Biological Evaluation and Alternatives Analysis
TEP Kino–DeMoss-Petrie Transmission Line Project
Tucson, Pima County, Arizona

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ABSTRACT

PROJECT TITLE: Biological Evaluation and Alternatives Analysis: TEP Kino–DeMoss-Petrie Transmission Line Project in Tucson, Pima County, Arizona

LAND STATUS: Private

PROJECT DESCRIPTION: A Biological Evaluation was performed to identify and record any Federal or State-listed species or their habitats within the study area.

FIELDWORK DATE: August 18, 2020

ACRES SURVEYED: Approximately 77 ha (190 acres)

CONCLUSIONS: Tucson Electric Power (TEP) identified eight potential alternative corridors within the study area. Each of the corridors was assigned a score based on their individual potential to impact five general biological resource areas, including special status species, water resources, wildlife linkages, riparian habitat, and native plants.

Table A.1 below presents the combined impact scores for each alternative corridor and resource area evaluated in this report. A higher impact score indicates that the specific alternative would have correspondingly lower impacts on resources than an alternative with a lower score. Our evaluation found that Alternative 1 would result in the least amount of impacts to resources for the southern portion of the proposed transmission line between the Kino Substation and the planned UA North Substation. Alternatives A, B, D, and E would result in the least amount of impacts for the northern portion of the proposed line from the DeMoss-Petrie (DMP) Substation to UA North. The combined alternative corridor scores for the functional combinations of northern and southern routes are summarized in Table A.2.

Table A.1. Alternative Corridor Impact Score Summary

Resource Affected	***Alt. 1***	***Alt. 2***	***Alt. 3***	***Alt. 5***	***Alt. A***	***Alt. B***	***Alt. D***	***Alt. E***
Special Status Species	3	2	3	2	3	3	3	3
Water Resources	3	3	3	3	3	3	3	3
Wildlife Linkages	3	3	3	3	3	3	3	3
Riparian Habitat	3	3	3	3	3	3	3	3
Native Plants	3	2	1.46	1	3	3	3	3
Total	**15**	**14**	**13.46**	**13**	**15**	**15**	**15**	**15**

Table A.2. Functional Alternative Route Combination Scores

Alternative Combination	Score
1, A	30
1, B	30
1, D	30
1, E	30
2, A	29
2, B	29
2, D	29
2, E	29
3, A	28.46
3, D	28.46
5, A	28
5, D	28

1.0 INTRODUCTION

At the request of Tucson Electric Power Company (TEP), Tierra Right of Way Services, Ltd. (Tierra), performed an alternative corridor analysis and reconnaissance site visit for TEP's proposed Kino to DeMoss-Petrie (DMP) 138kV transmission line project in Tucson, Arizona. The purpose of this analysis is to provide information regarding the biological resources present in the vicinity of the alternative transmission line corridors, collectively referred to as the "study area", and the potential impacts to those resources that may occur during construction and operation of the new transmission line. This Biological Evaluation (BE) includes descriptions of wildlife, native plants, suitable habitat for special status species and migratory birds, and water resources present in the study area that will assist TEP in their selection of alternative corridors for the new transmission line. The BE identifies potential impacts to these resources and can be used in support of TEP's application for a Certificate of Environmental Compliance (CEC) from the Arizona Corporation Commission (ACC) allowing the proposed transmission line's construction.

1.1 Study Area

The study area, which encompasses all 11 of TEP's Kino–DMP transmission line alternative corridors, is in western and south-central Tucson and is roughly bounded by Grant Road, Interstate 10 (I-10), Campbell Avenue, and 36th Street (Figures 1 and 2). Specific Township, Range, and Section (TRS) locations (Gila and Salt River Baseline and Meridian [G&SRB&M]) of the study area, as indicated on the Tucson East and Tucson, Arizona, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps, are presented in Table 1.1.

Table 1.1. Study Area TRS Locations[a]

Township, Range	Sections
Township 14 South, Range 13 East	1, 2, and 12
Township 14 South, Range 14 East	6, 7, 18–20, and 30

[a] Gila and Salt River Baseline and Meridian.

