger burrow	Steep burrow in poor condition. Many annuals present. .5-1m deep.	598559	3985399	X						
Badger burrow	Steep burrow in fair condition. However, it may have been used this year. 1-1.5m deep.	598084	3985389	X						
Badger burrow	Fair condition.	598868	3983304	X						
Badger burrow	Good condition.	598425	3983549	X						
Badger burrow	Good condition.	598903	3983610	X						
Badger burrow	Good condition.	597550	3983596	X						
Badger burrow	Good condition.	597719	3983667	X						
Badger burrow	Fair condition.	599128	3983641	X						
Badger burrow	Fair condition.	598157	3983808	X						
Badger burrow	Fair condition.	597549	3984201	X						
Badger burrow	Fair condition, not used this year.	596968	3986134					X		
Burrowing owl white wash	White wash found outside a single canid burrow. Burrow is in fair condition. Length of burrow 1-1.5m.	597953	3985617	X						

Table 2. Sensitive Species and Sign Locations

Type of Sign	Description and Comments	Easting	Northing	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Burrowing owl white wash and pellets.	White wash found outside single canid burrow. 2 pellets found in burrow. Burrow is in fair condition with annuals present on runway. Burrow 1-1.5m deep. Can't see back of burrow.	598330	3985780	X						
Burrowing owl white wash and pellets.	White wash found outside a single canid burrow. One pellet inside the burrow and one pellet outside burrow. Burrow is in fair condition with annuals on runway. Burrow .5-1m deep.	598292	3985200	X						
Burrowing owl white wash and pellets.	Pellets and white wash at canid complex. Pellet old and falling apart.	600094	3983375	X						
Burrowing owl white wash and pellets.	Pellets and white wash at tortoise burrow.	601181	3982411	X						
Burrowing owl white wash and pellets.	Pellets and white wash at a single canid burrow.	597514	3984200	X						
Burrowing owl white wash, pellets, and feathers.	White wash found outside a single canid burrow. 2+ pellet inside the burrow and one pellet outside burrow. Feathers found in burrow. Burrow is in fair condition with annuals in runway. Burrow 1-1.5m deep.	598101	3985729	X						
Burrowing owl white wash, pellets, and feathers.	Single Canid burrow with white wash, pellets, and feathers.	597554	3982741	X						
Burrowing owl white wash.	White wash found outside a single canid burrow. Burrow is in fair condition with annuals present on runway. Length of burrow 5.-1m	598153	3985791	X						
Burrowing Owl whitewash	Whitewash found outside of badger burrow.	596968	3986134					X		

(Datum NAD 83 CONUS)

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main SITE**	**Zone-Of-Influence 200**	**400**	**600**	**1200**	**1600**
APIACEAE								
Lomatium mohavense	Mojave Desert Parsley	Incidental	X					
ASCLEPIADACEAE								
Asclepias speciosa	Showy Milkweed	Only along roads	X	X	X	X	X	X
ASTERACEAE								
Acamptopappus sphaerocephalus	Rayless Goldenhead	Incidental	X					
Acamptopappus shockleyi	Shockley's Goldenhead	Common	X	X	X	X	X	X
Agoseris glauca	Pale Agoseris	Occasional	X					
Ambrosia dumosa	Burro-Weed	Common	X	X	X	X	X	X
Baccharis sergiloides	Desert Baccharis						X	
Baileya multiradiata	Desert Marigold	Common	X					
Baileya pleniradiata	Woolly Desert Marigold	Common	X	X	X	X	X	X
Chaenactis carphoclinia	Pebble Pincushion	Common	X	X	X	X	X	X
Chaenactis fremontii	Desert Pincushion	Occasional	X					
Chaenactis macrantha	Bighead Dustymaiden	Common	X	X	X	X	X	X
Chaenactis stevioides	Esteve's Pincushion	Common	X					
Ericameria nauseosa var. hololeucus	Rabbitbrush	Incidental	X					
Encelia virginensis	Virgin River Brittlebush	Common	X	X	X	X	X	X
Glyptopleura marginata	Carveseed	Common	X					
Gutierrezia microcephala	Sticky Snakeweed	Common	X			X	X	X
Hymenoclea salsola	Cheese Bush	Common	X		X	X		
Isocoma acradenia var. acradenia	Alkali Goldenbush	Rare	X					
Lygodesmia spinosa	Spiny Skeletonweed	Common	X	X	X	X	X	X
Malacothrix coulteri	Snake's Head	Occasional	X					
Malacothrix glabrata	Smooth Desert Dandelion	Occasional	X					
Prenanthella exigua	Brightwhite	Occasional	X	X	X	X	X	X
Psathyrotes ramosissima	Velvet Turtleback	Common	X		X	X	X	X
Psilostrophe cooperi	Paperflower	Common	X					
Rafinesquia neomexicana	Desert Chicory	Common	X		X	X		X
Stephanomeria exigua	Small Wirelettuce	Common	X					
Stephanomeria pauciflora	Brownplume Wirelettuce	Common	X					

