



CRESCENT PEAK WIND PROJECT

PROPOSED DESERT TOTOISE SURVEY PROTOCOL

Applicant:

Crescent Peak Renewables, LLC
A wholly-owned subsidiary of Eolus North America, Inc.
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PROPOSED DESERT TOTOISE SURVEY PROTOCOL

SWCA Environmental Consultants (SWCA) has been retained by Crescent Peak Renewables, LLC to perform the baseline surveys for desert tortoise (*Gopherus agassizii*) on their proposed Crescent Peak Wind Project. SWCA reviewed the project POD, dated November 27, 2017, and modeled desert tortoise habitat. Subsequent to that SWCA met with the Bureau of Land Management (BLM), Southern Nevada District Office, Las Vegas Field Office, Mark Slaughter, Wildlife Supervisor, and Gregg Brooks, Biologist on March 15, 2018 to discuss the survey protocol, and what the BLM would consider a reasonable survey area. As the modeled tortoise habitat does not necessarily depict the entire actual habitat, BLM suggested that SWCA perform a field verification of the project area and assess the habitat of areas outside the modeled habitat that potentially could be considered suitable for desert tortoise. SWCA authorized desert tortoise biologists narrowed down areas on the proposed layout and performed a field verification on March 19, 2018. The below represents what was noted in the field and added to the survey area for the project.

PROPOSED SURVEY METHODS

Major Linear Components

SWCA proposes to conduct 100% coverage survey for desert tortoise along the entire length of the major linear components of the proposed project. Surveys of the major linear components will consist of a 200-foot (~60-meter) right-of-way (ROW). Project components included in the major linear components will be Walking Box Ranch Road and the proposed 230 kV transmission lines (Figure 1).

Authorized biologists will survey for all desert tortoises that are above ground (both out of burrows and within burrows but still visible), as well as all desert tortoise sign (burrows, scats, carcasses, etc.). Ten-meter-wide (~33-foot-wide) belt transects walking parallel to the linear features will be used to perform presence/absence surveys. Biologists will record all locations of desert tortoises and sign discovered during the survey effort using the U.S. Fish and Wildlife Service (USFWS) 2017 Desert Tortoise Pre-Project Survey Data Sheet. To ensure against data loss, we will record duplicate data into a Trimble GPS unit, which will also generate highly accurate locational data for observations of desert tortoise and tortoise sign.

Unless otherwise authorized by the BLM and the U.S. Fish and Wildlife Service, surveys will be conducted during the desert tortoise's most active periods (April through May or September through October).¹ Desert tortoises use burrows to avoid daily and annual thermal extremes;² therefore, surveys will take place when air temperatures are below 35°C (95°F).³

SWCA also proposes to complete burrowing owl (*Athene cunicularia*) surveys concurrent with desert tortoise surveys. Although burrowing owls are a protected species in the state of Nevada, there are no specific survey requirements for this species. Surveyors would record the coordinates of any individuals observed and would also record and photograph any burrows found with burrowing owl sign. Any other notable wildlife observations will also be recorded.

¹ Inman (2008); Nussear and Tracy (2007); USFWS (2010)

² Woodbury and Hardy (1948)