1.2 Alternatives

TEP has identified six alternatives (Alternatives 1–6) to connect the Kino Substation to the proposed University of Arizona North (UA North) substation, and five alternatives (Alternatives A–E) to connect the proposed UA North Substation to the DMP Substation. The DMP Substation is located just north of Grant Road on the east side of Interstate 10 (I-10), the Kino Substation is located on the south side of 36th Street east of Kino Parkway, and the proposed UA North Substation would be located in the northwestern portion of the Banner University of Arizona Medical Center (UMC) campus at Elm Street and Vine Avenue (see Figures 1 and 2 and corridor detail maps in Appendix A).

1.2.1 Alternatives 1–6 (Kino Substation–UA North Substation)

Alternative 1 is approximately 6.46 km (4.01 miles) long and extends west from the Kino Substation along 36th Street to Kino Parkway, north on Kino Parkway to the 22nd Street overpass off-ramp, north on the ramp to 22nd Street, east on 22nd Street to Cherry Avenue, north on Cherry Avenue and across the Union Pacific Railroad (UPRR) tracks and Aviation Parkway to Kino Parkway and 17th Street, north on Kino Parkway and then Campbell Avenue to Elm Street, then west on Elm Street to the UA North Substation.

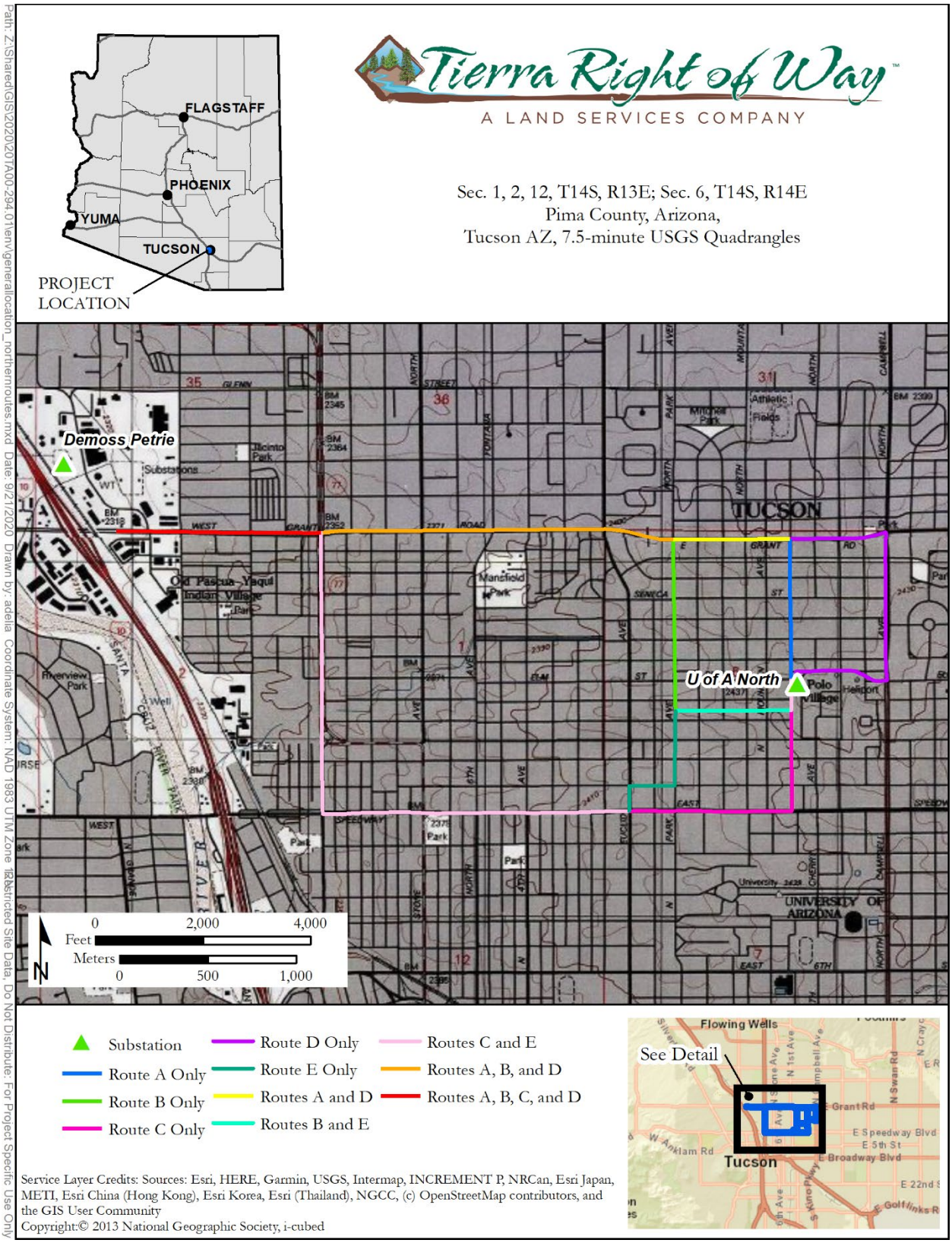

Figure 1. Project location, Alternatives A–E.