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main**	**Zone-Of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
Xylorhiza tortifolia	Mojave Woodyaster	Occasional	X	X	X	X	X	X
BORAGINACEAE								
Amsinckia tessellata var. tessellata	Fiddleneck	Occasional	X					
Cryptantha angustifolia	Panamint Catseye	Common	X	X	X	X	X	X
Cryptantha circumscissa	Cushion Cryptantha	Common	X	X	X	X	X	X
Cryptantha micrantha	Purpleroot Cryptantha	Common	X					
Cryptantha nevadensis	Nevada Catseye	Common	X	X	X	X	X	X
Cryptantha pterocarya	Wingnut Cryptantha	Common	X					
Cryptantha sp. (perennial)	Cryptantha	Potential rare plant, mature nutlets needed for identification.	X	X	X	X		X
Lappula redowskii var. cupulata	Western Stickseed	Common	X	X	X	X	X	X
Pectocarya heterocarpa	Chuckwalla Combseed	Common	X					
Pectocarya platycarpa	Broadfruit Combseed	Common	X					
BRASSICACEAE								
Chorispora tenella	Purple Mustard		X					
Descurainia sophia	Flixweed	Occasional	X					
Descurainia pinnata	Western Tansymustard	Common	X	X	X			
Guillenia lasiophylla	Slenderpod Jewelflower	Occasional	X					
Lepidium fremontii	Desert Alyssum	Common	X	X	X	X	X	X
Lepidium lasiocarpum	Shaggyfruit Pepperweed	Common	X	X	X	X	X	X
Malcolmia africana	African Mustard	Common	X	X	X	X	X	X
Sisymbrium altissimum	Tall Tumblemustard	Occasional	X					
Sisymbrium irio	London Rocket	Common	X	X				
Stanleya pinnata	Prince's Plume	Common	X	X	X	X	X	X
CACTACEAE								
Opuntia basilaris	Beavertail	Occasional	X	X	X	X	X	X
Opuntia echinocarpa	Silver Cholla	Occasional	X	X	X	X	X	X
CHENOPODIACEAE								
Atriplex canescens	Fourwing Saltbush			X	X	X	X	X
Atriplex confertifolia	Shadscale Saltbush	Common	X	X	X	X	X	X

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main SITE**	**Zone-Of-Influence 200**	**400**	**600**	**1200**	**1600**
Atriplex polycarpa	Cattle Spinach, Alkali Saltbush	Common	X	X	X	X	X	X
Grayia spinosa	Spiny Hop Sage	Common	X					
Halogeton glomeratus	Saltlover	Common	X	X	X	X	X	X
Krascheninnikovia lanata	Winter Fat	Common	X	X	X	X	X	X
Salsola tragus	Prickly Russian Thistle	Common	X	X	X	X	X	X
Suaeda moquinii	Mojave Seablite	Incidental	X					
CUPRESSACEAE								
Juniperus osteosperma	Utah Juniper	Incidental	X					
CUSCUTACEAE								
Cuscuta sp.	Dodder	Incidental	X			X		
EPHEDRACEAE								
Ephedra funerea	Death Valley Jointfir	Common	X	X	X	X	X	X
Ephedra nevadensis	Nevada Ephedra			X	X	X	X	X
EUPHORBIACEAE								
Chamaesyce albomarginata	Rattlesnake Weed	Common	X	X	X	X	X	X
FABACEAE								
Astragalus geyeri var. geyeri	Geyer's Milkvetch	Rare	X					
Astragalus layneae	Widow's Milkvetch	Occasional	X	X	X	X	X	X
Astragalus lentiginosus var. fremontii	Spotted Locoweed	Common	X					
Astragalus nuttallianus var. imperfectus	Turkeypeas	Common	X					
Astragalus preussii var. preussii	Preuss' Milkvetch	Rare	X		X			
Hoffmannseggia glauca	Indian Rushpea	Common	X	X	X	X	X	X
Prosopis glandulosa	Honey Mesquite	Common	X	X	X	X	X	X
Psorothamnus fremontii	Indigo Bush	Occasional	X	X	X	X	X	X
Senna armata	Desert Senna	Occasional	X			X	X	X
GERANIACEAE								
Erodium cicutarium	Redstem Filaree	Common	X	X	X	X	X	X
HYDROPHYLLACEAE								
Nama demissum	Purplemat	Occasional	X	X	X	X	X	X
Phacelia crenulata var. ambigua	Purplestem Phacelia	Occasional	X	X	X	X	X	X

