ATTACHMENT E: DESERT TORTOISE PRE-PROJECT SURVEY REPORT

Desert Tortoise Pre-Project Survey Report for the

Eldorado-Lugo-Mohave Series Capacitor Project

Prepared for:

Prepared by:





Revised April 2017

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1 – INTRODUCTION

Southern California Edison Company (SCE) is proposing to construct two new mid-line series capacitors and other improvements along the existing Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kilovolt (kV) Transmission Lines in San Bernardino County, California and Clark County, Nevada for the Eldorado-Lugo-Mohave Series Capacitor Project (Proposed Project¹). Insignia Environmental (Insignia) conducted Mojave desert tortoise (*Gopherus agassizii*) presence/absence surveys for the Proposed Project. This document provides an overview of the Proposed Project, describes the location and setting of the Proposed Project, outlines the methods used to conduct the field surveys, and provides details on all Mojave desert tortoise (desert tortoise) individuals and sign identified during the surveys. In addition, data were also collected on common raven (*Corvus corax*) roosts and nests, juvenile desert tortoise predation, and avian mortality. Surveys were conducted in accordance with the United States (U.S.) Fish and Wildlife Service's (USFWS's) survey guidelines (USFWS 2010)² to determine presence/absence of desert tortoises, estimate the number of tortoises (abundance), and assess the distribution of tortoises within Proposed Project in order to inform "take" avoidance and minimization measures.

The desert tortoise is a large herbivorous reptile that shelters in the ground in soil/rock burrows, caliche dens, and pallets. This species is very cryptic and typically active during spring/fall months or following rain events when annual plants are most abundant. Desert tortoises spend the rest of the year underground, escaping from the extreme weather conditions of the Mojave Desert. Populations of desert tortoise can be found in the Mojave Desert in California, Nevada, and southwestern Utah at elevations up to 5,500 feet. The dominant plant species in these areas are creosote (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), and cacti species (*Opuntia* sp.), saltbush (*Atriplex* sp.), and Joshua trees (*Yucca brevifolia*) are also present. In 1990, the desert tortoise was listed as a federally threatened species. It is also listed as threatened in California and as a threatened reptile in Nevada (USFWS 2009).

2 – PROJECT DESCRIPTION

2.0 PROJECT OVERVIEW

The Proposed Project is needed to safely deliver renewable generation to the Los Angeles Basin from the Eldorado and Mohave Substations. In addition, the Proposed Project will increase power flow between SCE's existing Eldorado, Lugo, and Mohave Substations.

The Proposed Project will include the following main components:

¹ The term "Proposed Project" is inclusive of all components of the Eldorado-Lugo-Mohave Series Capacitor Project. Where the discussion in this section focuses on a particular component, that component is called out by its individual work area (e.g., "Ludlow Series Capacitor").

² The surveys were conducted in accordance with modifications to the guidelines, which were approved by the USFWS. The modifications are described in Section 4.1 Survey Methodology.

- Construct two new 500 kV mid-line series capacitors (i.e., the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment
- Relocate, replace, or modify existing transmission, subtransmission, and distribution facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines to address 14 potential overhead clearance discrepancies³
- Perform minor grading at two discrepancy locations along the Lugo-Mohave 500 kV
 Transmission Line
- Install distribution facilities to provide station light and power to and connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites
- Install distribution facilities to provide station light and power to three proposed fiber optic repeater sites
- Install approximately 173 miles of optical ground wire (OPGW) on the Lugo-Mohave 500 kV Transmission Line, as well as approximately 59 miles of OPGW on the Eldorado-Mohave 500 kV Transmission Line
- Modify the ground-wire peak of existing suspension towers used as splice locations for the OPGW work; some of these towers would also require minor modifications to the steel in the tower body
- Install approximately 1 mile of overhead and underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system
- Install underground telecommunications facilities at three fiber optic repeater sites within the Lugo-Mohave 500 kV Transmission Line right-of-way (ROW)
- Install approximately 1,000 feet of underground telecommunications facilities within the existing Lugo, Mohave, and Eldorado Substations
- Install approximately 3 miles of underground telecommunications facilities in the vicinity of Mohave Substation
- Perform modifications within the existing Lugo Substation on the existing series capacitors and install new terminating equipment; remove two existing tubular steel poles

³ SCE has defined "discrepancies" as potential clearance problems between an energized conductor and its surroundings, such as the structure, another energized conductor on the same structure, a different line, or the ground. SCE has identified approximately 16 discrepancies along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines where minor grading or relocation, replacement, or modification of transmission, subtransmission, or distribution facilities are needed to address California Public Utilities Commission General Order 95 and National Electrical Safety Code overhead clearance requirements.

(TSPs) at the substation and install two new TSPs on the Eldorado and Mohave 500 kV Transmission Lines

- Perform modifications within the existing Eldorado Substation on the existing series capacitors and install new terminal equipment on the Lugo 500 kV Transmission Line
- Replace existing series capacitors on the Lugo 500 kV Transmission Line, and install new terminal equipment on the Eldorado and Lugo 500 kV Transmission Lines at the existing Mohave Substation

Construction is scheduled to begin in the third quarter of 2018 and is expected to take approximately 21 months to complete. SCE is required to comply with California Public Utilities Commission (CPUC) General Order 131-D and is seeking a Permit to Construct (PTC) from the CPUC for the Proposed Project. Federal authorizations will also be required because a majority of the Proposed Project is under the jurisdiction of the Bureau of Land Management (BLM), National Park Service, Bureau of Reclamation, and Department of Defense.

It is anticipated that the BLM will serve as the lead federal agency under the National Environmental Policy Act because the Proposed Project will require a new ROW Grant. If the BLM determines that the authorization for the construction and operation of the Proposed Project may affect wildlife species listed under the federal Endangered Species Act (FESA), the lead federal agency will be expected to engage in a Section 7 consultation with the USFWS regarding the effects to listed species. In addition to the PTC and the ROW Grant, SCE will obtain all required permits for the Proposed Project from federal, State, and local agencies prior to construction.

2.1 PROJECT LOCATION AND SETTING

The Proposed Project site is located in California and Nevada, within the Mojave Basin and Range. As shown in Figure 1: Proposed Project Overview Map, the Proposed Project site will extend northeast from Lugo Substation (located in San Bernardino County, California) to Mohave Substation (located in Clark County, Nevada), and northwest from Mohave Substation to Eldorado Substation (located in the City of Boulder City, Nevada).

Portions of the Proposed Project site will also cross the City of Hesperia and the community of Lucerne Valley in California, as well as the communities of Searchlight and Laughlin in Nevada. The majority of the Proposed Project will be constructed within existing SCE easements, feeowned property, and public franchise areas. SCE will need to acquire approximately 1.5 acres of additional ROW from the BLM to construct the proposed mid-line series capacitors.

The desert tortoise is known to occur throughout most of the undeveloped areas in the Proposed Project site. Figure 2: Desert Tortoise Critical Habitat shows areas of critical habitat that are located in the Proposed Project area.

2.2 BIOLOGICAL RESOURCE AREA

The Proposed Project occurs throughout the Western Mojave, Colorado Desert, and Eastern Mojave Desert Tortoise Recovery Units (USFWS 2011). The Biological Resource Survey Area

(BRSA) is defined as the potential Proposed Project sites and includes additional buffers around work areas to allow for flexibility and further engineering. The BRSA totals approximately 1,342 acres over approximately 240 linear miles of transmission ROW and includes approximately 500 separate potential work areas.

3 – REGULATORY FRAMEWORK

The following subsections provide a description of the regulatory framework protecting desert tortoises.

3.0 FEDERAL ENDANGERED SPECIES ACT

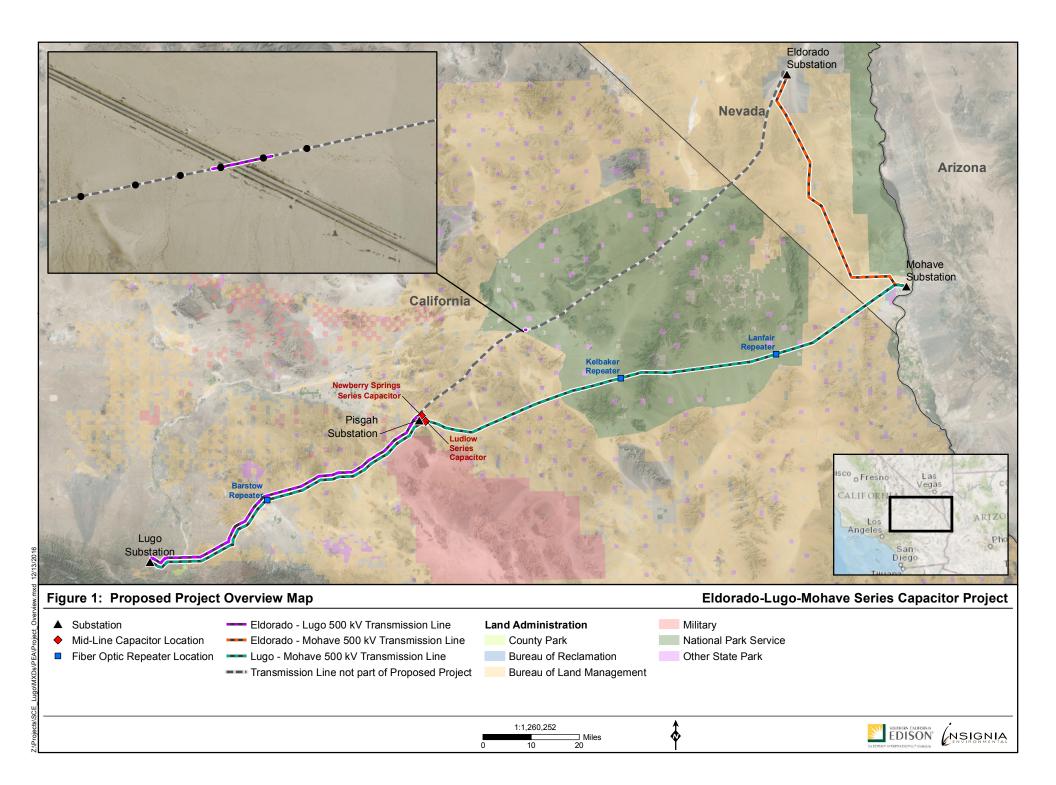
The desert tortoise is listed as a threatened species under the FESA and is protected from unauthorized "take" of that species when located on federal land or when a federal agency is consulting with the USFWS under Section 7 of the FESA on protected wildlife species. Take can also be issued under Section 10 of the FESA. The definition of "take" includes to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or attempt to engage in any such conduct" (16 U.S. Code § 1531). If it is necessary to take a federally listed endangered or threatened species as part of an otherwise lawful activity, it may be necessary to receive permission from the USFWS prior to initiating the take.

3.1 DESERT TORTOISE RECOVERY PLAN AND CRITICAL HABITAT DESIGNATION

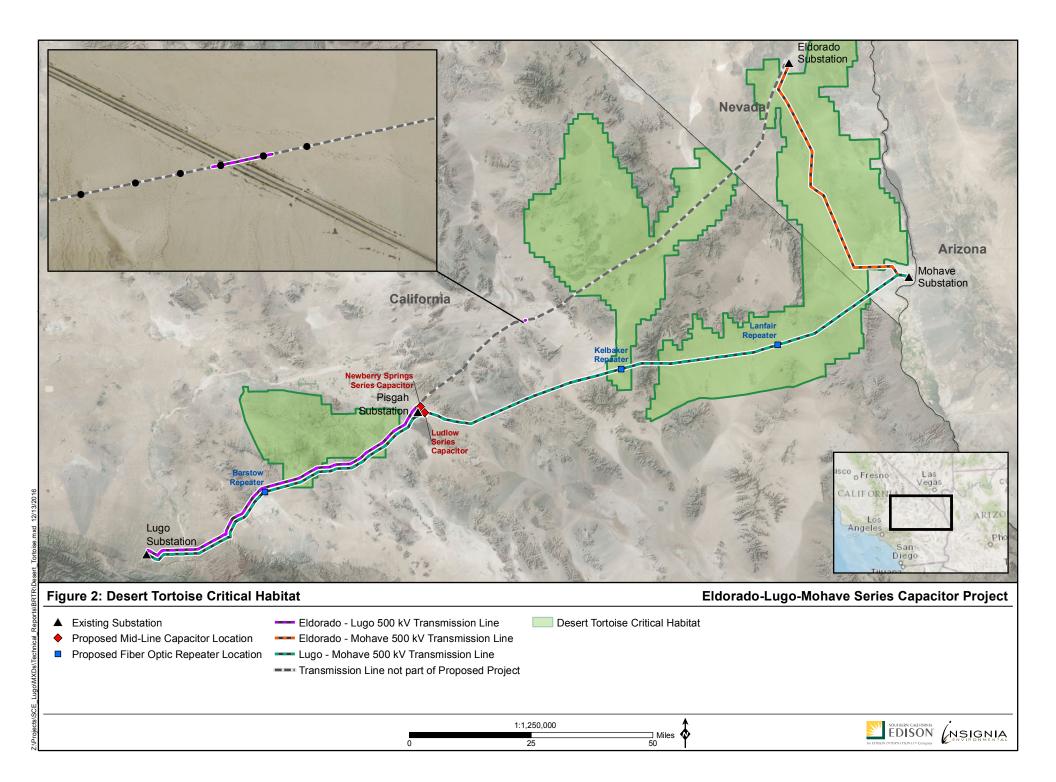
The Desert Tortoise Recovery Plan establishes a strategy for the recovery and eventual delisting of the desert tortoise within the Mojave Desert. This plan establishes five recovery units, which cover the entire range of the desert tortoise. It also designates 12 critical habitat units established by the USFWS. The Proposed Project crosses the Western Mojave, Colorado Desert, and Eastern Mojave Desert Tortoise Recovery Units. The designated critical habitat is shown in Figure 2: Desert Tortoise Critical Habitat.

3.2 CALIFORNIA ENDANGERED SPECIES ACT

Desert tortoises are listed as threatened under the California Endangered Species Act (California Fish and Game Code § 2050) and are protected from unauthorized "take." If it is necessary to "take" a State-listed threatened species as part of an otherwise lawful activity, it is necessary to receive permission from the California Department of Fish and Wildlife prior to initiating the "take." Section 2081 allows "take" of a listed species for educational, scientific, or population-management purposes.









3.3 NEVADA ADMINISTRATION CODE SECTION 503

Desert tortoises are listed as threatened under the Nevada Administration Code Section 503. A permit issued by the Nevada Department of Wildlife (NDOW) is required to handle, move, or temporarily possess any wildlife species classified as endangered, threatened, sensitive, or protected to protect the wildlife from harm that may result from any previously approved activity on land where the wildlife is located. The NDOW reserves the right to make any stipulations and conditions of use it deems necessary.

4 - METHODS

4.0 BACKGROUND RESEARCH

A database review of the California Natural Diversity Database and Nevada Natural Heritage Program was conducted to obtain wildlife resource data for desert tortoise observations within 5 miles of the BRSA. Reference materials were also utilized, including the USFWS Desert Tortoise Recovery Plan, which shows desert tortoise critical habitat unit, habitat modeling, and conservation areas. Based on the literature and database review, desert tortoises were identified as having a high potential to occur within the BRSA, and approximately 194 acres of the Proposed Project were characterized as desert tortoise critical habitat. In addition to the literature review, Insignia biologists observed desert tortoises and sign within the BRSA during botanical surveys conducted in the spring of 2016.

4.1 SURVEY METHODOLOGY

Nine Insignia biologists—Audrey Johnson, Nicholas Wagner, Donald McAlister, Patrick Livingston, Irene Alexakos, Katheryn Holmes, Peggy Wood, Rich Crawford, and Tyler Meester—conducted desert tortoise presence/absence surveys within the BRSA between October 3 and 20, 2016, as recommended by the USFWS.⁴ Desert tortoises are most active from April through May and September through October, when temperatures are below 104 degrees Fahrenheit. Therefore, the timing of the surveys occurred concurrently with an active period.

The surveys were conducted in accordance with the USFWS's survey guidelines (2010), as modified with approval by the USFWS. A 20-meter survey buffer was added around the perimeter of each work area. The addition of an appropriate survey buffer was approved by the USFWS, which did not require additional surveys for buffers of 200, 400, or 600 meters. Attachment A: USFWS Correspondence Email documents adjustments to the survey methodology. Insignia biologists conducted 100-percent coverage surveys by walking transects that were spaced approximately 30 feet apart. Insignia biologists identified and mapped all desert tortoises and desert tortoise sign, including the following:

- Shells, bones, scutes, limbs, and carcasses
- Burrows and pallets

⁴ Although the survey window for desert tortoise presence/absence surveys is during September and October, surveys were conducted during October because of high temperatures, as recommended by USFWS.

- Scat and egg shell fragments
- Tracks, courtship rings, drinking sites, and mineral licks

Desert tortoise burrows, pallets, and dens were recorded and examined for occupancy using a hand mirror or flashlight. The condition classes were recorded to describe current or past use. Condition classes are defined as follows:

- Class 1: Currently active, with desert tortoise or recent desert tortoise sign.
- Class 2: Good condition; definitely desert tortoise; no evidence of recent use.
- Class 3: Deteriorated condition; includes collapsed burrows; definitely desert tortoise.
- Class 4: Good condition; possibly desert tortoise.
- Class 5: Deteriorated condition; includes collapsed burrow; possibly desert tortoise.

Desert tortoise carcasses, shells, bones, limbs, and scutes were recorded and examined to determine their condition and age. The condition was recorded to describe the percent of the carcass still intact and was listed as either greater than 50 percent or less than 50 percent. The age of the carcass was determined using the time-since-death classes described as follows:

- Less than 1 year: Carcass soft tissues is odorous. The shell scutes adhered tightly to the bone. Bones are solid and shiny.
- 1 to 2 years: The growth rings on scutes may be beginning to peel. Exposed bone is less shiny and has no odor. Scutes may be normally attached or beginning to loosen.
- 2 to 4 years: Exposed bone has no sheen. Scute growth rings are curling and peeling. Unexposed bone may still have some oil, but scutes appear dull and fading and are loosened from bone.
- More than 4 years: Shell scutes not adhered to the bone. Bone is porous, white, and cracking.

The locations of desert tortoise sign were recorded with electronic data sheets using iPads and a BadElf Pro+ Global Positioning System unit. Electronic data sheets mirrored the USFWS 2010 Desert Tortoise Survey Data Sheet. All live desert tortoises were photographed. No desert tortoises were handled during surveys.

Per the USFWS's request, data were collected on common raven roosts and nests, juvenile desert tortoise predation (clear puncture hole in carapace), and avian mortality. The location of sign were recorded with electronic data sheets. All sign were photographed.

5 - RESULTS

Insignia's 2016 surveys found desert tortoise sign distributed throughout the length of the BRSA. Observation data for all live desert tortoises and sign are presented in Attachment B: Live Desert

Tortoise and Sign Occurrence Maps.⁵ Representative photographs of live desert tortoises, desert toroise sign, common raven nests, raven predation, and avian mortality are presented in Attachment C: Desert Tortoise Survey Photographs.

5.0 LIVE DESERT TORTOISE

Fourteen live desert tortoises were identified within the BRSA and buffer areas. Of these tortoises, eight were found within the Proposed Project area and six were found within the 20-meter buffer area. Twelve were adults and measured more than 160 millimeters in midline carapace length⁶ (MCL), and two were juvenile and measured less than 160 millimeters MCL.

Using the USFWS's 2010 model, 23.8 adult desert tortoises were estimated to be within the BRSA. Observations of live desert tortoises were concentrated near the northeastern sections of the Proposed Project in Eldorado Valley, Piute Valley, Newberry Mountains, Fenner Valley, and Kelso Dunes. Attachment D: Live Desert Tortoise Results summarizes the detections within the BRSA.

5.1 DESERT TORTOISE SIGN

The survey found various types of desert tortoise sign distributed throughout the BRSA. Of the 373 instances of sign observed, 246 were burrows, 93 were scat, 25 were carcasses or shell fragments, and nine were other types of sign (e.g., tracks, drinking depressions, and courtship rings). The burrows were determined to be in the following classes:

- 25 of the burrows were Class 1
- 119 burrows were Class 2
- 74 burrows were Class 3
- 28 burrows were Class 4
- No burrows were Class 5

The majority of the observed desert tortoise sign was observed in the valleys along the Lugo-Mohave and Eldorado-Mohave 500 kV Transmission Lines of the Proposed Project. Attachment E: Desert Tortoise Sign Results summarizes the observations within the BRSA.

5.2 COMMON RAVEN SIGN AND AVIAN MORTALITY

Eleven common raven nests and one roost were observed within the BRSA. These nests were found in transmission line towers. The roost included eight ravens on a barbed wire fence on Goffs Road near the community of Goffs, California. Eight predated juvenile desert tortoises were found within the BRSA under transmission lines, each with a clear puncture hole in the carapace.

Southern California Edison Eldorado-Lugo-Mohave Series Capacitor Project

⁵ Attachment B: Live Desert Tortoise and Sign Occurrence Maps only display survey locations where tortoises, sign, or burrows were observed.

⁶ Midline carapace length (MCL) is defined as the measurement from the most anterior scute in a straight line along the upper shell (carapace) to the most posterior scute.

Four occurrences of avian mortality were observed within the BRSA. These species include common raven, sparrow (*Passeridae sp.*), and one unknown species. The occurrences were found under transmission lines within the Proposed Project. Attachment F: Common Raven Observation and Avian Mortality Results summarizes the raven and avian mortality data within the BRSA.

6 – DISCUSSION

Approximately 194 acres of designated critical habitat for desert tortoise are located within the 1,341.5-acre BRSA. Using the USFWS's desert tortoise abundance model, 23.8 adult desert tortoises are estimated to be within the BRSA. This model utilizes rainfall data from the previous winter. However, precipitation in the Mojave Desert is often extremely localized, leaving some areas with abundant rainfall while adjacent areas may receive none. This localized rainfall was observed by Insignia biologists during spring botanical surveys along the Proposed Project.

The Eldorado Valley, Piute Valley, and Newberry Mountains received adequate rainfall and were observed by Insignia biologists to have the highest concentrations of desert tortoises within the BRSA. Other factors that influence desert tortoise population include habitat loss; human development; invasive species; climate change; and predation from common ravens, coyotes (*Canis latrans*), and or raptors.

Eight juvenile desert tortoise carcasses were found under transmission lines by Insignia biologists during the fall 2016 survey. Construction activities along the Proposed Project site could cause increases in predation on desert tortoises. Raven predation is the greatest cause of mortality among juvenile tortoises (Berry 1990). Predators are attracted to construction sites due to an increase in food opportunities from litter, ground disturbance, and water sources. Measures should be taken to reduce the impact on desert tortoises during construction activities.

7 – REFERENCES

- Berry, K.H., and P. Woodman. 1984. Preliminary investigations of shell wear in determining adult age groups of desert tortoises. Appendix 4 in K. H. Berry (ed.), The status of the desert tortoise (*Gopherus agassizii*) in the United States. Unpublished report to USFWS on Order 11310-0083-81.
- Berry, K.H. 1990. The Status of the Desert Tortoise in California. Draft Report from the U.S. Bureau of Land Management, Riverside, California, to the U.S. Fish and Wildlife Service, Portland, Oregon.
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- USFWS. 2010. Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise (*Gopherus agassizii*). Online.

https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise/DT%20Preproject%20Survey%20Protocol_2010%20Field%20Season.pdf. Site visited on September 12, 2016.

USFWS. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). Online.

https://www.fws.gov/nevada/desert_tortoise/documents/recovery_plan/rrp%20for%20the %20mojave%20desert%20tortoise%20-%20may%202011.pdf. Site visited on November 16, 2016.

ATTACHMENT A: USFWS CORRESPONDENCE EMAIL

From: Ray Bransfield [mailto:ray_bransfield@fws.gov]

Sent: Friday, September 30, 2016 4:12 PM

To: Audrey Johnson **Cc:** Stephanie Hansen

Subject: RE: Buffer Survey Area

Audrey,

The intent of those buffer transects was to determine if desert tortoises are nearby and try to get project proponents to consult or apply for incidental take permits even if animals were not right on their project site. It has never quite worked out that way: People were not flocking to get incidental take permits; over the years, we didn't try to push incidental take permits in those cases because they take so long to get done; and worst of all, the dang desert tortoises would not always align themselves at the 200, 400, and 600 meter marks. Sometimes they just sit there at 145 meters and hide from us.

SCE's work is going to be done in fairly small areas and is temporary in nature. With those facts in mind, to me the key question then is "Can SCE do this work while avoiding desert tortoises". I would say that, for work at specific sites, the answer is yes. SCE could do its work while a desert tortoise sits in its burrow or passes by 50 feet away.

I looked back briefly at your original email but didn't see how big of an area you plan to survey at each site in relation to how big SCE's work area will be. If you are already planning to survey some distance beyond SCE's work area at each site, I would say that is good enough. I don't have a specific recommendation for how much to 'go beyond' because I think that would vary quite a bit with changes in terrain, plant cover, and adjacent development.

OK then, a summary: I suggest NOT doing buffer transects as recommended in the protocol. I suggest that the survey area at each site extend some distance beyond the maximum SCE work area; the distance beyond would depend on the nature of the site.

I hope that helps. I am working at home. Let me know if you want to talk and I will give you a call. Ray

From: Audrey Johnson [mailto:ajohnson@insigniaenv.com]

Sent: Friday, September 30, 2016 2:48 PM

To: ray_bransfield@fws.gov Cc: Stephanie Hansen Subject: Buffer Survey Area

Hello Ray,

We are going to begin our desert tortoise surveys as planned on Monday Oct 3rd. As I mentioned to you over the phone a couple weeks ago, our surveys will be of approximately 300 non-contiguous survey

areas, between Hesperia, Laughlin and Boulder City, where disturbance is planned as part of SCE's Eldorado-Lugo-Mohave Series Capacitor Project. All the survey areas are along SCE's existing transmission lines, which is why we will also be doing the raven and avian mortality studies, as requested.

I had a question for you about the USFWS tortoise presence/absence protocol...

As its written, in any one survey area, if tortoise sign is <u>not</u> found, additional 200m, 400m and 600m buffers should be surveyed. These buffer results will contribute to the presence/absence survey, but will not affect the abundance estimate. Given that we have so many small, non-contiguous work areas, we could use your input on the value of these buffer survey results. Is it worth walking these additional buffers at every survey area without sign? Is it more valuable to have the additional buffer data in specific areas of the project? Or for the large or small survey areas?

Feel free to give me a call when you can -- 269-267-4269.

Have a great weekend,

Audrey

AUDREY JOHNSON

ASSOCIATE BIOLOGIST

INSIGNIA ENVIRONMENTAL 904 2ND STREET

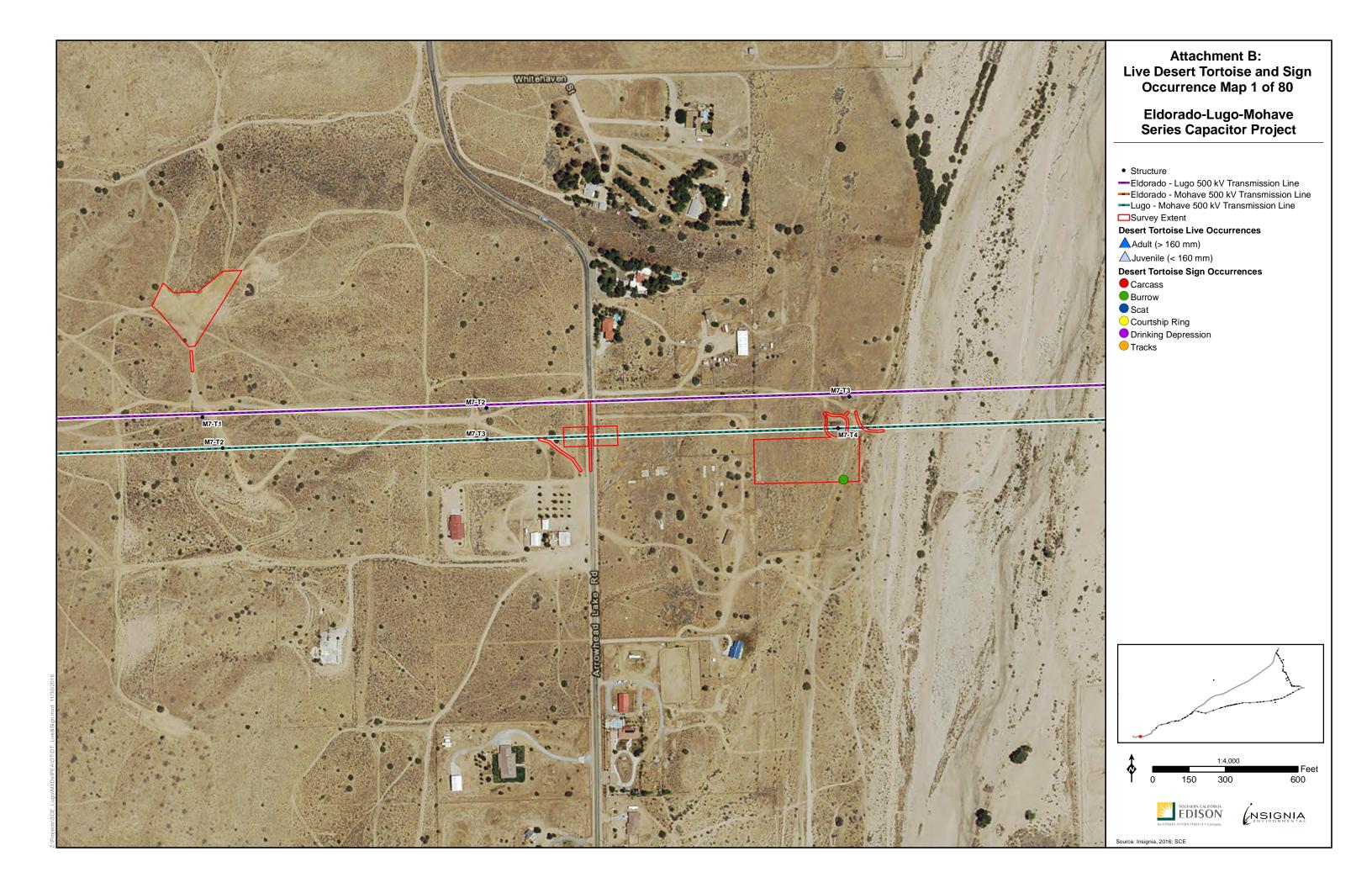
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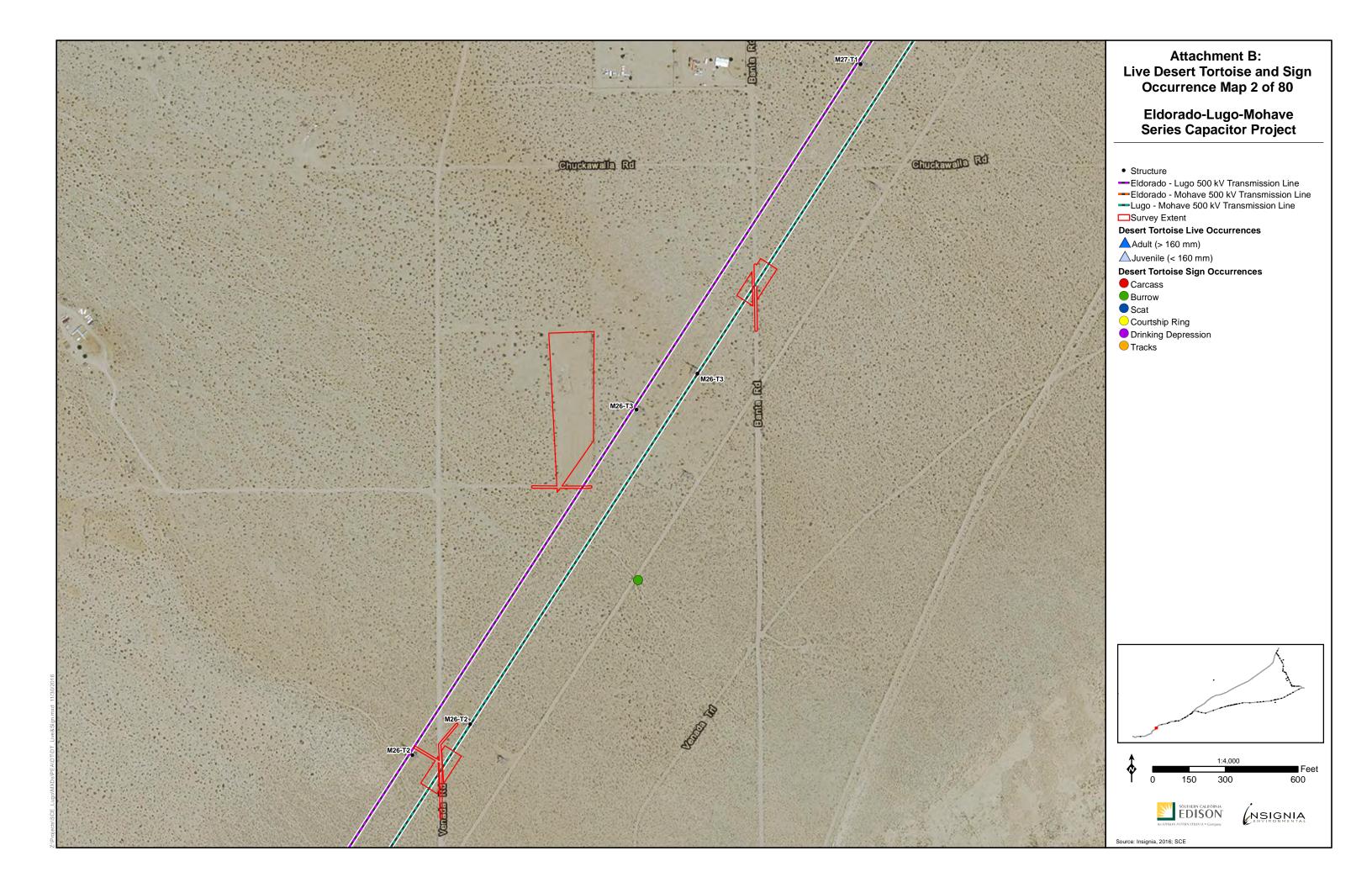
Office: (760) 635-1587 EXT 312