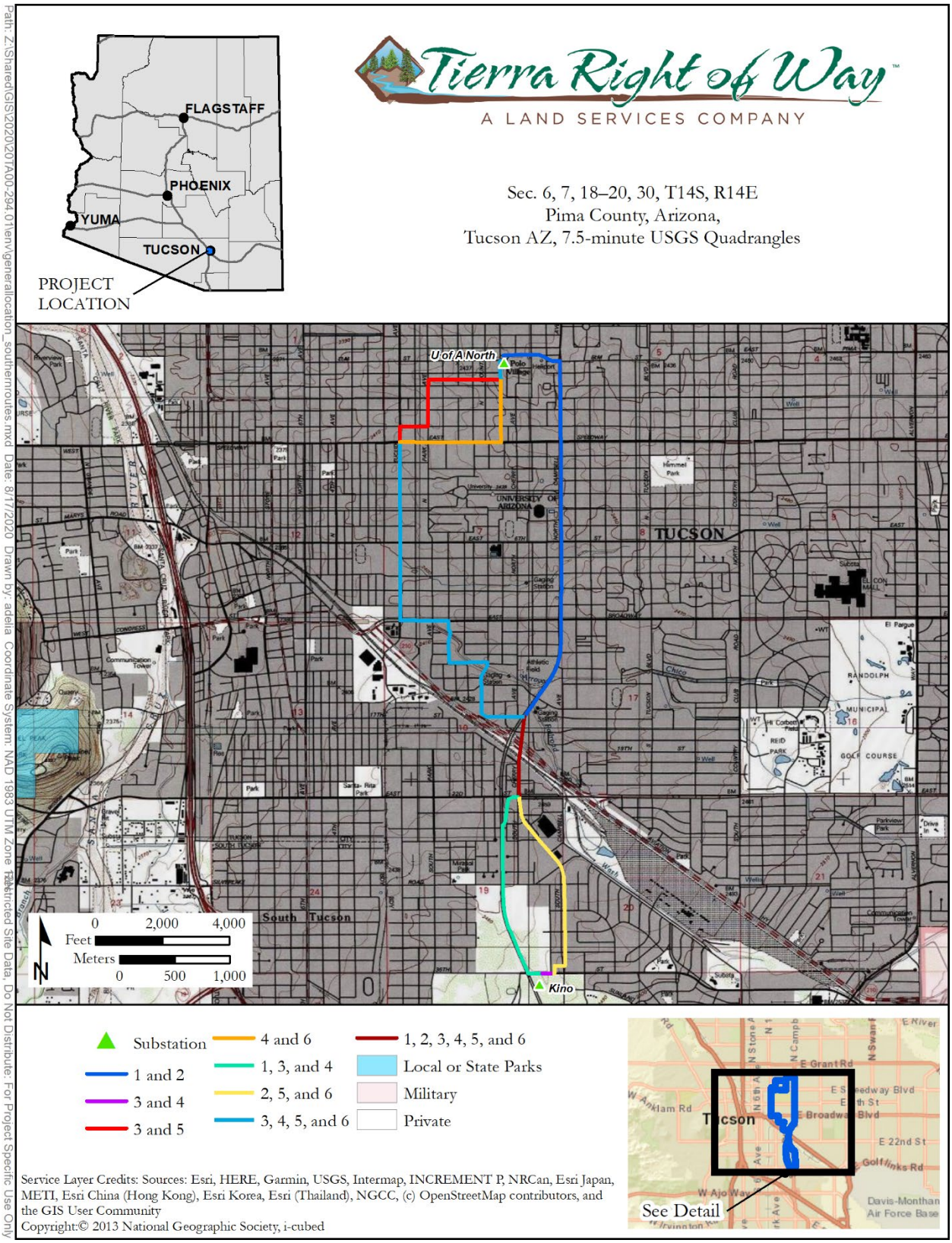

Figure 2. Project location, Alternatives 1–6.