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main**	**Zone-Of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
Phacelia fremontii	Fremont's Phacelia	Occasional	X	X	X	X		
Phacelia ivesiana	Ives' Phacelia	Incidental	X					
Phacelia neglecta	Alkali Phacelia				X			
Phacelia pachyphylla	Blacktack Phacelia	Common	X					
KRAMERIACEAE								
Krameria erecta	Purple Heather	Common	X	X	X	X	X	X
LILIACEAE								
Androstephium breviflorum	Pink Funnel Lily	rare	X					X
LOASACEAE								
Mentzelia obscura	Pacific Blazing Star	Common	X					
Mentzelia oreophila	Blazing Star	Rare					X	
MALVACEAE								
Eremalche rotundifolia	Desert Five Spot	Incidental		X	X	X	X	X
Sphaeralcea ambigua	Globe Mallow	Common	X	X	X	X	X	X
NYCTAGINACEAE								
Selinocarpus nevadensis	Desert Moonpod	Rare						X
Oleaceae								
Menodora spinescens	Spiny Menodora	Common	X	X	X	X	X	X
ONAGRACEAE								
Camissonia boothii	Booth's Evening Primrose	Common	X	X	X			
Camissonia brevipes	Yellow Cups	Common	X	X	X	X	X	X
Gaura coccinea	Scarlet Beeblossom			X	X	X	X	X
Oenothera primiveris ssp. bufonis	Desert Evening Primrose	Occasional	X	X	X	X	X	X
PAPAVERACEAE								
Eschscholzia californica	California Poppy	Common	X					
PLANTAGINACEAE								
Plantago ovata	Desert Indianwheat	Common	X		X	X		X
POACEAE								
Achnatherum hymenoides	Indian Ricegrass	Common	X	X	X	X	X	X
Achnatherum speciosum	Desert Needlegrass	Occasional	X					
Bothriochloa barbinodis	Cane Bluestem			X	X	X	X	X

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main**	**Zone-Of-Influence**				
			SITE	**200**	**400**	**600**	**1200**	**1600**
Bromus madritensis ssp. rubens	Compact Brome	Common	X		X	X	X	X
Pleuraphis rigida	Big Galleta	Common	X	X	X	X	X	X
Hordeum murinum	Mouse Barley	Occasional	X					
Schismus arabicus	Arabian Schismus	Common	X	X	X	X	X	X
Sporobolus cryptandrus	Sand Dropseed	Occasional	X					
Vulpia octoflora	Sixweeks Fescue	Occasional	X					
POLYGONACEAE								
Chorizanthe brevicornu	Brittle Spineflower	Occasional	X					
Chorizanthe rigida	Devil's Spineflower	Occasional	X	X	X	X	X	X
Eriogonum bifurcatum	Pahrump Valley Buckwheat	Common (Rare plant)	X	X				
Eriogonum deflexum	Flatcrown Buckwheat	Occasional	X		X			
Eriogonum inflatum	Desert Trumpet	Occasional	X					
Eriogonum trichopes	Little Desert Trumpet	Common	X	X	X	X	X	X
POLEMONIACEAE								
Gilia brecciarum	Nevada Gilia	Occasional	X					
Gilia cana ssp. speciformis	Showy Gilia	Common	X	X	X	X	X	X
Gilia hutchinsifolia	Desert Pale Gilia	Common	X	X	X	X		X
Ipomopsis polycladon	Manybranched Ipomopsis	Common on desert pavement	X					
Langloisia setosissima ssp. setosissima	Bristly Langloisia	Common	X	X	X	X	X	X
RANUNCULACEAE								
Delphinium parishii	Parish's Larkspur	Occasional	X					
ROSACEAE								
Coleogyne ramosissima	Blackbrush	Incidental	X					
SCROPHULARIACEAE								
Castilleja angustifolia	Indian Paintbrush	Occasional	X					
SOLANACEAE								
Lycium andersonii	Anderson Thornbush	Common	X	X	X	X	X	X
Lycium cooperi	Peach Thorn	Common	X	X	X	X	X	X
TAMARICACEAE								
Tamarix ramosissima	Salt Cedar	Incidental	X					

Table 3. Plant Species List

FAMILY *Genus Species*	**Common Name**	**Notes**	**Main SITE**	**Zone-Of-Influence 200**	**400**	**600**	**1200**	**1600**
VISCACEAE								
Phoradendron californicum	Desert Mistletoe	Common	X	X	X	X	X	X
ZYGOPHYLLACEAE								
Larrea tridentata	Creosote	Common	X	X	X	X	X	X

Table 4. Mammal Species List

Latin Name	**Common Name**	**Notes**	**Main Site**	**150m Buffer**	**200m ZOI**	**400m ZOI**	**600m ZOI**	**1200 m ZOI**	**1600 m ZOI**
Lepus californicus	Black-tailed jackrabbit		X	X	X	X	X	X	X
Ammospermophilus leucurus	White-tailed Antelope Squirrel		X					X	
Taxidea taxus	American badger	CDFG-SSC, sign	X				X		
Canis latrans	Coyote	sign	X						
Vulpes macrotis	Kit fox	sign	X						

Table 5. Reptile Species List

Scientific Name	**Common Name**	**Notes**	**Main Site**	**150m Buffer**	**200m ZOI**	**400m ZOI**	**600m ZOI**	**1200m ZOI**	**1600m ZOI**
Gopherus agassizii	Desert tortoise	USFWS/CDFG threatened	X						
Phrynosoma platyrhinos	Desert horned lizard		X						
Callisaurus draconoides	Zebra-tail lizard		X				X	X	
Aspidoscelis tigris	Western whiptail		X		X	X	X	X	X
Uta stansburiana	Side-blotched lizard		X		X	X	X	X	X
Gambelia wislizenii	Long-nosed leopard lizard		X						
Dipsosaurus dorsalis	Desert Iguana		X						
Pituophis catenifer	Gopher snake		X						
Masticophis flagellum	Coach whip		X						
Crotalus cerastes	Sidewinder		X		X		X		
Crotalus scutulatus	Mojave Green		X						
Arizona elegans	Glossy snake		X						

