



**Date:** 6/22/2016

**To:** Larry Pieper, Vice President of Operations, Wildlands, Inc.

**From:** Ironwood Consulting, Inc.

**Subject:** Focused Desert Tortoise Surveys on Three Parcels (1,920 Acres), near Lockhart, San Bernardino County, CA.

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This report represents findings from focused desert tortoise surveys conducted by Ironwood Consulting for Wildlands, Inc. on three parcels (APNs 0501-01-02, 0501-01-04, and 0501-01-06) outside of Lockhart, California near the Black Mountains in San Bernardino County.

## SITE LOCATION AND DESCRIPTION

The parcels are located north of Harper Lake Road outside of the small community of Lockhart, California. The site is approximately 5-6 miles northwest of the existing Mojave Solar Project and Abengoa Solar Project. The Study Area consisted of 5 parcels all together (about 1,950 acres in total) within the lower bajada of the Black Mountains. The parcels are about 2-3 miles southwest of Harper Dry Lake and support several dry washes and runnels that feed into the dry lake. Vegetation is comprised primarily of creosote bush scrub and mixed salt bush scrub with sandy loamy soils at an elevation of about 2,270 meters.

## METHODS

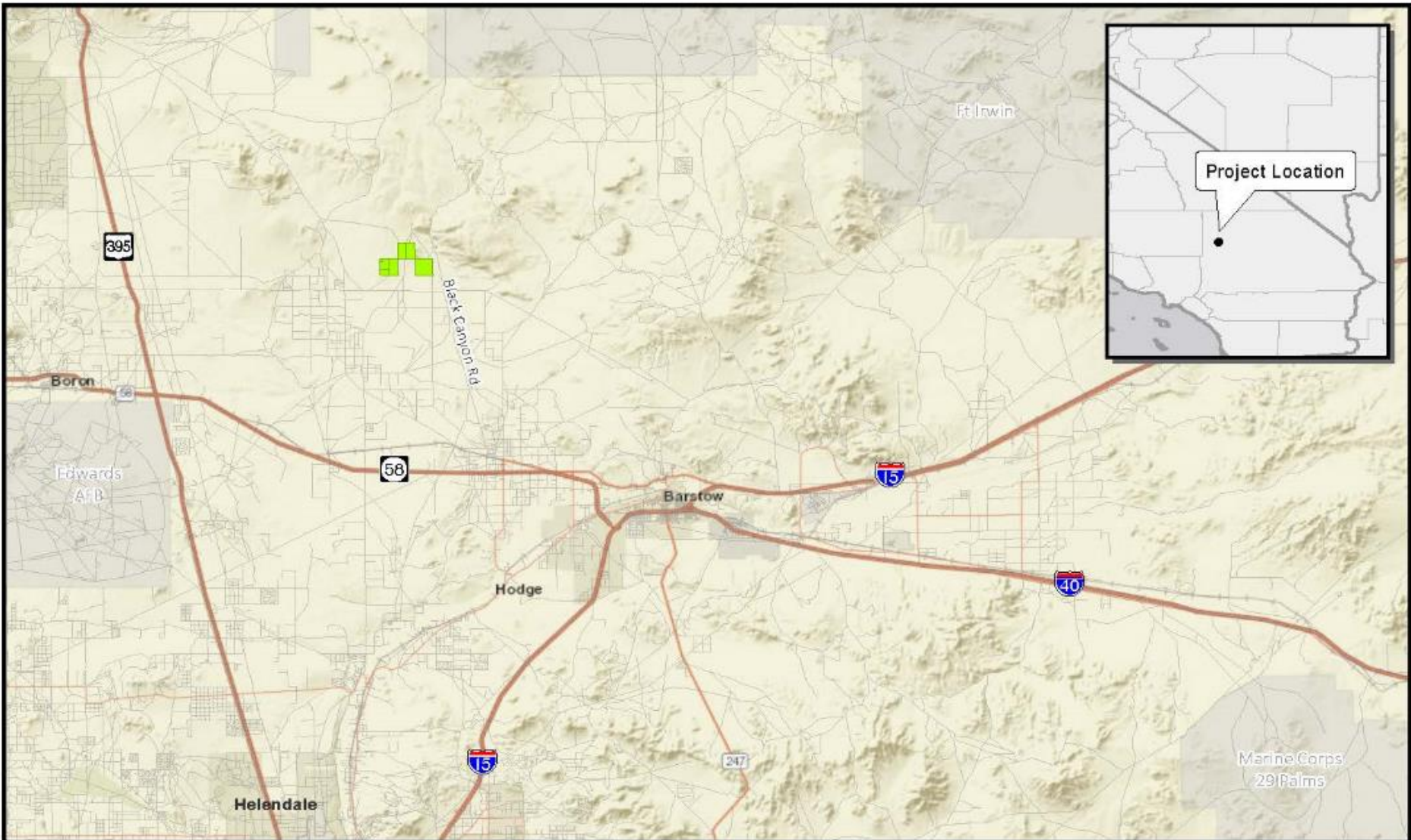
Desert tortoise surveys were conducted by Ironwood biologists Kent Hughes, Brian Sandstrom, and Lehong Chow between May 6 and May 20, 2016. The surveys focused on detecting live tortoises and confirming occupancy. The surveys included both systematic, evenly spaced transects and high-grade transects, which deviated from the U.S. Fish and Wildlife Service 2010 protocol in order to maximize efficiency. Approximately 134 survey hours were performed during this effort, which is less than 25% the level-of-effort assumed under full-coverage 10m surveys.