Alternative 2 is approximately 6.45 km (4.00 miles) long and extends east from the Kino Substation along 36th Street to Campbell Avenue, north on Campbell Avenue and Cherrybell Stravenue to 22nd Street, then north on Cherry Avenue across the UPRR tracks and Aviation Parkway and continuing north to the UA North Substation identically to Alternative 1.

Alternative 3 is approximately 8.05 km (5.00 miles) long and is identical to Alternative 1 going north from the Kino Substation to Kino Parkway and 17th Street. The route then continues west on 17th Street to Highland Avenue, north on Highland Avenue crossing Arroyo Chico, west along Manlove Street to Fremont Avenue, north on Fremont Avenue to Broadway Boulevard, west on Broadway to Euclid Avenue, north on Euclid Avenue to Helen Street, east on Helen Street to Park Avenue, north on Park Avenue to the alley between Lee and Adams Streets, east along the alley to Vine Avenue, then north on Vine Avenue to the UA North Substation.

Alternative 4 is approximately 8.07 km (5.01 miles) long and is identical to Alternative 3 from the Kino Substation north to Euclid Avenue and Speedway Boulevard. The route continues east on Speedway to Vine Avenue and then north on Vine Avenue to the UA North Substation.

Alternative 5 is approximately 7.95 km (4.94 miles) long and is identical to Alternative 2 going north from the Kino Substation to Cherrybell Stravenue and 22nd Street and identical to Alternative 3 going north from Cherrybell Stravenue and 22nd Street to the UA North Substation.

Alternative 6 is approximately 7.96 km (4.95 miles) long and is identical to Alternative 2 going north from the Kino Substation to Cherrybell Stravenue and 22nd Street and identical to Alternative 4 going north from Cherrybell Stravenue and 22nd Street to the UA North Substation.

1.2.2 Alternatives A–E (UA North Substation–DMP Substation)

Alternative A is approximately 4.62 km (2.87 miles) long and extends east from the DMP Substation along Grant Road to Vine Avenue and then south on Vine Avenue to the UA North Substation.

Alternative B is approximately 4.79 km (2.98 miles) long and extends east from the DMP Substation along Grant Road to Park Avenue, south on Park Avenue to the alley between Lee and Adams Streets, then east along the alley to the UA North Substation.

Alternative C is approximately 6.15 km (3.82 miles) long and extends east from the DMP Substation along Grant Road to Oracle Road, south on Oracle Road to Speedway Boulevard, east on Speedway to Vine Avenue, then north on Vine Avenue to the UA North Substation.

Alternative D is approximately 5.74 km (3.57 miles) long and extends east from the DMP Substation along Grant Road to Campbell Avenue, south on Campbell Avenue to Elm Street, then west on Elm Street to the UA North Substation.

Alternative E is approximately 6.14 km (3.82 miles) long and is identical to Alternative C east from the DMP Substation to the intersection of Speedway Boulevard and Euclid Avenue, and it continues to the UA Substation from that intersection along the same route as Alternatives 3 and 5.

1.2.3 Functional Combinations of Alternatives

During their initial alternatives analysis, TEP added Alternative E and removed Alternatives 4, 6, and C from further consideration because they discovered that the University of Arizona is planning to construct two new buildings on Vine Avenue that would be incompatible with the construction of a new transmission line. In addition, TEP found that certain combinations of the alternatives were not viable due to construction concerns with parallel lines; for example, Alternatives 3 and 5 cannot be combined with Alternative D, and Route 5 cannot be combined with Route B or E. Therefore, 12 viable combinations of the alternatives remain that could serve to functionally connect the Kino Substation through the planned UA North Substation to the DMP Substation. These alternative combinations and their overall lengths are summarized in Table 1.2.