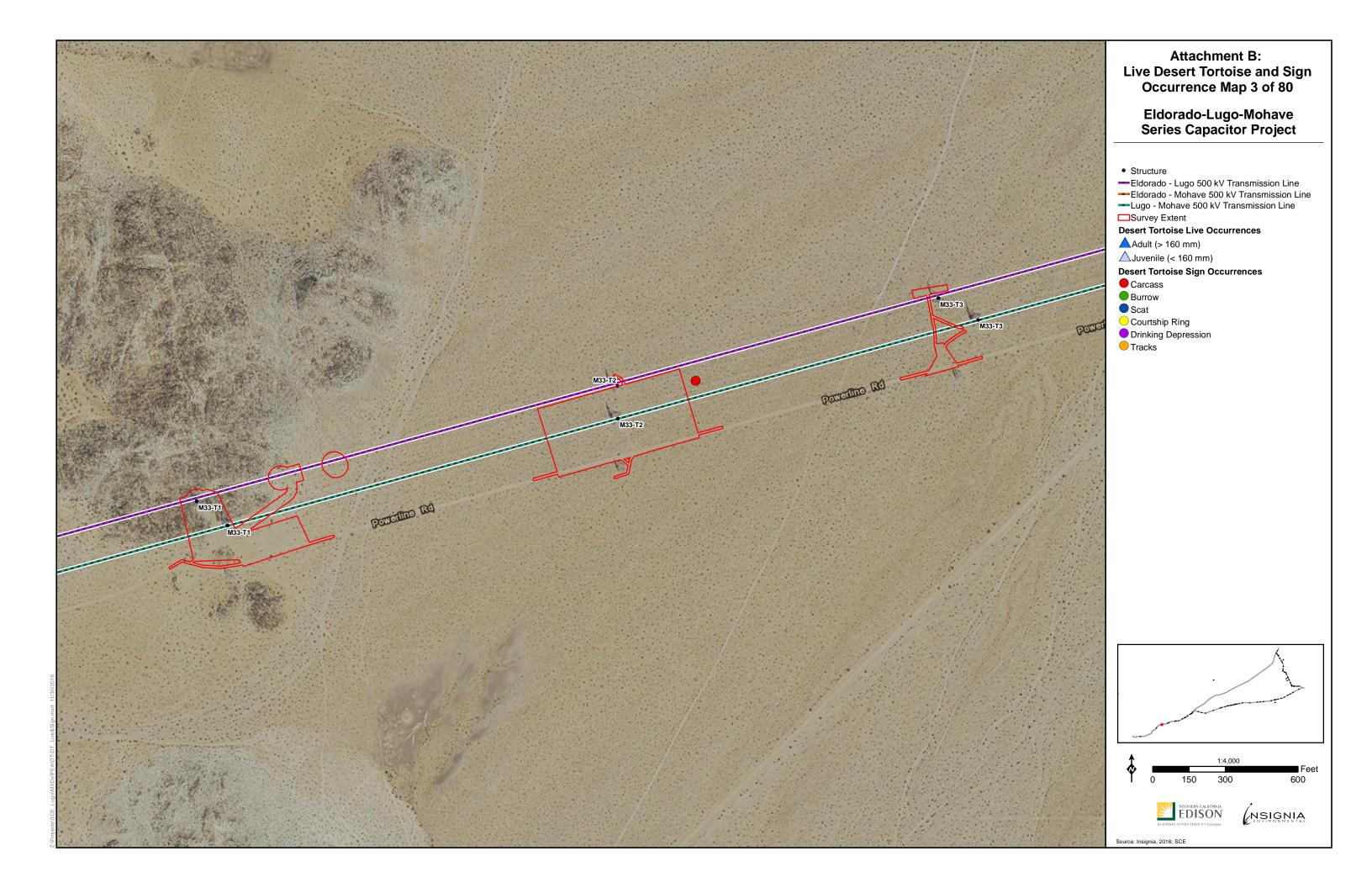
CELL: (269) 267-4269

WWW.INSIGNIAENV.COM

ATTACHMENT B: LIVI	E DESERT TORTOISE A	AND SIGN OCCURRENCE M	APS

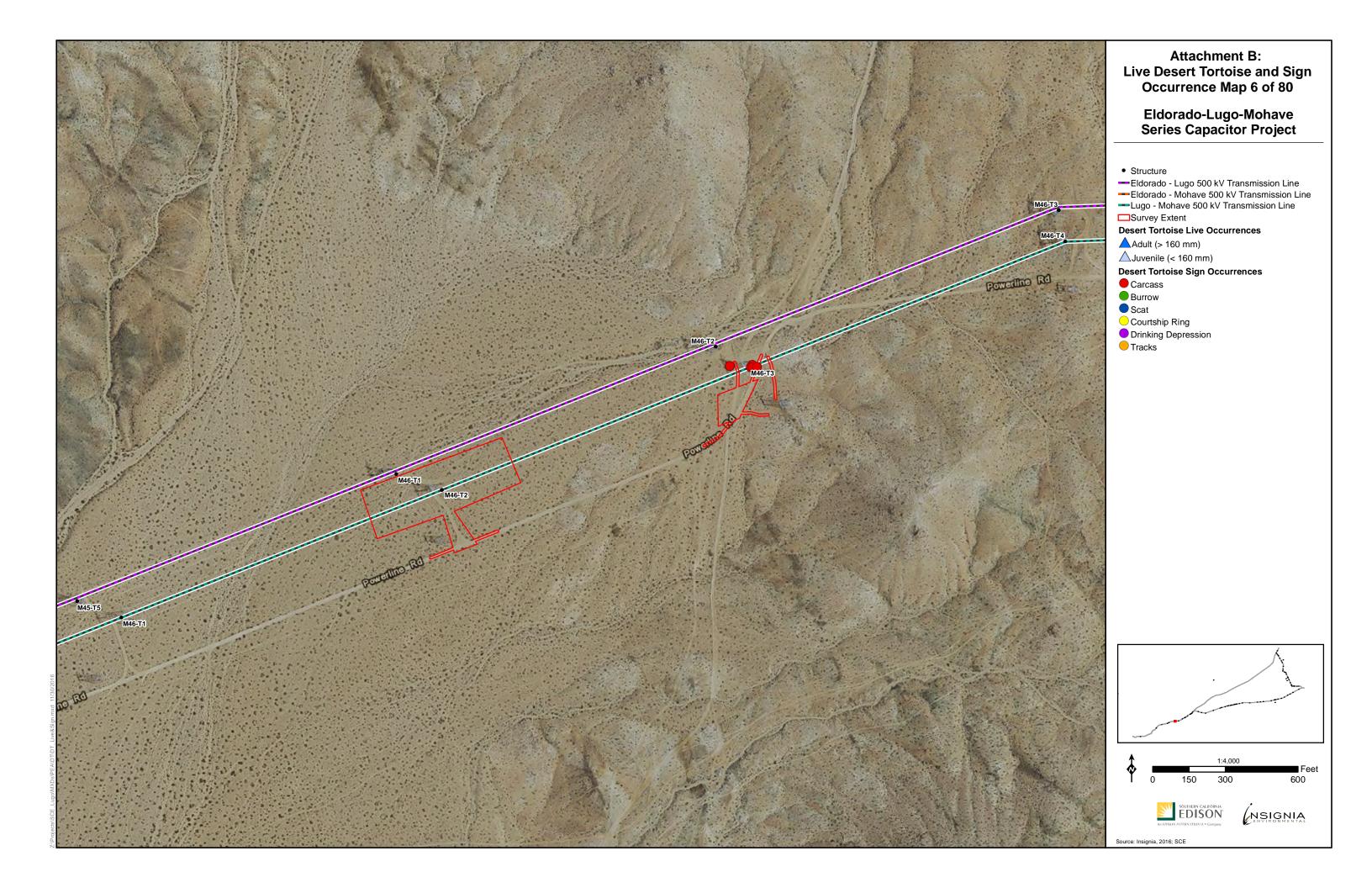


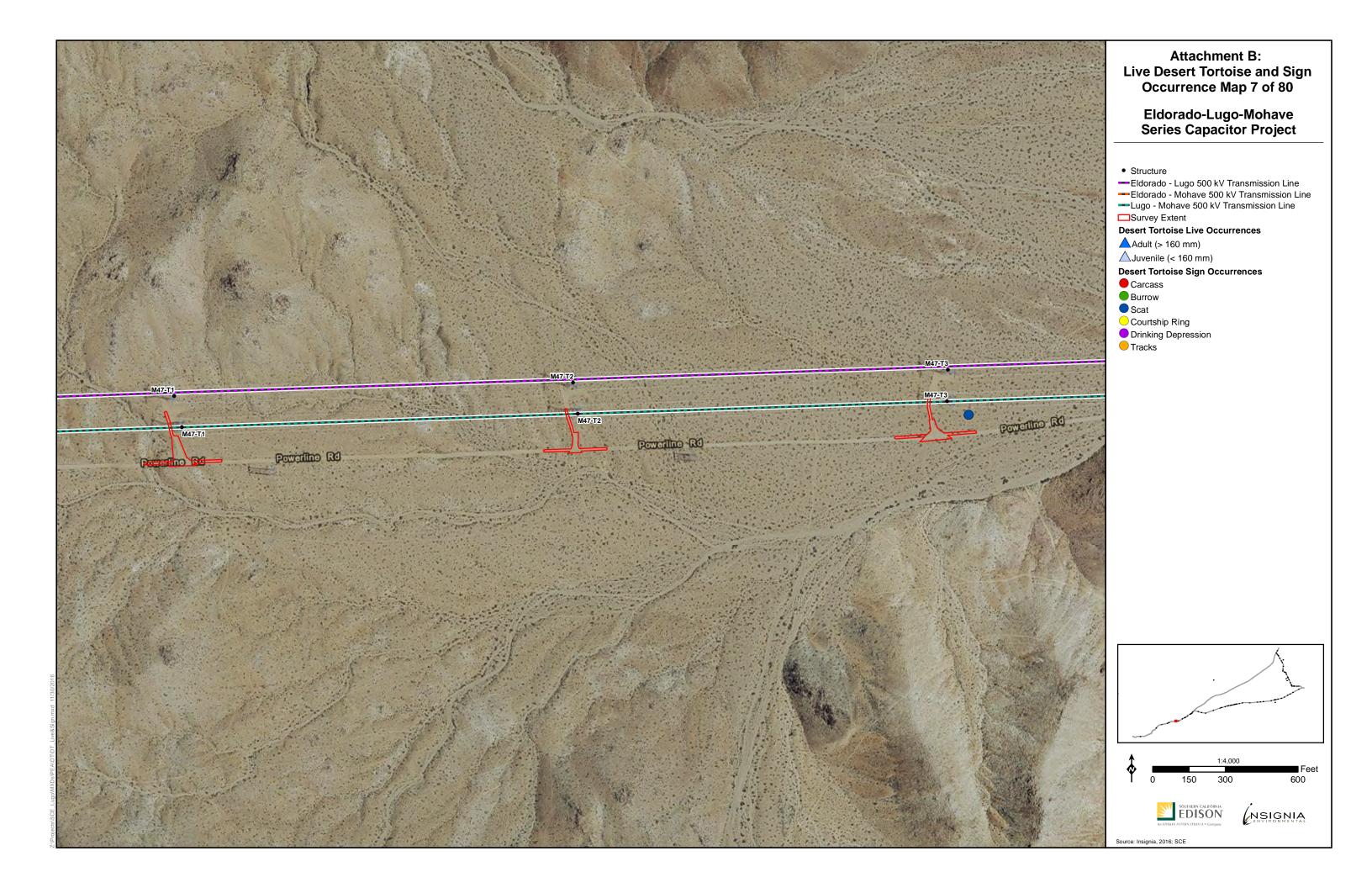


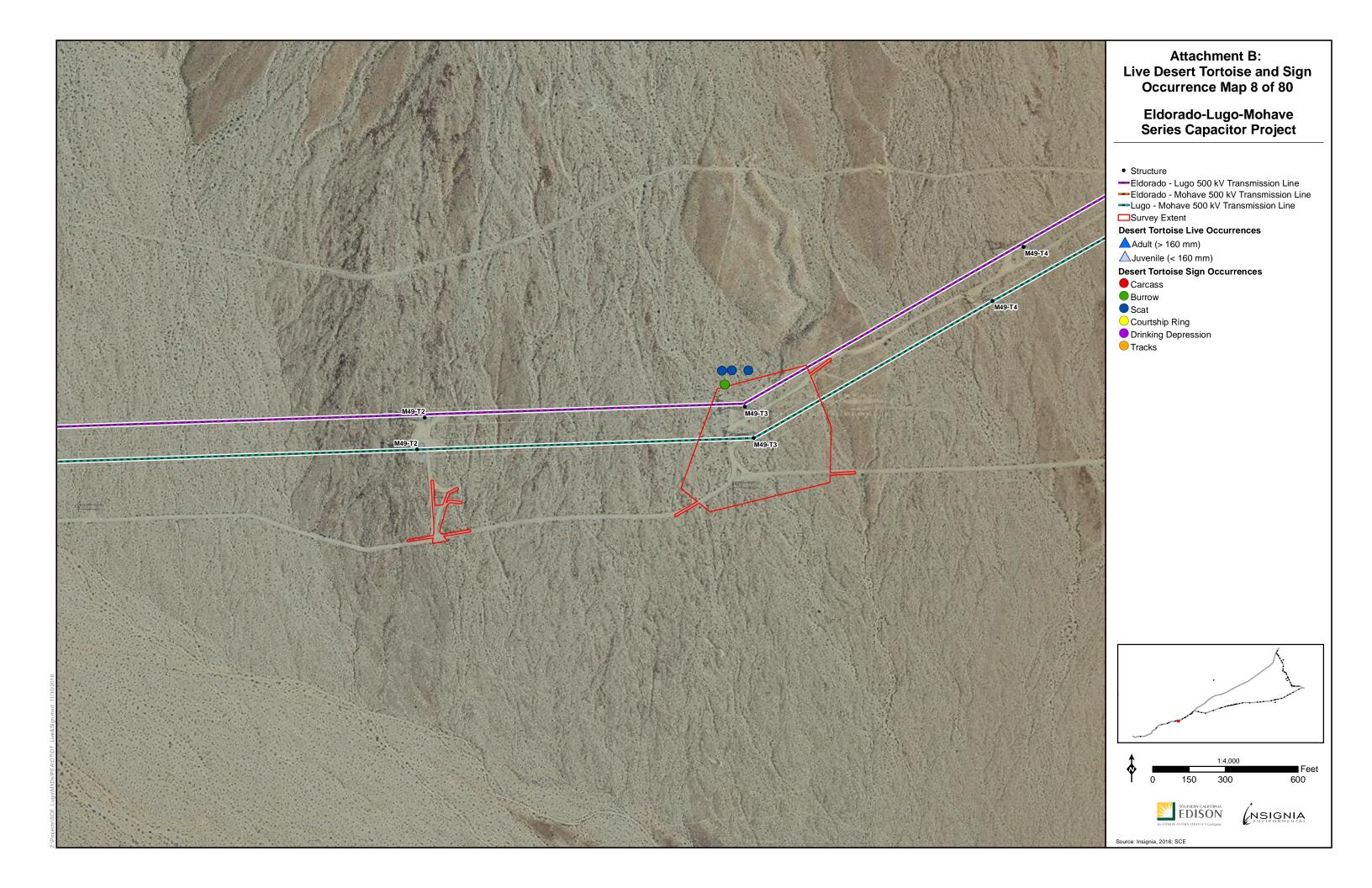


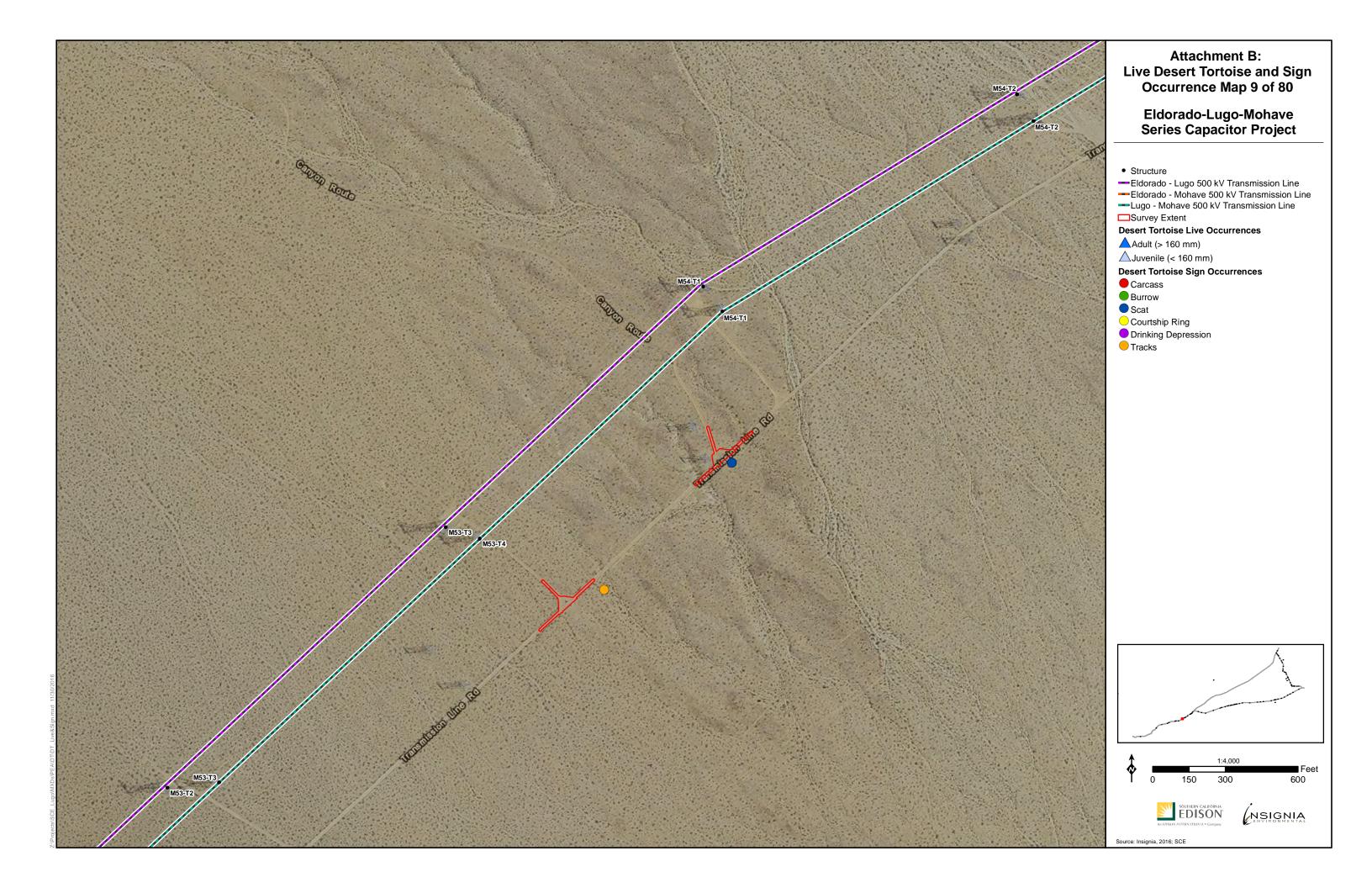


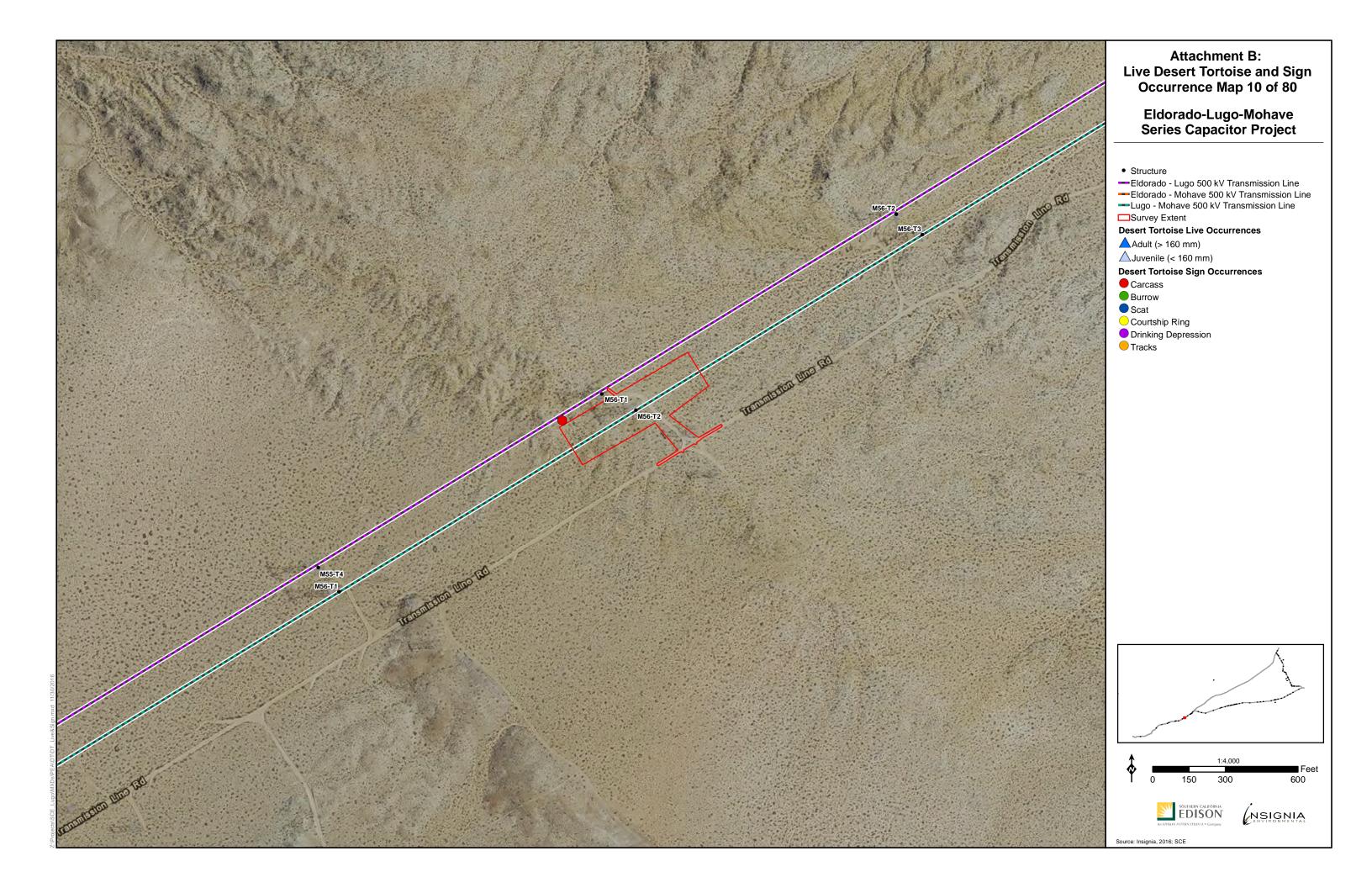


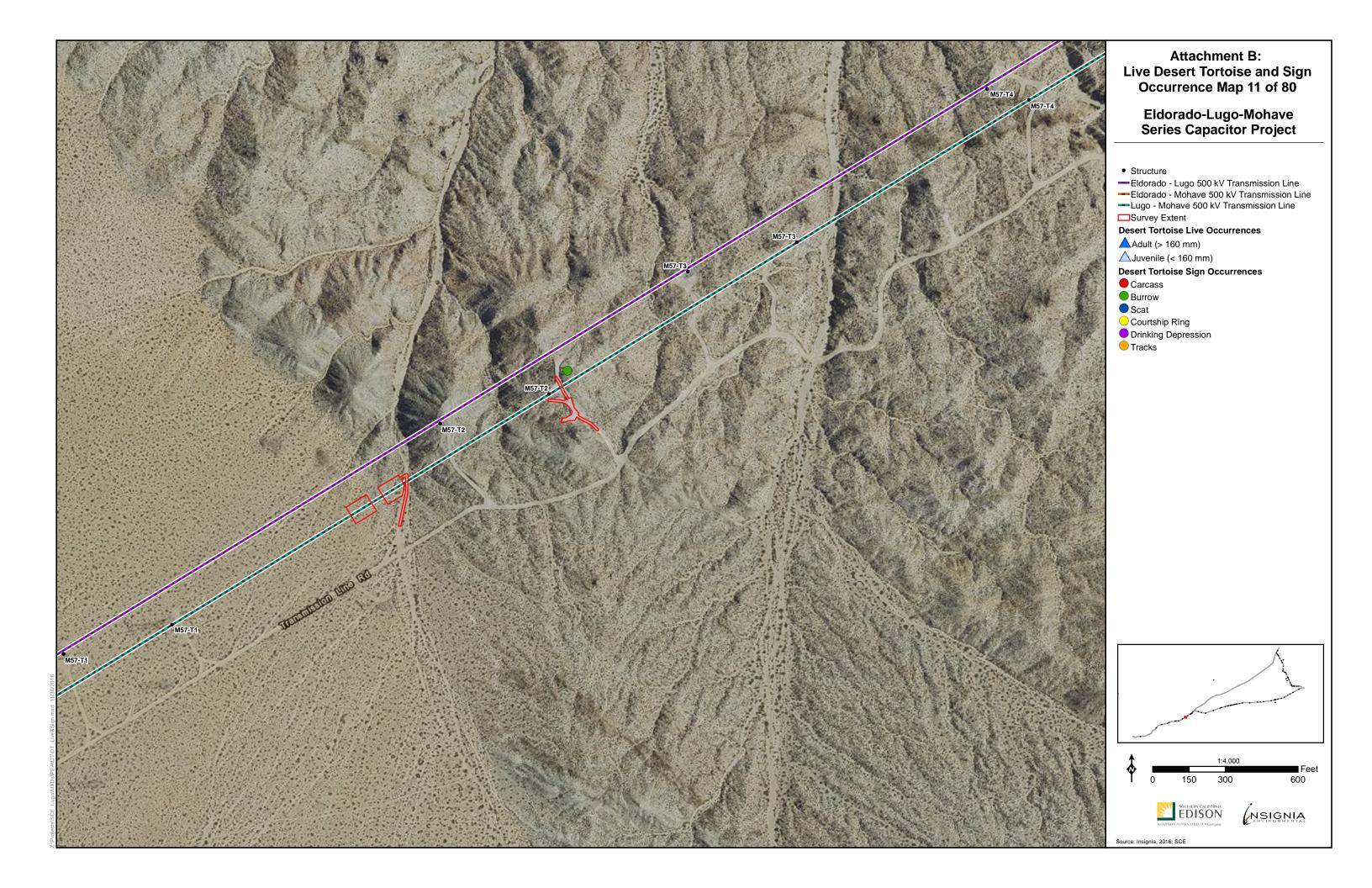


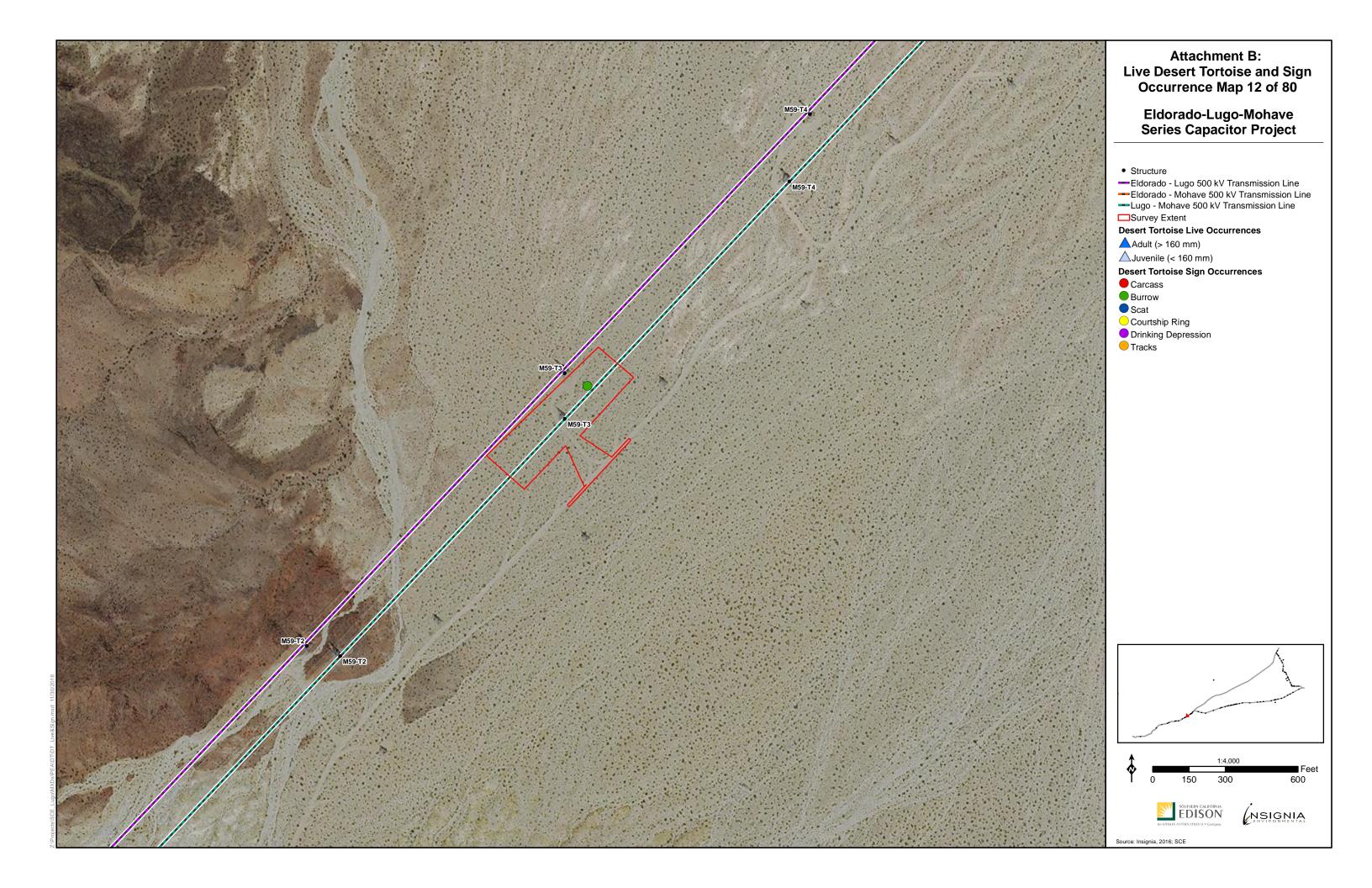


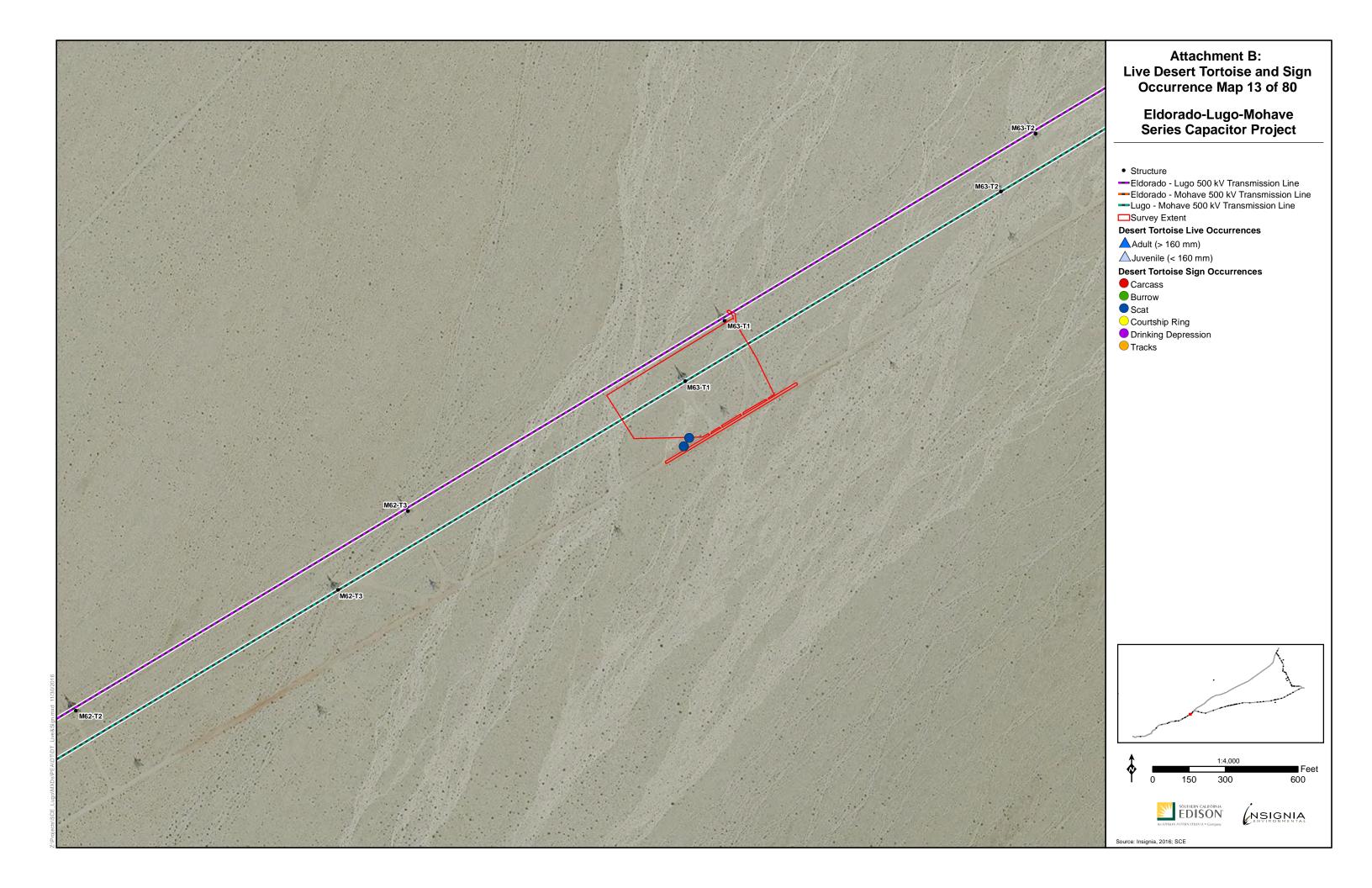


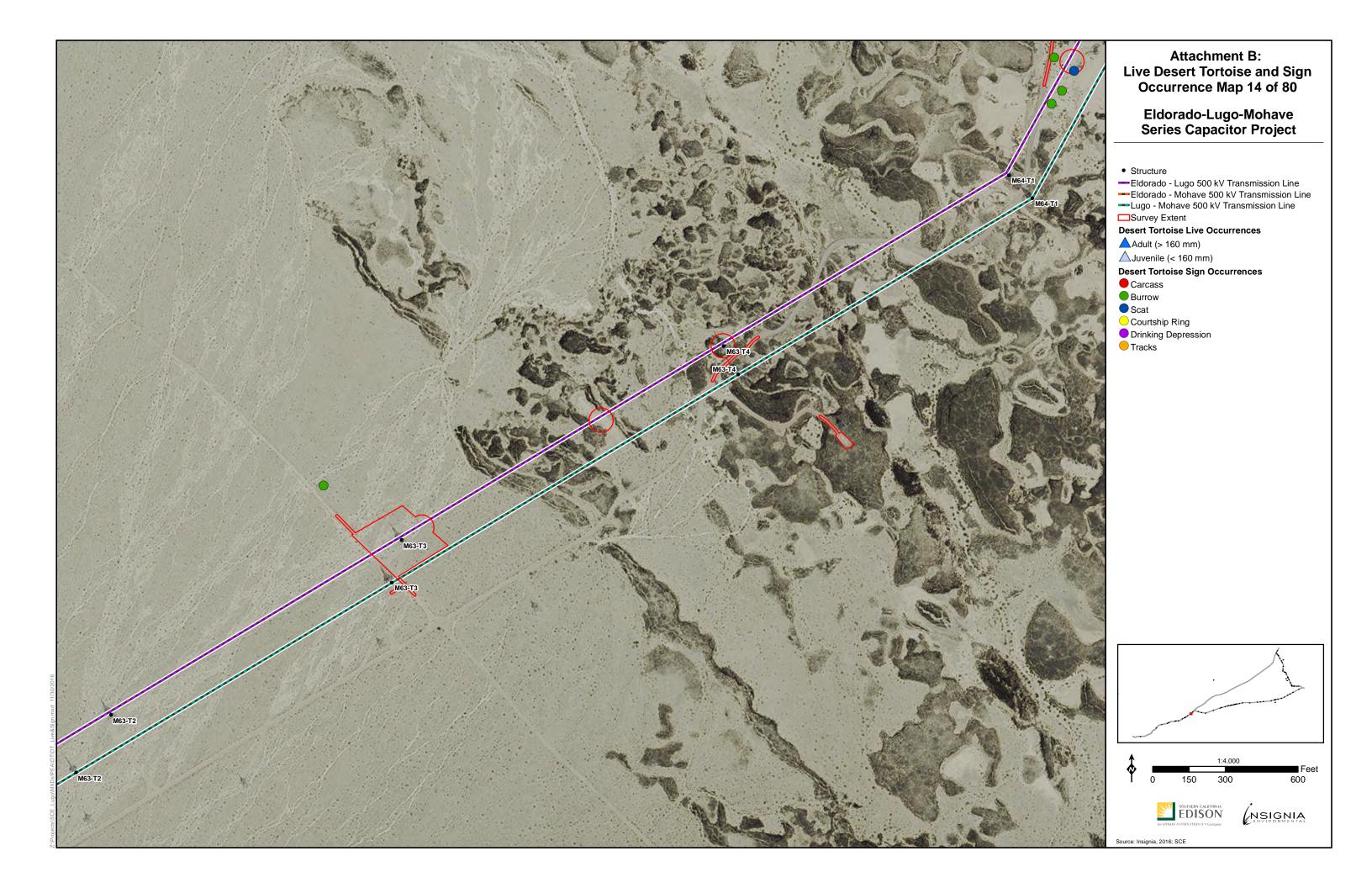


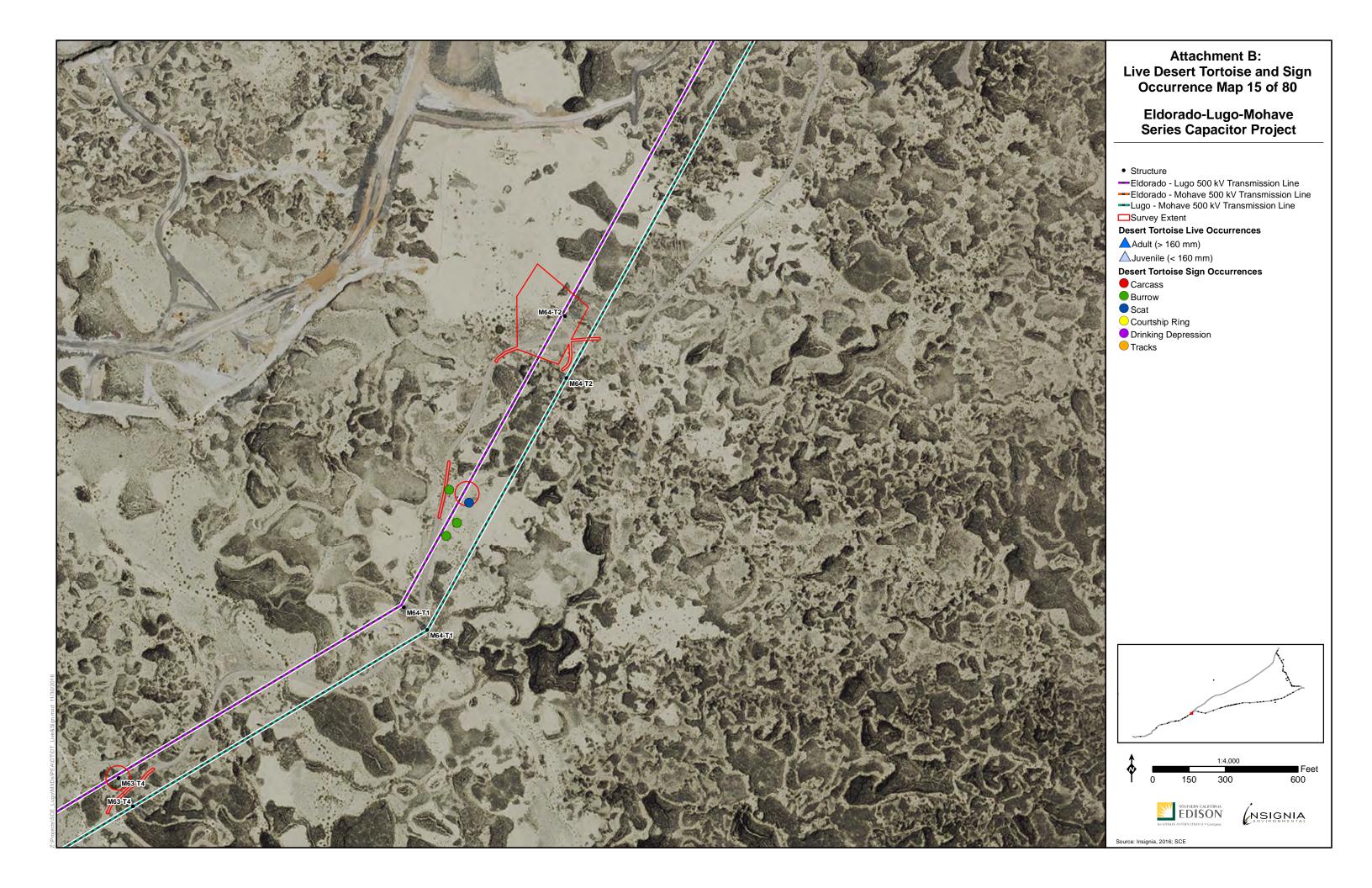


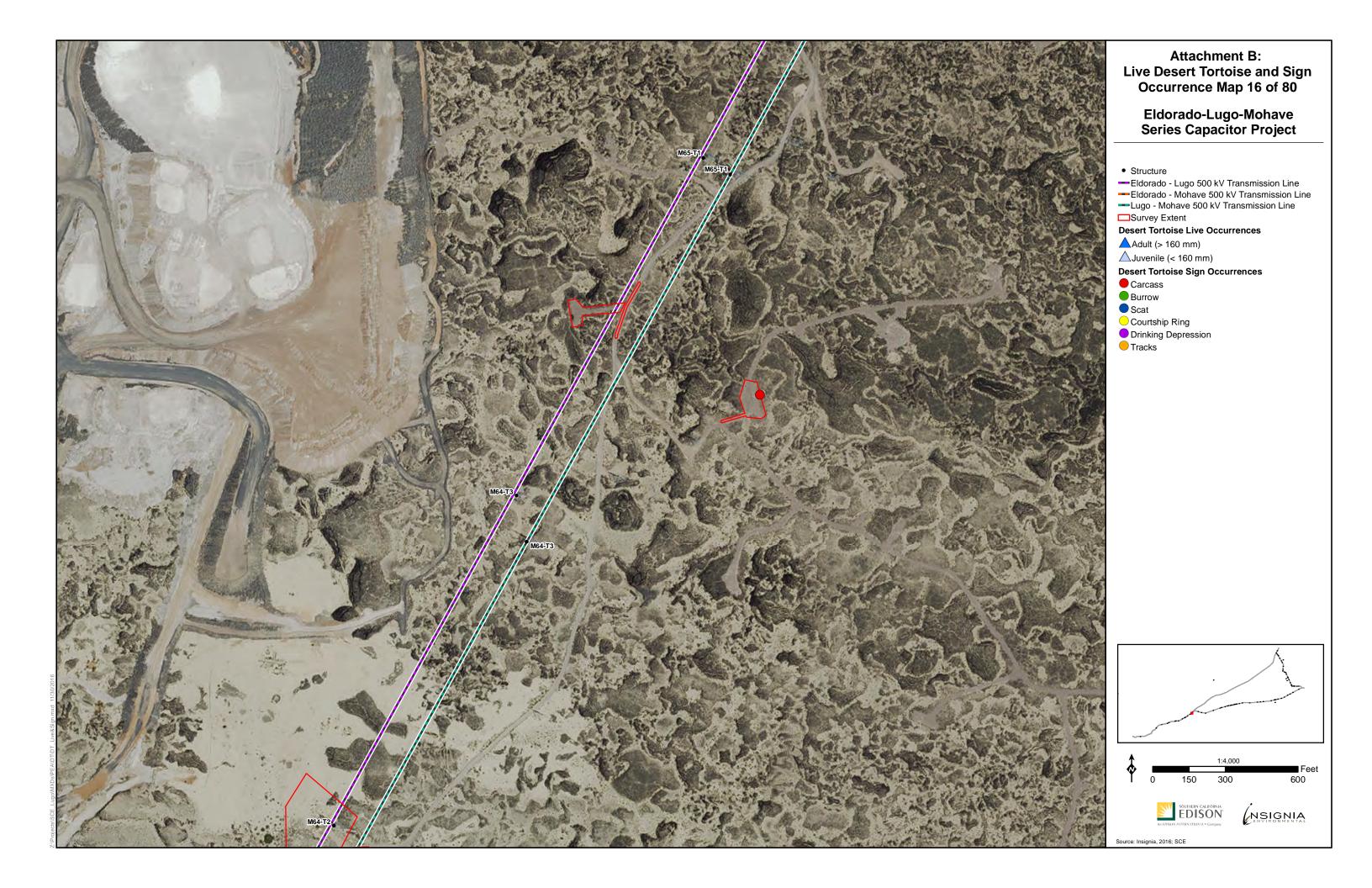






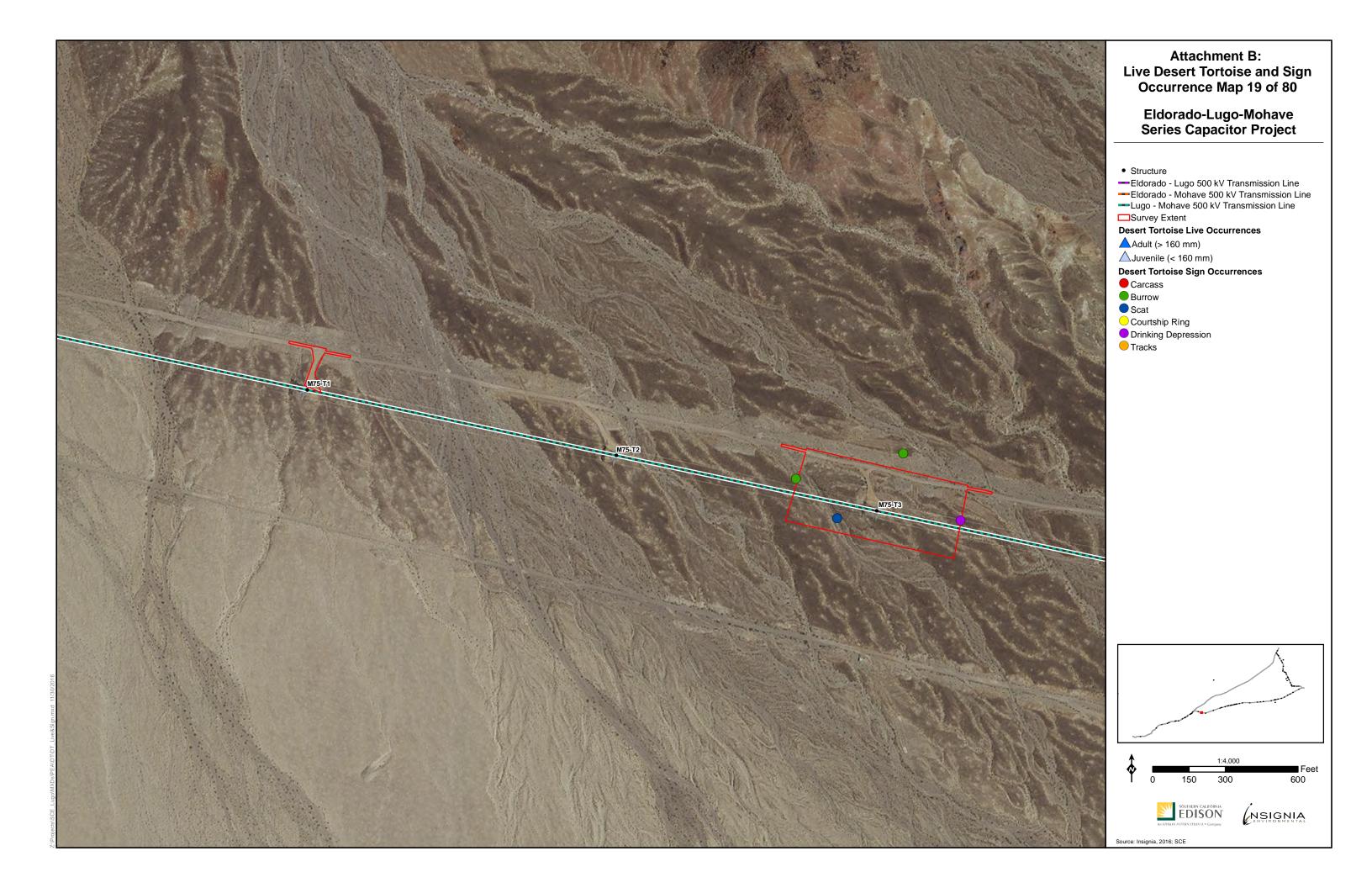


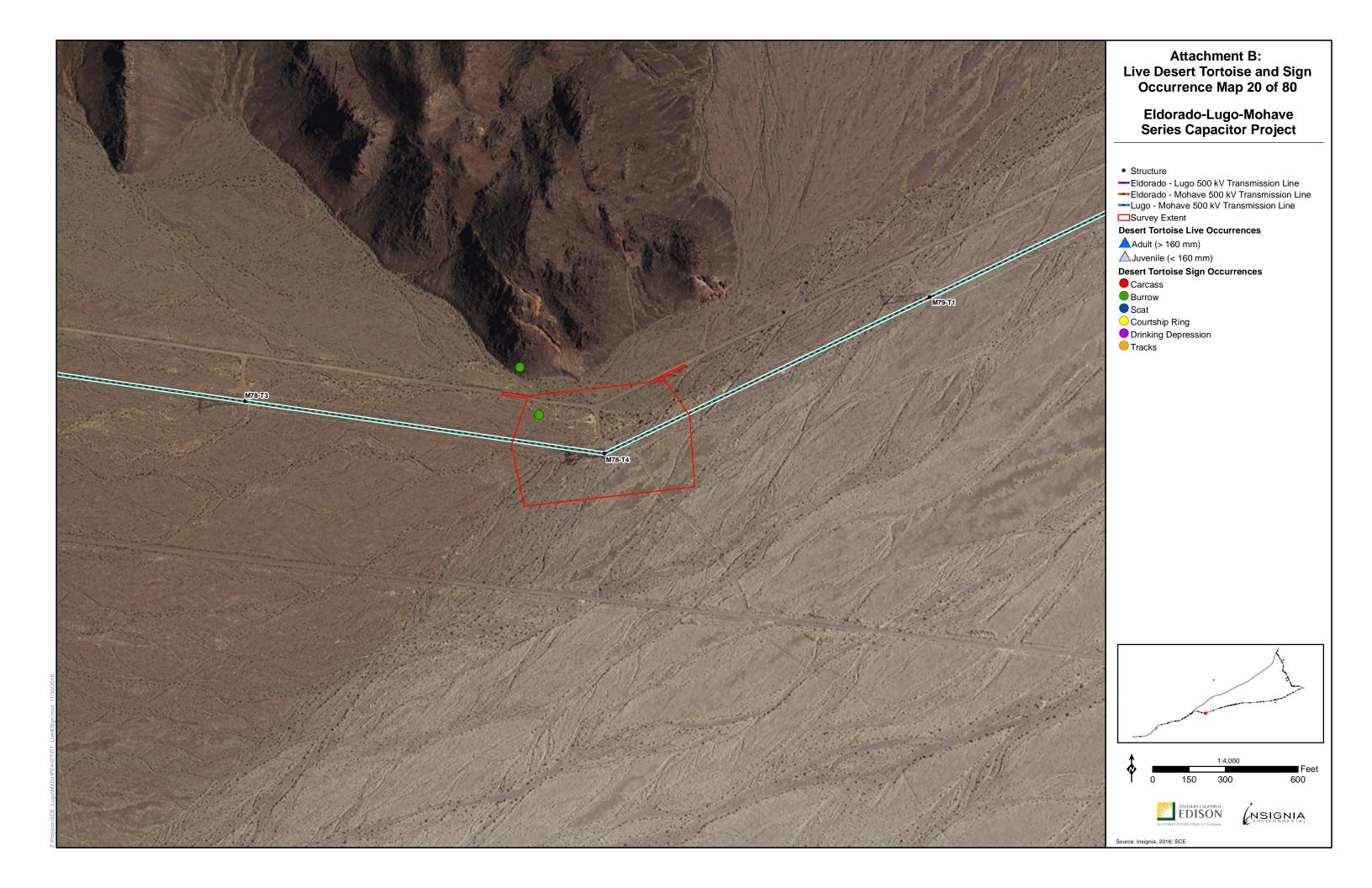




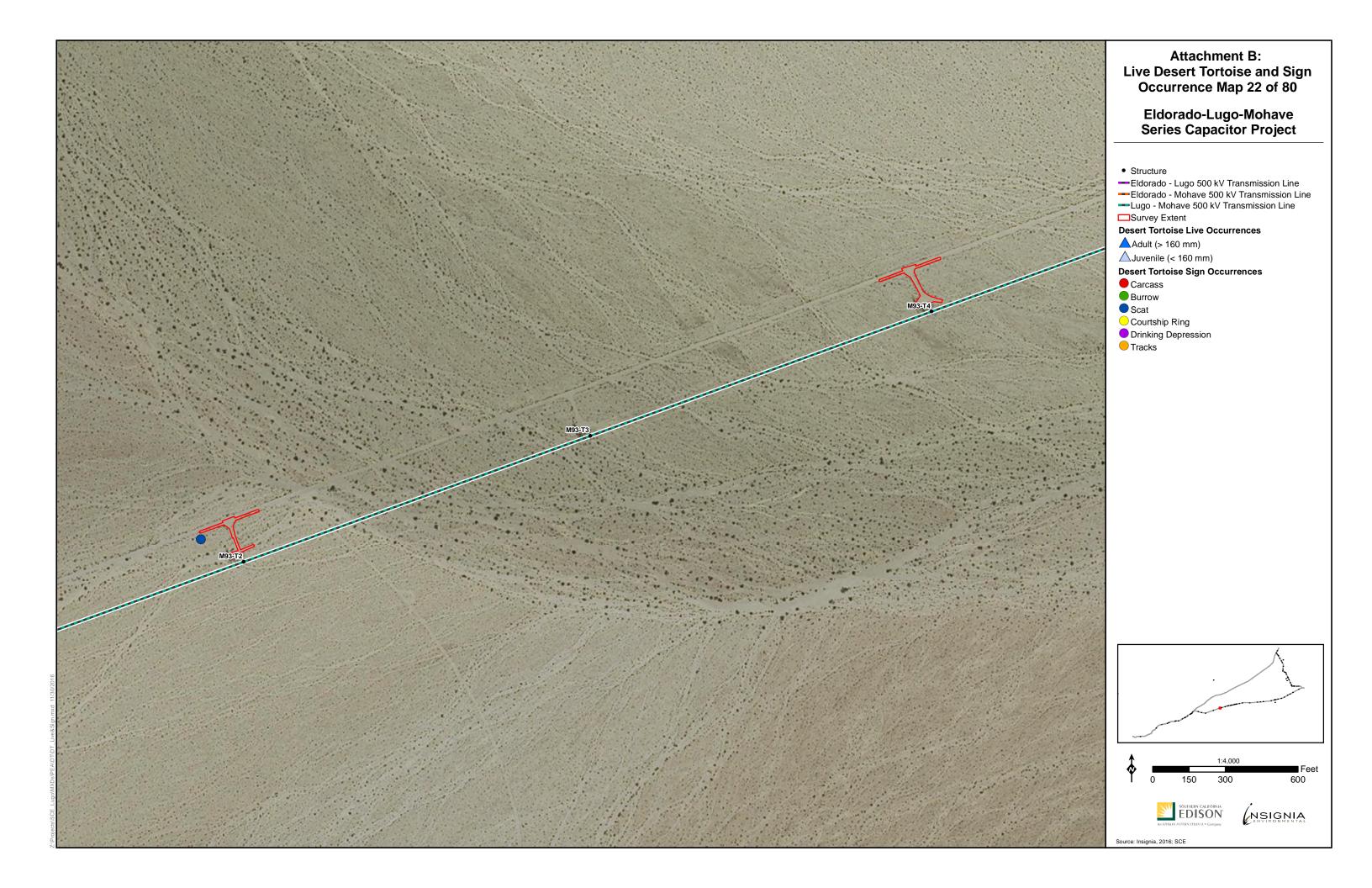




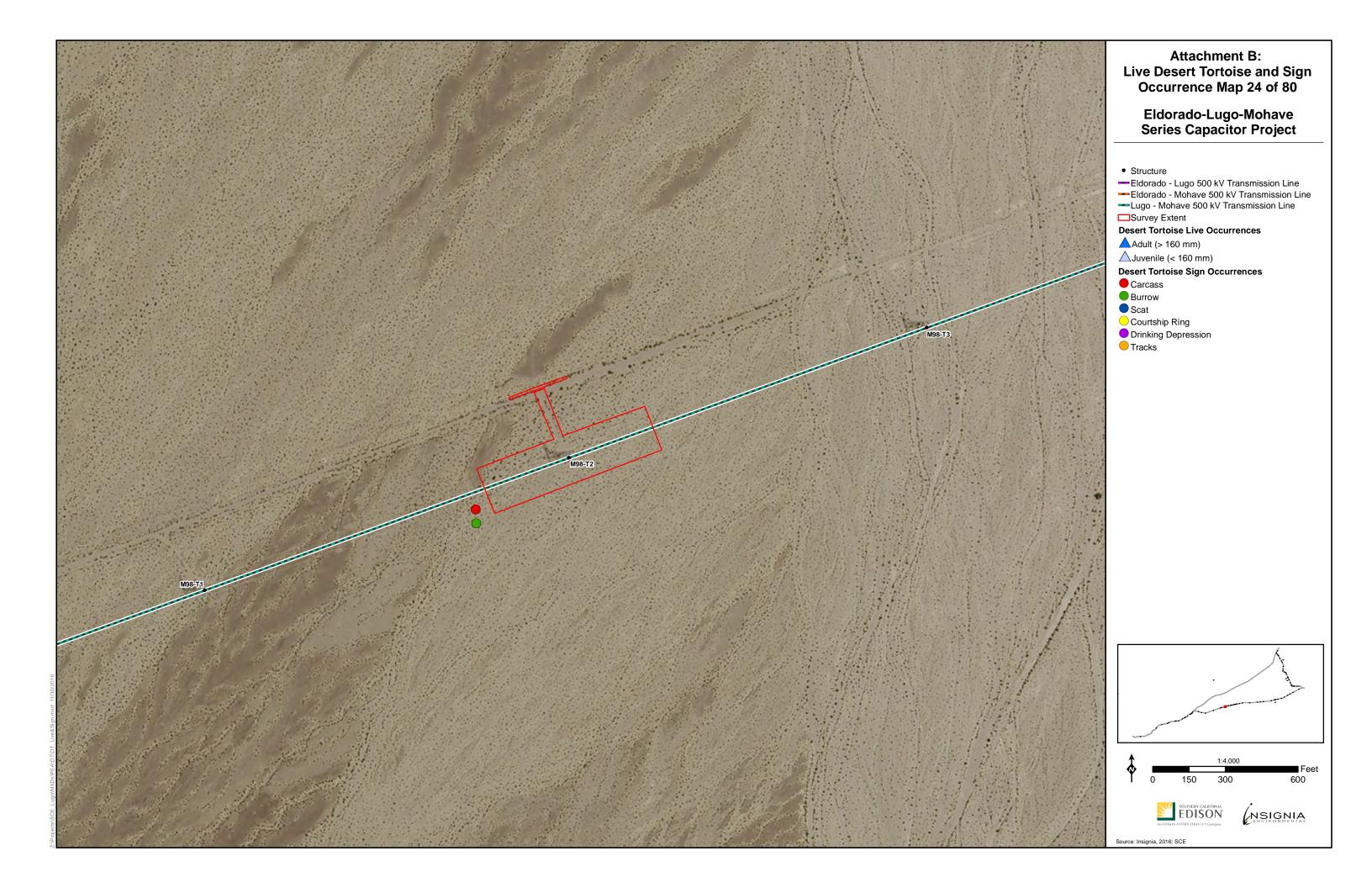


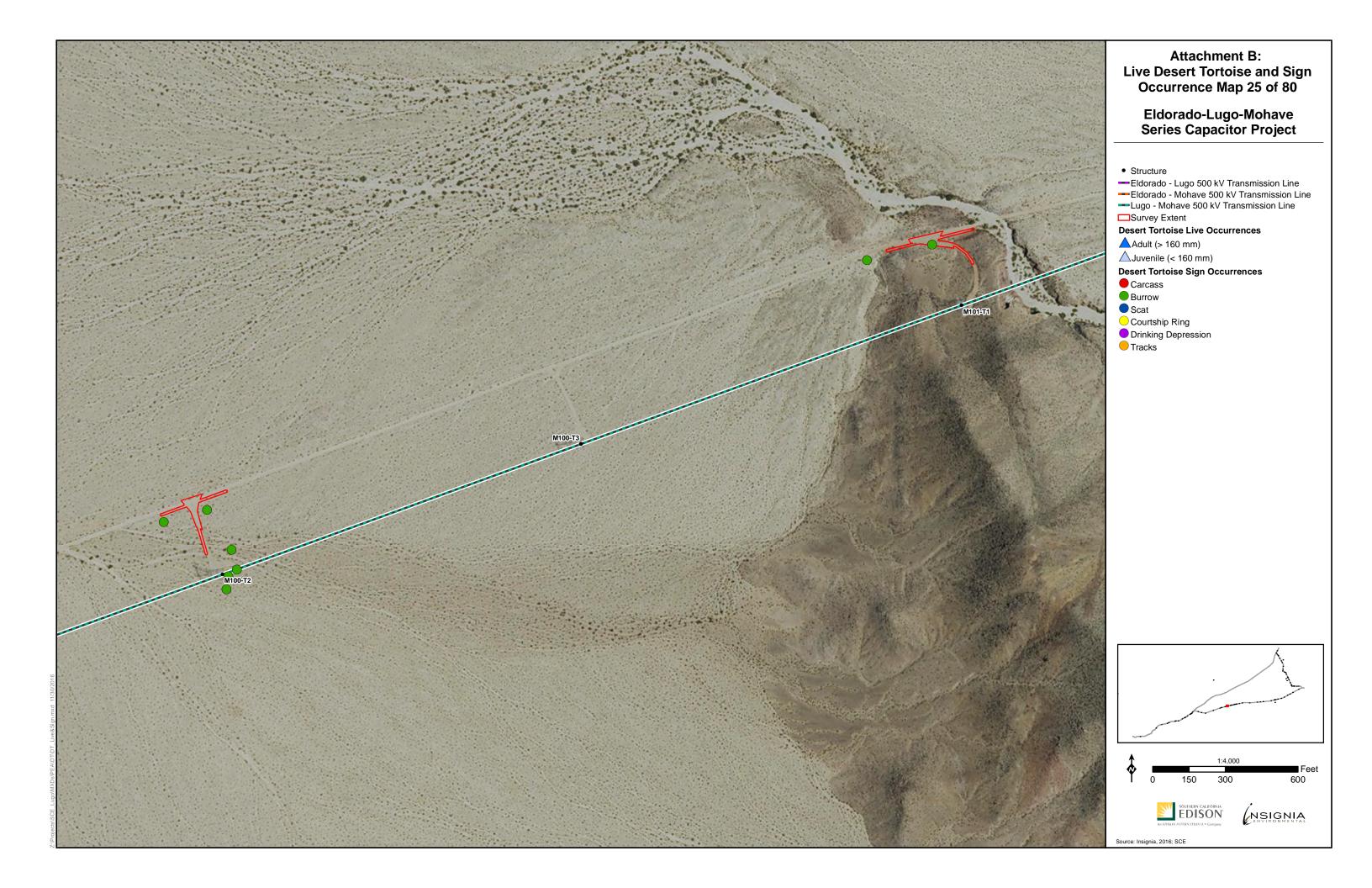


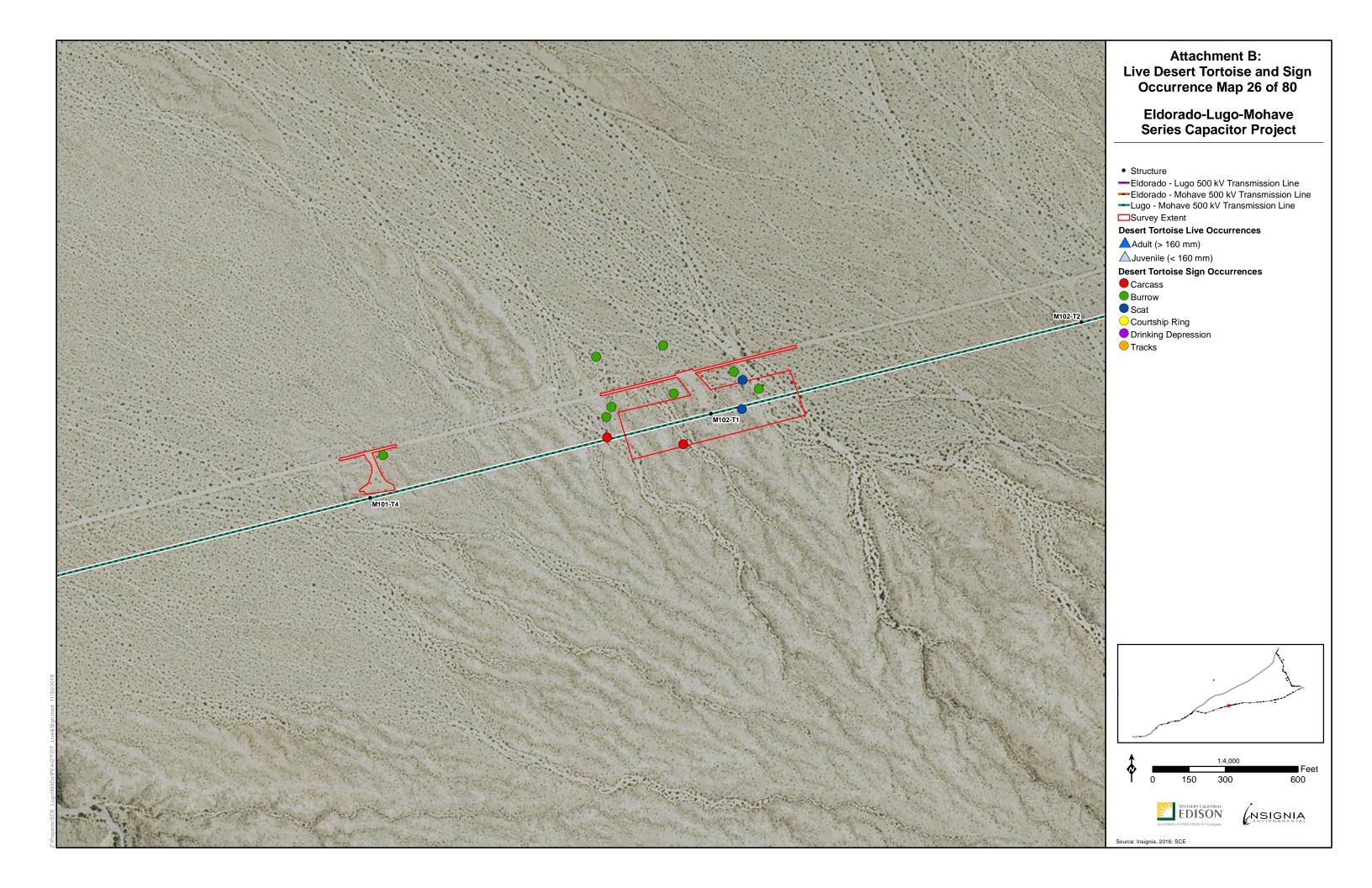






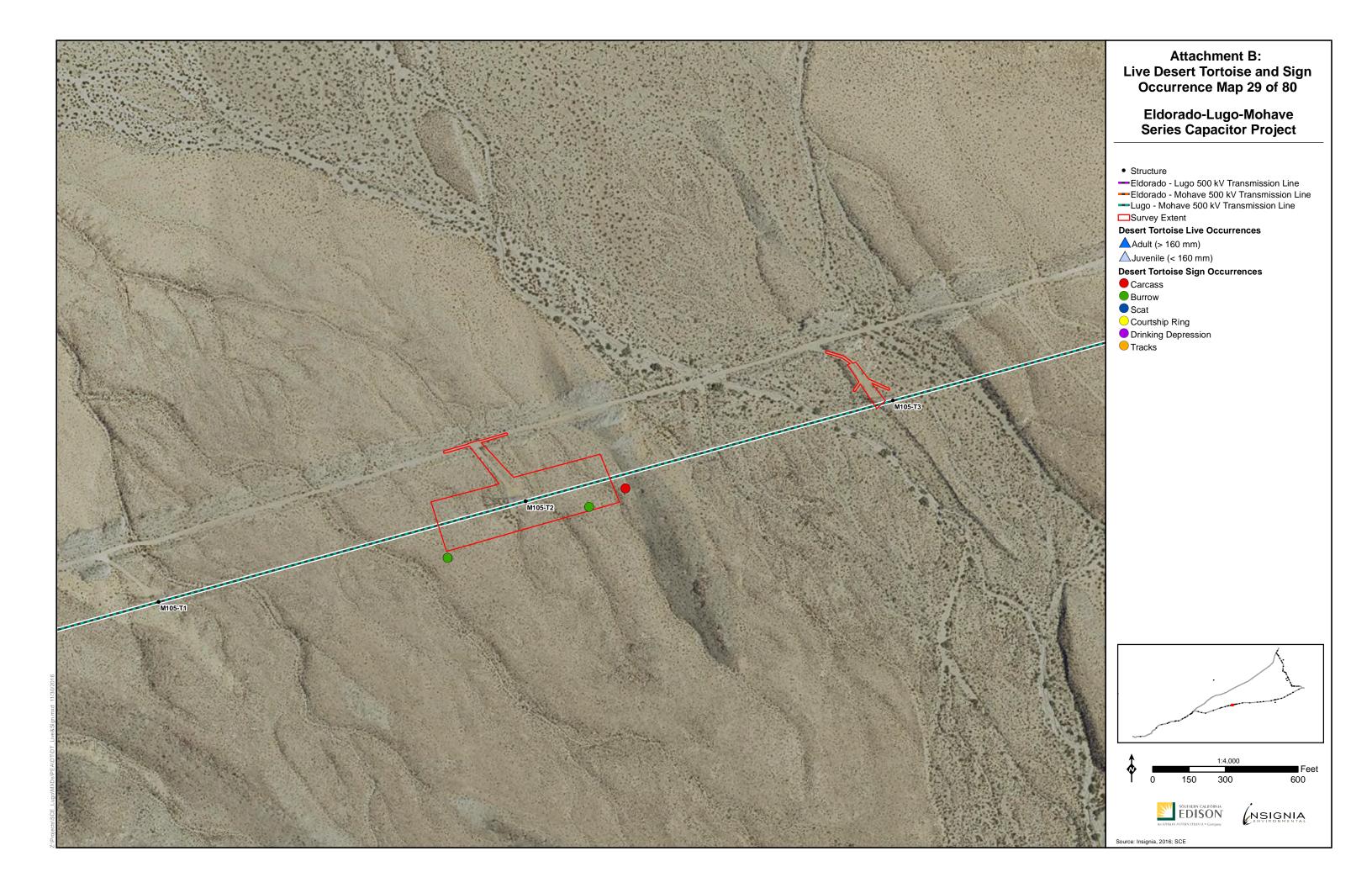


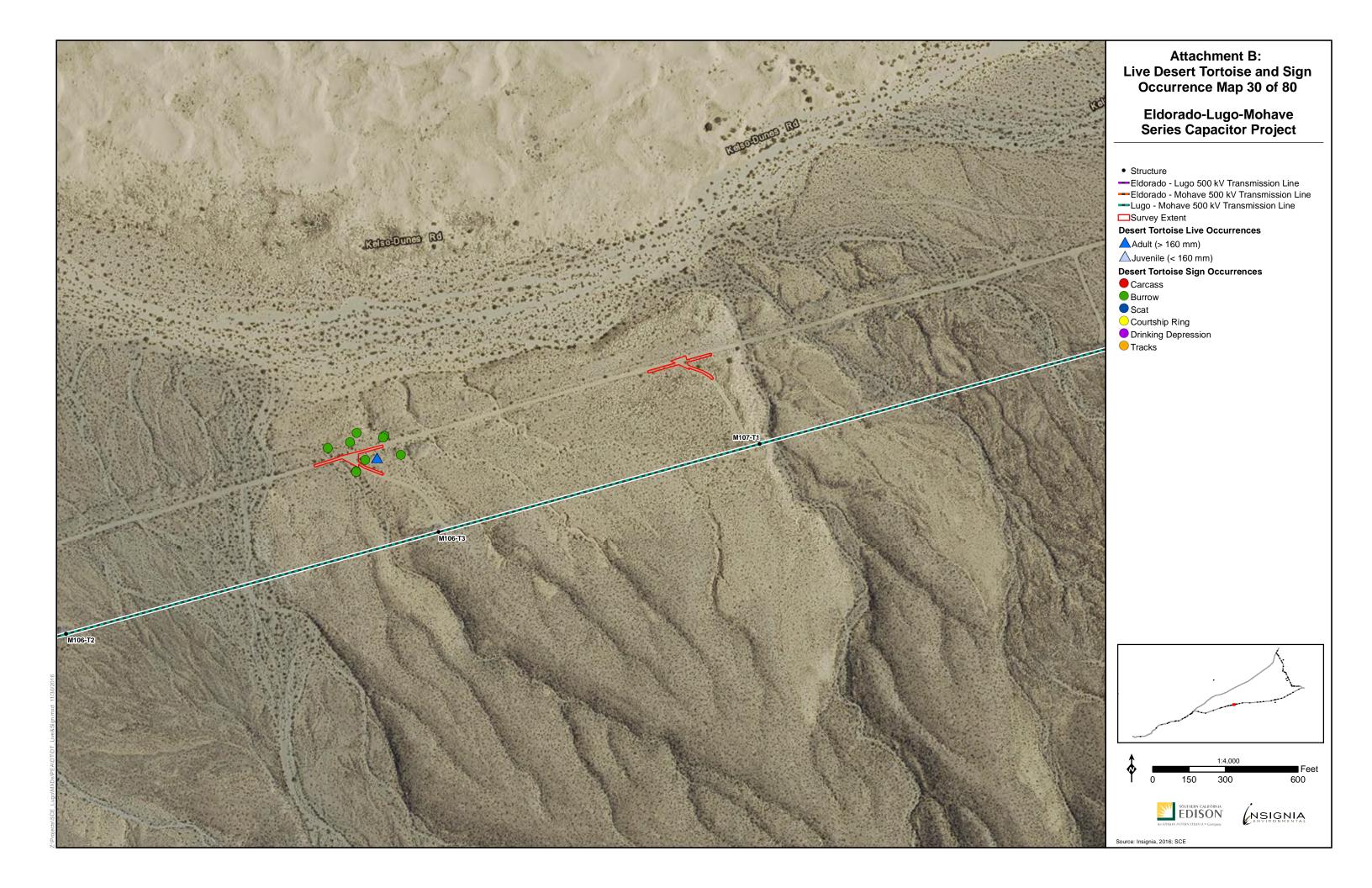