Table 6. Bird Species List

Scientific Name	Common Name	Notes	Main Site	150m Buffer	200m ZOI	400m ZOI	600m ZOI	1200m ZOI	1600m ZOI
Circus cyaneus	Northern Harrier	CDFG-SSC	X						
Aquila chrysaetos	Golden Eagle	USFWS-BCC	X						
Zenaida macroura	Mourning Doves		X				X	X	
Athene cunicularia	Burrowing owl	CDFG-SSC,USFWS-BCC	X						
Phalaenoptilus nuttallii	Common poorwill		X						
Calypte costae	Costa's Hummingbird								X
Tyrannus verticalis	Western Kingbird		X						
Lanius ludovicianus	Loggerhead shrike	CDFG-SSC	X						X
Corvus brachyrhynchos	American Crow		X						
Corvus corax	Common raven		X		X	X	X	X	X
Eremophila alpestris	Horned lark		X		X	X	X	X	X
Progne subis	Purple Martin	CDFG-SSC	X						
Hirundo rustica	Barn Swallow								X
Salpinctes obsoletus	Rock Wren							X	X
Mimus polyglottos	Northern Mockingbird		X						
Toxostoma lecontei	LeConte’s thrasher	USFWS-BCC	X						
Phainopepla nitens	Phainopepla		X				X		
Spizella breweri	Brewer's sparrow		X						
Amphispiza bilineata	Black-throated Sparrow		X		X	X	X	X	X
Zonotrichia leucophrys	White-crowned sparrow		X						

Figure 1. Hidden Hills Ranch Solar Energy Project proposed site location, Inyo County, California