Table 1.2. Functional Alternative Route Combinations

Alternative Combination	Length
1, A	11.08 km (6.88 miles)
1, B	11.25 km (6.99 miles)
1, D	12.20 km (7.58 miles)
1, E	12.60 km (7.83 miles)
2, A	11.07 km (6.88 miles)
2, B	11.24 km (6.98 miles)
2, D	12.19 km (7.57 miles)
2, E	12.59 km (7.82 miles)
3, A	12.67 km (7.87 miles)
3, D	13.79 km (8.57 miles)
5, A	12.57 km (7.81 miles)
5, D	13.69 km (8.51 miles)

2.0 METHODS

Prior to conducting fieldwork, Tierra performed background "desktop" research, including a review of the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation System (IPAC) and the Arizona Game and Fish Department (AZGFD) Heritage Data Management System (HDMS), to obtain information on sensitive biological resources that may be present in the study area. After compiling a list of special status species potentially occurring in the study area, Senior Biologist Tim Jordan conducted a reconnaissance site visit of the study area on August 18, 2020. Site reconnaissance consisted of driving all the alternative corridors and stopping frequently to note plant species present, inspect areas with potentially suitable habitat for special status species, and to photographically document the study area. The assessed corridor width during the site visit included the entire right-of-way (ROW) of each road and utility corridor associated with the alternatives. Following the site visit, special status species listed in Section 4.1 were assessed for their potential to occur in the study area based on the existing characteristics of the area. Representative photographs of the alternative transmission line corridors in the study area can be found in Appendix B.

3.0 DESCRIPTION OF EXISTING CONDITIONS

3.1 General Overview

The 11 alternative corridors within the study area are located in built-up urban areas of Tucson, Arizona. All alternative corridors follow previously disturbed, existing road and utility ROWs, and land use in the vicinity consists of commercial, industrial, and residential areas. The topography of the study area is relatively flat with a slight northwestern aspect.

3.2 Biotic Community

The study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community, as described and mapped by Brown (1994), at elevations ranging from approximately 707–756 m (2,320–2,480 feet) above mean sea level (AMSL). The Arizona Upland biotic community is often referred to as "the Arizona Desert." It is the most watered and least desert-like desertscrub habitat in North America. Vegetation in this biotic community takes on the appearance of a scrubland or low woodland of leguminous trees with intervening spaces held by one or several open layers of shrubs and perennial succulents. Common tree species found in the Arizona Upland community include Velvet Mesquite *(Prosopis velutina)*, Foothills and Blue Palo Verde (*Parkinsonia microphylla* and *P. florida*), Ironwood *(Olneya tesota)*, and Desert Willow *(Chilopsis linearis)*. Common shrubs include Whitethorn and Catclaw Acacia (*Acacia constricta* and *A. greggii*), Creosote *(Larrea tridentata)*, Jojoba *(Simmondsia chinensis)*, Four-wing Saltbush *(Atriplex canescens)*, and Desert Broom *(Baccharis sarothroides)*. Forb and grass species commonly seen include Brittlebush *(Encelia farinosa)*, Jimmyweed *(Isocoma tenuisecta)*, Broom Snakeweed *(Gutierrezia sarothrae)*, Canyon Ragweed *(Ambrosia ambrosioides)*, Desert Marigold *(Baileya multiradiata)*, Desert Straw *(Stephanomeria pauciflora)*, Triangle-leaf Bursage *(Ambrosia deltoidea)*, Fluffgrass *(Dasyochloa pulchella)*, Sixweeks Grama *(Bouteloua barbata)*, and Bush Muhly *(Muhlenbergia porteri)*. Cactus species common in the Arizona Upland community include Saguaro *(Carnegiea gigantea)*, Fishhook Barrel *(Ferocactus wislizenii)*, Pincushion *(Mammillaria microcarpa)*, Desert Christmas Cactus *(Cylindropuntia leptocaulis)*, Chainfruit Cholla *(Cylindropuntia fulgida)*, Cane Cholla *(Cylindropuntia spinosior)*, Buckhorn Cholla *(Cylindropuntia versicolor)*, Engelmann's Prickly Pear *(Opuntia engelmannii)*, and hedgehog cactus (*Echinocereus* spp.). The lower contact of this subdivision is with the Lower Colorado River Valley biotic community at an elevation between 290–640 m (950–2,100 feet) AMSL. Over an elevation of approximately 1,000 m (3,300 feet) AMSL, the Arizona Desert merges with colder and wetter interior chaparral or semidesert grassland (Brown 1994).