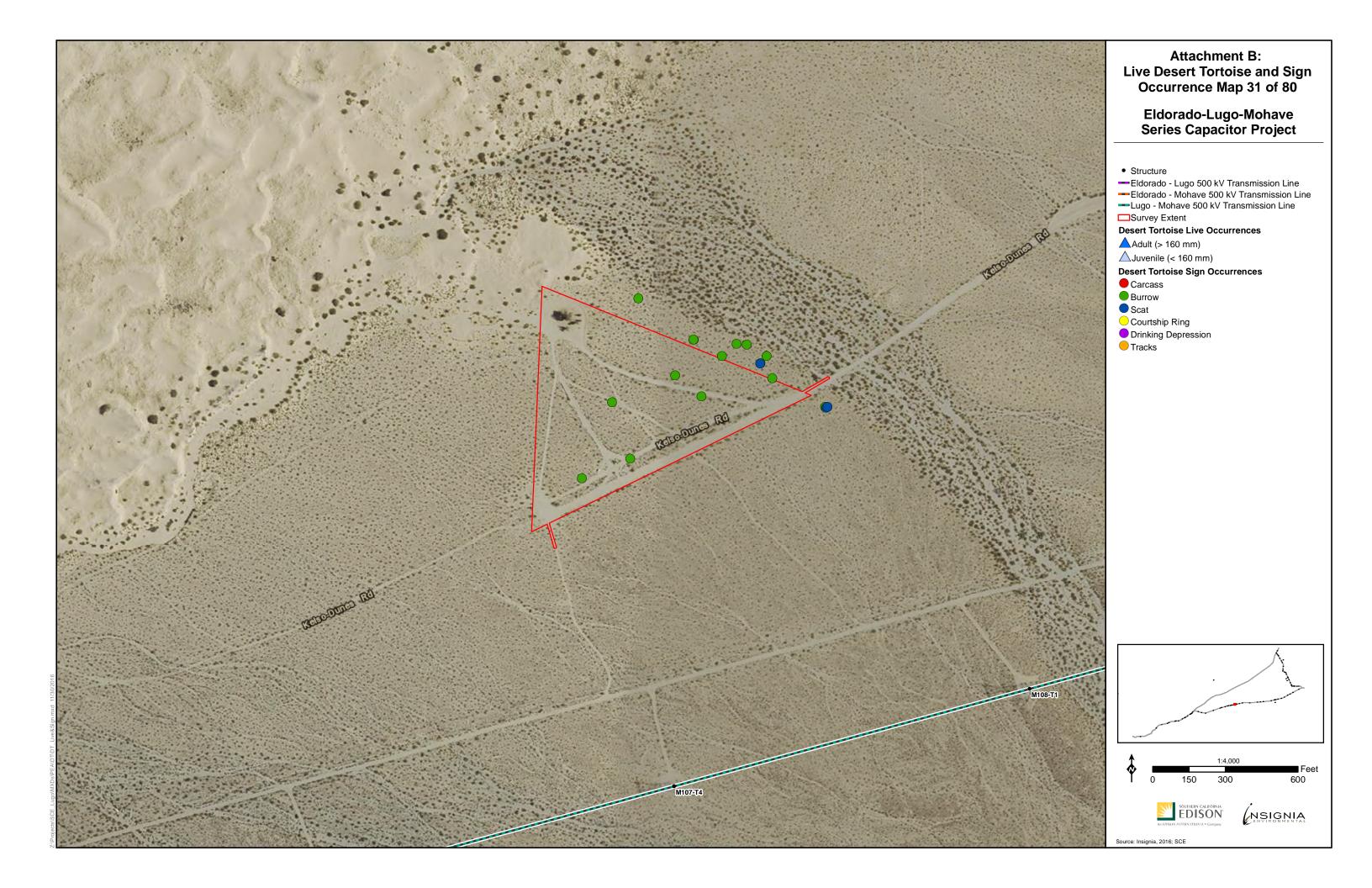




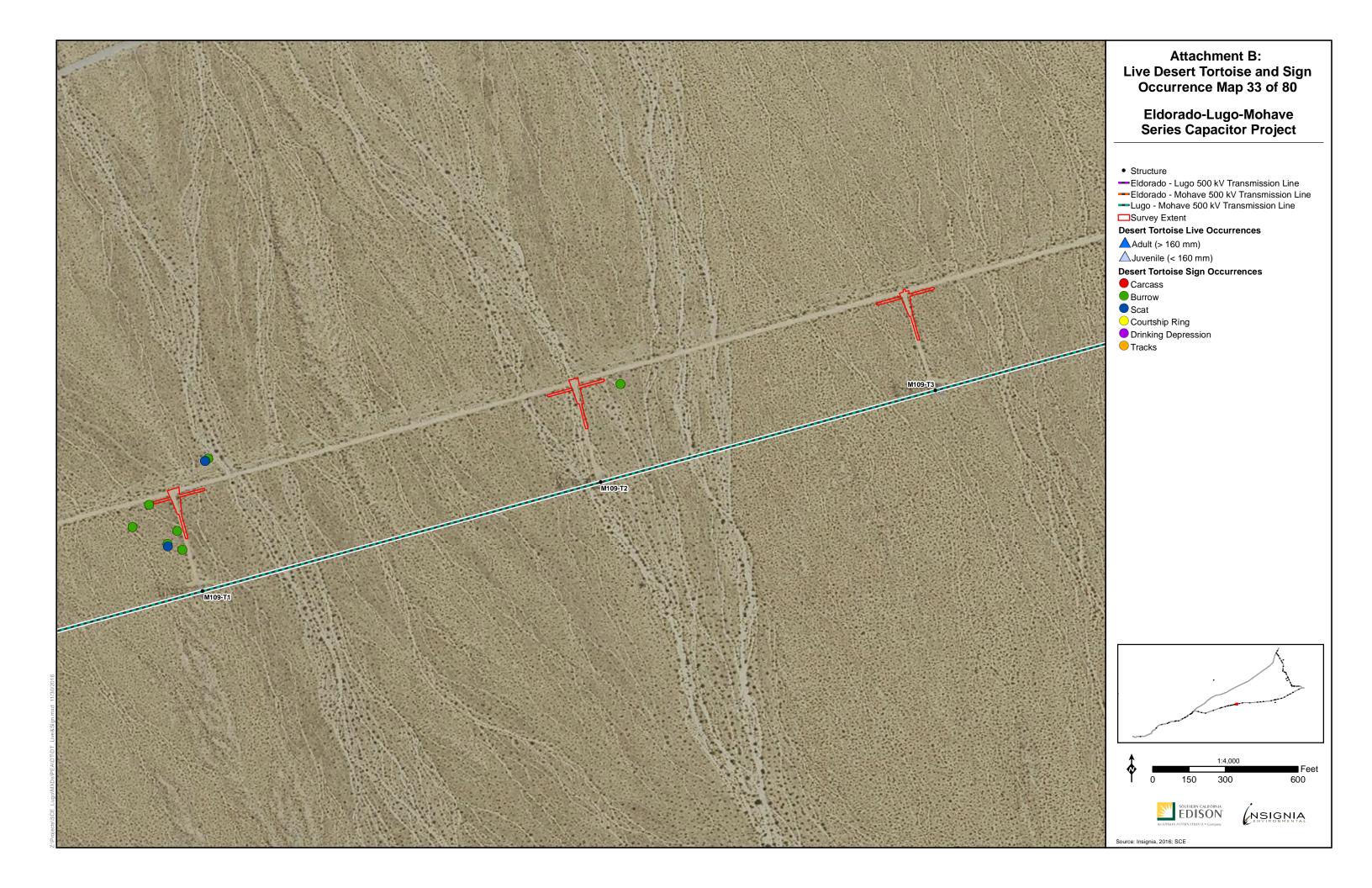


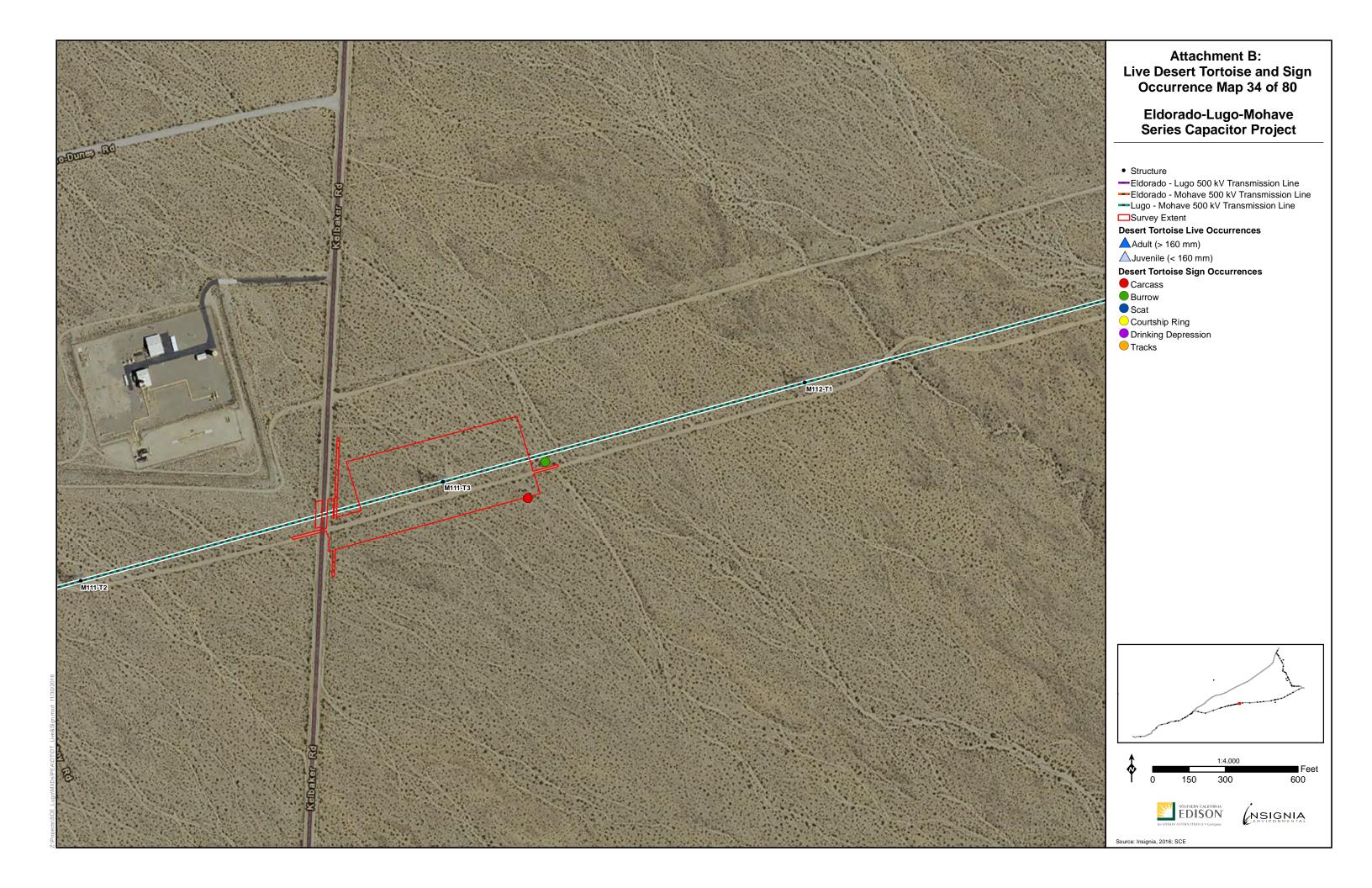


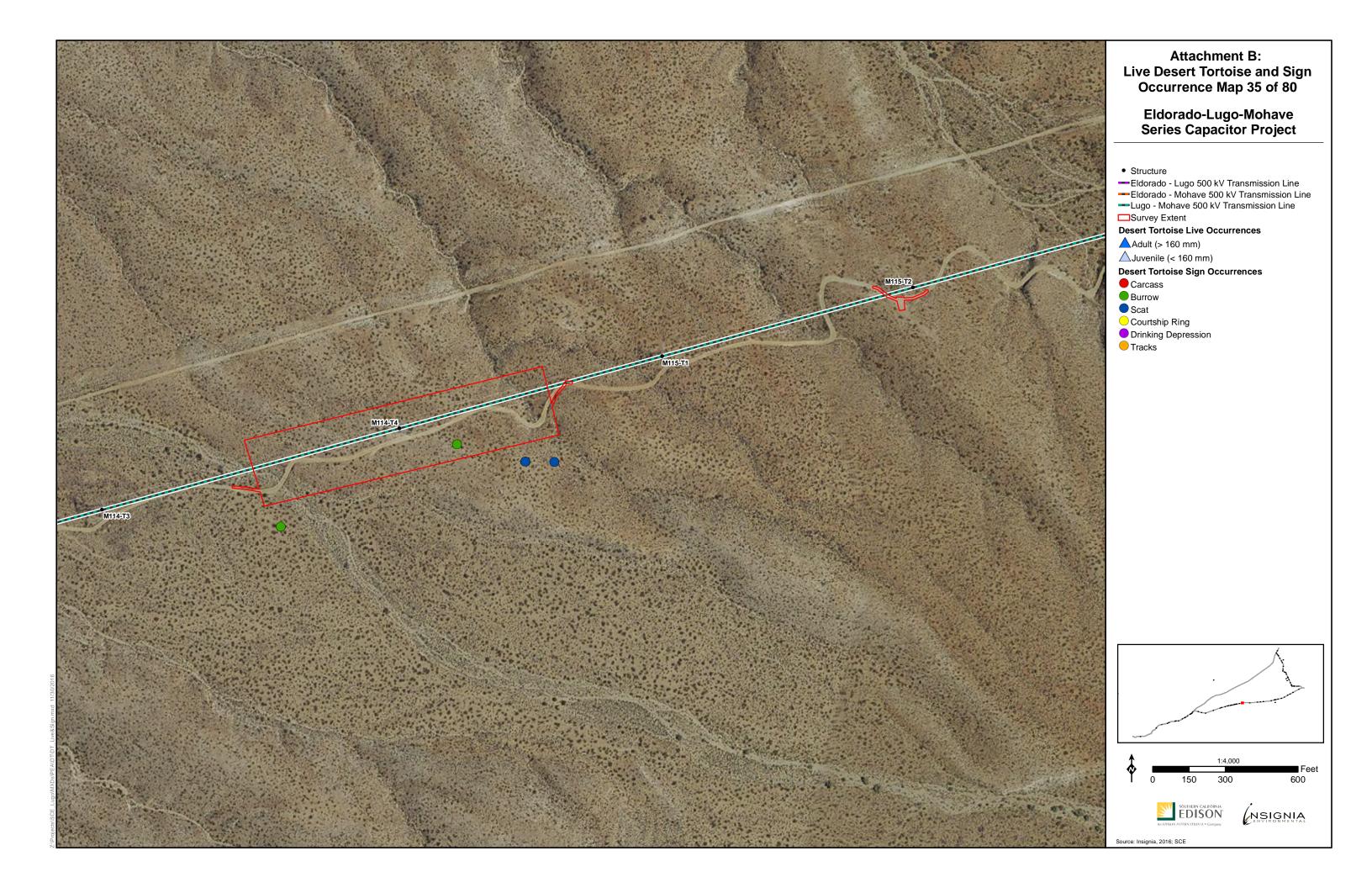


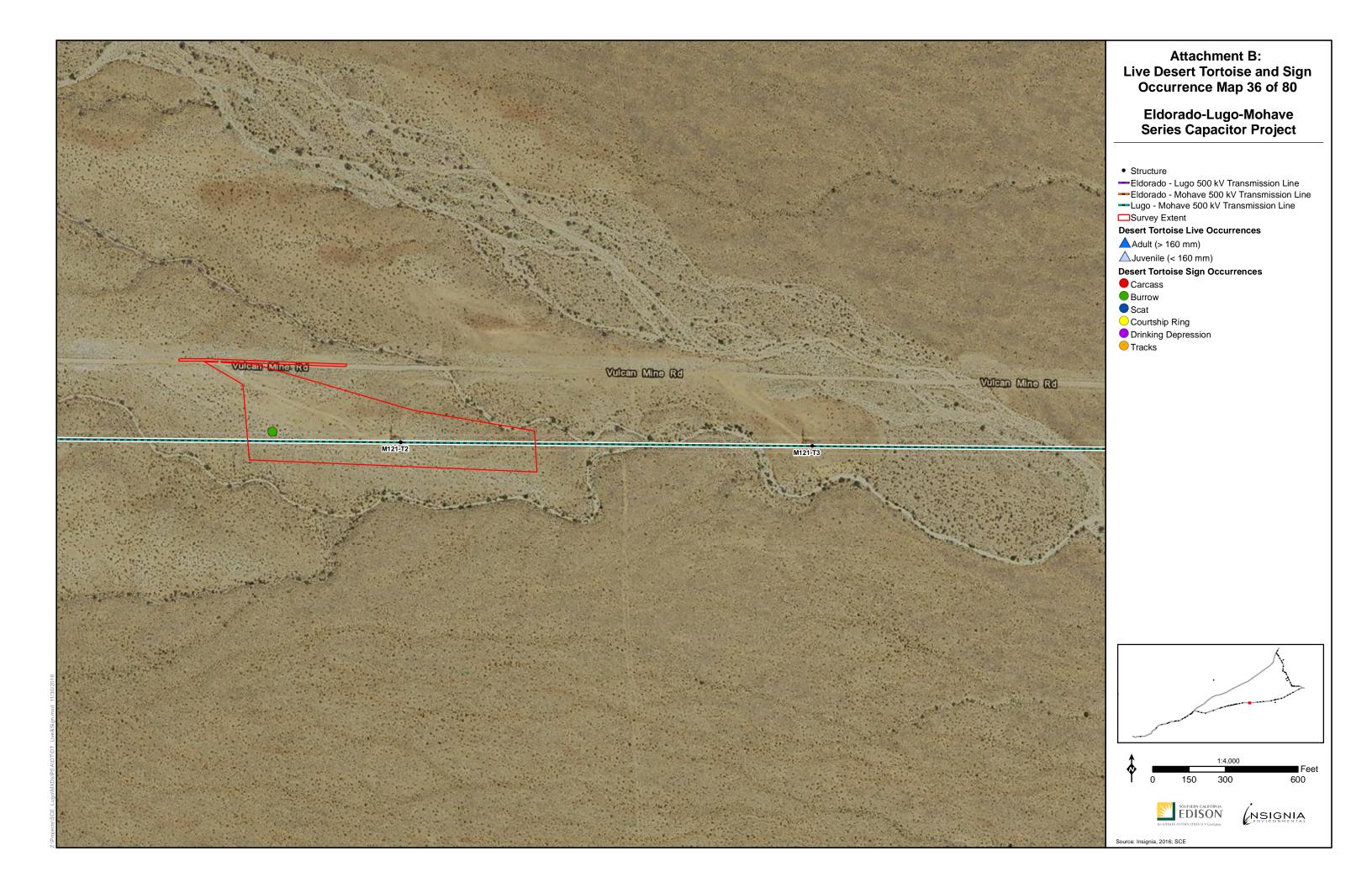






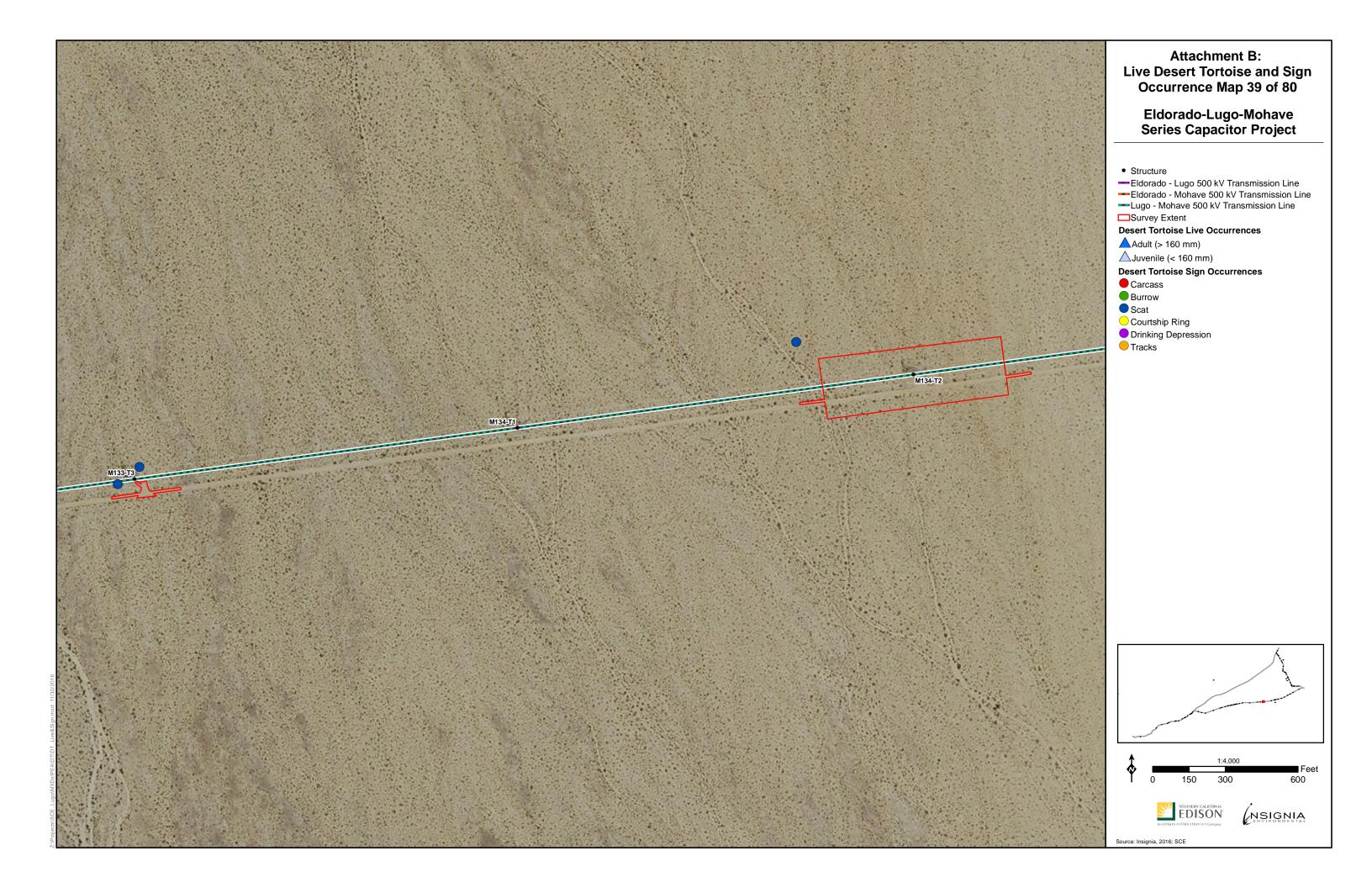


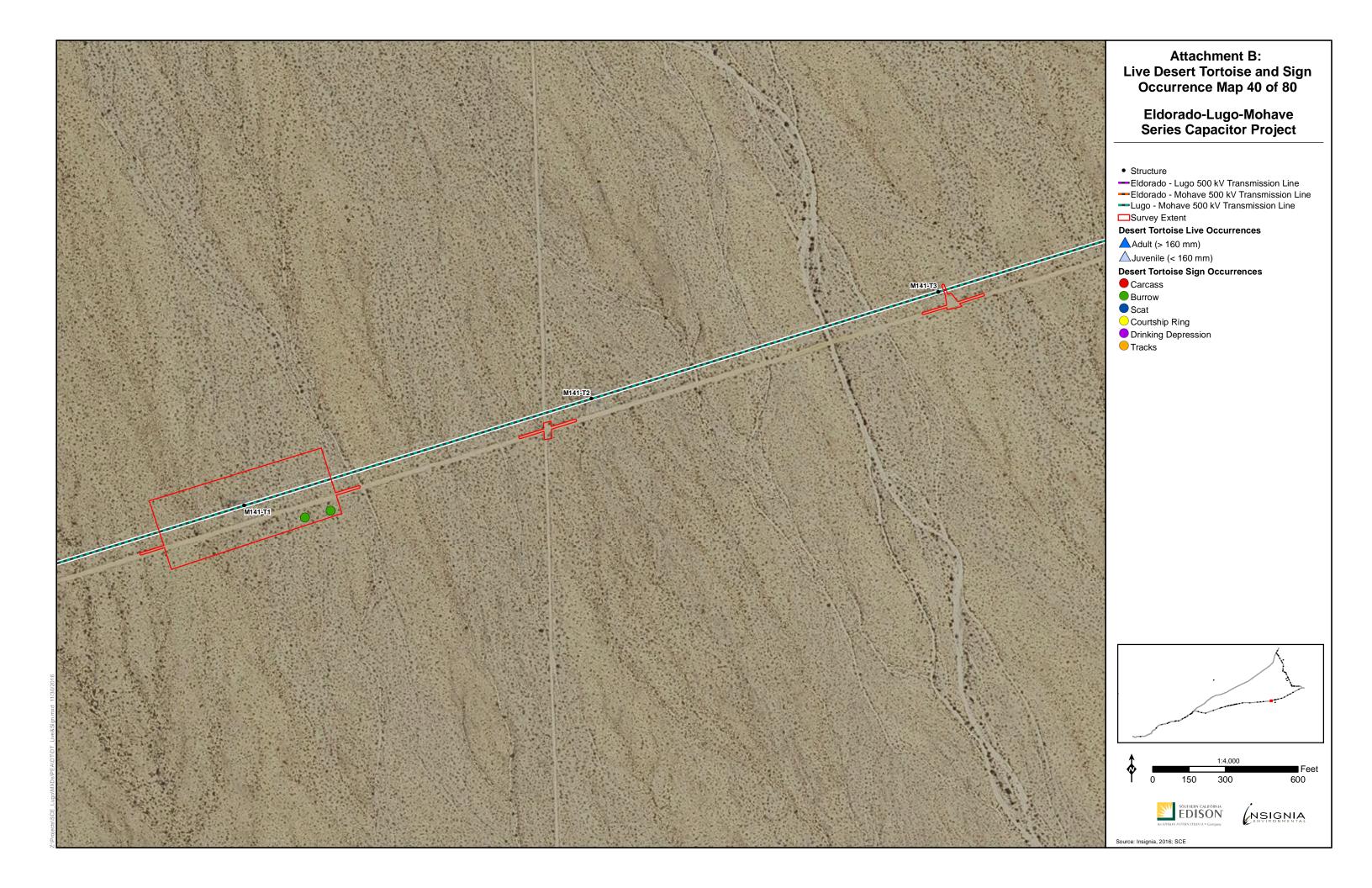


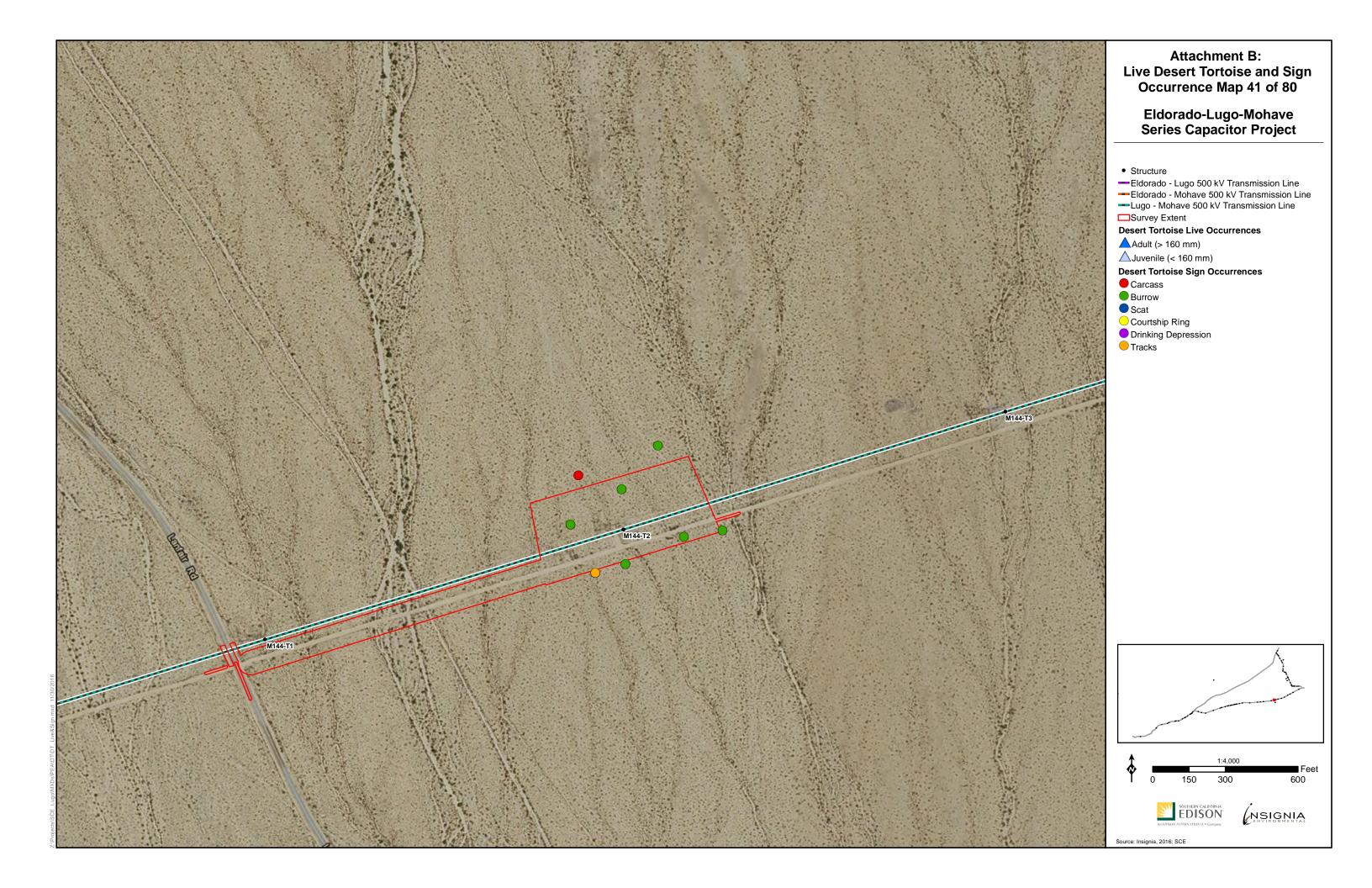




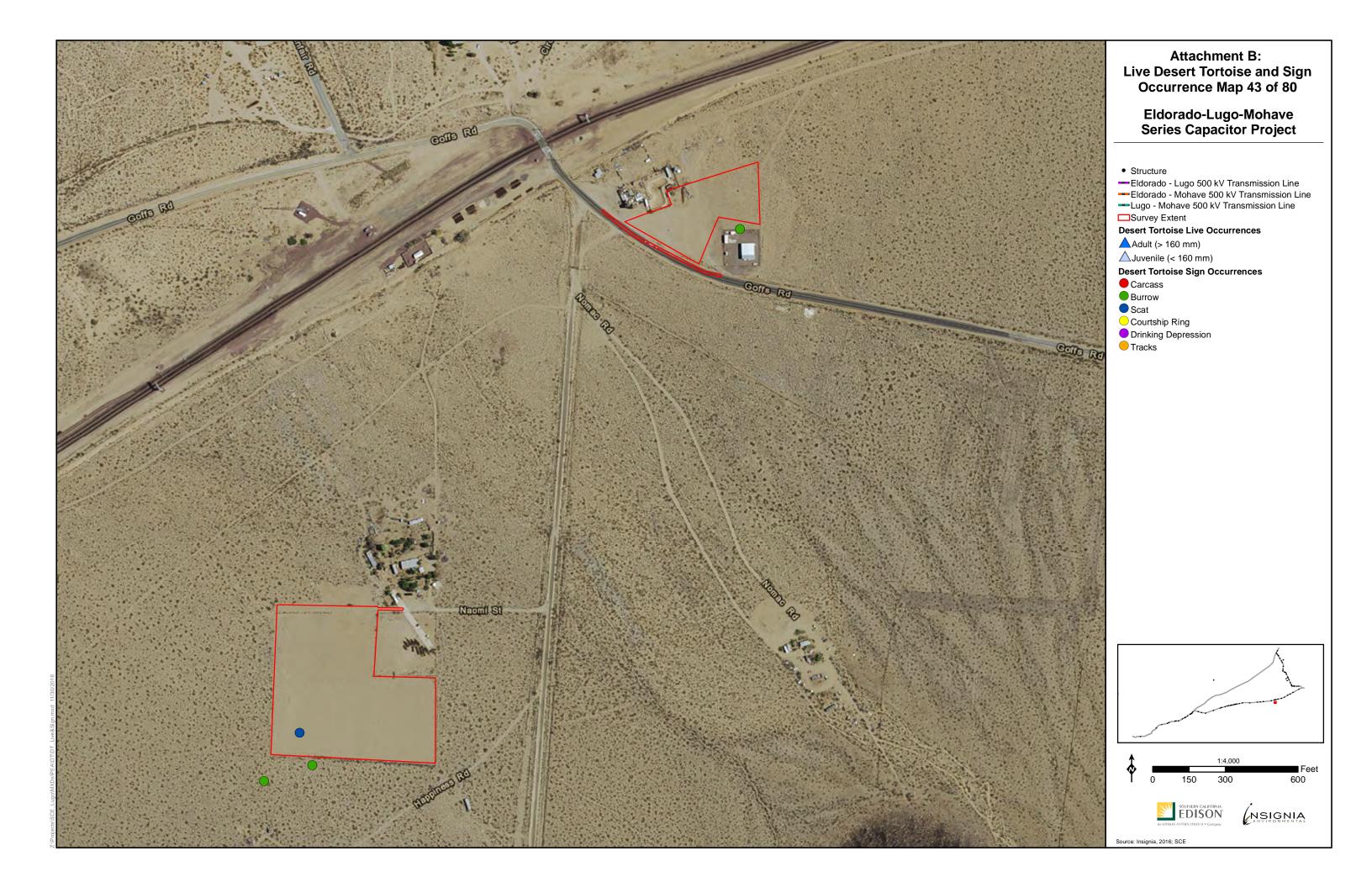




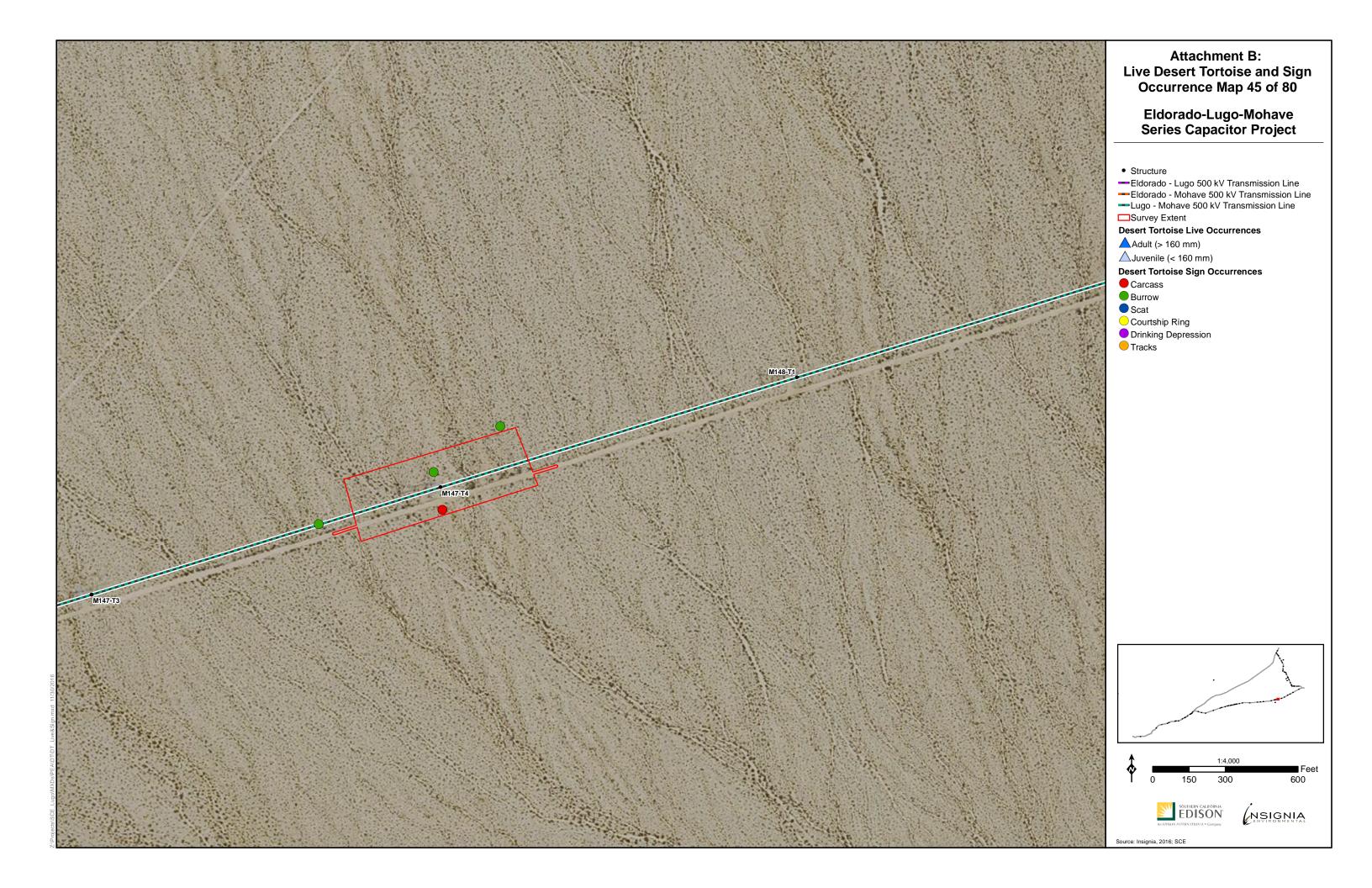


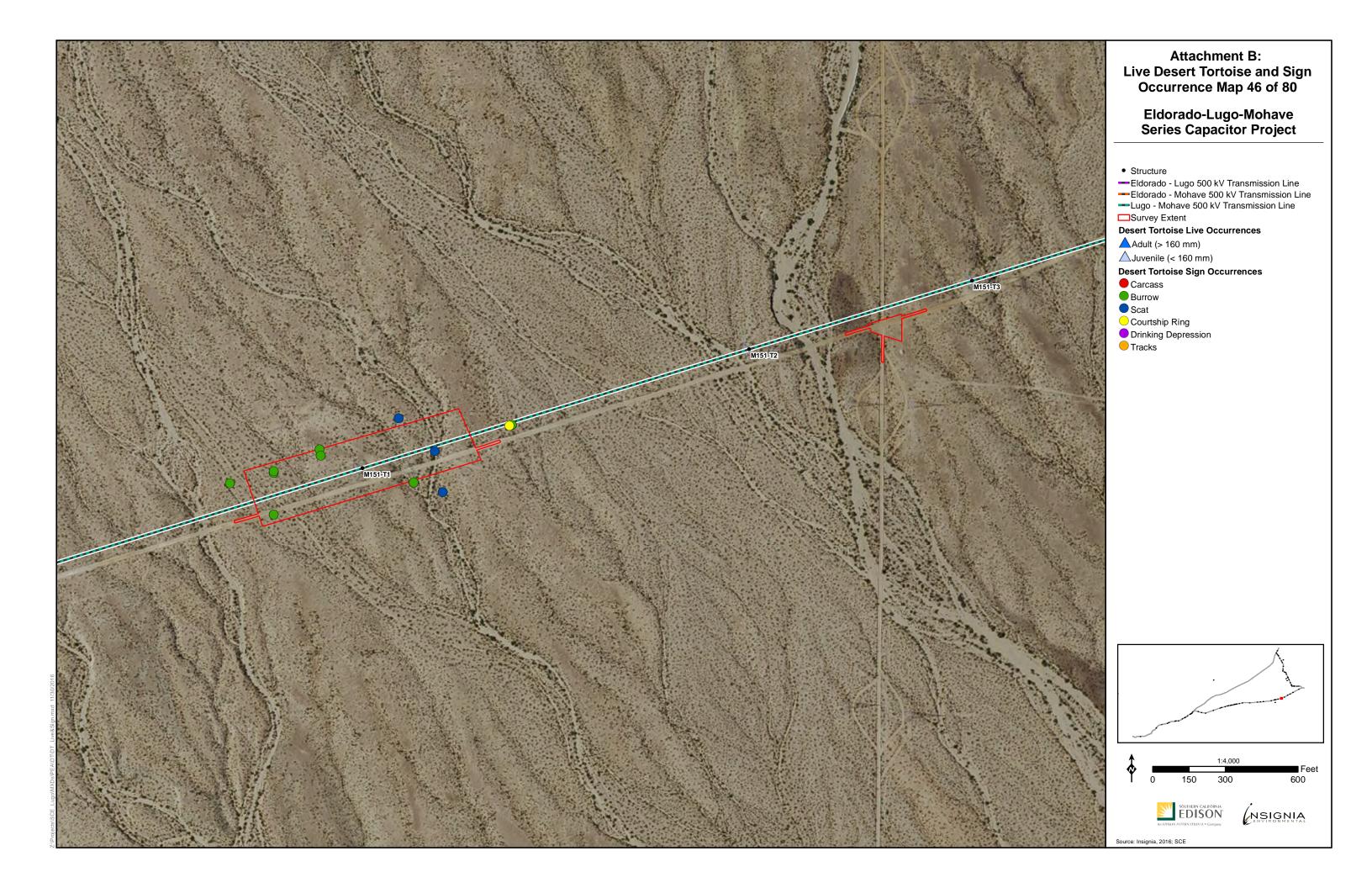


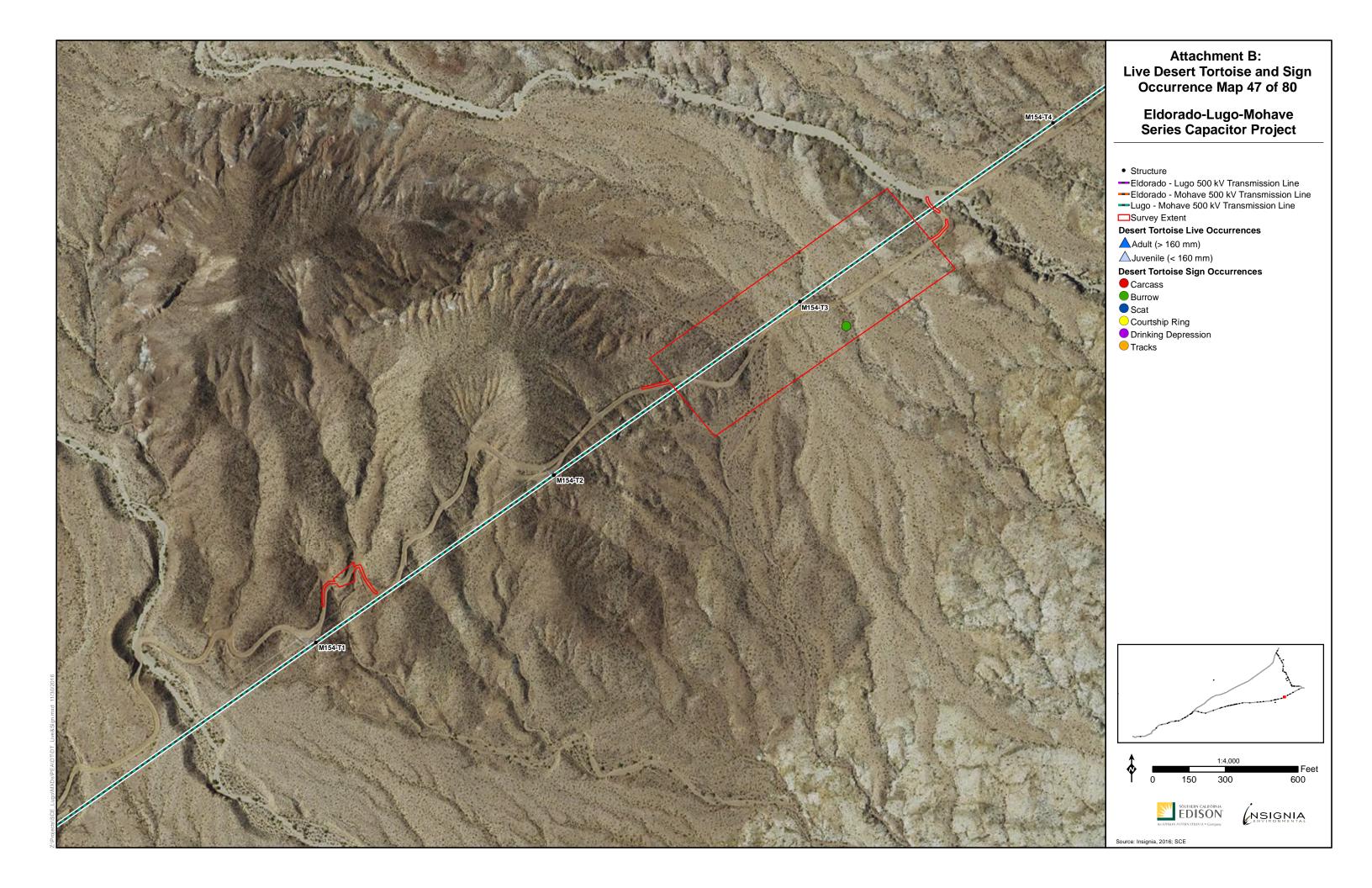


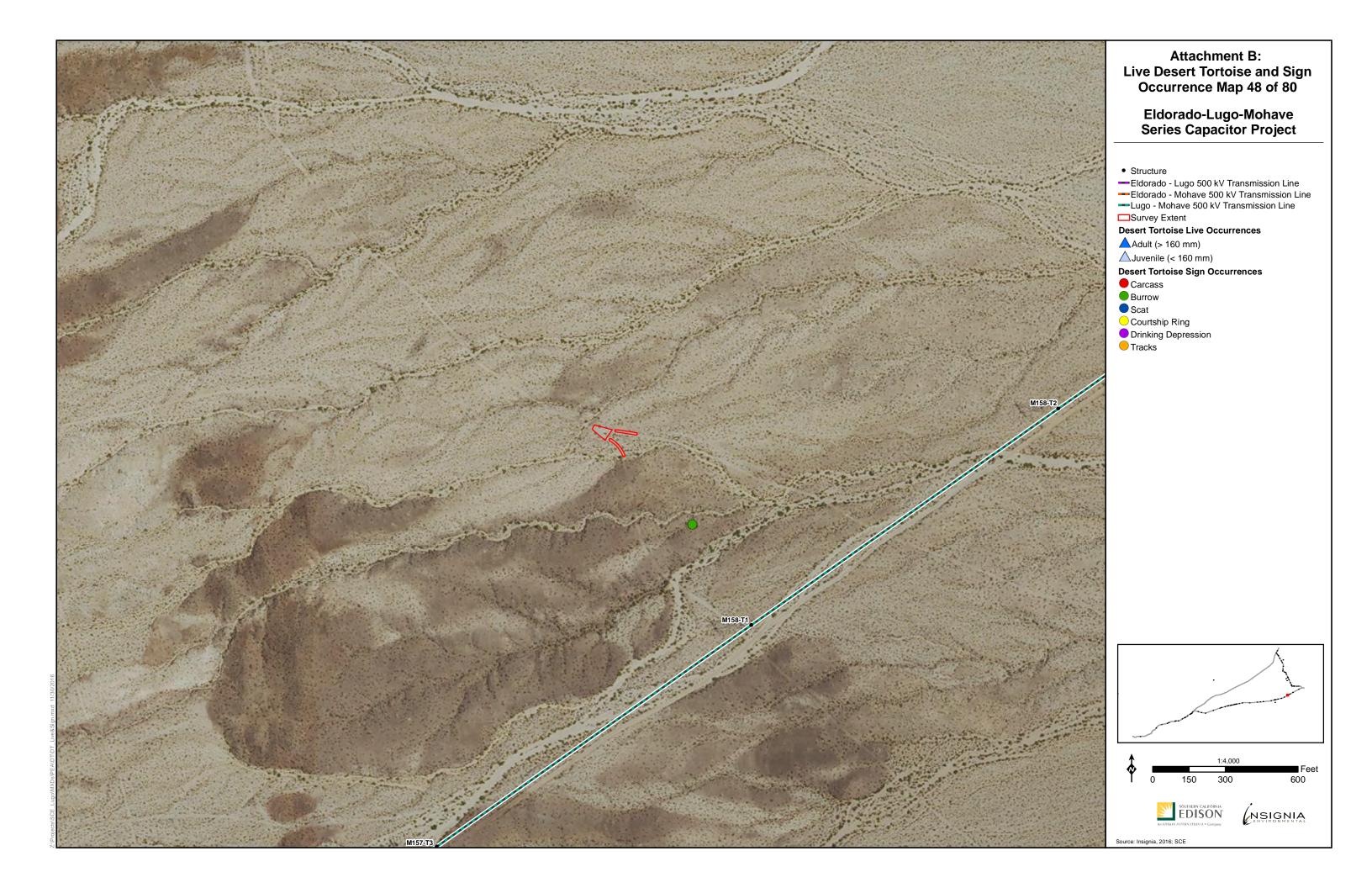




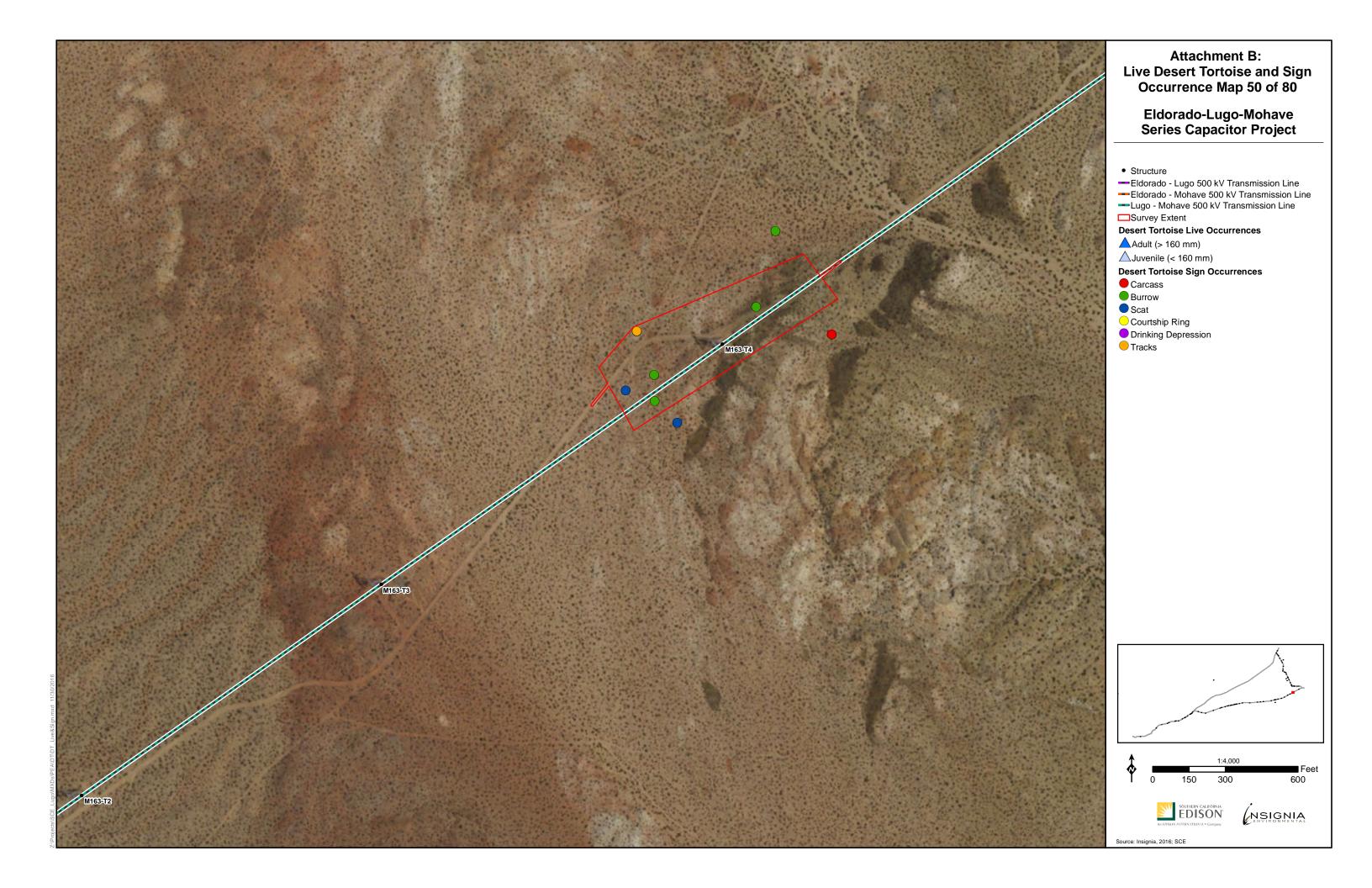


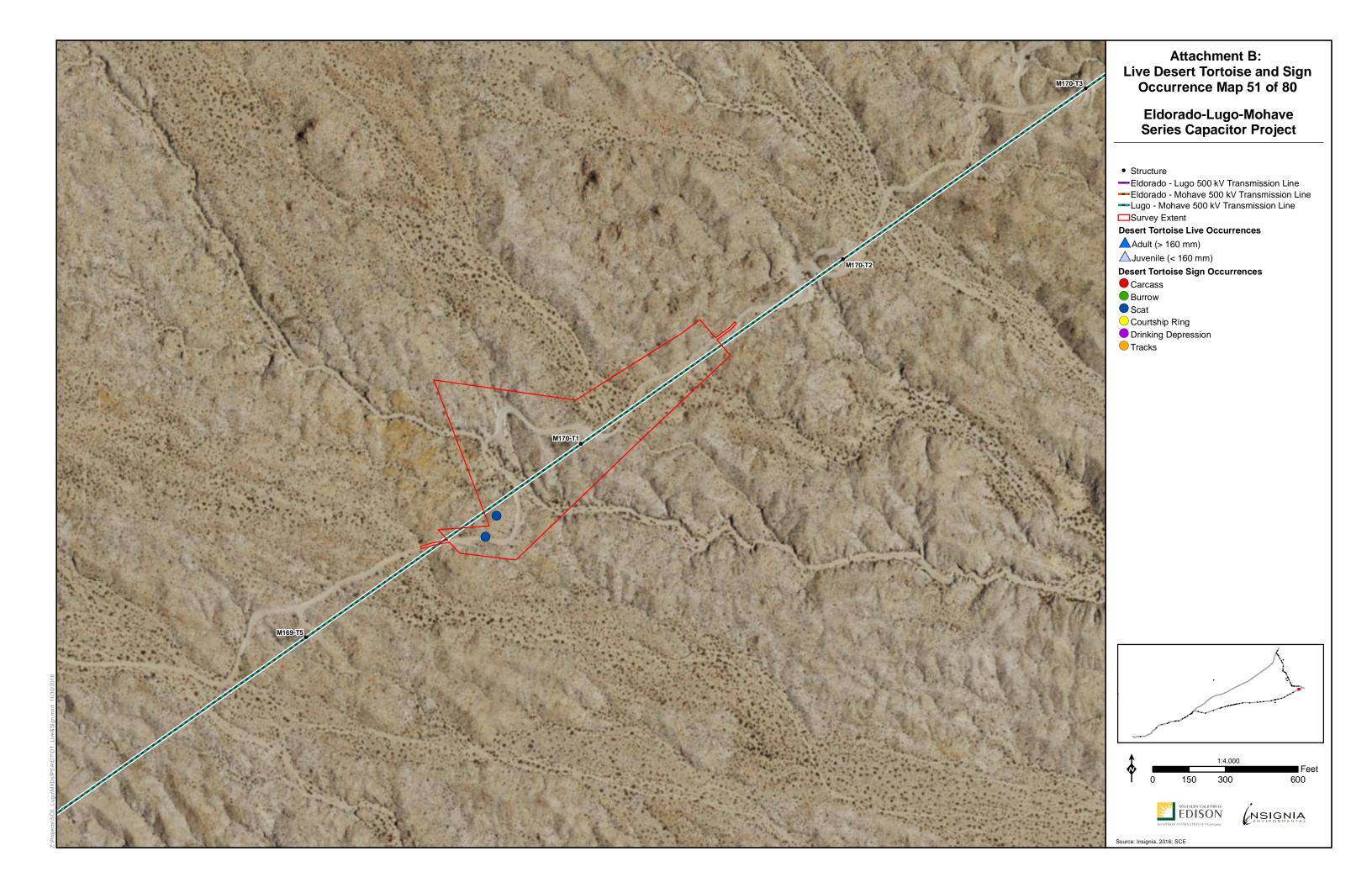


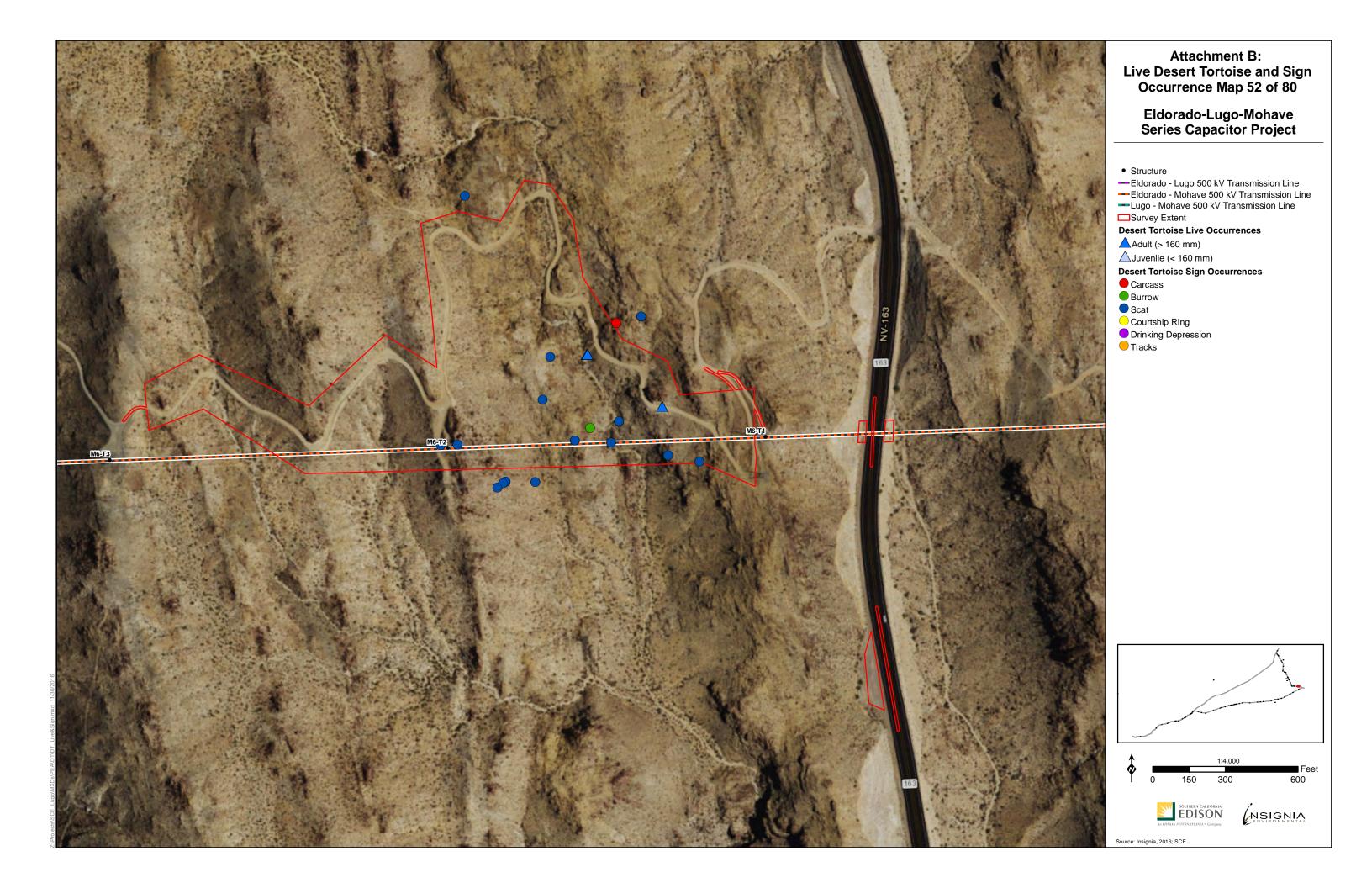


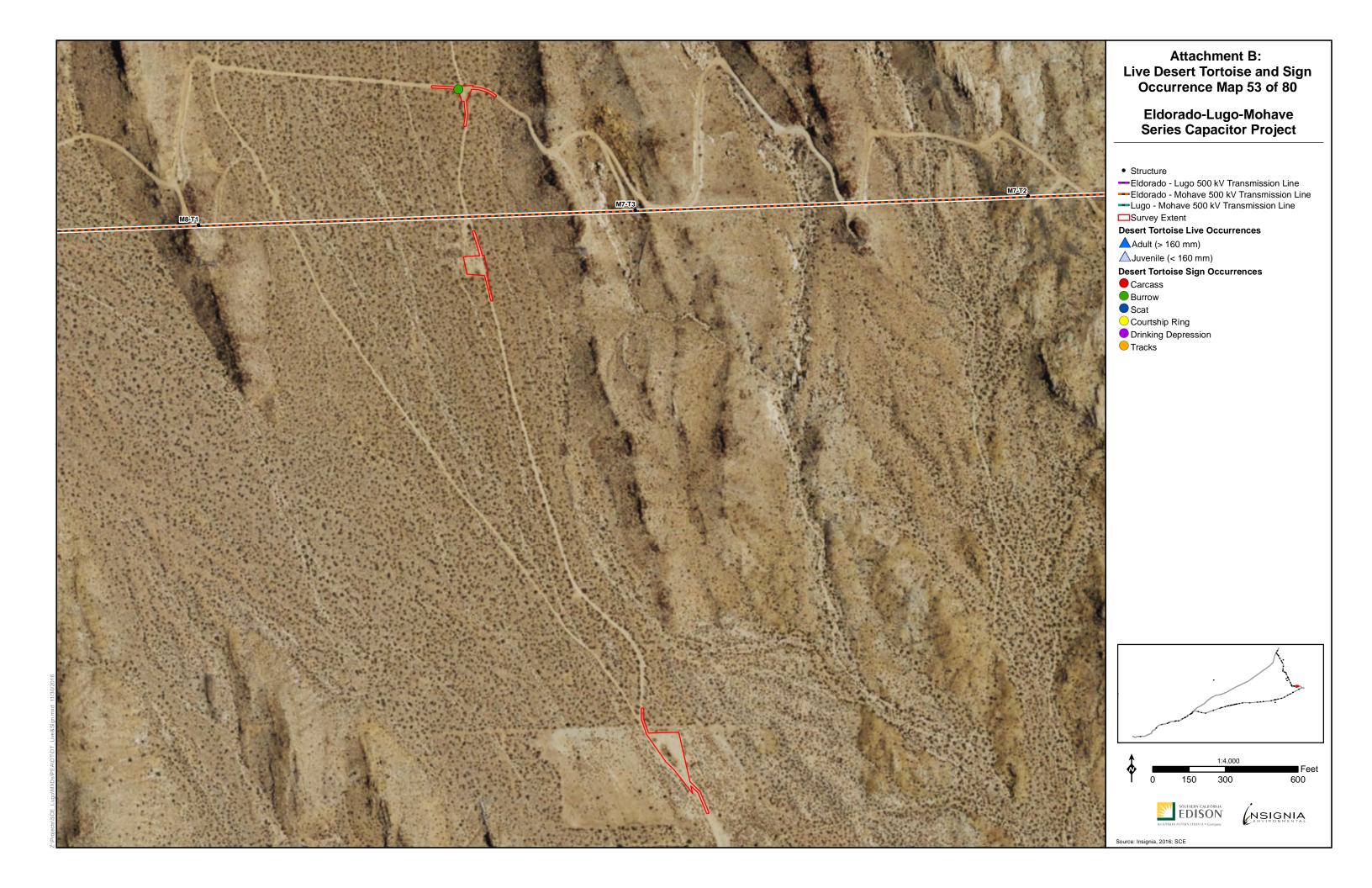


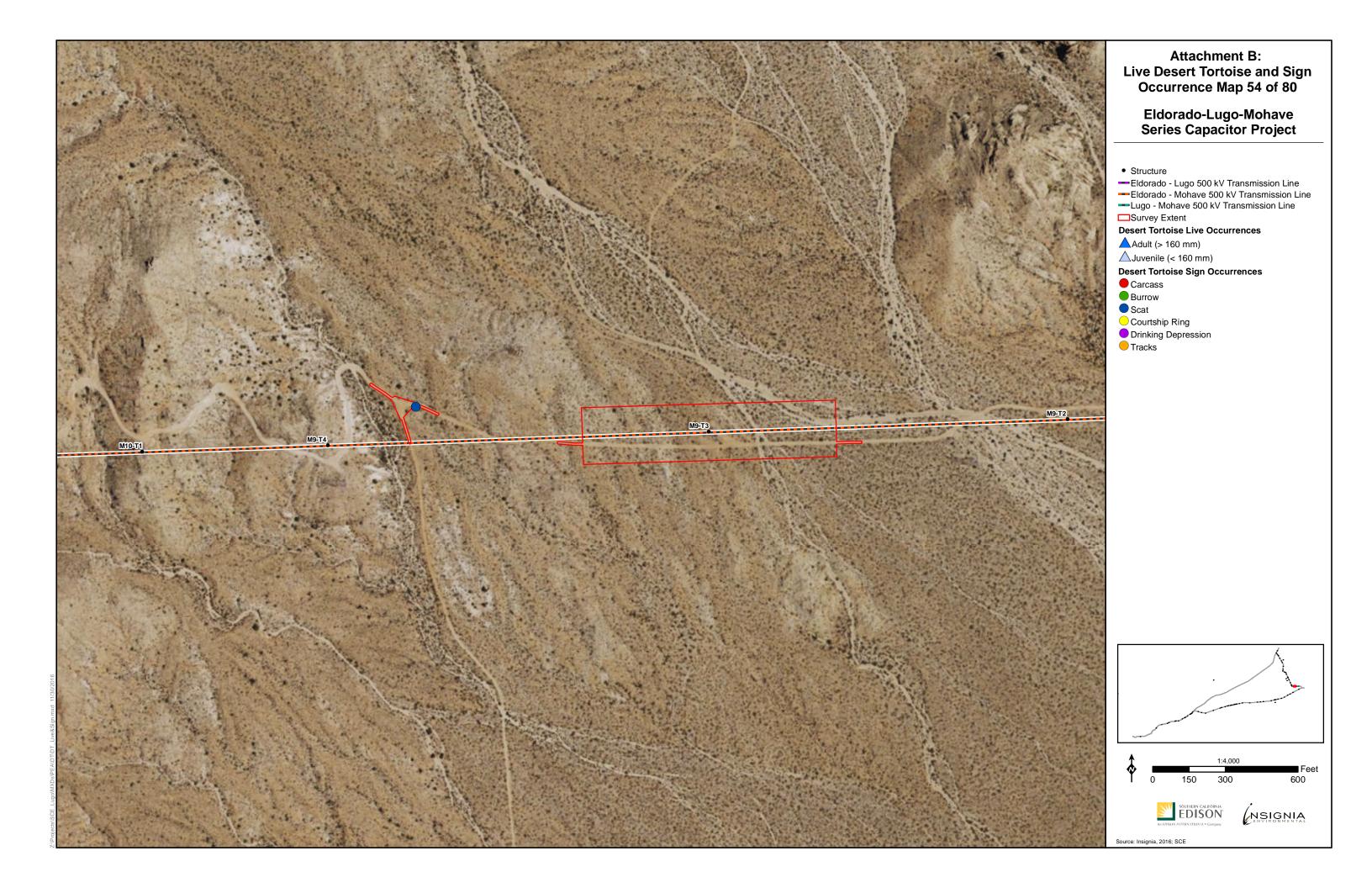


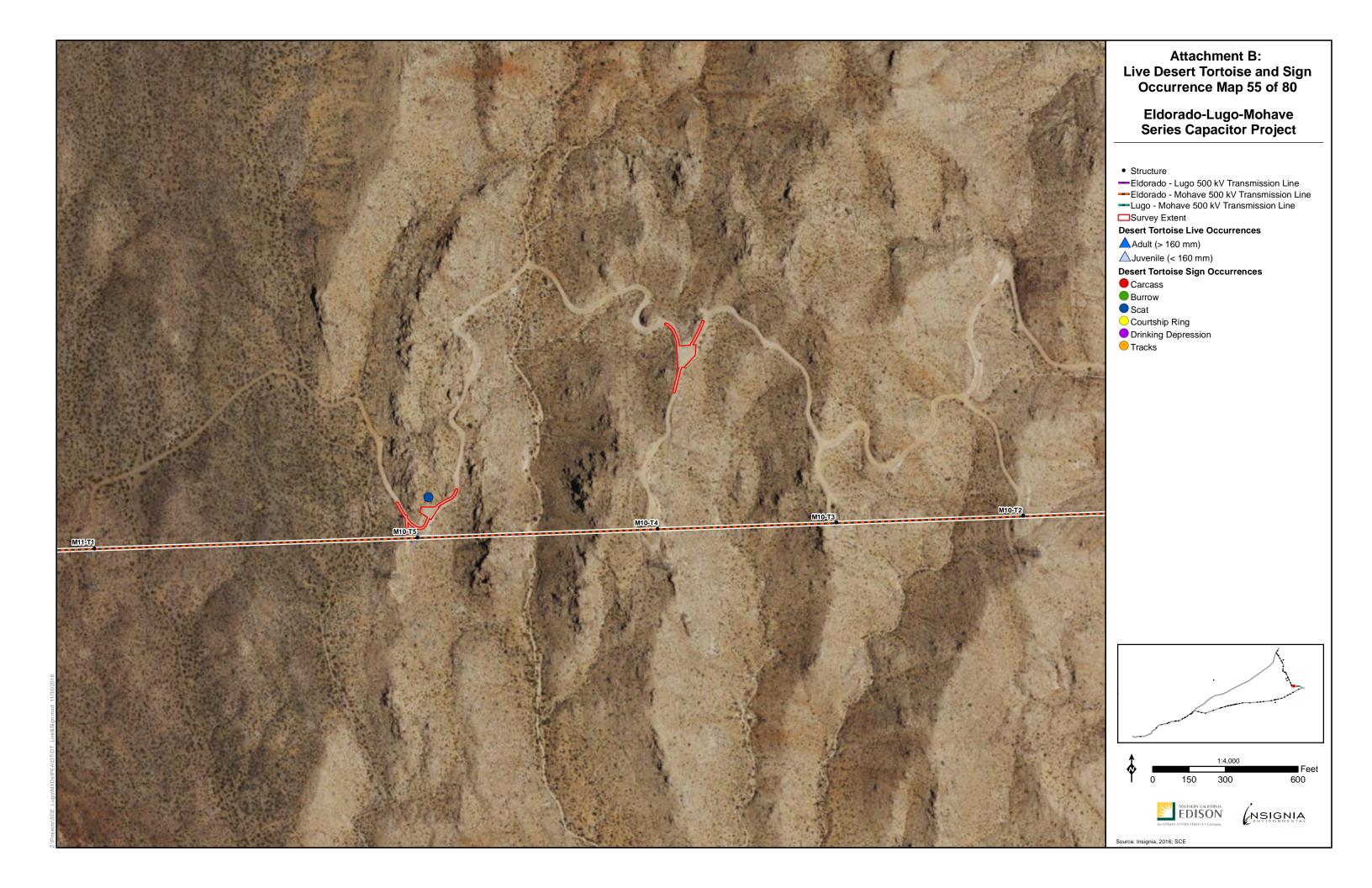


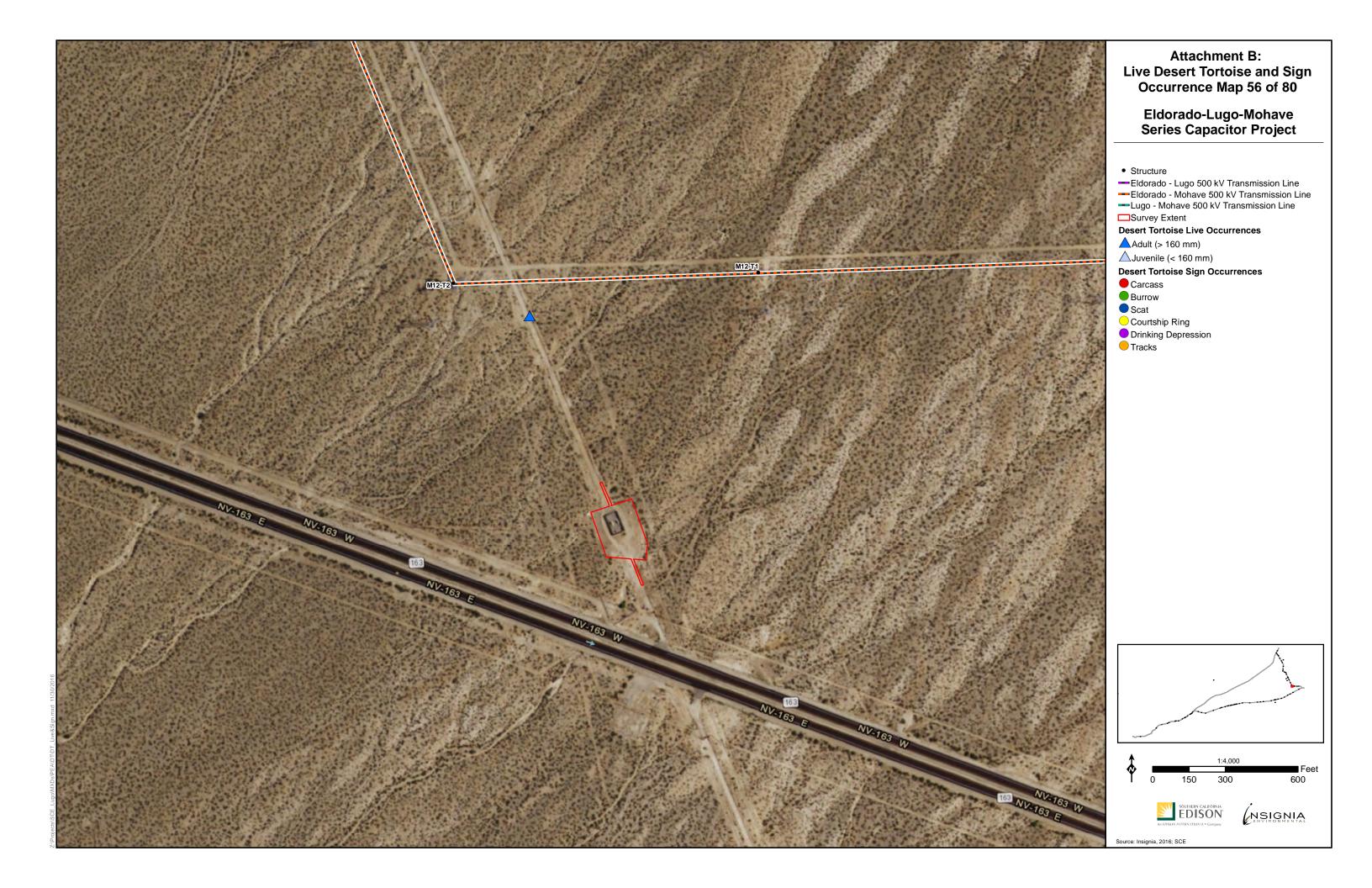








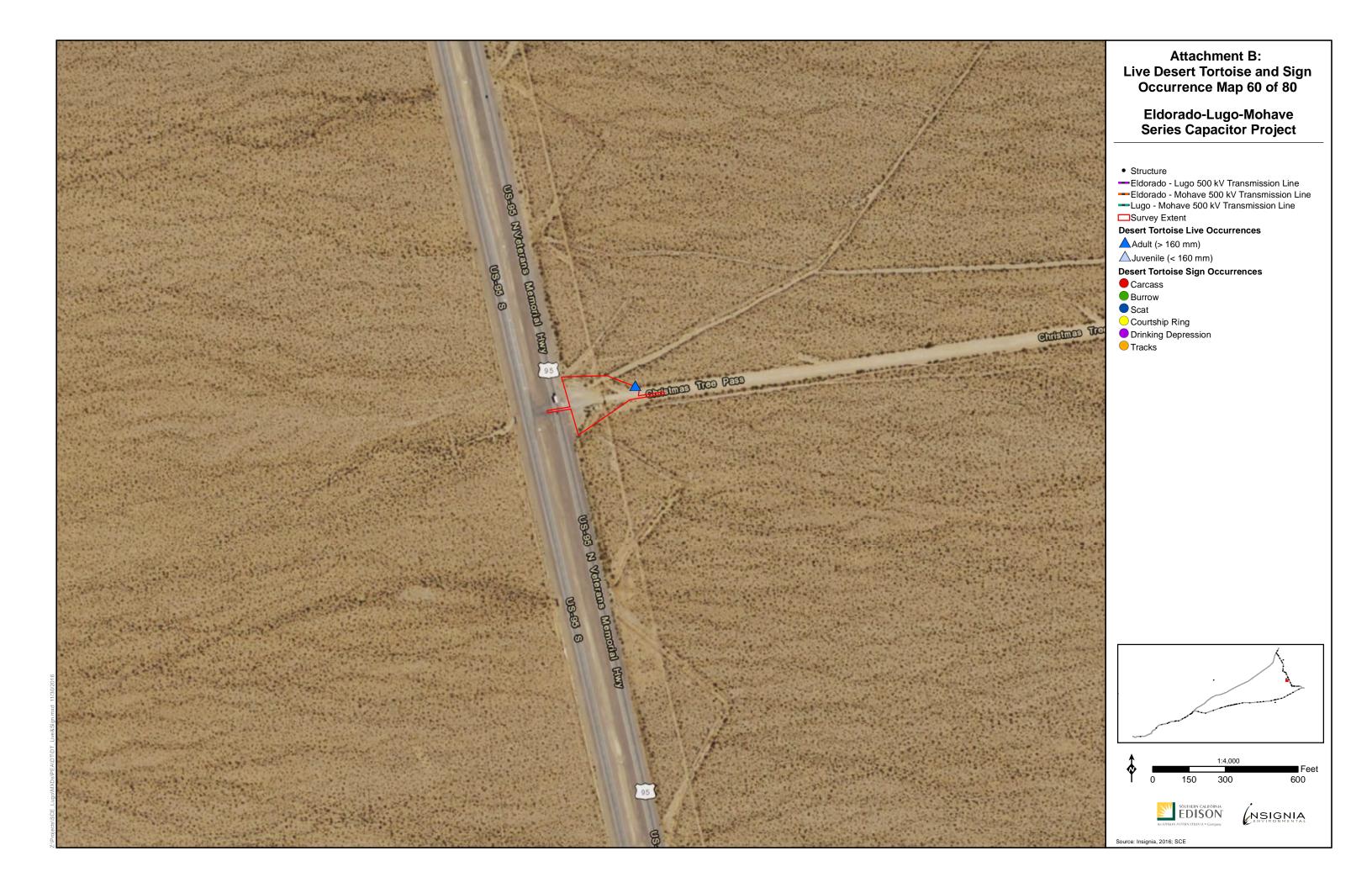


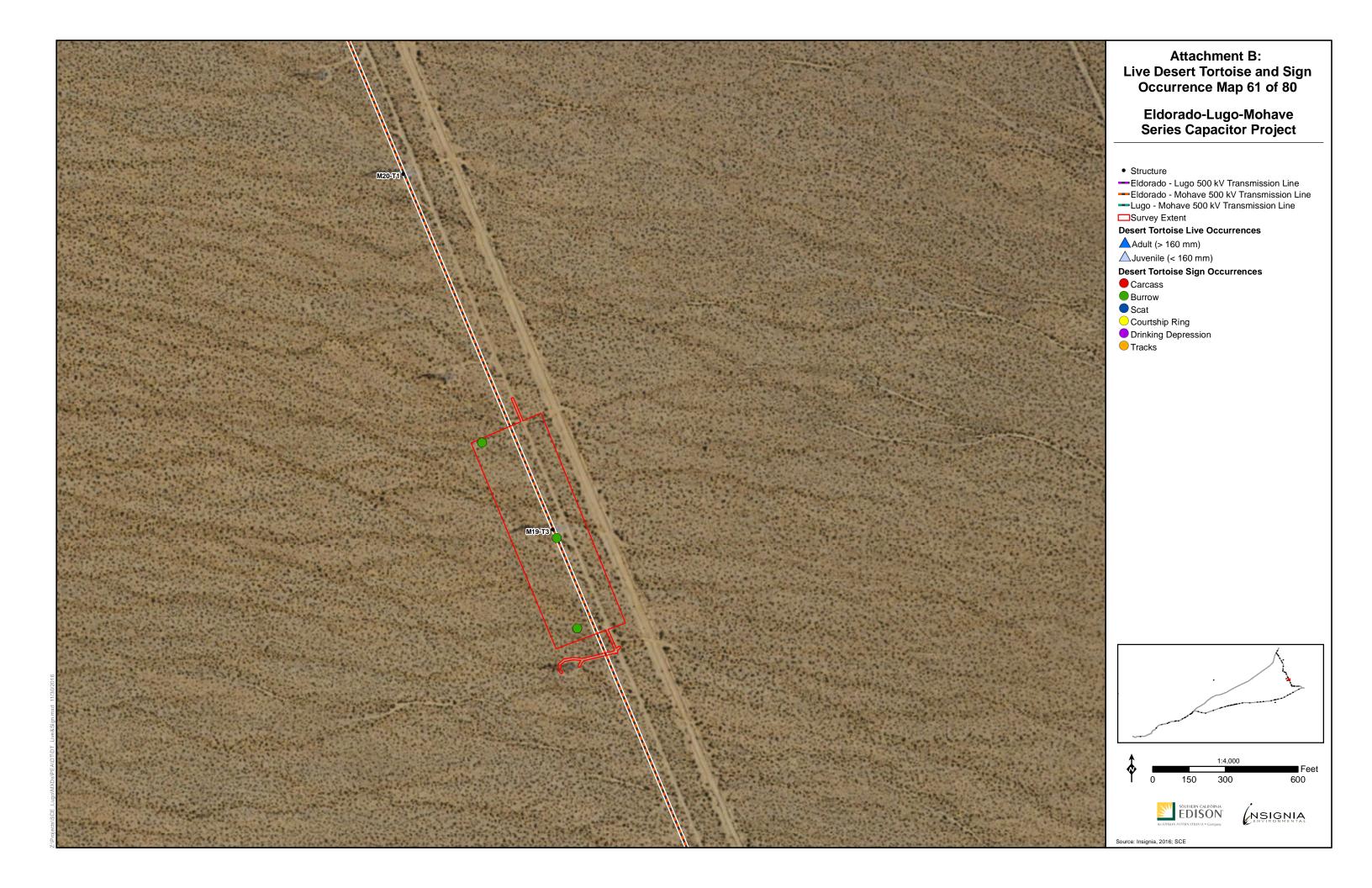








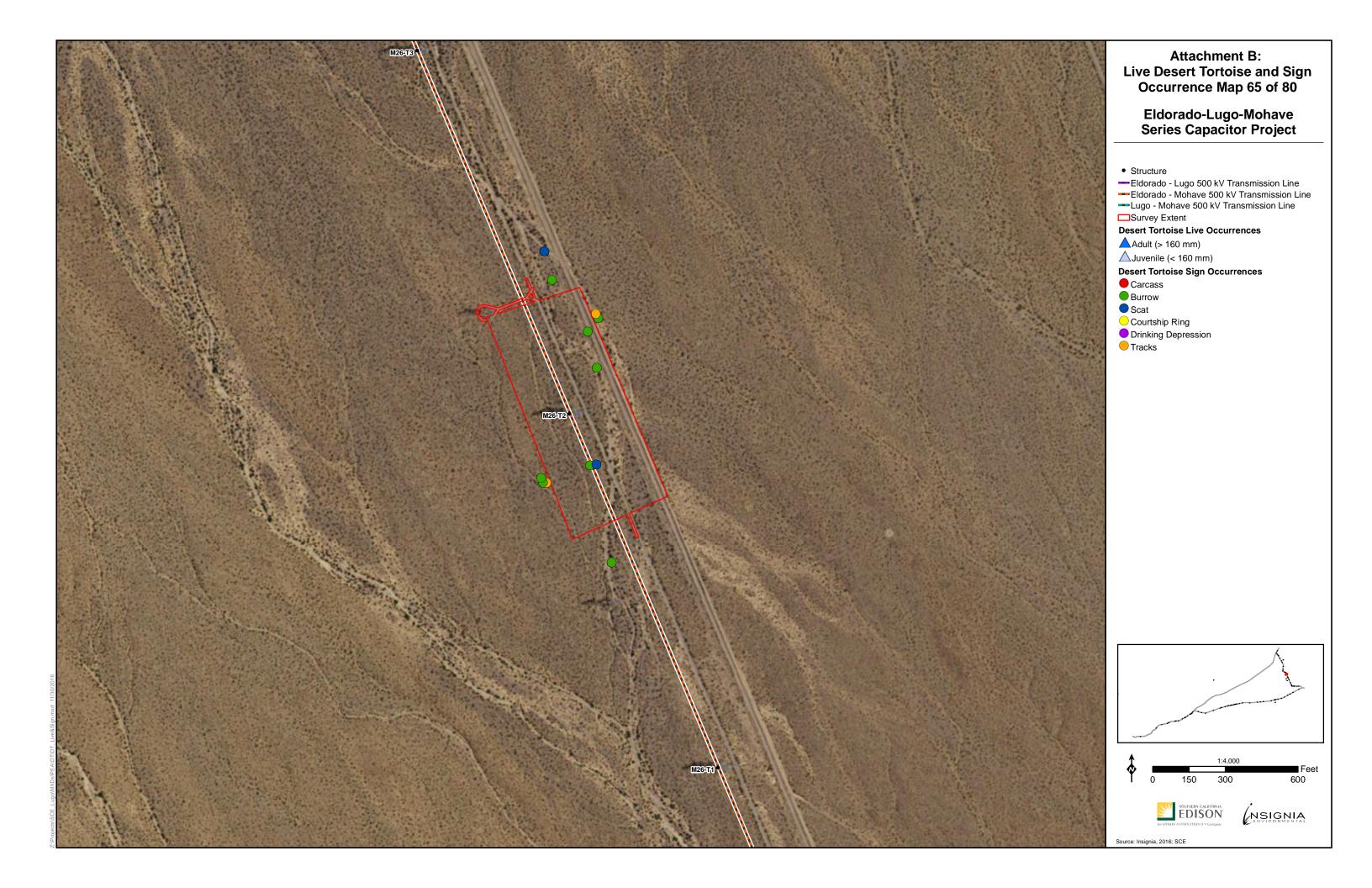