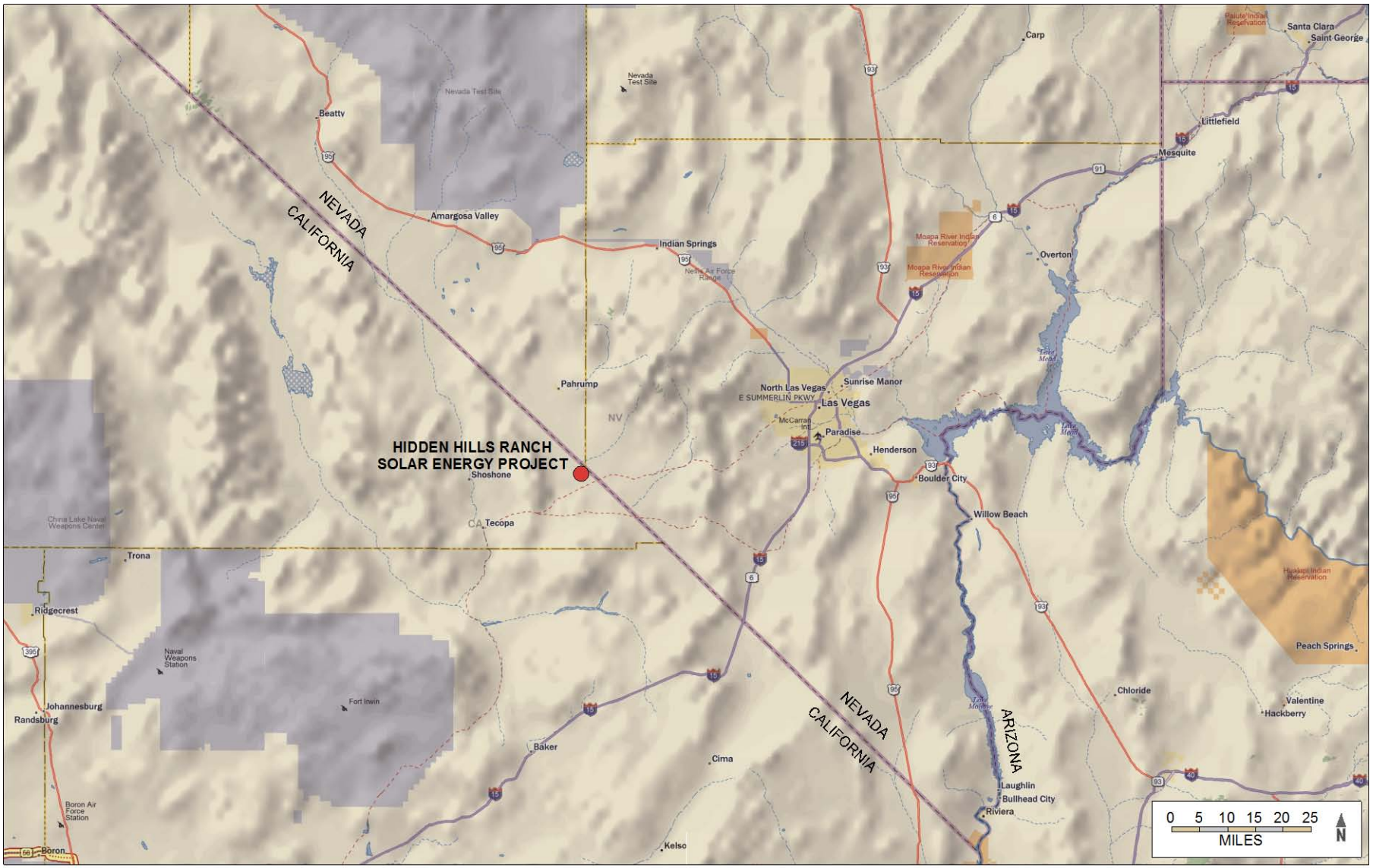

Figure 2. Hidden Hills Ranch Solar Energy Project Live Tortoise Sign, Inyo County, California

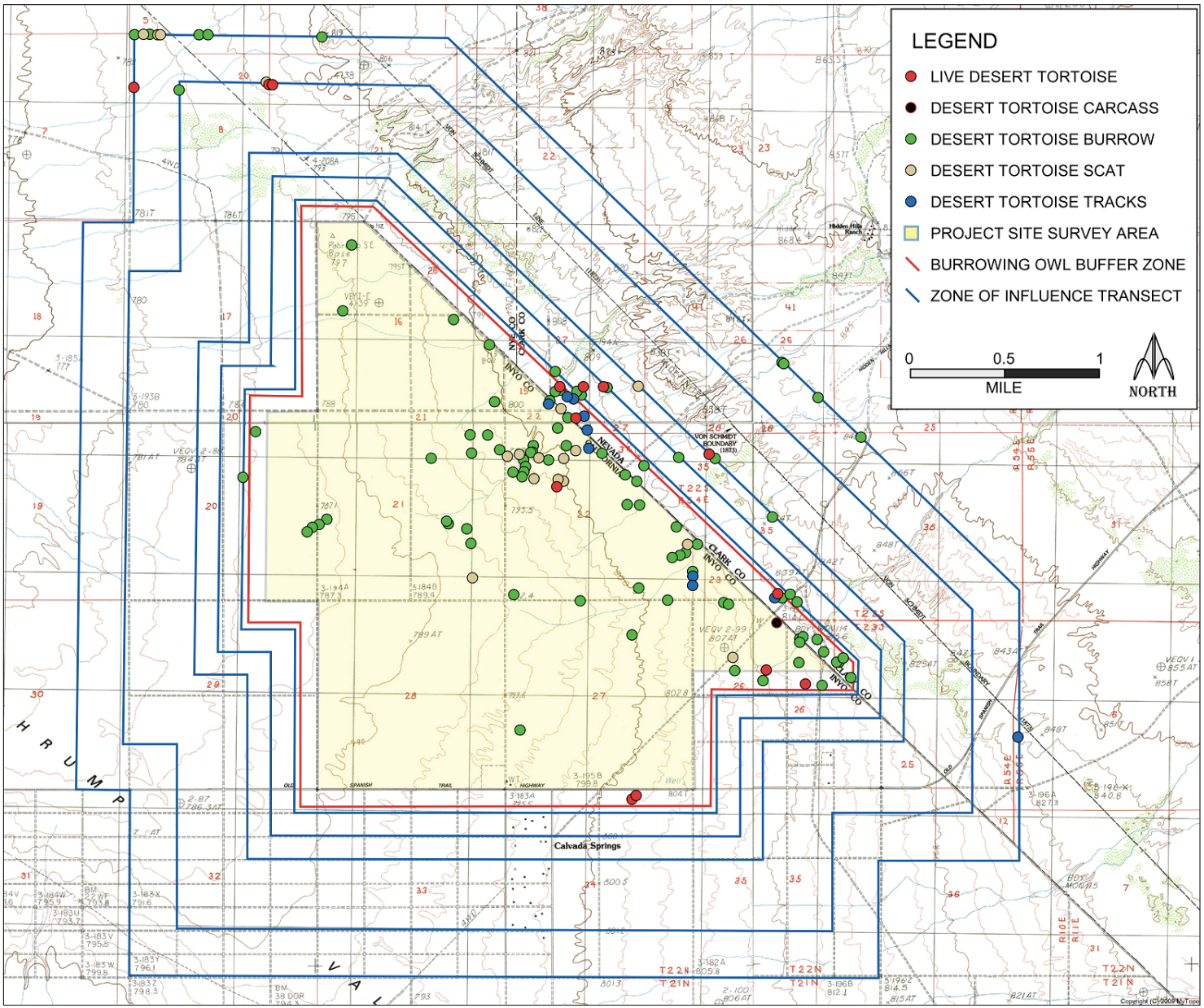

Figure 3. Hidden Hills Ranch Solar Energy Project Sensitive Species Sign Locations, Inyo County, California