The bimodal rainfall pattern of the Sonoran Desert allows for a greater structural diversity than in the Great Basin, Mohave, or Chihuahuan Deserts. The Sonoran Desert differs markedly from the other North American desert biotic communities, which are dominated by low shrubs, in its arboreal elements and its truly large cacti and succulent constituents. Even in its most arid parts, the Sonoran Desert exhibits tree, tall shrub, and succulent life-forms along drainages and other favored habitats (Brown 1994).

Wildlife in the Arizona Uplands is as diverse as the vegetation. Mammals well represented in this biotic community include Black-tailed Jackrabbits *(Lepus californicus)*, ground squirrels (*Spermophilus* spp. and *Ammospermophilus* spp.), pocket mice (*Perognathus* spp.), kangaroo rats (*Dipodomys* spp.), Coyotes *(Canis latrans)*, Javelinas *(Tayassu tajacu)*, and numerous bat species (*Myotis* spp. and *Leptonycteris* spp., among others). The variety of birds is great and can include Harris's Hawk *(Parabuteo unicinctus)*, Mourning Dove *(Zenaida macroura)*, Gambel's Quail *(Callipepla gambelii)*, Burrowing Owl *(Athene cunicularia)*, Gila

Woodpecker *(Melanerpes uropygialis)*, Verdin *(Auriparus flaviceps)*, Cactus Wren *(Campylorhynchus brunneicapillus)*, and Phainopepla *(Phainopepla nitens)* (Brown 1994).

Common reptiles found in the Arizona Upland include Desert Tortoise *(Gopherus agassizii)*, Zebra-tailed Lizard *(Callisaurus draconoides)*, Desert Iguana *(Dipsosaurus dorsalis)*, gecko (*Coleonyx* spp.), horned lizard (*Phrynosoma* spp.), whiptail (*Cnemidophorus* spp.), Ground Snake *(Sonora semiannulata)*, and rattlesnake (*Crotalus* spp.) (Brown 1994).

3.3 Vegetation in the Study Area

Several areas along the alternative corridors have been landscaped with a combination of native and non-native plants and most of the other vegetation present in the study area is ruderal, or that commonly found in disturbed areas. However, patches of native vegetation remain in two locations (see Table 3.1).

Table 3.1. Native Vegetation in the Study Area

Alternatives	Location	Approximate Length	Notes
2 and 5	Vicinity of main post office	135 m (443 feet)	Creosote, Velvet Mesquite
3 and 5	Vicinity of Arroyo Chico	158 m (520 feet)	Saltbush, Palo Verde, Velvet Mesquite

3.3.1 Native Plants

Native plants observed in the study area characteristic of the Arizona Upland biotic community described above include trees such as Velvet Mesquite and Blue Palo Verde. Other native species observed include Catclaw Acacia, Four-wing Saltbush, Creosote, Desert Broom, Desert Marigold, Globemallow *(Sphaeralcea ambigua)*, Jimmyweed, Fluffgrass *(Dasyochloa pulchella)*, and Sixweeks Threeawn *(Aristida adscensionis)*.

3.3.2 Riparian Vegetation

Review of Pima County GIS data indicates that none of the alternative corridors intersect Pima County regulated riparian habitat within the study area (Ordinance 2005-FC-2) (see Appendix A, Figures A.3 and A.4). This regulated habitat includes Xeroriparian A, B, C, and D areas, which are generally associated with ephemeral drainages and differ from the wetter types of riparian habitat by the lack of perennial water sources. Plants present in xeroriparian habitats are typical of those found in upland areas but are typically larger and occur at higher densities due to the presence of water.

3.3.3 Invasive and Non-native Plant Species

The Arizona Wildlands Invasive Plant Working Group (AZWIPWG) has developed categorized lists that are useful in assessing the varying degrees of invasiveness of plant species using ratings of High, Medium, and Low. These ratings are as follows.

High: These species have severe ecological impacts on ecosystems, plant and animal communities, and vegetational structure. Invasiveness attributes are conducive to moderate to high rates of dispersal and establishment. Species are usually widely distributed both among and within ecosystems/ communities.

Medium: These species have substantial and apparent ecological impacts on ecosystems, plant and animal communities, and vegetational structure. Invasiveness attributes are conducive to moderate to high rates of dispersal and are often enhanced by disturbance. Ecological amplitude and distribution range from limited to widespread.

Low: These species have minor, yet detectable, ecological impacts. Invasiveness attributes result in low to moderate rates of invasion. Ecological amplitude and distribution are generally limited, but the species can be problematic locally (AZWIPWG 2005).