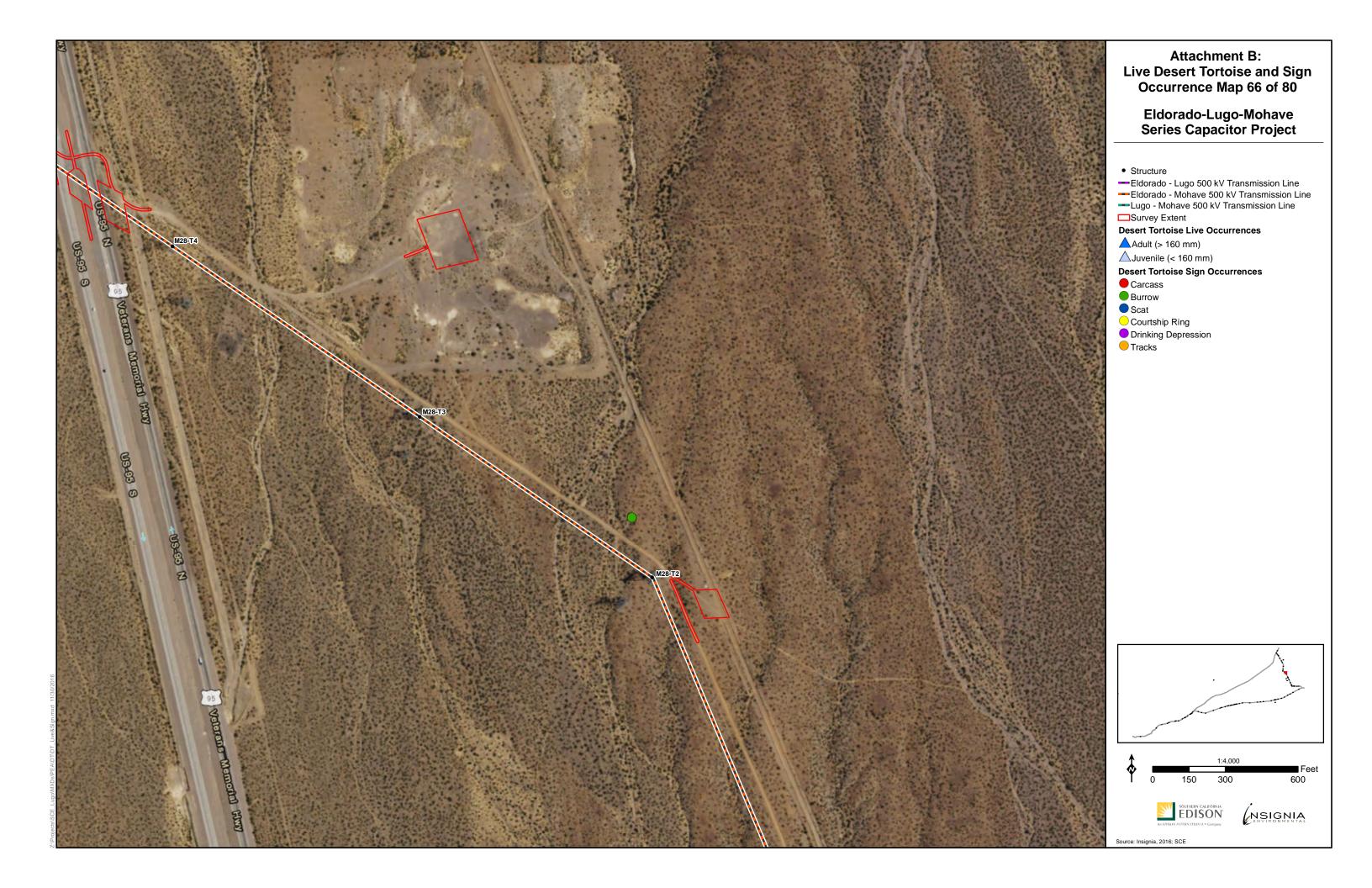


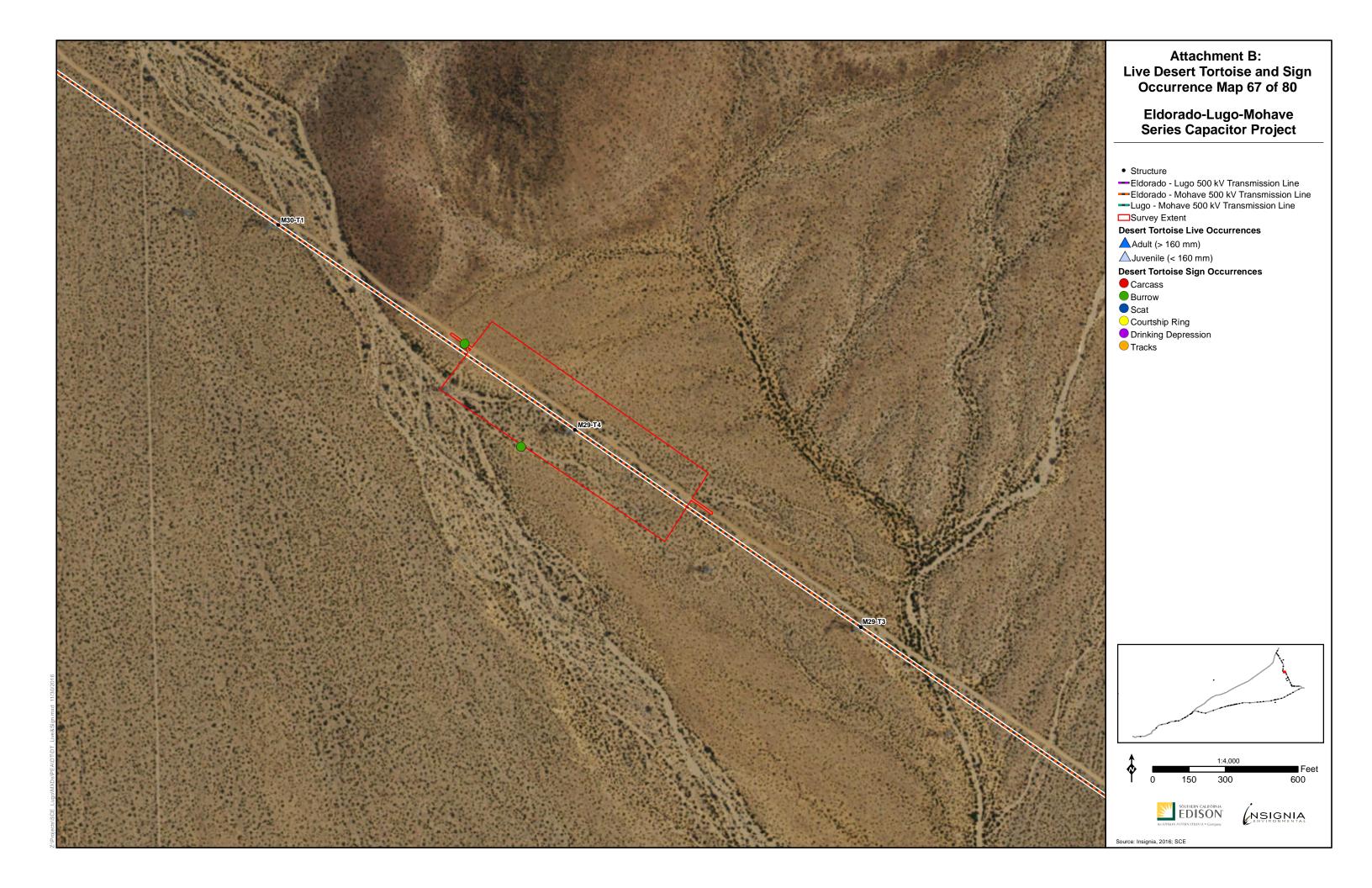


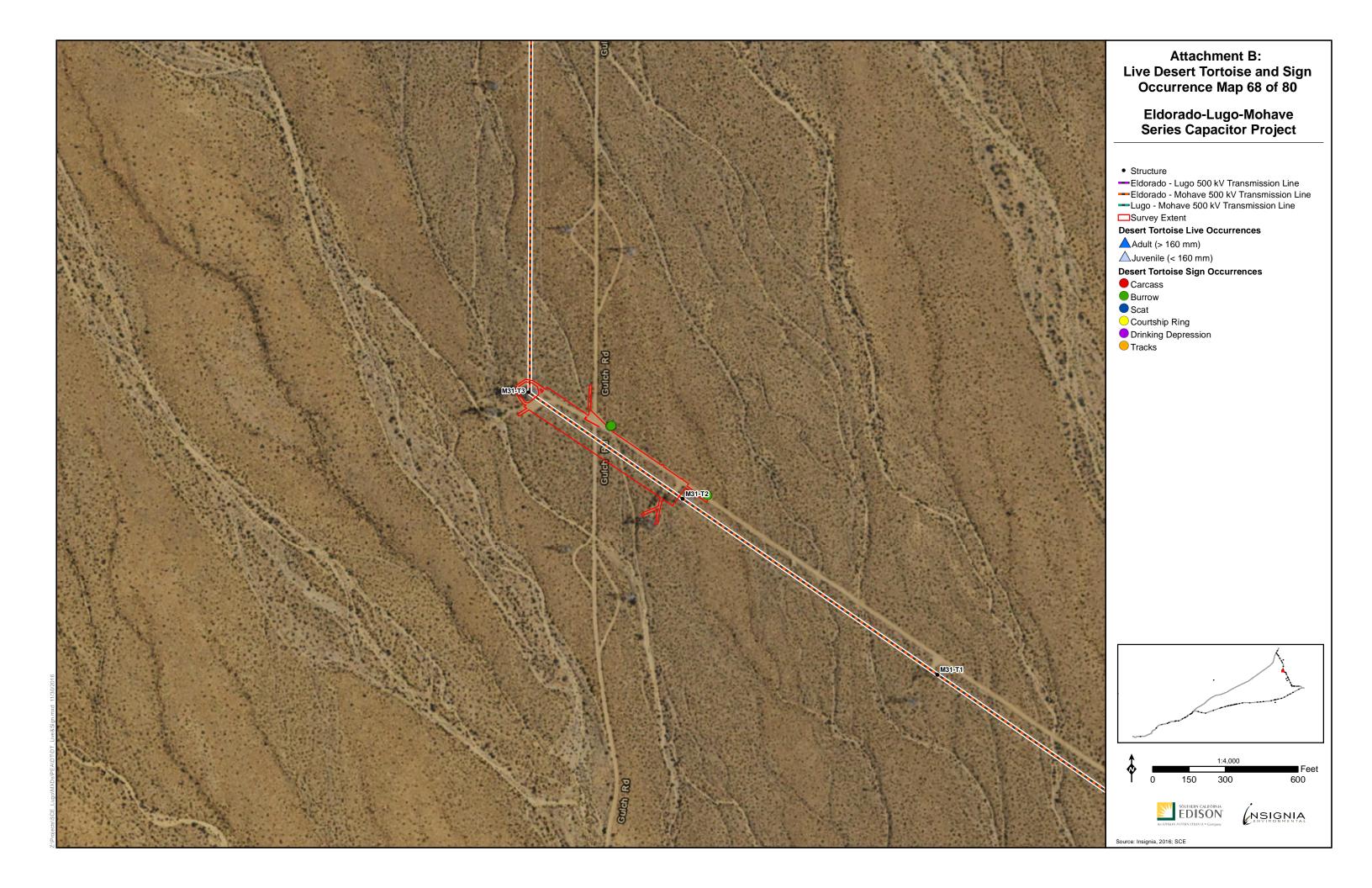




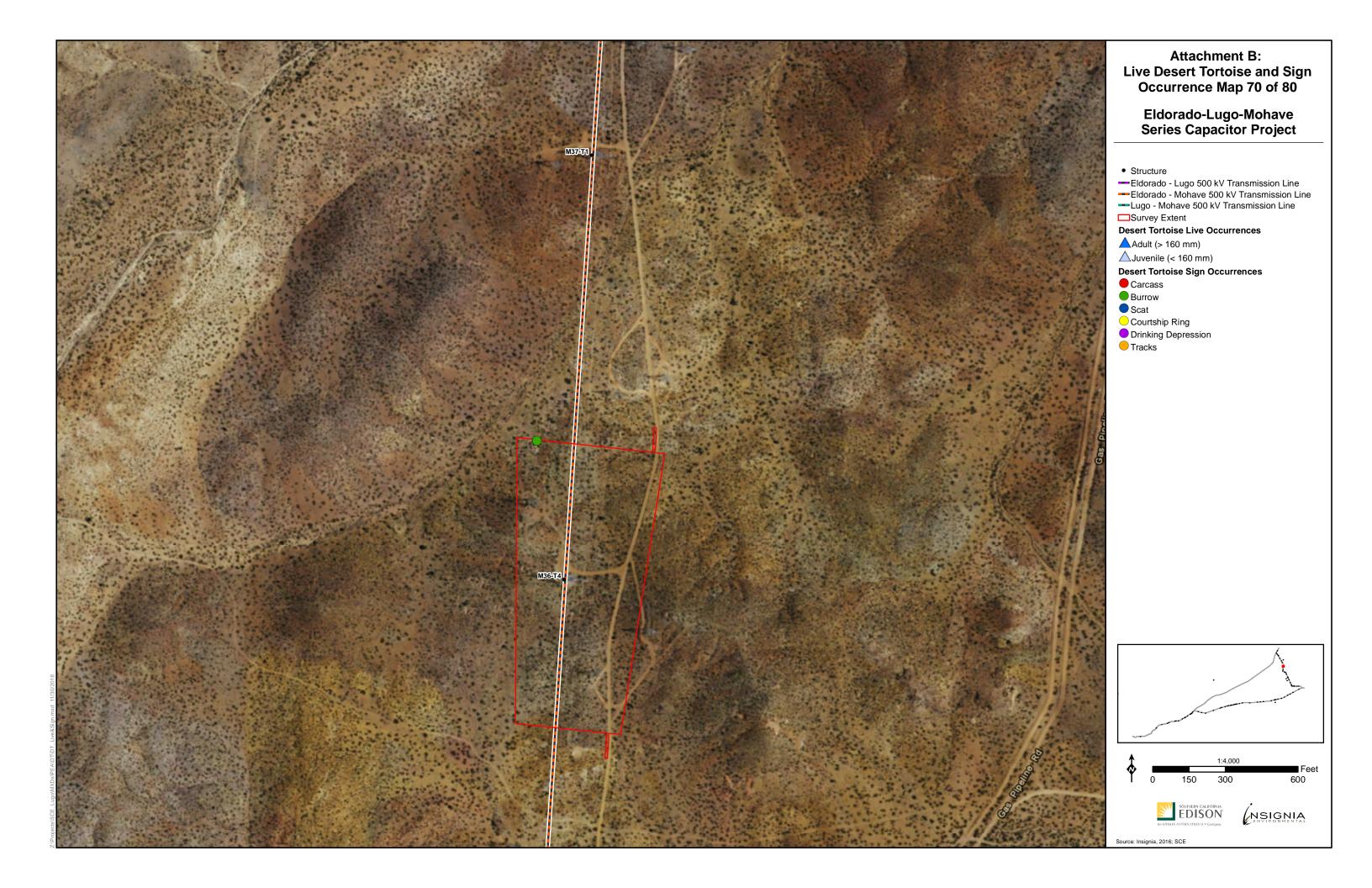


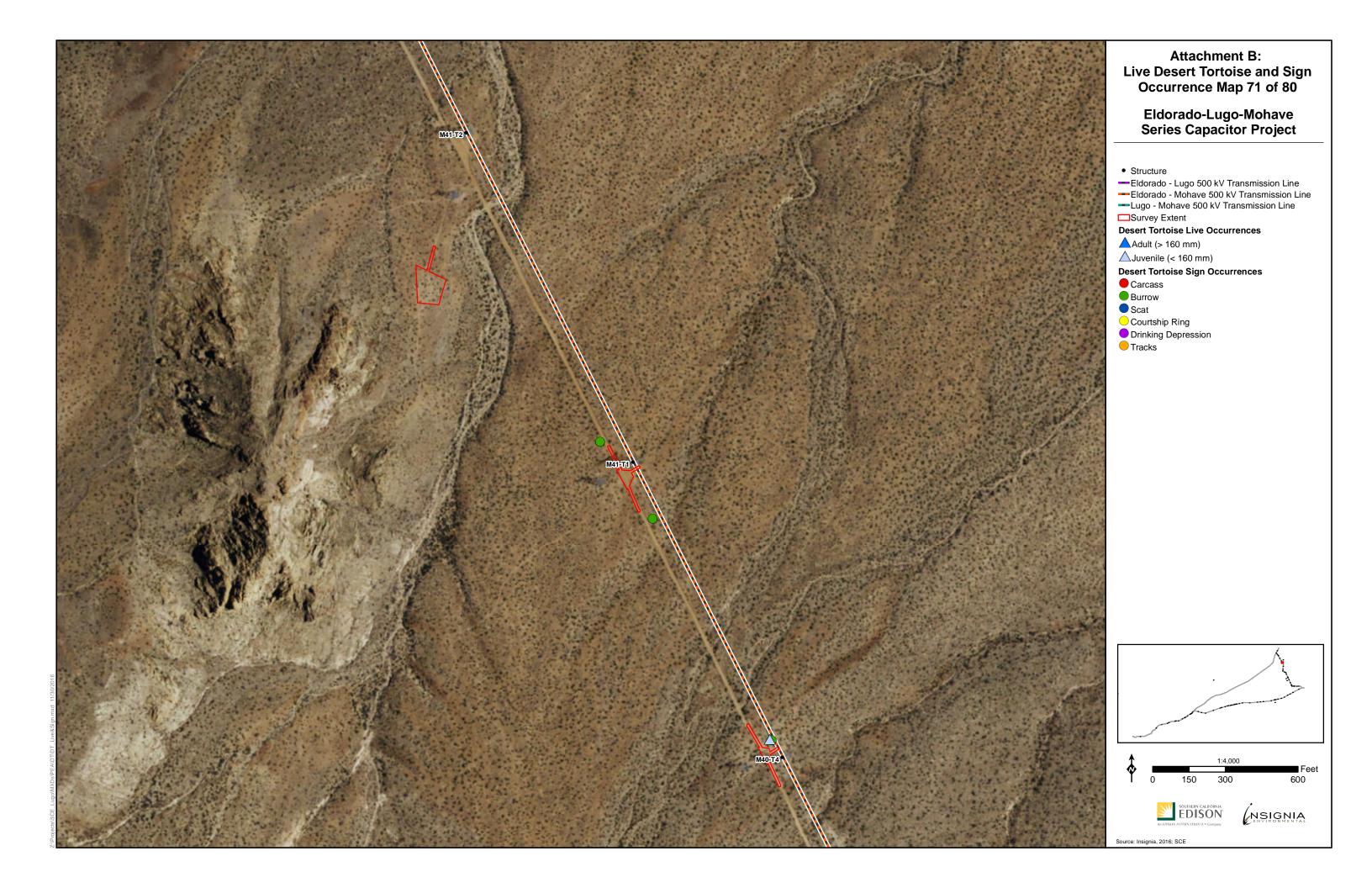


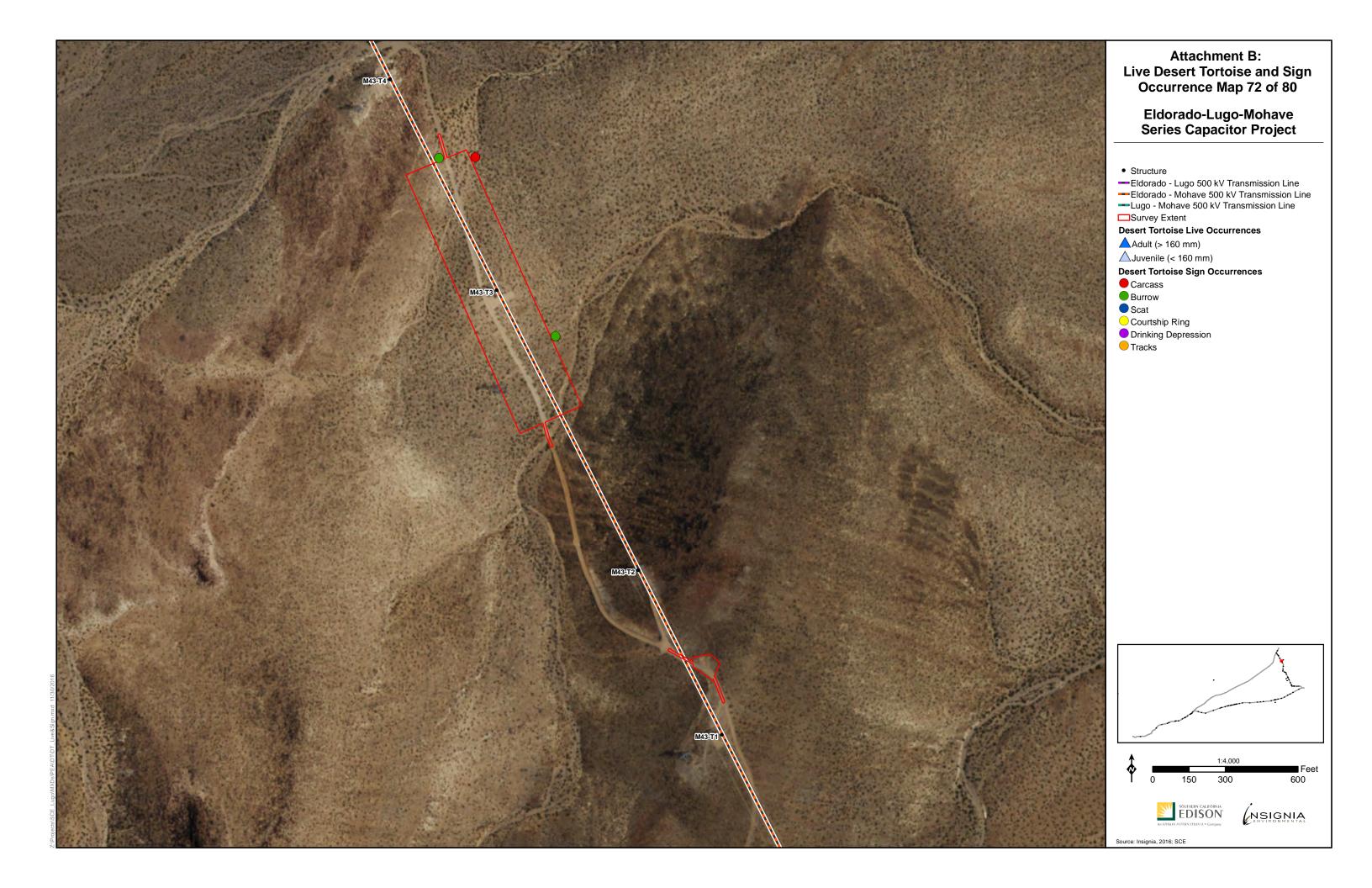


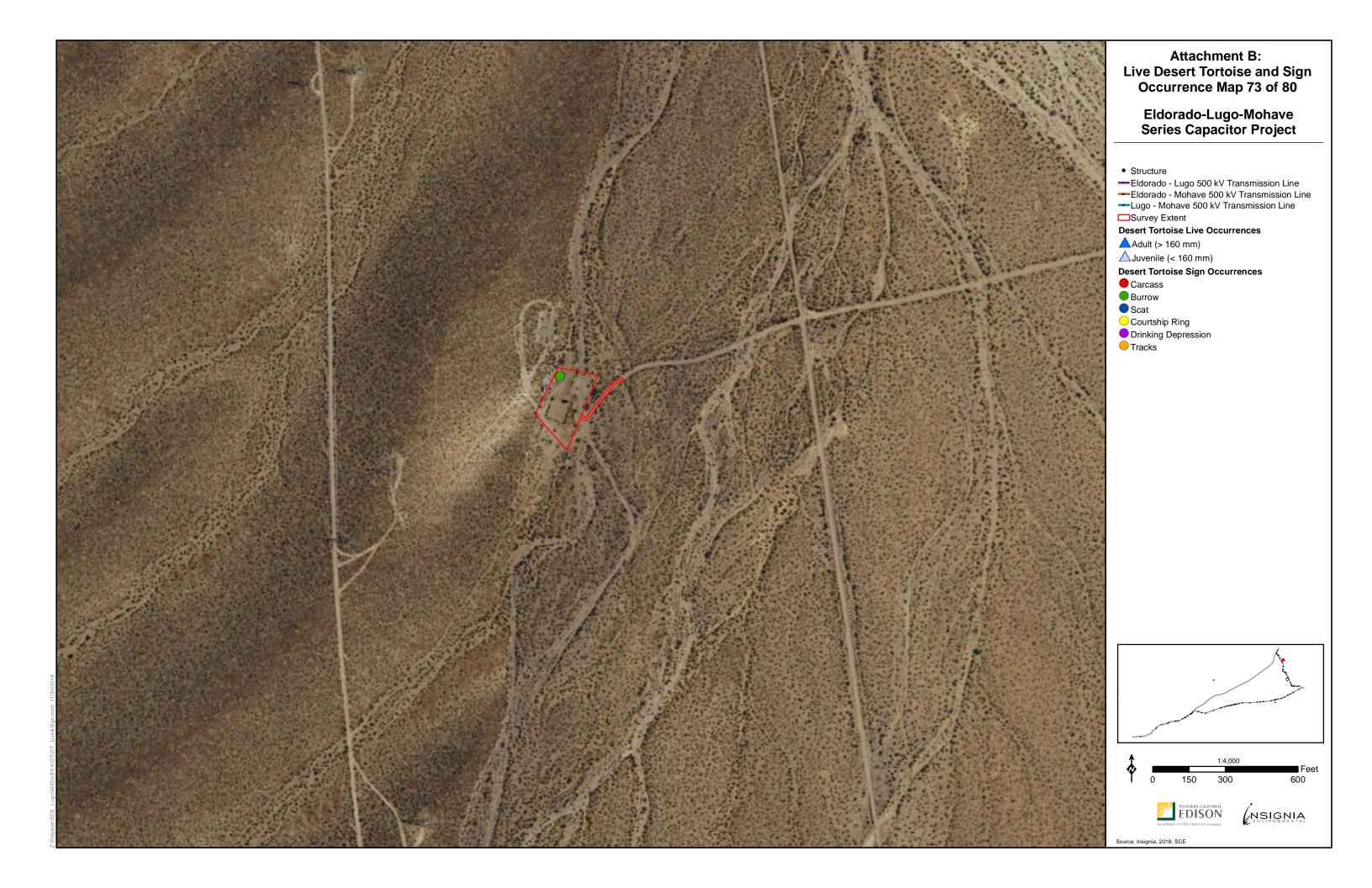


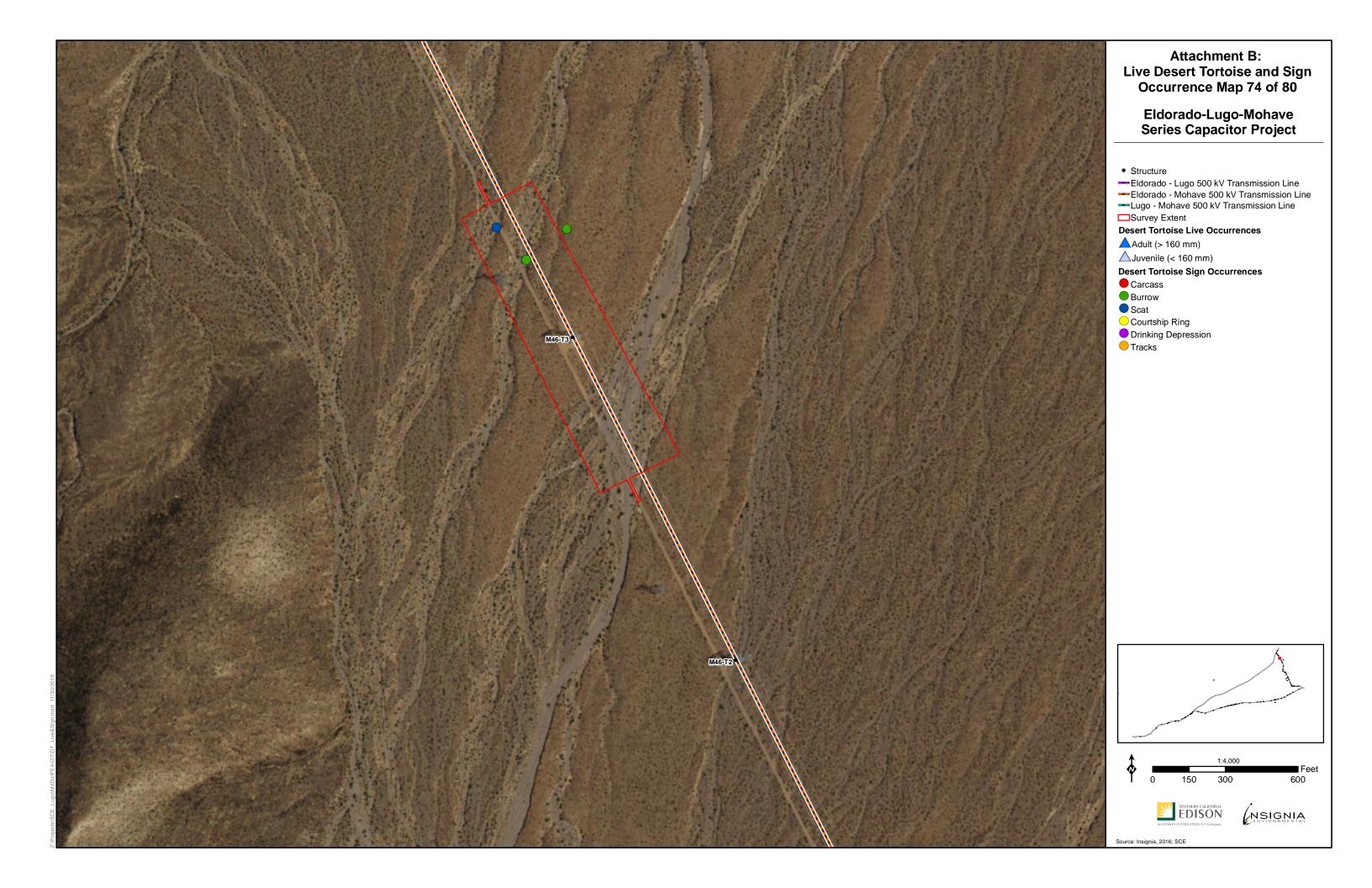


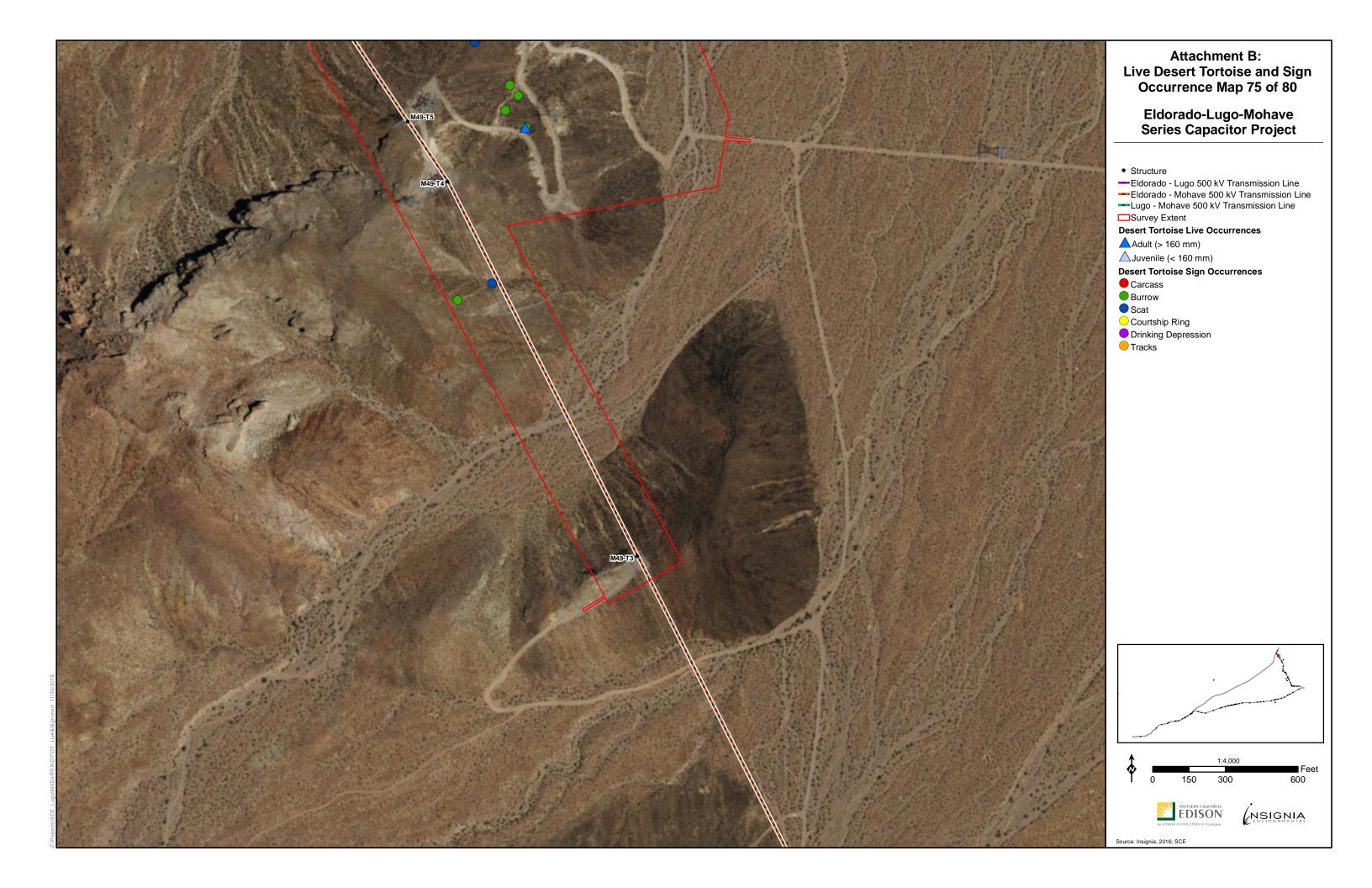


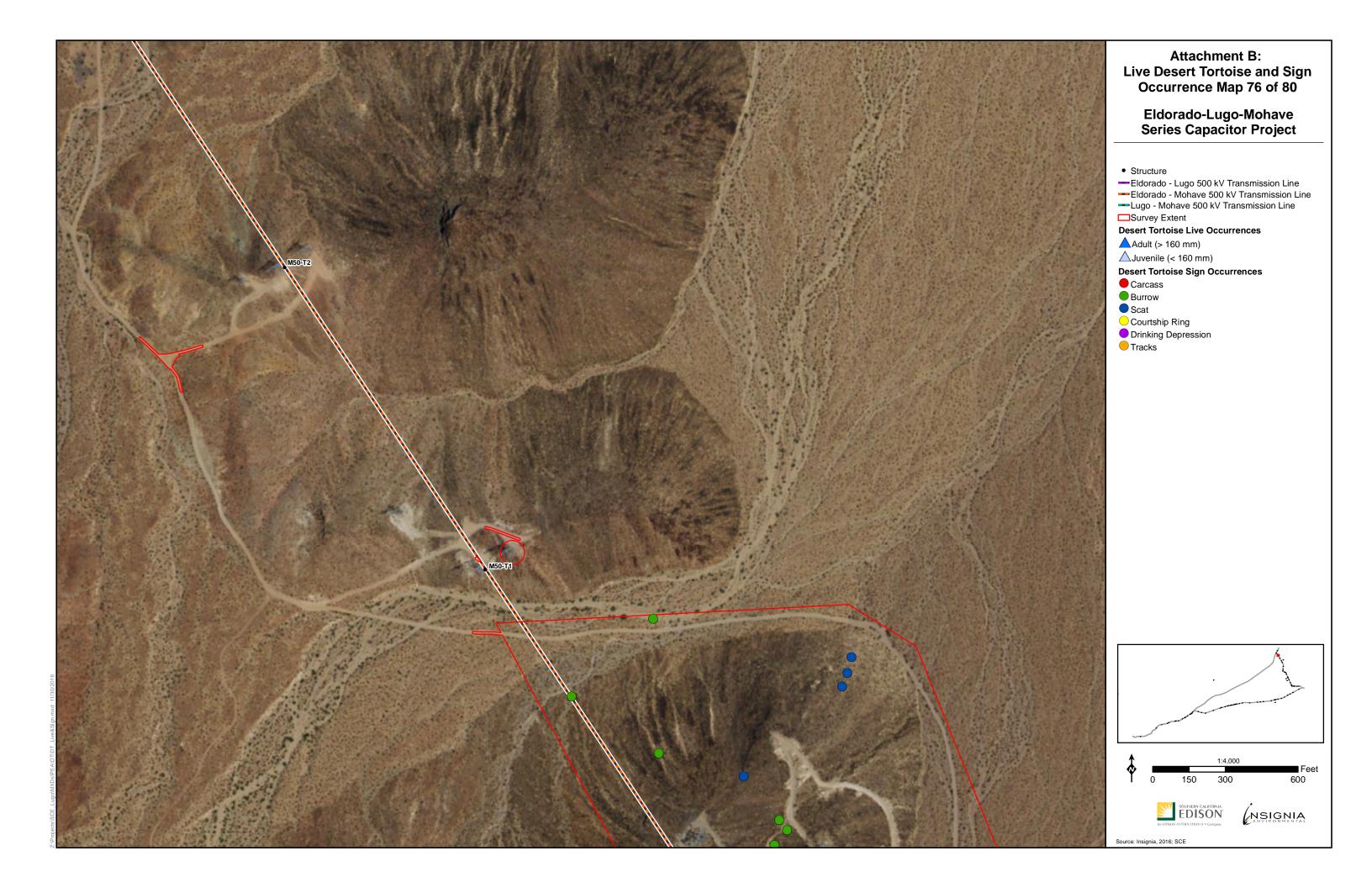


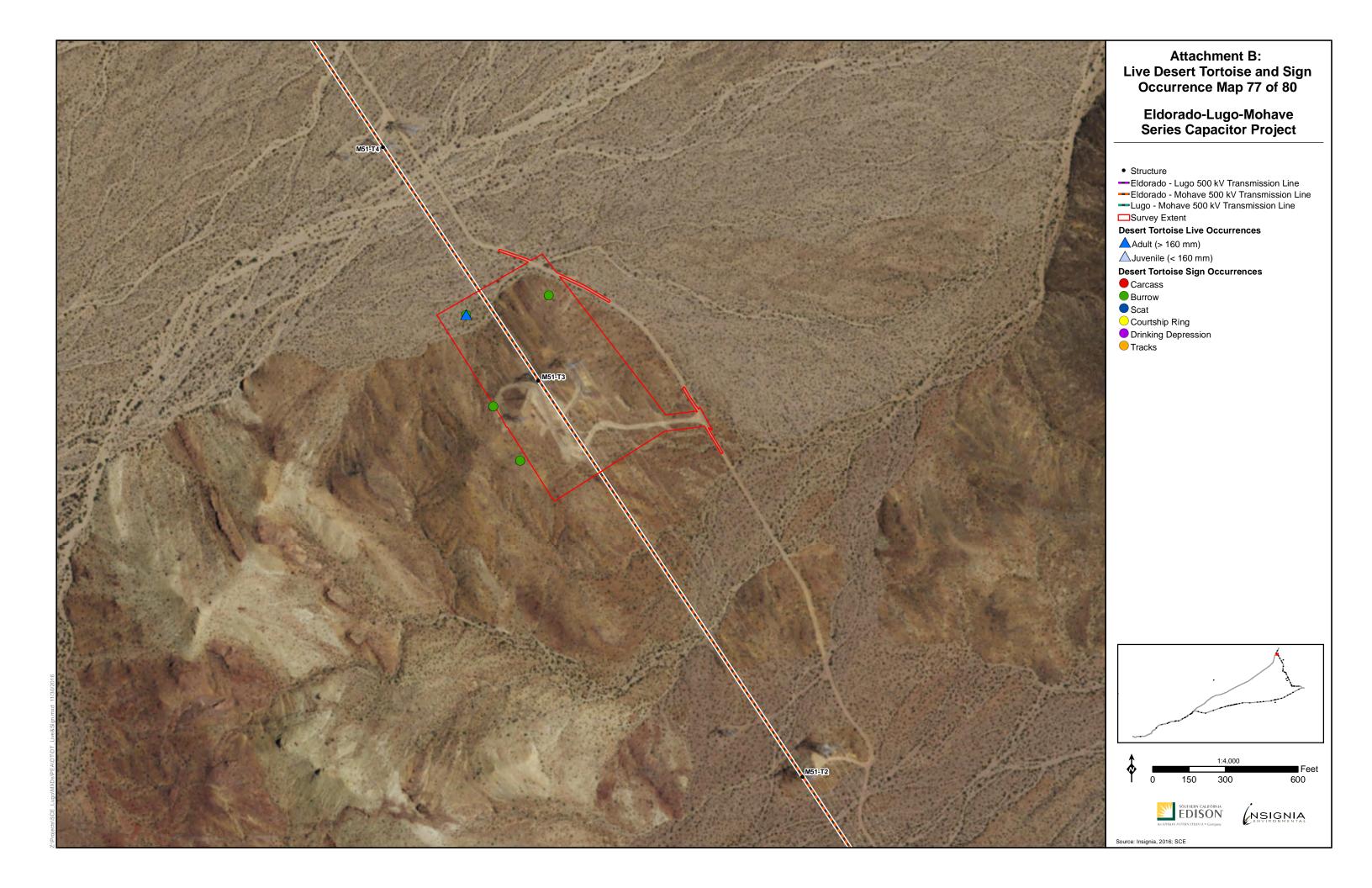




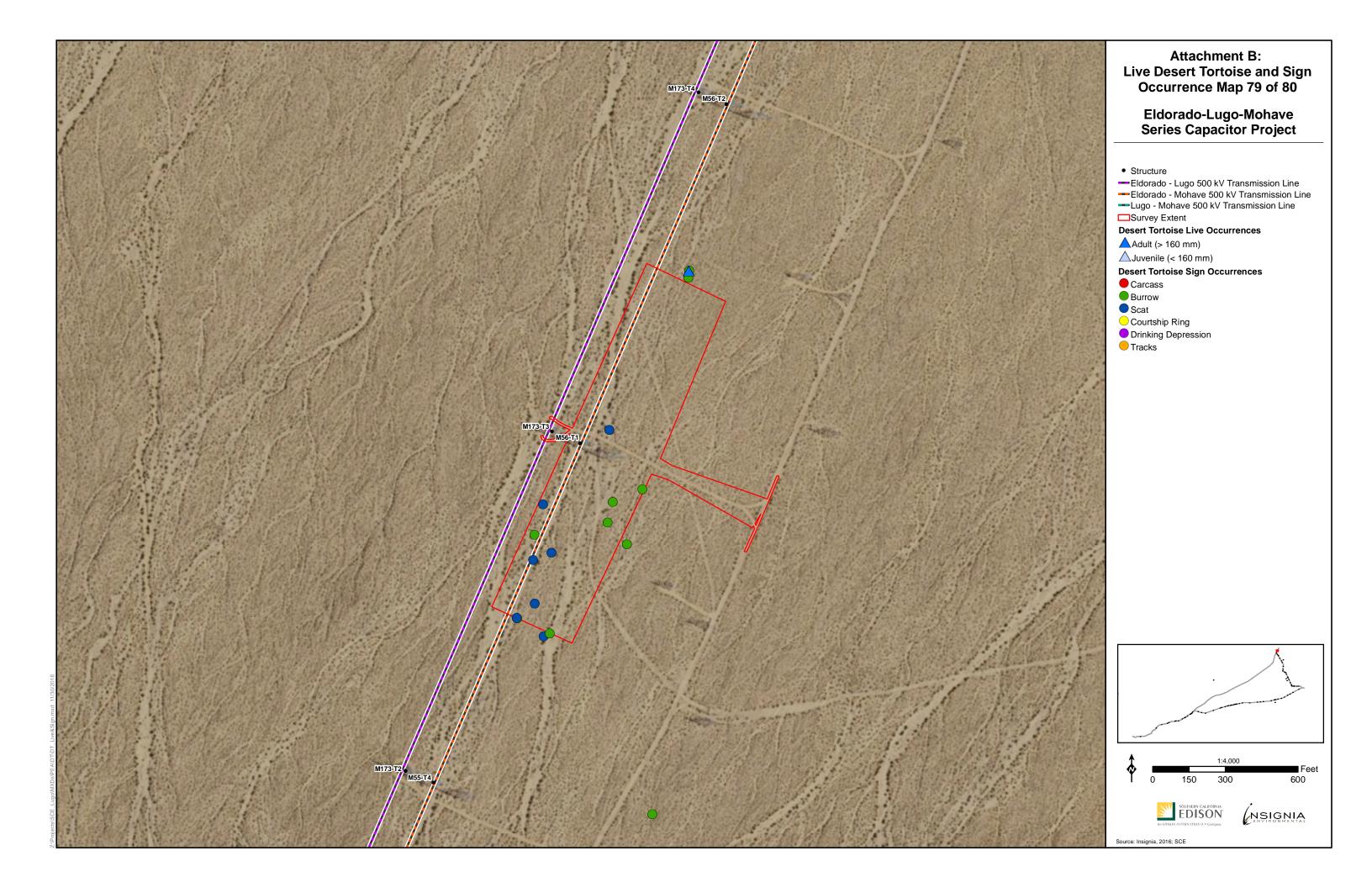


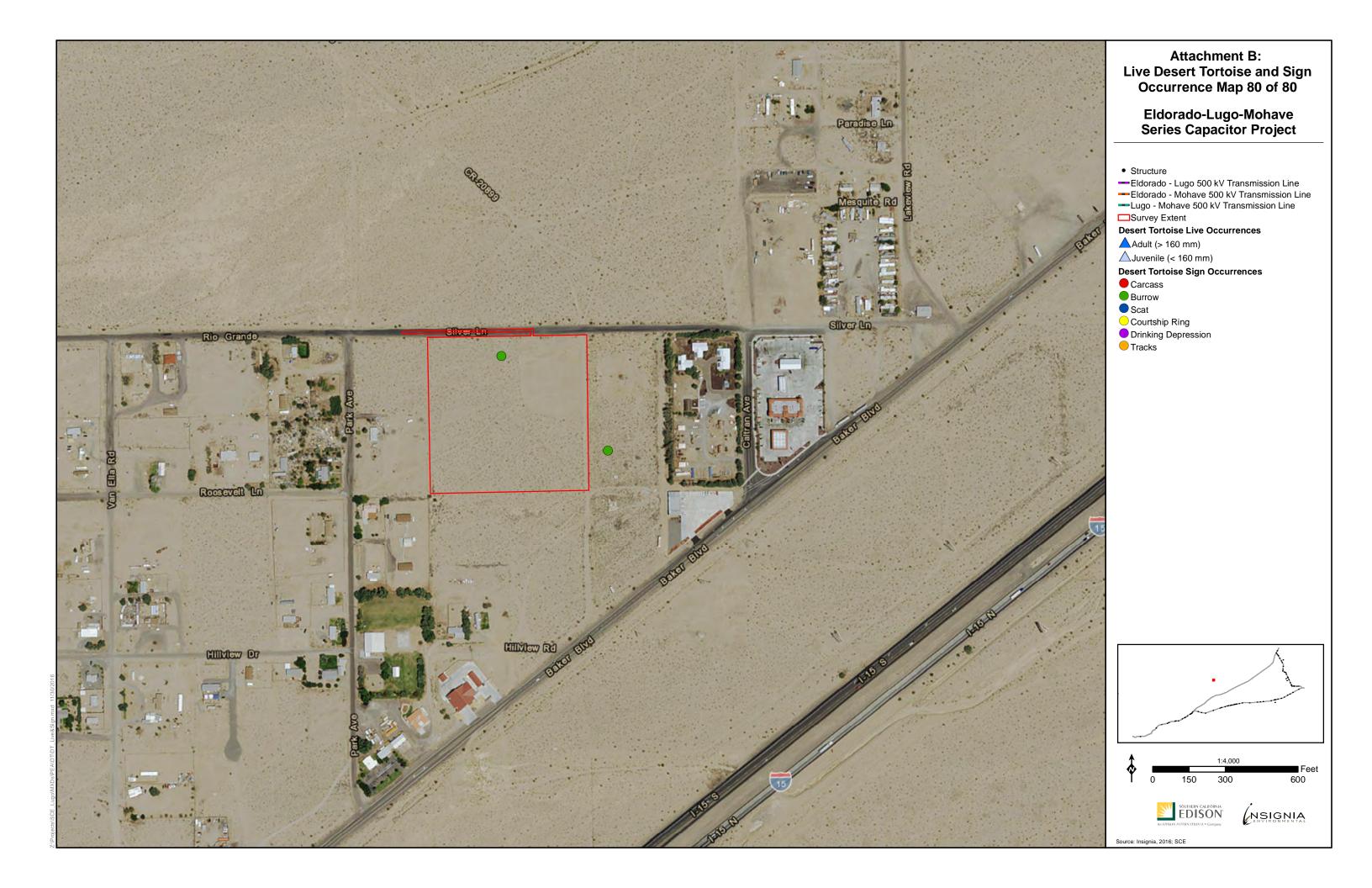












ATTACHMENT C: DESERT TORTOISE SURVEY PHOTOGRAPHS

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ATTACHMENT C: DESERT TORTOISE SURVEY PHOTOGRAPHS



Photograph 1: Adult desert tortoise (*Gopherus agassizii*) on a portion of the Biological Resources Survey Area (BRSA).



Photograph 2: Mating pair of adult desert tortoises.



Photograph 3: Juvenile desert tortoise.