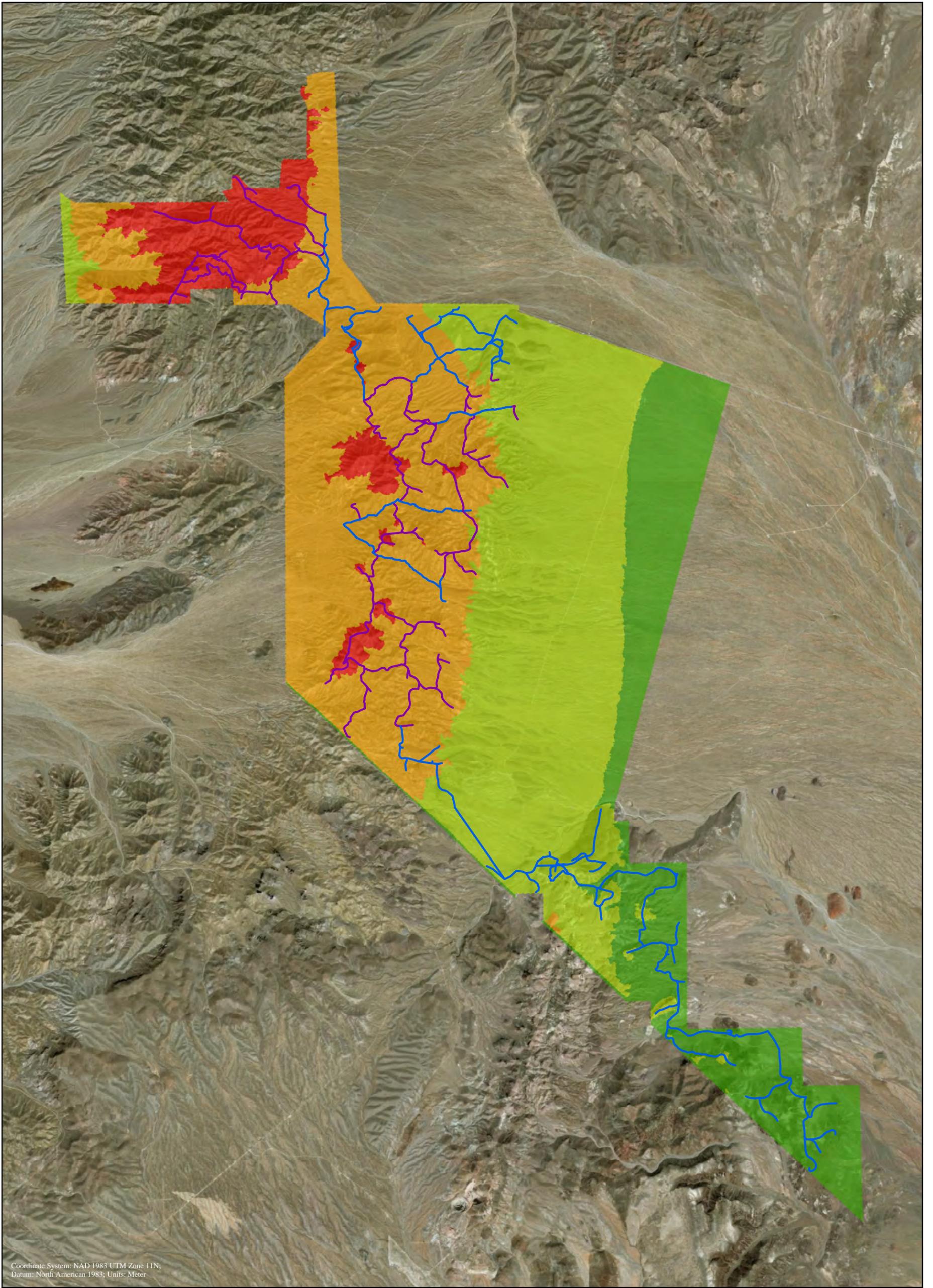
³ Inman (2008); Walde et al. (2003); Zimmerman et al. (1994); USFWS (2017)

Wind Turbines and Infrastructure

Project components included in the wind turbines and infrastructure consist primarily of existing roads, proposed new roads, and proposed 34 kV collector lines. Most of the proposed wind turbines and infrastructure do not occur in areas considered to be high quality tortoise habitat based on modeled habitat values (Nussear et al. 2009⁴; Figure 1). This determination is based on poor suitability of the soils for burrowing (Figure 2) and high elevation (> 1,200 meters; Figure 3). However, desert tortoise sign has previously been observed within the project area by SWCA biologists conducting avian surveys. A review of GIS layers and a site visit were used to identify areas where tortoise surveys would be most productive.

In addition to the major linear features, SWCA proposes to conduct 100% coverage survey for desert tortoise along the wind turbines and infrastructure components of the proposed project in areas where tortoise occupancy is most likely (Figures 2 and 3). Surveys of the wind turbines and infrastructure features will consist of a 66-foot (~20-meter) right-of-way (ROW). In addition to the linear feature surveys, the footprint of proposed staging areas and a proposed substation will also be surveyed. Surveys of the proposed 66-foot ROW, staging areas, and substation will follow the same methods as described previously for the major linear components surveys.