Three AZWIPWG-listed weed species, including the Medium-rated Bermuda Grass *(Cynodon dactylon)* and the High-rated Buffelgrass *(Pennisetum ciliare)* and Fountain Grass *(P. setaceum)*, were identified in the study area at the time of the site visit. A summary of the locations where these weeds were observed is presented in Table 3.2.

One additional non-native plant species not on the AZWIPG list, the naturalized Mexican Palo Verde *(Parkinsonia aculeata)*, was observed during the survey.

Table 3.2. AZWIPWG-listed Weed Species Locations

Species	Location	Alternatives
Bermuda Grass	Scattered throughout study area	All
Buffelgrass	Scattered along Campbell and Cherrybell from 36th north to 22nd	2 and 5
Fountain Grass	Scattered along Euclid from Broadway north to Speedway	3 and 5

3.4 General Wildlife in the Study Area

Wildlife species observed in the study area at the time of the survey was limited to Mourning Dove, Common Raven *(Corvus corax)*, and whiptail. Some additional species expected to occur in urban areas such as the study area, but were not observed during the field visit, include Pigeon *(Columba livia)*, House Sparrow *(Passer domesticus)*, Red-tailed Hawk, *(Buteo jamaicensis)*, Cooper's Hawk *(Accipiter cooperii)*, Desert Cottontail *(Sylvilagus audubonii)*, and Coyote.

3.4.1 Wildlife Linkages

The AZGFD HDMS Online Review Tool Report (Appendix D) indicates that there are no designated wildlife connectivity areas present in the study area; however, the washes within the study area can serve as wildlife corridors for small urban species, such as Coyote and Javelina.

3.5 Water Resources in the Study Area

3.5.1 Waters of the U.S. including Wetlands

There are no perennial or intermittent waterways within the study area; however, several ephemeral drainages are present that would be crossed by the alternatives. Arroyo Chico is the major drainage in the study area, and it is crossed by Alternatives 1–6. The drainages in the study area are not considered jurisdictional because ephemeral features, including ephemeral streams, swales, gullies, and pools flowing or pooling only in direct response to precipitation, are no longer considered Waters of the U.S. (WUS) according to the Clean Water Rule, which took effect on June 22, 2020. A summary of

the drainage crossings for each of the alternatives is presented in Table 3.3 and indicated on Figures A.5 and A.6 in Appendix A.

Table 3.3. Drainages Crossings in the Study Area

Alternative	Number of Drainage Crossings
1 and 2	**3:** Arroyo Chico, two unnamed drainages
3 and 5	**4:** Arroyo Chico (three crossings), one unnamed drainage
A and B	**none**
D	**1:** unnamed drainage
E	**1:** unnamed drainage

Pre-field visit review of FWS National Wetland Inventory (NWI) GIS data indicated that there are no previously mapped wetlands in the study area. This absence of wetlands was confirmed during the reconnaissance survey.

3.5.2 Floodplains

Review of Federal Emergency Management Administration (FEMA) GIS data (see Appendix A, Figures A.5 and A.6) indicates that the alternative corridors cross FEMA Zone AE and X floodplains. Zone AE areas have a 1 percent annual chance of flooding, with established base flood elevations and areas mapped as Zone X having a minimal 0.2 percent annual chance of flooding. A summary of the floodplains present in the study area and their lengths intersected by the alternatives is presented in Table 3.4.

Table 3.4. Floodplains in the Study Area

Alternative	Floodplain	Intersected Length
1	Zone X	6.34 km (3.94 miles)
	Zone AE	0.13 km (0.08 miles)
2	Zone AE	0.13 km (0.08 miles)
	Zone X	6.32 km (3.93 miles)
3	Zone X	7.67 km (4.77 miles)
	Zone AE	0.37 km (0.23 miles)
5	Zone X	7.57 km (4.70 miles)
	Zone AE	0.37 km (0.23 miles)
A	Zone X	4.62 km (2.87 miles)
B	Zone X	4.79 km (2.98 miles)
D	Zone X	5.74 km (3.57 miles)
E	Zone X	5.95 km (3.70 miles)
	Zone AE	0.19 km (0.12 miles)

4.0 FINDINGS

4.1 Special Status Species

Special status species were determined through a review of data as managed by the following agencies:

- FWS IPAC Official Species List of Threatened and Endangered species for the study area vicinity in Pima County, Arizona (Appendix C).
- AZGFD HDMS Online Review Tool Report for State Wildlife Action Plan (SWAP) (AZGFD 2012) Tier 1A and 1B Species of Greatest Conservation Need (SGCN) documented within 4.8 km (3.0 miles) of the study area (Appendix D).