Photograph 4: Adult desert tortoise in entrance of burrow.



Photograph 5: Class 1 desert tortoise burrow in soil substrate.



Photograph 6: Desert tortoise burrow in caliche substrate.



Photograph 7: Desert tortoise carcass. Greater than 50-percent intact.



Photograph 8: Desert tortoise disarticulated carcass.



Photograph 9: Desert tortoise drinking depression.



Photograph 10: Desert tortoise courtship ring.



Photograph 11: Raptor or common raven (*Corvus corax*) nest in transmission line tower.



Photograph 12: Evidence of avian mortality along transmission lines.



Photograph 13: Juvenile desert tortoise predation under transmission line.



Photograph 14: Avian predation under transmission line.

ATTACHMENT D: LIVE DESERT TORTOISE RESULTS

ATTACHMENT D: LIVE DESERT TORTOISE RESULTS

Tortoise Size (millimeter)	Latitude	Longitude	Elevation (feet)	Tortoise Location	Tag
Within the Biologic	al Resource Survey Are	ea (BRSA)			
> 160	-115.04974	35.71686	2503.3	In Burrow	No
> 160	-115.03449	35.69774	2561.7	In Burrow	No
> 160	-115.01473	35.67447	2804.5	In Burrow	No
> 160	-114.80150	35.19643	3029.9	Not in Burrow	No
> 160	-114.68673	35.18091	2248.7	Not in Burrow	No
> 160	-114.68672	35.18091	2249.3	Not in Burrow	No
> 160	-114.68571	35.18030	2211.6	Not in Burrow	No
> 160	-115.06388	34.95992	2739.2	In Burrow	No
Within 20 Meters of	f the BRSA				
< 160	-114.94811	35.55599	3450.8	In Burrow	No
> 160	-114.87006	35.26797	2524.3	Not in Burrow	No
> 160	-115.30126	34.92443	2840.9	In Burrow	No
> 160	-115.73527	34.87982	2413.4	In Burrow	No
< 160	-116.06619	34.78713	2160.4	In Burrow	No
> 160	-115.02674	35.75655	1994.4	In Burrow	No



ATTACHMENT E: DESERT TORTOISE SIGN RESULTS

ATTACHMENT E: DESERT TORTOISE SIGN RESULTS

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Within the Bio	logical Resource	e Survey Area (I	BRSA)				
Burrow	-115.02771	35.75348	2021.7	Soil Burrow	3	Not Applicable (N/A)	N/A
Burrow	-115.02748	35.75410	2014.8	Pallet	2	N/A	N/A