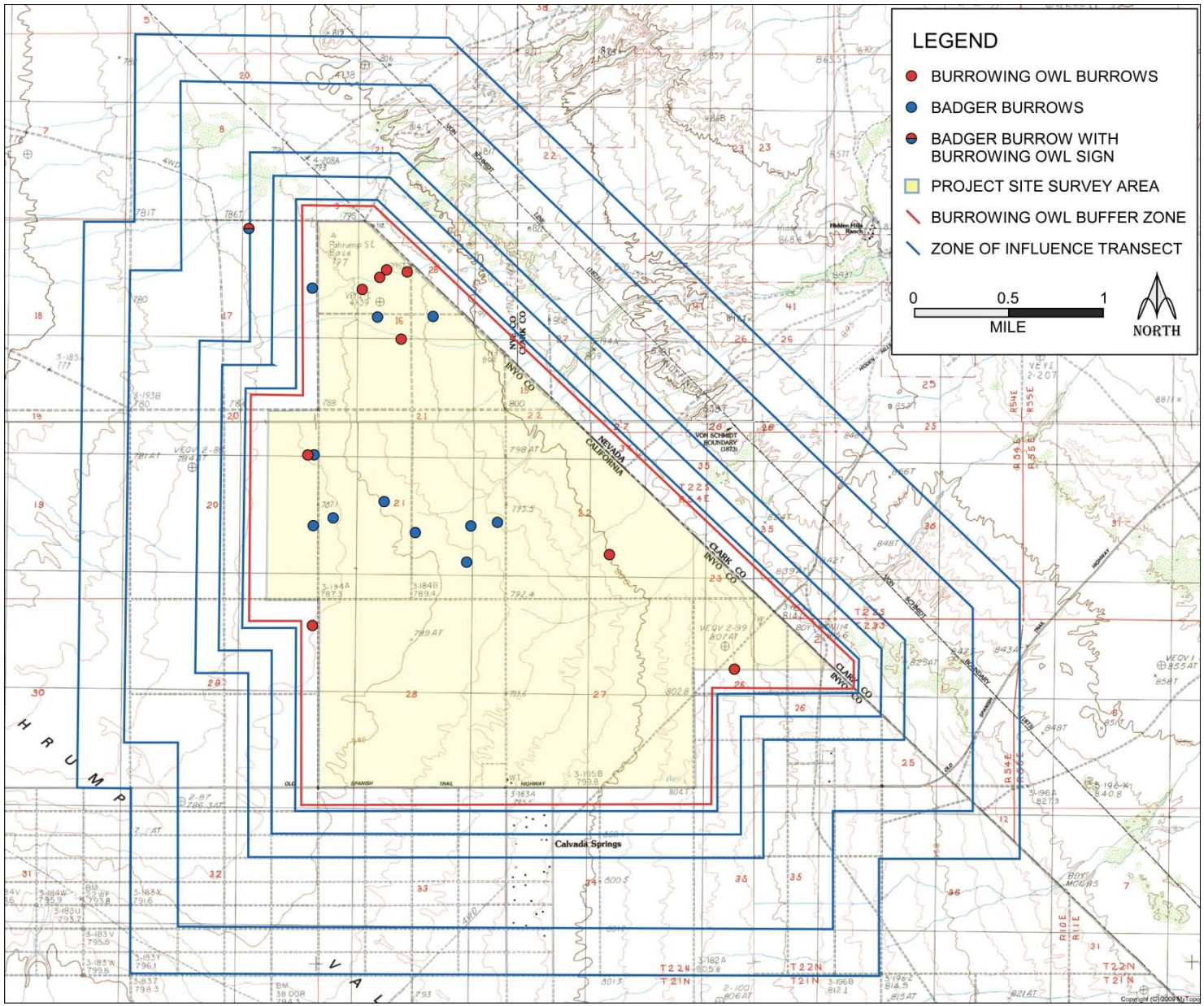

Figure 4. Habitat photos, Hidden Hills Ranch Solar Energy Project proposed site and zone-of-influence, Inyo County, California. (Datum NAD 83 CONUS)

MAIN SITE-ATRIPLEX, LYCIUM, BURROBUSH COMMUNITY
VIEW E UTM 597001E, 3983321N

MAIN SITE-CREOSOTE, ATRIPLEX, LYCIUM, AND BURROBUSH
VIEW E UTM 599108 E, 3983356 N

MAIN SITE-CREOSOTE BUSH SCRUB
VIEW W UTM 599193 E, 3984154 N

MAIN SITE-DESERT PAVEMENT
VIEW NE UTM 704028 E, 3769957 N

MAIN SITE-HEAVY GRAZING, DENUDED
VIEW E UTM 598550 E, 3984160 N

ZOI 600-STABILIZED DUNES
VIEW S UTM 602636 E, 3982681 N

ZOI 1600-INCISED WASH
VIEW S UTM 602859 E, 3983838 N

ZOI 600-STEEP TERRAIN
VIEW S UTM 602409 E, 3982894 N

Figure 5. Desert tortoise and sign photos, Hidden Hills Ranch Solar Energy Project proposed site, Inyo County, California. (Datum NAD 83 CONUS)

ADULT DESERT TORTOISE

IMMATURE DESERT TORTOISE

DESERT TORTOISE BURROW

DESERT TORTOISE BURROW

Figure 6. Sensitive species photos, Hidden Hills Ranch Solar Energy Project proposed site, Inyo County, California.