⁴ Nussear et al. (2009)



Coordinate System: NAD 1983 UTM Zone 11N;
Datum: North American 1983; Units: Meter

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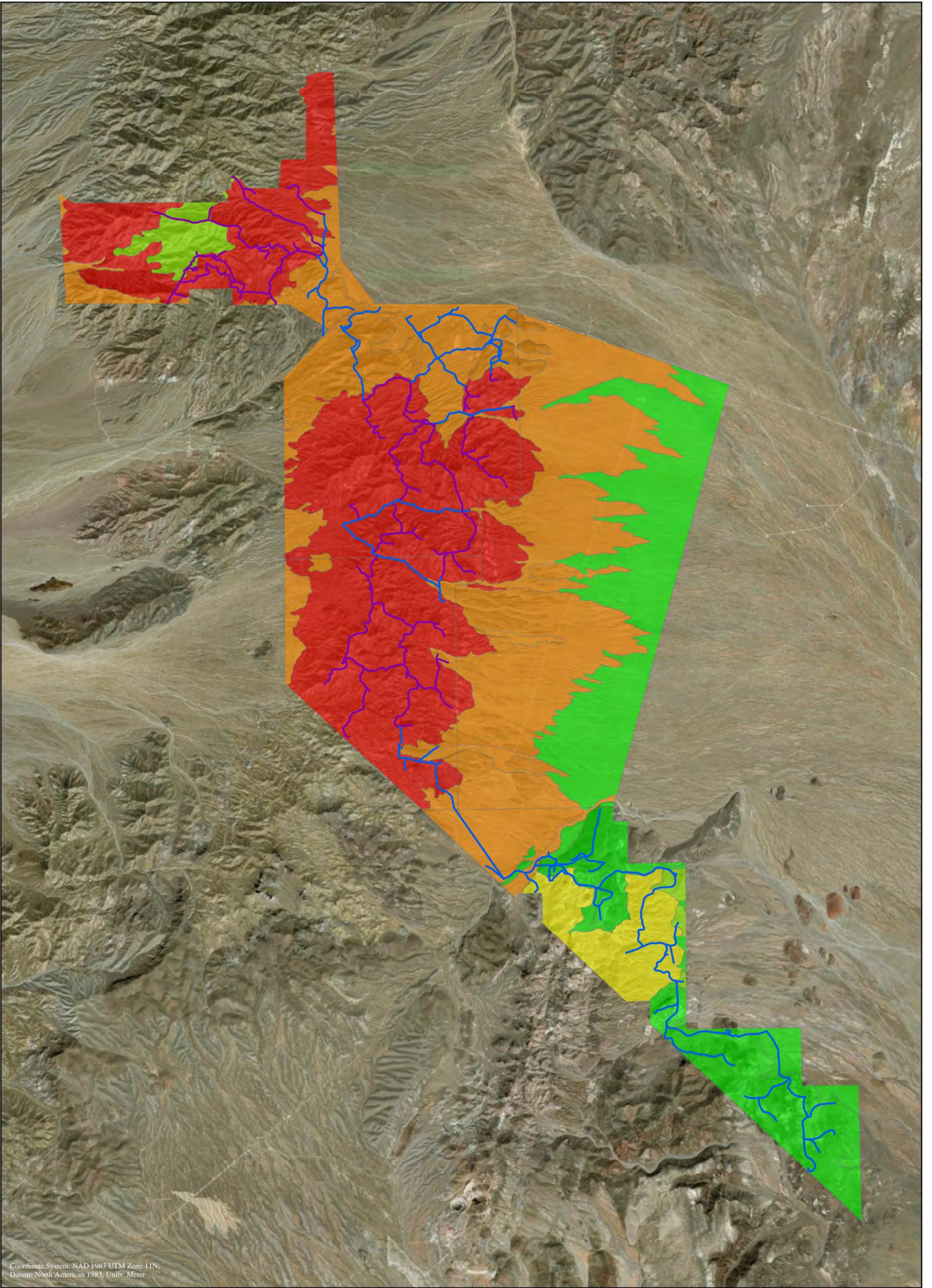
Wind Turbine Infrastructure
66-foot Right-of-Way