Burrow	-115.02789	35.75396	2025.9	Soil Burrow	2	N/A	N/A
Burrow	-115.02797	35.75373	2025.6	Soil Burrow	3	N/A	N/A
Burrow	-115.02882	35.75249	2033.5	Soil Burrow	2	N/A	N/A
Burrow	-115.02674	35.75656	1994.4	Soil Burrow	1	N/A	N/A
Burrow	-115.02927	35.75268	2030.8	Soil Burrow	2	N/A	N/A
Burrow	-115.02899	35.75362	2019	Soil Burrow	3	N/A	N/A
Burrow	-114.93316	35.60643	3009.8	Soil Burrow	3	N/A	N/A
Burrow	-115.02747	35.75041	2014.8	Pallet	2	N/A	N/A
Burrow	-114.99180	35.63329	3060.4	Soil Burrow	2	N/A	N/A
Burrow	-114.99238	35.63296	3065.9	Caliche Burrow	2	N/A	N/A
Burrow	-114.96798	35.59090	3297.6	Pallet	3	N/A	N/A
Burrow	-115.04824	35.71827	2476.4	Soil Burrow	3	N/A	N/A

¹ Desert tortoise burrow classifications are defined as follows:

[•] Class 1: Currently active, with desert tortoise or recent desert tortoise sign.

[•] Class 2: Good condition; definitely desert tortoise; no evidence of recent use.

[•] Class 3: Deteriorated condition; includes collapsed burrows; definitely desert tortoise.