BURROWING OWL BURROW WITH WHITE WASH AND PELLETS

BADGER BURROWS

Figure 7. Desert Tortoise Abundance/Density Estimates from Table 3 of USFWS Desert Tortoise Pre-project Survey Protocol, 2010

What is the estimated number of tortoises and associated 95% confidence interval for the action area?

HIDDEN HILLS RANCH

INSTRUCTIONS ***Use this tab when your transects were of unequal length.***

Enter the appropriate values from the survey into the yellow cells below. The number of tortoises and assocated 95% confidence interval for the action area will be calculated.

N =	**13.8**	0.9 per km^2
Lower 95%CI =	**5.75**	0.4 per km^2
Upper 95%CI =	**33.02**	2.1 per km^2
Total action area (acres)	**3932**	15.9 km^2
Prob that a tort is above ground given winter rainfall (Pa from Table 2) =	**0.800**	
Total length of transects walked (km) =	**1604**	
Number of transects walked =	**514**	
Number of tortoises found during surveys (n) =	**8**	

Transects of various lengths

Transect	Length (km)	Tortoises within 5m of centerline
1	0.61	
2	0.62	
3	0.64	
4	0.65	
5	0.66	
6	0.67	
7	0.68	
8	0.69	
9	0.70	
10	0.71	
11	0.72	
12	0.73	
13	0.75	
14	0.76	
15	0.77	
16	0.78	
17	0.79	
18	0.80	
19	0.81	
20	0.82	
21	0.83	
22	0.84	

23	0.86		
24	0.87		
25	0.88		
26	0.89		
27	0.90		
28	0.91		
29	0.92		
30	0.93		
31	0.94		
32	0.95		
33	0.97		
34	0.98		
35	0.99		
36	1.00		
37	1.01		
38	1.02		
39	1.03		
40	1.04		
41	1.05		
42	1.06		
43	1.07		
44	1.09		
45	1.10		
46	1.11		
47	1.12		
48	1.13		
49	1.14		
50	1.15		
51	1.16		
52	1.17		
53	1.18		
54	1.20		
55	1.21		
56	1.22		
57	1.23		
58	1.24		
59	1.25		
60	1.26		
61	1.27		
62	1.28		
63	1.29		
64	1.31		
65	1.32		
66	1.33		
67	1.34		
68	1.35		
69	1.36		
70	1.37		

71	1.38		
72	1.39		
73	1.40		
74	1.42		
75	1.43		
76	1.44		
77	1.45		
78	1.46		
79	1.47		
80	1.48		
81	1.49		
82	1.50		
83	1.51		
84	1.53		
85	1.54		
86	1.55		
87	1.56		
88	1.57		
89	1.58		
90	1.59		
91	1.60		
92	1.61		
93	1.62		
94	1.64		
95	1.65		
96	1.66		
97	1.67		
98	1.68		
99	1.69		
100	1.70		
101	1.71		
102	1.72		
103	1.73		
104	1.75		
105	1.76		
106	1.77		
107	1.78		
108	1.79		
109	1.80		
110	1.81		
111	1.82		
112	1.83		
113	1.84		
114	1.86		
115	1.87		
116	1.88		
117	1.89		
118	1.90		

119	1.91		
120	1.92		
121	1.93		
122	1.94		
123	1.95		
124	1.96		
125	1.98		
126	1.99		
127	2.00		
128	2.01		
129	2.02		
130	2.03		
131	2.04		
132	2.05		
133	2.06		
134	2.07		
135	2.09		
136	2.10		
137	2.11		
138	2.12		
139	2.13		
140	2.14		
141	2.15		
142	2.16		
143	2.17		
144	2.18		
145	2.20		
146	2.21		
147	2.22		
148	2.23		
149	2.24		
150	2.25		
151	2.26		
152	2.27		
153	2.28	1.00	
154	2.29		
155	2.31		
156	2.32		
157	2.33		
158	2.34		
159	2.35		
160	2.36		
161	2.37		
162	2.38		
163	2.79		
164	2.80		
165	2.81		
166	2.82		

167	2.83		
168	2.84		
169	2.85		
170	2.86		
171	2.87		
172	2.88		
173	2.89		
174	2.91		
175	2.92		
176	2.93		
177	2.94		
178	2.95		
179	2.96	1.00	
180	2.97		
181	2.98		
182	2.99		
183	3.00		
184	3.01		
185	3.02		
186	3.04		
187	3.05		
188	3.06		
189	3.07		
190	3.08		
191	3.09		
192	3.10		
193	3.11		
194	3.12		
195	3.13		
196	3.14		
197	3.15		
198	3.17		
199	3.18		
200	3.19		
201	3.20		
202	3.21		
203	3.22		
204	3.23		
205	3.24		
206	3.25		
207	3.26		
208	3.27		
209	3.28		
210	3.30		
211	3.31		
212	3.32		
213	3.33		
214	3.34		