One-half of the western parcel (APN 0501-01-06), measuring approximately 324 acres, was surveyed using systematic transects spaced at 30 meters apart (Figure 2). The remaining portions of the parcels were surveyed using high-grading methods, which involved meandering pedestrian transects in desert washes and areas with higher plant diversity and density where the potential for tortoises to occur was higher. All active burrows with a live tortoise or recent tortoise sign (Class 1) or tortoise burrows in good condition with no recent sign of use (Class 2) data was collected. Observations of burrows that were poor quality and carcass data were noted; however, not all individual locations of this sign were recorded because the primary focus was to find live tortoises and active sign.



**Ironwood Consulting, Inc.**

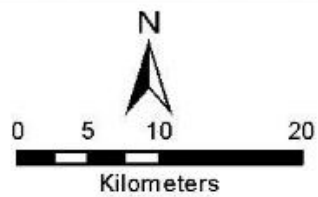
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Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012  
 Copyright: © 2013 Esri, DeLorme, NAVTEQ

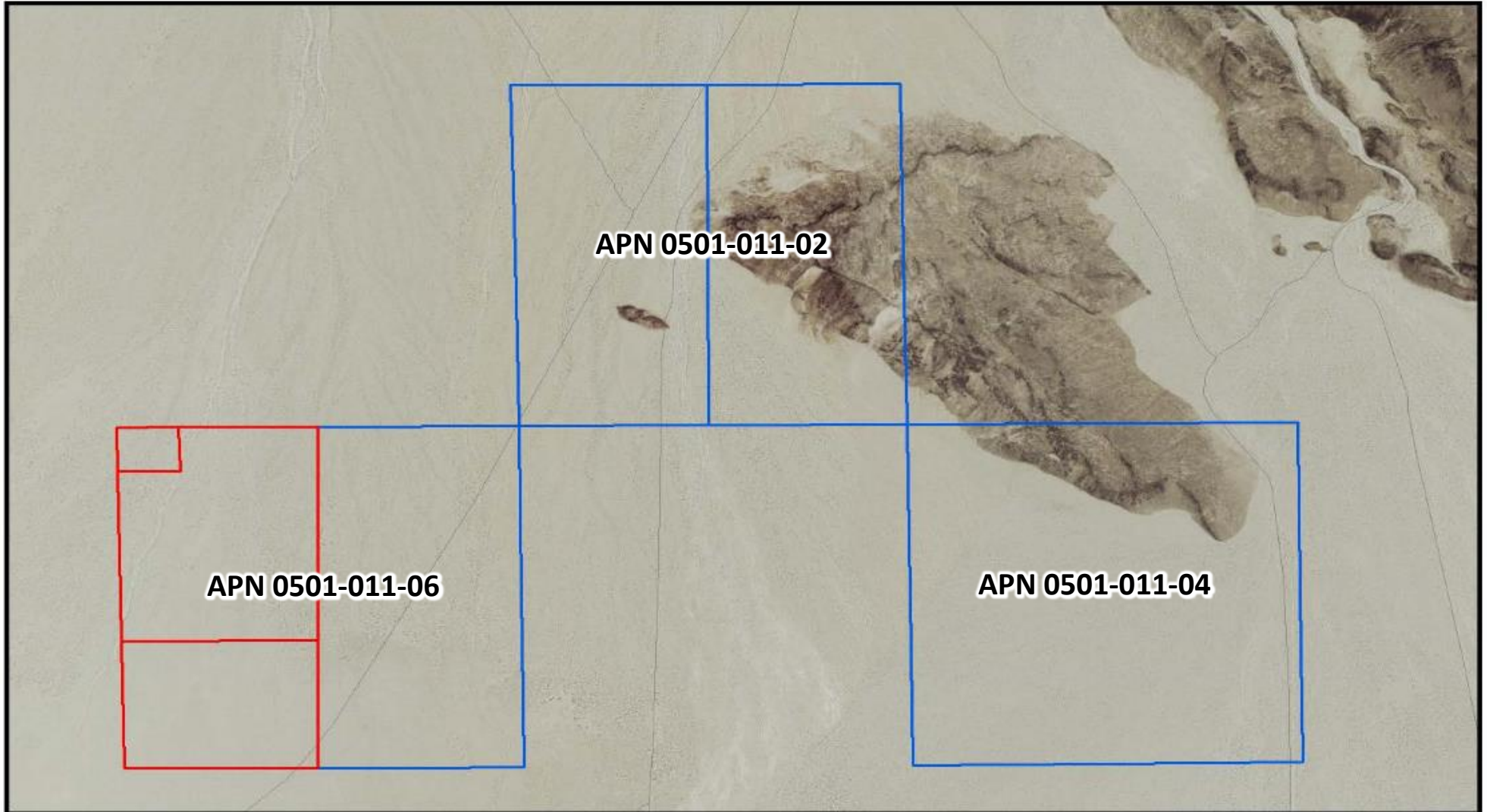
-  Streets and Unpaved Roads
-  Project Location