- No Tortoise Surveys
- Proposed Tortoise Survey

Elevation in meters

- 0-1,200
- 1,201-1,400
- 1,401-1,600
- 1,601-1,924





Wind Turbine Infrastructure

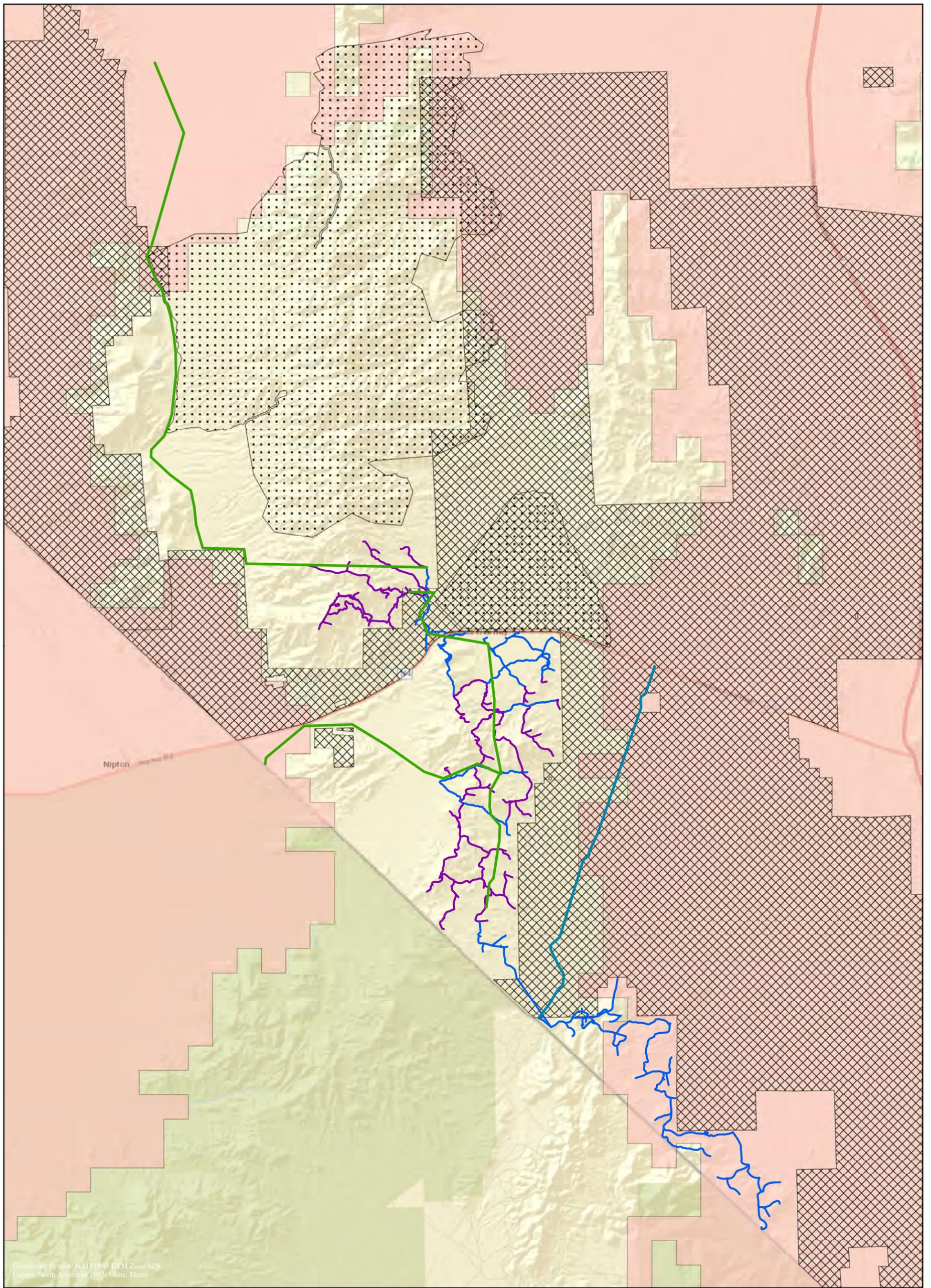
66-foot Right-of-Way

- No Tortoise Surveys
- Proposed Tortoise Survey

Percent of Soils Suitable for Burrowing

- 0%
- <25%
- 25%-50%
- 50%-75%
- 75%-100%





Major Linear Components

200-foot Right-of-Way

230 kV

Road

Wind Infrastructure

66-foot Right-of-Way

No Tortoise Surveys

Proposed Tortoise Survey

Modeled Tortoise Habitat (Nussear et al. 2009)

Area of Critical Environmental Concern

Wilderness Area

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