215	3.35		
216	3.36		
217	3.37		
218	3.38		
219	3.39		
220	3.40		
221	3.42		
222	3.43		
223	3.44		
224	3.45		
225	3.46		
226	3.47		
227	3.48		
228	3.49		
229	3.50		
230	3.51		
231	3.52		
232	3.53		
233	3.55		
234	3.56		
235	3.57		
236	3.58		
237	3.59		
238	3.60	1.00	
239	3.61		
240	3.62		
241	3.63		
242	3.64		
243	3.65		
244	3.66		
245	3.68		
246	3.69		
247	3.70		
248	3.71		
249	3.72		
250	3.73		
251	3.74		
252	3.75		
253	3.76		
254	3.77		
255	3.78		
256	3.79		
257	3.81		
258	3.82		
259	3.83		
260	3.84		
261	3.85		
262	3.86		

263	3.87	
264	3.88	
265	3.89	
266	3.90	
267	3.91	
268	3.93	
269	3.94	
270	3.95	
271	3.96	
272	3.97	
273	3.98	
274	3.99	
275	4.00	
276	4.01	
277	4.02	
278	4.03	
279	4.04	
280	4.06	
281	4.07	
282	4.08	
283	4.09	
284	4.10	
285	4.11	
286	4.12	
287	4.13	
288	4.14	
289	4.15	
290	4.16	
291	4.17	
292	4.19	
293	4.20	
294	4.21	
295	4.22	
296	4.23	
297	4.24	
298	4.25	
299	4.26	
300	4.27	
301	4.28	
302	4.29	
303	4.30	
304	4.32	
305	4.33	
306	4.34	
307	4.35	
308	4.36	
309	4.37	
310	4.38	

311	4.39		
312	4.40		
313	4.41		
314	4.42		
315	4.43		
316	4.45		
317	4.46		
318	4.47		
319	4.48		
320	4.49		
321	4.50		
322	4.51		
323	4.52		
324	4.53		
325	4.54		
326	4.55		
327	4.57		
328	4.58	1.00	
329	4.59		
330	4.60		
331	4.61		
332	4.62		
333	4.63		
334	4.64		
335	4.65		
336	4.66		
337	4.67		
338	4.68		
339	4.70		
340	4.71		
341	4.72		
342	4.73		
343	4.74		
344	4.75		
345	4.76		
346	4.77		
347	4.78		
348	4.79		
349	4.80		
350	4.81		
351	4.83		
352	4.84		
353	4.85		
354	4.86		
355	4.87		
356	4.88		
357	4.43		
358	4.45		

359	4.46		
360	4.47		
361	4.48		
362	4.49		
363	4.50		
364	4.51		
365	4.52		
366	4.53		
367	4.54		
368	4.55		
369	4.57		
370	4.58		
371	4.59		
372	4.60		
373	4.61		
374	4.62		
375	4.63		
376	4.64		
377	4.65		
378	4.66		
379	4.68		
380	4.69		
381	4.70		
382	4.71		
383	4.72		
384	4.73		
385	4.75		
386	4.75		
387	4.75		
388	4.75		
389	4.75		
390	4.75		
391	4.75		
392	4.75		
393	4.75	1.00	
394	4.75		
395	4.75		
396	4.75		
397	4.75		
398	4.75		
399	4.75		
400	4.75		
401	4.75		
402	4.75		
403	4.75		
404	4.75	1.00	
405	4.75		
406	4.75		

407	4.75	
408	4.75	
409	3.53	
410	3.53	
411	3.53	
412	3.53	
413	3.53	
414	3.53	
415	3.53	
416	3.53	
417	3.53	
418	3.53	
419	3.53	
420	3.53	
421	3.53	
422	3.53	
423	3.53	
424	3.53	
425	3.53	
426	3.53	
427	3.54	
428	3.54	
429	3.54	
430	3.54	
431	3.54	
432	3.54	
433	3.54	
434	3.54	
435	3.54	
436	3.54	
437	3.54	
438	3.54	
439	3.54	
440	3.54	
441	3.54	
442	3.54	
443	3.54	
444	3.54	
445	3.54	
446	3.54	
447	3.54	
448	3.54	
449	3.54	
450	3.54	
451	3.54	
452	3.54	
453	3.54	
454	3.54	

455	3.54		
456	3.54		
457	3.54		
458	3.54		
459	3.54		
460	3.54		
461	3.54		
462	3.54		
463	3.54		
464	3.54		
465	3.54		
466	3.54		
467	3.54		
468	3.54		
469	3.54		
470	3.55		
471	3.55		
472	3.55		
473	3.55		
474	3.55		
475	3.55		
476	3.55		
477	3.55		
478	3.55		
479	3.55		
480	3.55		
481	3.55		
482	3.55		
483	3.55		
484	3.55		
485	3.55		
486	3.55		
487	3.55		
488	3.55		
489	3.55		
490	3.55		
491	3.55		
492	3.55		
493	3.55		
494	3.55		
495	3.55		
496	3.55		
497	3.55		
498	3.55		
499	3.55		
500	3.55		
501	3.55	1.00	
502	3.55		

503	3.55		
504	3.55	1.00	
505	3.55		
506	3.55		
507	3.55		
508	3.55		
509	3.55		
510	3.55		
511	3.55		
512	3.56		
513	3.56		
514	3.56		