**Wildlands Harper**  
 San Bernardino County, CA

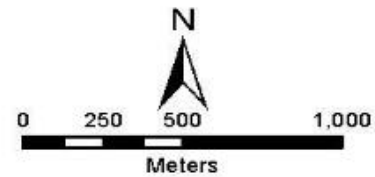
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Figure 1  
**Regional Setting**



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

-  Access Roads
-  324 ac - 30m
-  High Grade



**Wildlands Harper**  
San Bernardino County, CA

**Figure 2**  
**Study Area**

## RESULTS

The following description focuses on active sign and live tortoises observed during the surveys, consistent with the objective of the surveys. Several Class 3 burrows (deteriorated condition) and several disarticulated carcasses were detected throughout the survey area. Historical and poor-condition sign are not discussed below.

### APN 0501-01-04

The surveys confirmed that this parcel is currently occupied by desert tortoise. One live adult tortoise (~200mm MCL) was located in a burrow (see Photos 1 and 2). Visual characteristics suggested that this tortoise had discharge around the eyes, which may be indicative of upper respiratory tract disease and the acronym (URTD). In addition to this live tortoise, one Class 1 burrow (currently active, with live desert tortoise or recent sign) was recorded within the northern extent of the parcel and one Class 2 burrows (good condition, definitely tortoise, no evidence of recent use) was recorded within the southern extent of the parcel. It is expected that additional tortoises occur within the parcel due presence of contiguous suitable habitat.

### APN 0501-01-02

The surveys confirmed that this parcel is currently occupied by desert tortoise. One live adult tortoise (~250mm MCL) was located in a burrow (see Photos 3 and 4). Visual characteristics suggested that this tortoise was healthy and robust. In addition to this live tortoise, two Class 2 burrows (good condition, definitely tortoise, and no evidence of recent use) were recorded within the northern extent of the parcel. It is expected that additional tortoises occur within the parcel due presence of contiguous suitable habitat.

### APN 0501-01-06

No live tortoises were observed within the parcel; however, the survey results suggested that this parcel is likely occupied by desert tortoise. One Class 1 burrow (currently active, with live desert tortoise or recent sign) was recorded within the northern extent of the parcel where formal 30m pedestrian transects were conducted (see Photo 5). This burrow contained tortoise tracks inside the burrow and on the apron. The area was searched for any additional active sign, but none was detected. The mouth of the burrow was gated with creosote sticks and the tracks on the apron were smoothed to indicate any new activity at the burrow following the initial detection. The live tortoise was not found and no additional active sign was found during subsequent visits occurring over the span of 3 days.



**Photo 1.** Female tortoise in burrow (APN 0501-01-02)



**Photo 2.** General vicinity of female tortoise burrow (APN 0501-01-02)



**Photo 3.** Male tortoise in burrow (APN 0501-01-04)



**Photo 4.** General vicinity of male tortoise burrow (APN 0501-01-04)



**Photo 5.** Active tortoise burrow (APN 0501-01-06)