[•] Class 4: Good condition; possibly desert tortoise.

[•] Class 5: Deteriorated condition; includes collapsed burrow; possibly desert tortoise. (United States Fish and Wildlife Service 2010).

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.04755	35.71805	2479.7	Soil Burrow	2	N/A	N/A
Burrow	-115.04915	35.71824	2483.9	Soil Burrow	2	N/A	N/A
Burrow	-115.05007	35.71808	2494.1	Pallet	3	N/A	N/A
Burrow	-115.04805	35.71731	2491.8	Soil Burrow	2	N/A	N/A
Burrow	-115.04932	35.71716	2494.4	Soil Burrow	3	N/A	N/A
Burrow	-115.04774	35.71611	2507.9	Soil Burrow	2	N/A	N/A
Burrow	-115.03380	35.69607	2646	Soil Burrow	2	N/A	N/A
Burrow	-115.03415	35.69669	2633.5	Pallet	2	N/A	N/A
Burrow	-115.03334	35.69793	2574.1	Pallet	4	N/A	N/A
Burrow	-115.04974	35.71687	2503.3	Soil Burrow	1	N/A	N/A
Burrow	-115.03449	35.69774	2561.7	Soil Burrow	1	N/A	N/A
Burrow	-115.01483	35.67484	2753.3	Pallet	3	N/A	N/A
Burrow	-115.01473	35.67447	2802.5	Pallet	1	N/A	N/A
Burrow	-115.01501	35.67467	2782.8	Rock Burrow	1	N/A	N/A
Burrow	-115.01493	35.67496	2763.8	Pallet	2	N/A	N/A
Burrow	-115.01658	35.67575	2706.7	Caliche Burrow	1	N/A	N/A
Burrow	-115.01575	35.67254	2812.3	Soil Burrow	1	N/A	N/A
Burrow	-115.01660	35.67728	2545.3	Soil Burrow	2	N/A	N/A
Burrow	-115.01777	35.67643	2644	Caliche Burrow	2	N/A	N/A
Burrow	-114.93655	35.50132	3627	Soil Burrow	2	N/A	N/A
Burrow	-114.94023	35.45070	3435.7	Soil Burrow	2	N/A	N/A
Burrow	-114.94029	35.45069	3435	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-114.94030	35.45062	3423.9	Soil Burrow	2	N/A	N/A
Burrow	-114.94051	35.45055	3425.9	Soil Burrow	2	N/A	N/A
Burrow	-114.94058	35.45059	3426.8	Soil Burrow	2	N/A	N/A
Burrow	-114.94075	35.44926	3390.7	Soil Burrow	2	N/A	N/A
Burrow	-114.94057	35.45013	3404.9	Soil Burrow	2	N/A	N/A
Burrow	-114.94122	35.44932	3343.8	Soil Burrow	3	N/A	N/A
Burrow	-114.84140	35.28139	2751.6	Soil Burrow	3	N/A	N/A
Burrow	-114.84116	35.28036	2800.9	Soil Burrow	3	N/A	N/A
Burrow	-114.84239	35.28249	2786.1	Soil Burrow	3	N/A	N/A
Burrow	-114.82057	35.23736	2995.1	Soil Burrow	3	N/A	N/A
Burrow	-114.82038	35.23661	2993.1	Soil Burrow	3	N/A	N/A
Burrow	-114.82103	35.23741	2968.2	Soil Burrow	3	N/A	N/A
Burrow	-114.82063	35.23676	2980	Soil Burrow	2	N/A	N/A
Burrow	-114.82045	35.23608	2971.8	Pallet	2	N/A	N/A
Burrow	-114.82063	35.23615	2963.9	Soil Burrow	2	N/A	N/A
Burrow	-114.82072	35.23644	2967.2	Soil Burrow	3	N/A	N/A
Burrow	-114.82131	35.23797	2980	Soil Burrow	3	N/A	N/A
Burrow	-114.80144	35.19659	3022	Soil Burrow	1	N/A	N/A
Burrow	-114.88365	35.37164	2856	Soil Burrow	2	N/A	N/A
Burrow	-114.88362	35.37316	2857.9	Pallet	2	N/A	N/A
Burrow	-114.88351	35.37275	2861.9	Pallet	2	N/A	N/A
Burrow	-114.86285	35.32762	2616.8	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-114.86281	35.32761	2618.1	Soil Burrow	2	N/A	N/A
Burrow	-114.86322	35.32690	2636.5	Soil Burrow	2	N/A	N/A
Burrow	114.85530	35.31353	2370	Soil Burrow	3	N/A	N/A
Burrow	-114.88620	35.30139	2559.7	Soil Burrow	2	N/A	N/A
Burrow	-114.93956	35.42385	3232.9	Pallet	3	N/A	N/A
Burrow	-114.91849	35.41028	3130.6	Soil Burrow	3	N/A	N/A
Burrow	-114.91923	35.41147	3134.5	Soil Burrow	3	N/A	N/A
Burrow	-114.71445	35.18130	2559.7	Soil Burrow	2	N/A	N/A
Burrow	-114.68566	35.17974	2291.3	Rock Burrow	2	N/A	N/A
Burrow	-114.68596	35.18133	2367.1	Rock Burrow	2	N/A	N/A
Burrow	-114.68632	35.18014	2346.1	Rock Burrow	2	N/A	N/A
Burrow	-114.68672	35.18009	2276.6	Rock Burrow	1	N/A	N/A
Burrow	-114.91372	35.00285	2501.6	Soil Burrow	3	N/A	N/A
Burrow	-114.77498	35.07875	2377.6	Soil Burrow	2	N/A	N/A
Burrow	-114.77643	35.07772	2376.6	Soil Burrow	2	N/A	N/A
Burrow	-114.77642	35.07802	2384.8	Soil Burrow	2	N/A	N/A
Burrow	-114.77664	35.07852	2407.5	Soil Burrow	1	N/A	N/A
Burrow	-114.82628	35.05167	1884.5	Pallet	2	N/A	N/A
Burrow	-115.13446	34.94352	2782.5	Soil Burrow	4	N/A	N/A
Burrow	-115.13410	34.94359	2778.2	Soil Burrow	4	N/A	N/A
Burrow	-115.07859	34.95629	2754.9	Soil Burrow	2	N/A	N/A
Burrow	-115.07943	34.95685	2783.5	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.06050	34.91861	2593.8	Soil Burrow	4	N/A	N/A
Burrow	-114.96781	34.98150	2545.9	Soil Burrow	3	N/A	N/A
Burrow	-114.96780	34.98197	2569.2	Soil Burrow	3	N/A	N/A
Burrow	-114.96779	34.98199	2568.6	Soil Burrow	3	N/A	N/A
Burrow	-114.96714	34.98215	2536.7	Soil Burrow	3	N/A	N/A
Burrow	-115.02230	34.96956	2674.9	Soil Burrow	3	N/A	N/A
Burrow	-115.30232	34.92436	2843.5	Soil Burrow	2	N/A	N/A
Burrow	-115.30599	34.92332	2860.6	Soil Burrow	2	N/A	N/A
Burrow	-115.30863	34.92357	2874.7	Soil Burrow	2	N/A	N/A
Burrow	-115.30832	34.92357	2877	Soil Burrow	3	N/A	N/A
Burrow	-115.48175	34.91002	3316.9	Soil Burrow	2	N/A	N/A
Burrow	-115.59617	34.90698	3479	Soil Burrow	2	N/A	N/A
Burrow	-115.70609	34.88607	2574.1	Pallet	3	N/A	N/A
Burrow	-115.70450	34.88543	2614.5	Soil Burrow	2	N/A	N/A
Burrow	-115.70354	34.88564	2622	Soil Burrow	3	N/A	N/A
Burrow	-115.70336	34.88543	2622.7	Soil Burrow	3	N/A	N/A
Burrow	-115.70379	34.88524	2639.4	Soil Burrow	3	N/A	N/A
Burrow	-115.70387	34.88529	2638.5	Soil Burrow	2	N/A	N/A
Burrow	-115.71587	34.88662	2603.3	Soil Burrow	4	N/A	N/A
Burrow	-115.71654	34.88641	2548.2	Soil Burrow	3	N/A	N/A
Burrow	-115.71487	34.88731	2580.7	Soil Burrow	3	N/A	N/A
Burrow	-115.71389	34.88750	2527.9	Soil Burrow	3	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.71396	34.88775	2513.5	Soil Burrow	2	N/A	N/A
Burrow	-115.71437	34.88789	2511.5	Soil Burrow	3	N/A	N/A
Burrow	-115.71458	34.88776	2519.4	Soil Burrow	2	N/A	N/A
Burrow	-115.71523	34.88755	2517.1	Pallet	3	N/A	N/A
Burrow	-115.71611	34.88727	2530.2	Soil Burrow	4	N/A	N/A
Burrow	-115.71496	34.88796	2535.1	Soil Burrow	3	N/A	N/A
Burrow	-115.73565	34.88001	2407.8	Soil Burrow	2	N/A	N/A
Burrow	-115.73595	34.87995	2395.7	Soil Burrow	2	N/A	N/A
Burrow	-115.73557	34.87967	2395.7	Soil Burrow	3	N/A	N/A
Burrow	-115.75517	34.87445	2332	Soil Burrow	2	N/A	N/A
Burrow	-115.81471	34.86341	2065.9	Soil Burrow	2	N/A	N/A
Burrow	-115.81505	34.86361	2066.3	Soil Burrow	4	N/A	N/A
Burrow	-115.81588	34.86338	2073.8	Soil Burrow	3	N/A	N/A
Burrow	-115.81675	34.86325	2066.9	Soil Burrow	2	N/A	N/A
Burrow	-115.81694	34.86382	2059.4	Soil Burrow	2	N/A	N/A
Burrow	-115.81990	34.86276	2037.1	Soil Burrow	2	N/A	N/A
Burrow	-115.83354	34.86021	1921.9	Soil Burrow	2	N/A	N/A
Burrow	-115.84332	34.85662	1817.3	Pallet	3	N/A	N/A
Burrow	-115.93151	34.83173	2090.9	Soil Burrow	2	N/A	N/A
Burrow	-115.93060	34.83232	2074.5	Soil Burrow	1	N/A	N/A
Burrow	-115.93065	34.83237	2073.5	Soil Burrow	2	N/A	N/A
Burrow	-116.25439	34.75125	2194.2	Soil Burrow	3	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-116.25384	34.75080	2205.4	Caliche Burrow	2	N/A	N/A
Burrow	-116.25291	34.75152	2207.7	Soil Burrow	2	N/A	N/A
Burrow	-116.19502	34.74313	1662.1	Soil Burrow	4	N/A	N/A
Burrow	-116.30754	34.76593	2472.4	Soil Burrow	4	N/A	N/A
Burrow	-116.43888	34.72642	2161.1	Soil Burrow	2	N/A	N/A
Burrow	-116.42088	34.73718	1992.5	Soil Burrow	3	N/A	N/A
Burrow	-116.40043	34.76385	2079.4	Soil Burrow	2	N/A	N/A
Burrow	-116.40151	34.76460	2126.3	Soil Burrow	3	N/A	N/A
Burrow	-116.48569	34.69741	3122.4	Soil Burrow	3	N/A	N/A
Burrow	-116.81012	34.57566	3770.7	Soil Burrow	4	N/A	N/A
Burrow	-116.78539	34.58839	3419.9	Soil Burrow	2	N/A	N/A
Burrow	-117.00309	34.48814	2940.9	Soil Burrow	3	N/A	N/A
Burrow	-117.24472	34.36492	2954.1	Soil Burrow	4	N/A	N/A
Burrow	-116.06114	35.27807	977.7	Soil Burrow	4	N/A	N/A
Carcass	-115.05014	35.71808	2495.4	N/A	N/A	2 - 4 years	>50%
Carcass	-115.05001	35.71779	2505.9	N/A	N/A	2 - 4 years	< 50%
Carcass	-114.82060	35.23680	2968.5	N/A	N/A	1 - 2 years	>50%
Carcass	-114.82063	35.23676	2979.3	N/A	N/A	> 4 years	< 50%
Carcass	-114.68631	35.18126	2377	N/A	N/A	2 - 4 years	>50%
Carcass	-115.02219	34.96913	2637.1	N/A	N/A	1 - 2 years	>50%
Carcass	-115.81577	34.86281	2078.7	N/A	N/A	2 - 4 years	>50%
Carcass	-115.81681	34.86290	2071.5	N/A	N/A	> 4 years	< 50%

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Carcass	-115.93154	34.83211	2075.1	N/A	N/A	> 4 years	>50%
Carcass	-116.41330	34.74394	2036.7	N/A	N/A	> 4 years	>50%
Carcass	-116.68444	34.61422	4118.1	N/A	N/A	> 4 years	< 50%
Carcass	-116.68446	34.61420	4117.5	N/A	N/A	> 4 years	< 50%
Carcass	-116.68443	34.61420	4112.9	N/A	N/A	> 4 years	< 50%
Carcass	-116.68438	34.61420	4096.8	N/A	N/A	> 4 years	< 50%
Carcass	-116.68475	34.61421	4099.4	N/A	N/A	> 4 years	< 50%
Carcass	-116.89888	34.55790	3053.1	N/A	N/A	> 4 years	>50%
Drinking Depression	-115.04949	35.71875	2480.6	N/A	N/A	N/A	N/A
Drinking Depression	-116.25214	34.75075	2187.7	N/A	N/A	N/A	N/A
Scat	-115.02928	35.75268	2030.8	N/A	N/A	N/A	N/A
Scat	-115.02902	35.75284	2025.3	N/A	N/A	N/A	N/A
Scat	-115.02877	35.75341	2034.8	N/A	N/A	N/A	N/A
Scat	-115.02791	35.75478	2014.4	N/A	N/A	N/A	N/A
Scat	-115.02902	35.75333	2027.9	N/A	N/A	N/A	N/A
Scat	-115.02886	35.75396	2022.6	N/A	N/A	N/A	N/A
Scat	-114.99278	35.63333	3069.2	N/A	N/A	N/A	N/A
Scat	-115.01386	35.67678	2641.7	N/A	N/A	N/A	N/A
Scat	-115.01393	35.67660	2634.5	N/A	N/A	N/A	N/A
Scat	-115.01400	35.67645	2645.7	N/A	N/A	N/A	N/A
Scat	-115.01541	35.67546	2763.8	N/A	N/A	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Scat	-115.01526	35.67272	2793	N/A	N/A	N/A	N/A
Scat	-114.81982	35.23563	2970.8	N/A	N/A	N/A	N/A
Scat	-114.79922	35.19022	2984.6	N/A	N/A	N/A	N/A
Scat	-114.75107	35.18018	2882.2	N/A	N/A	N/A	N/A
Scat	-114.76831	35.18019	3082.3	N/A	N/A	N/A	N/A
Scat	-114.88356	35.37165	2848.8	N/A	N/A	N/A	N/A
Scat	-114.88866	35.30170	2541	N/A	N/A	N/A	N/A
Scat	-114.68522	35.17966	2332.3	N/A	N/A	N/A	N/A
Scat	-114.68566	35.17974	2291.3	N/A	N/A	N/A	N/A
Scat	-114.68596	35.18133	2366.8	N/A	N/A	N/A	N/A
Scat	-114.68644	35.17991	2314.3	N/A	N/A	N/A	N/A
Scat	-114.68632	35.18015	2345.5	N/A	N/A	N/A	N/A
Scat	-114.68694	35.17995	2278.9	N/A	N/A	N/A	N/A
Scat	-114.68694	35.17995	2278.9	N/A	N/A	N/A	N/A
Scat	-114.68750	35.17949	2246.1	N/A	N/A	N/A	N/A
Scat	-114.68736	35.18042	2301.2	N/A	N/A	N/A	N/A
Scat	-114.68724	35.18090	2321.9	N/A	N/A	N/A	N/A
Scat	-114.68791	35.17951	2298.9	N/A	N/A	N/A	N/A
Scat	-114.68791	35.17951	2298.9	N/A	N/A	N/A	N/A
Scat	-114.68795	35.17949	2300.2	N/A	N/A	N/A	N/A
Scat	-114.68803	35.17944	2302.2	N/A	N/A	N/A	N/A
Scat	-114.68834	35.18276	2407.2	N/A	N/A	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Scat	-114.68879	35.17994	2422.6	N/A	N/A	N/A	N/A
Scat	-114.68856	35.17994	2446.5	N/A	N/A	N/A	N/A
Scat	-114.68445	35.12732	1614.5	N/A	N/A	N/A	N/A
Scat	-114.68461	35.12709	1643.4	N/A	N/A	N/A	N/A
Scat	-114.77612	35.07747	2386.5	N/A	N/A	N/A	N/A
Scat	-114.77682	35.07785	2382.9	N/A	N/A	N/A	N/A
Scat	-114.82512	35.05139	1868.8	N/A	N/A	N/A	N/A
Scat	-115.06676	34.91305	2572.8	N/A	N/A	N/A	N/A
Scat	-114.96557	34.98216	2552.5	N/A	N/A	N/A	N/A
Scat	-115.26405	34.92766	2804.5	N/A	N/A	N/A	N/A
Scat	-115.30118	34.92421	2829.1	N/A	N/A	N/A	N/A
Scat	-115.70409	34.88518	2631.2	N/A	N/A	N/A	N/A
Scat	-115.70490	34.88476	2622	N/A	N/A	N/A	N/A
Scat	-115.81495	34.86319	2079.4	N/A	N/A	N/A	N/A
Scat	-115.81493	34.86352	2065	N/A	N/A	N/A	N/A
Scat	-115.92521	34.83385	2040	N/A	N/A	N/A	N/A
Scat	-115.93004	34.83226	1992.8	N/A	N/A	N/A	N/A
Scat	-115.93032	34.83213	2064.6	N/A	N/A	N/A	N/A
Scat	-115.93151	34.83174	2091.5	N/A	N/A	N/A	N/A
Scat	-115.93165	34.83181	2087.3	N/A	N/A	N/A	N/A
Scat	-115.93106	34.83174	2077.8	N/A	N/A	N/A	N/A
Scat	-115.93077	34.83185	2072.8	N/A	N/A	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Scat	-115.96063	34.82421	2270.3	N/A	N/A	N/A	N/A
Scat	-116.25384	34.75080	2205.4	N/A	N/A	N/A	N/A
Scat	-116.43888	34.72642	2161.1	N/A	N/A	N/A	N/A
Scat	-116.43881	34.72651	2168	N/A	N/A	N/A	N/A
Scat	-116.42061	34.73703	1994.1	N/A	N/A	N/A	N/A
Scat	-116.79208	34.58629	3544	N/A	N/A	N/A	N/A
Tracks	-114.77664	35.07852	2407.5	N/A	N/A	N/A	N/A
Tracks	-116.40081	34.76391	2076.1	N/A	N/A	N/A	N/A
20 Meters of th	e BRSA						
Burrow	-114.95034	35.55943	3414	Soil Burrow	2	N/A	N/A
Burrow	-114.94965	35.55854	3431.1	Soil Burrow	3	N/A	N/A
Burrow	-114.94809	35.55598	3422.2	Soil Burrow	1	N/A	N/A
Burrow	-114.94154	35.45027	3342.5	Soil Burrow	3	N/A	N/A
Burrow	-114.94154	35.45028	3345.1	Soil Burrow	2	N/A	N/A
Burrow	-114.80149	35.19624	3034.8	Soil Burrow	1	N/A	N/A
Burrow	-114.88427	35.37146	2840.9	Soil Burrow	2	N/A	N/A
Burrow	-114.88431	35.37146	2835.6	Soil Burrow	4	N/A	N/A
Burrow	-114.88433	35.37152	2833.3	Soil Burrow	2	N/A	N/A
Burrow	-114.88339	35.37054	2841.5	Soil Burrow	2	N/A	N/A
Burrow	-114.88419	35.37409	2872.4	Soil Burrow	2	N/A	N/A
Burrow	-114.88410	35.37376	2859.3	Pallet	2	N/A	N/A
Burrow	-114.88347	35.37331	2839.9	Soil Burrow	1	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-114.86099	35.32548	2596.1	Soil Burrow	3	N/A	N/A
Burrow	-114.86298	35.32845	2644.7	Soil Burrow	2	N/A	N/A
Burrow	-114.94088	35.42467	3239.2	Soil Burrow	2	N/A	N/A
Burrow	-114.94086	35.42467	3235.6	Soil Burrow	2	N/A	N/A
Burrow	-114.77468	35.07961	2367.1	Soil Burrow	4	N/A	N/A
Burrow	-114.82388	35.05158	1888.8	Soil Burrow	3	N/A	N/A
Burrow	-115.07983	34.95591	2746.4	Soil Burrow	1	N/A	N/A
Burrow	-115.07941	34.956	2733.3	Soil Burrow	4	N/A	N/A
Burrow	-115.07806	34.95635	2766.1	Soil Burrow	2	N/A	N/A
Burrow	-115.08015	34.95647	2770.7	Soil Burrow	4	N/A	N/A
Burrow	-115.07891	34.95733	2785.1	Soil Burrow	4	N/A	N/A
Burrow	-115.06727	34.91251	2599.4	Soil Burrow	3	N/A	N/A
Burrow	-115.06660	34.91268	2584	Soil Burrow	3	N/A	N/A
Burrow	-114.96587	34.98181	2545.6	Pallet	3	N/A	N/A
Burrow	-114.96715	34.98222	2532.2	Soil Burrow	3	N/A	N/A
Burrow	-114.96840	34.98187	2554.8	Soil Burrow	3	N/A	N/A
Burrow	-114.96449	34.98244	2548.2	Soil Burrow	1	N/A	N/A
Burrow	-115.02136	34.97006	2690.3	Soil Burrow	3	N/A	N/A
Burrow	-115.02391	34.96901	2657.5	Pallet	3	N/A	N/A
Burrow	-115.06388	34.95992	2738.8	Soil Burrow	1	N/A	N/A
Burrow	-115.30126	34.92445	2839.9	Soil Burrow	1	N/A	N/A
Burrow	-115.30675	34.92328	2863.2	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.35278	34.91926	2919	Soil Burrow	2	N/A	N/A
Burrow	-115.59523	34.90677	3502.6	Soil Burrow	2	N/A	N/A
Burrow	-115.59862	34.9061	3425.5	Soil Burrow	4	N/A	N/A
Burrow	-115.64642	34.89696	2936	Pallet	2	N/A	N/A
Burrow	-115.68809	34.88954	2692.6	Soil Burrow	2	N/A	N/A
Burrow	-115.69379	34.88881	2672.6	Soil Burrow	2	N/A	N/A
Burrow	-115.69383	34.88878	2660.1	Soil Burrow	2	N/A	N/A
Burrow	-115.69485	34.88805	2665.7	Pallet	3	N/A	N/A
Burrow	-115.69462	34.8883	2660.4	Soil Burrow	2	N/A	N/A
Burrow	-115.69424	34.88799	2644.4	Soil Burrow	2	N/A	N/A
Burrow	-115.69438	34.88785	2649.9	Soil Burrow	2	N/A	N/A
Burrow	-115.69417	34.88778	2650.6	Pallet	2	N/A	N/A
Burrow	-115.70609	34.88607	2573.8	Soil Burrow	3	N/A	N/A
Burrow	-115.70544	34.88536	2590.6	Soil Burrow	1	N/A	N/A
Burrow	-115.70589	34.88534	2569.2	Pallet	3	N/A	N/A
Burrow	-115.70334	34.88561	2612.2	Soil Burrow	2	N/A	N/A
Burrow	-115.70321	34.88519	2618.4	Soil Burrow	2	N/A	N/A
Burrow	-115.71317	34.88716	2536.1	Soil Burrow	2	N/A	N/A
Burrow	-115.71315	34.88716	2536.1	Soil Burrow	2	N/A	N/A
Burrow	-115.71405	34.88767	2526.2	Soil Burrow	2	N/A	N/A
Burrow	-115.71423	34.88789	2509.5	Soil Burrow	3	N/A	N/A
Burrow	-115.71496	34.88795	2535.4	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.71571	34.88844	2516.7	Soil Burrow	3	N/A	N/A
Burrow	-115.73517	34.88007	2411.4	Soil Burrow	2	N/A	N/A
Burrow	-115.73517	34.88007	2411.4	Soil Burrow	3	N/A	N/A
Burrow	-115.73519	34.88005	2410.8	Soil Burrow	3	N/A	N/A
Burrow	-115.73555	34.88011	2414	Soil Burrow	2	N/A	N/A
Burrow	-115.73557	34.87968	2395.7	Soil Burrow	2	N/A	N/A
Burrow	-115.73544	34.8798	2411.4	Soil Burrow	3	N/A	N/A
Burrow	-115.73495	34.87985	2412.4	Soil Burrow	2	N/A	N/A
Burrow	-115.75713	34.8739	2331.7	Soil Burrow	2	N/A	N/A
Burrow	-115.81601	34.86393	2066.6	Soil Burrow	2	N/A	N/A
Burrow	-115.81682	34.86313	2073.8	Soil Burrow	2	N/A	N/A
Burrow	-115.83444	34.86005	1912.4	Soil Burrow	4	N/A	N/A
Burrow	-115.84327	34.85692	1813.3	Soil Burrow	2	N/A	N/A
Burrow	-115.84320	34.85669	1812	Pallet	2	N/A	N/A
Burrow	-115.84335	34.85647	1814.6	Soil Burrow	3	N/A	N/A
Burrow	-115.84420	34.85725	1813.3	Soil Burrow	2	N/A	N/A
Burrow	-115.84360	34.85738	1810.4	Pallet	4	N/A	N/A
Burrow	-115.79077	34.86814	2221.5	Soil Burrow	2	N/A	N/A
Burrow	-115.77080	34.87184	2229.7	Soil Burrow	4	N/A	N/A
Burrow	-115.77092	34.87214	2216.5	Soil Burrow	2	N/A	N/A
Burrow	-115.87475	34.84751	1803.1	Soil Burrow	3	N/A	N/A
Burrow	-115.93519	34.83105	2109.9	Soil Burrow	2	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-116.06617	34.78716	2159.8	Soil Burrow	1	N/A	N/A
Burrow	-116.31130	34.76831	2496.4	Soil Burrow	3	N/A	N/A
Burrow	-116.31201	34.76836	2490.8	Soil Burrow	4	N/A	N/A
Burrow	-116.31223	34.76809	2494.8	Soil Burrow	3	N/A	N/A
Burrow	-116.30808	34.7655	2436.4	Soil Burrow	4	N/A	N/A
Burrow	-116.30810	34.76544	2432.4	Soil Burrow	4	N/A	N/A
Burrow	-116.43101	34.73246	2053.1	Soil Burrow	4	N/A	N/A
Burrow	-116.42078	34.73681	1995.4	Soil Burrow	3	N/A	N/A
Burrow	-116.42093	34.73666	1993.4	Soil Burrow	3	N/A	N/A
Burrow	-116.40101	34.76375	2115.8	Soil Burrow	1	N/A	N/A
Burrow	-116.62886	34.61705	3701.8	Soil Burrow	1	N/A	N/A
Burrow	-116.51430	34.67697	3784.1	Soil Burrow	2	N/A	N/A
Burrow	-116.66487	34.61568	3961.6	Soil Burrow	2	N/A	N/A
Burrow	-116.81002	34.57618	3794.6	Rock Burrow	4	N/A	N/A
Burrow	-116.79225	34.58538	3532.8	Soil Burrow	2	N/A	N/A
Burrow	-116.78933	34.58669	3468.2	Soil Burrow	2	N/A	N/A
Burrow	-116.78244	34.58977	3429.8	Soil Burrow	1	N/A	N/A
Burrow	-116.78244	34.58976	3430.4	Soil Burrow	1	N/A	N/A
Burrow	-116.78172	34.5902	3450.1	Soil Burrow	2	N/A	N/A
Burrow	-115.02839	35.42889	2530	Pallet	2	N/A	N/A
Burrow	-115.02729	35.42743	2522	Soil Burrow	3	N/A	N/A
Burrow	-116.05969	35.27697	981	Soil Burrow	4	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Burrow	-115.02675	35.75648	1991.1	Soil Burrow	1	N/A	N/A
Burrow	-114.96644	35.58884	3296.3	Soil Burrow	3	N/A	N/A
Burrow	-114.89581	35.39777	3042.7	Soil Burrow	2	N/A	N/A
Burrow	-114.86206	35.03307	2031.8	Caliche Burrow	2	N/A	N/A
Burrow	-116.19527	34.74368	1681.1	Rock Burrow	4	N/A	N/A
Burrow	-116.40136	34.76509	2138.8	Soil Burrow	2	N/A	N/A
Burrow	-116.99104	34.5013	2877	Soil Burrow	2	N/A	N/A
Carcass	-114.86162	35.32676	2607.3	N/A	N/A	2 - 4 years	< 50%
Carcass	-114.77395	35.07841	2356.3	N/A	N/A	> 4 years	>50%
Carcass	-115.08002	34.95702	2786.1	N/A	N/A	> 4 years	< 50%
Carcass	-115.64667	34.89655	2899.9	N/A	N/A	2 - 4 years	>50%
Carcass	-115.75466	34.87465	2358.6	N/A	N/A	> 4 years	< 50%
Carcass	-115.87475	34.84767	1810.4	N/A	N/A	> 4 years	< 50%
Carcass	-115.92510	34.83369	2038.1	N/A	N/A	> 4 years	< 50%
Carcass	-116.53378	34.6677	3942.9	N/A	N/A	> 4 years	< 50%
Carcass	-114.96748	35.5909	3284.4	N/A	N/A	> 4 years	< 50%
Courtship Ring	-114.96452	34.98242	2544.9	N/A	N/A	N/A	N/A
Scat	-114.84761	35.29538	2637.8	N/A	N/A	N/A	N/A
Scat	-114.82005	35.23677	2985.9	N/A	N/A	N/A	N/A
Scat	-114.80152	35.19627	3034.8	N/A	N/A	N/A	N/A
Scat	-114.88419	35.37409	2872	N/A	N/A	N/A	N/A
Scat	-115.25496	34.92887	2807.7	N/A	N/A	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Scat	-114.96605	34.98255	2541	N/A	N/A	N/A	N/A
Scat	-114.96547	34.9817	2542.3	N/A	N/A	N/A	N/A
Scat	-115.05435	34.9621	2737.9	N/A	N/A	N/A	N/A
Scat	-115.05456	34.96184	2759.5	N/A	N/A	N/A	N/A
Scat	-115.26436	34.92747	2802.5	N/A	N/A	N/A	N/A
Scat	-115.30128	34.92449	2839.6	N/A	N/A	N/A	N/A
Scat	-115.59483	34.90675	3497.4	N/A	N/A	N/A	N/A
Scat	-115.59523	34.90677	3503	N/A	N/A	N/A	N/A
Scat	-115.69384	34.88878	2660.1	N/A	N/A	N/A	N/A
Scat	-115.69437	34.88782	2650.3	N/A	N/A	N/A	N/A
Scat	-115.70571	34.8863	2601.7	N/A	N/A	N/A	N/A
Scat	-115.70607	34.88521	2601.7	N/A	N/A	N/A	N/A
Scat	-115.71316	34.88715	2536.1	N/A	N/A	N/A	N/A
Scat	-115.71314	34.88715	2536.1	N/A	N/A	N/A	N/A
Scat	-115.71405	34.88766	2525.3	N/A	N/A	N/A	N/A
Scat	-115.92997	34.83201	2058.1	N/A	N/A	N/A	N/A
Scat	-115.92950	34.83204	2051.8	N/A	N/A	N/A	N/A
Scat	-115.93519	34.83105	2110.2	N/A	N/A	N/A	N/A
Scat	-116.06615	34.78718	2159.4	N/A	N/A	N/A	N/A
Scat	-116.62890	34.6172	3709	N/A	N/A	N/A	N/A
Scat	-116.62876	34.61721	3707.3	N/A	N/A	N/A	N/A
Scat	-116.56417	34.65067	3985	N/A	N/A	N/A	N/A

Desert Tortoise Sign	Latitude	Longitude	Elevation (feet)	Burrow Type	Burrow Condition Class ¹	Carcass Time Since Death	Percent of Carcass Intact
Scat	-116.62854	34.6172	3697.8	N/A	N/A	N/A	N/A
Scat	-116.66487	34.61568	3961.6	N/A	N/A	N/A	N/A
Scat	-116.81002	34.57619	3793.3	N/A	N/A	N/A	N/A
Scat	-116.78244	34.58977	3429.8	N/A	N/A	N/A	N/A
Scat	-115.02891	35.75246	2032.2	N/A	N/A	N/A	N/A
Tracks	-114.88426	35.37146	2835.3	N/A	N/A	N/A	N/A
Tracks	-114.88350	35.37336	2844.2	N/A	N/A	N/A	N/A
Tracks	-115.07983	34.95591	2746.4	N/A	N/A	N/A	N/A
Tracks	-116.56595	34.64925	3989	N/A	N/A	N/A	N/A

ATTACHMENT F: COMMON	RAVEN OBSERVATIO	ON AND AVIAN MOR	TALITY RESULTS

ATTACHMENT F: COMMON RAVEN OBSERVATION AND AVIAN MORTALITY RESULTS

Observation Type	Latitude	Longitude	Elevation (feet)	Raven Nest Substrate	Predation Desert Tortoise Midline Carapace Length (mm)	Raven Predation Near Nest	Raven Roost Congregating	Raven Roost Substrate
Raven Mortality	-115.00687	35.79346	1791.3	Not Applicable (N/A)	N/A	N/A	N/A	N/A
Raven Mortality	-116.38047	34.78640	2083.3	N/A	N/A	N/A	N/A	N/A
Raven Nest	-114.96717	35.58937	3309.7	Tower	N/A	N/A	N/A	N/A
Raven Nest	-115.17559	34.93501	2875.7	Tower	N/A	N/A	N/A	N/A
Raven Nest	-114.91426	35.00305	2507.5	Tower	N/A	N/A	N/A	N/A
Raven Nest	-115.86320	34.85116	1734.3	Tower	N/A	N/A	N/A	N/A
Raven Nest	-116.38340	34.78393	2058.7	Tower	N/A	N/A	N/A	N/A
Raven Nest	-116.38047	34.78640	2083.3	Tower	N/A	N/A	N/A	N/A
Raven Nest	-116.36234	34.77860	2134.2	Tower	N/A	N/A	N/A	N/A
Raven Nest	-117.02781	34.46944	2949.5	Tower	N/A	N/A	N/A	N/A
Raven Nest	-117.04797	34.46101	2995.7	Tower	N/A	N/A	N/A	N/A
Raven Nest	-117.00309	34.48775	2942.6	Tower	N/A	N/A	N/A	N/A
Raven Nest	-117.11331	34.39762	4159.4	Tower	N/A	N/A	N/A	N/A
Raven Nest	-114.96718	35.58937	3309.7	Tower	N/A	N/A	N/A	N/A
Predated Desert Tortoise	-115.17560	34.93501	2875.7	n/a	85	Yes	N/A	N/A
Predated Desert Tortoise	-115.92512	34.83382	2044.3	n/a	55	No	N/A	N/A
Predated Desert Tortoise	-115.92511	34.83382	2044.6	n/a	55	No	N/A	N/A
Predated Desert Tortoise	-115.93041	34.83232	2073.2	n/a	45	No	N/A	N/A
Predated Desert Tortoise	-115.93555	34.83082	2113.8	n/a	45	No	N/A	N/A
Predated Desert Tortoise	-115.93548	34.83086	2109.3	n/a	110	No	N/A	N/A
Predated Desert Tortoise	-115.93545	34.83085	2108.3	n/a	55	No	N/A	N/A
Predated Desert Tortoise	-115.95042	34.82671	2199.8	n/a	120	No	N/A	N/A
Raven Roost	-115.06152	34.91934	2587.6	n/a	N/A	N/A	8	Fence
Sparrow Mortality	-116.98967	34.50438	2897.6	n/a	N/A	N/A	N/A	N/A
Unknown Avian Species Mortality	-117.06685	34.43070	3241.1	n/a	N/A	N/A	N/A	N/A