The FWS lists six wildlife species (three Endangered and three Threatened), one Endangered flowering plant species, and no critical habitats for the study area vicinity in Pima County, Arizona (see Appendix C). AZGFD HDMS indicates that 10 SGCN are known to occur within 4.8 km (3.0 miles) of the study area, including the Threatened Yellow-billed Cuckoo *(Coccyzus americanus)* (see Appendix D).

The determinations of a wildlife species' potential for occurring in the study area were performed after the field reconnaissance site visit by analyzing four aspects of what constitutes suitable habitat. Suitable habitat can contain one or more of the following: foraging habitat, residential habitat, resting habitat, and mating habitat. Foraging habitat for a species contains food items, such as prey species and plants, and can also contain a water source. Residential habitat is a species' home, such as a burrow, nest, or some other form of shelter. Resting habitat can include temporary shelters, such as shade under a tree, shrub, or rock, and for bird species, perches for roosting or casual use. Mating habitat can be as simple as an area where other same-species individuals can be found or can be more complicated, such as a lekking area or other area used for mating displays.

Suitable habitat for plant species is determined by whether or not a suitable combination of soils, moisture, exposure, elevation, and other factors required by a given plant species is present within the area of concern. The biotic community of an area in question is also important; for example, a desert obligate plant is extremely unlikely to occur in a Montane Conifer Forest biotic community.

Special status species were assessed for their potential to occur in the study area (Table 4.1). Potential to occur is ranked from lowest to highest using the ratings "0," "1," "2," "3," and "Present." A rating of "0" is assigned when there is no potential for a species to occur in the study area, such as when there is unsuitable habitat present or the range of the species in question is completely out of the study area. A rating of "1" is assigned when there is a low potential for a species to occur in the study area, such as when there is low-quality habitat (containing only one of the four aspects that make up suitable habitat) present in the study area. The species under consideration may occur in an area with a rating of "1," but is not common. A rating of "2" is assigned when there is medium potential for a species to occur in the study area (the study area contains marginal habitat, two or three aspects of suitable habitat may be present, and the species is likely to occur). A rating of "3" is assigned when there is a high potential for a species to occur in the study area; all of the suitable habitat aspects are present, and the species is most likely to occur. A rating of "present" is given if the species was observed in the study area during the survey.

After analysis of the data, 15 of the 16 special status species were removed from further consideration because the study area either is outside their known range or suitable habitat is not present in the study area (potential = "0"). The remaining species is discussed below in Section 4.2. Appendix E lists the species removed from further consideration and the justification for the determination.

Table 4.1. Listed Species and Their Potential for Occurrence in the Study Area

Scientific Name	Common Name	Status	Potential to Occur
AMPHIBIANS			
Lithobates yavapaiensis	Lowland Leopard Frog	1A[a]	0
BIRDS			
Athene cunicularia hypugaea	Western Burrowing Owl	1B[a]	0
Coccyzus americanus	Yellow-billed Cuckoo	T, 1A[a]	0
Falco peregrinus anatum	American Peregrine Falcon	1A[a]	0
Sterna antillarum browni	California Least Tern	E	0
Strix occidentalis lucida	Mexican Spotted Owl	T, 1A[a]	0
MAMMALS			
Leptonycteris curasoae yerbabuenae	Lesser Long-nosed Bat	1A[a]	1
Myotis occultus	Arizona Myotis	1B	0
Panthera onca	Jaguar	E	0
Tadarida brasiliensis	Brazilian Free-tailed Bat	1B[a]	0
REPTILES			
Aspidoscelis stictogramma	Giant Spotted Whiptail	1B[a]	0
Heloderma suspectum	Gila Monster	1A[a]	0
Heloderma suspectum suspectum	Reticulate Gila Monster	1A[a]	0
Kinosternon sonoriense longifemorale	Sonoyta Mud Turtle	E	0
Thamnophis eques megalops	Northern Mexican Gartersnake	T	0
PLANTS			
Coryphantha scheeri var. *robustispina*	Pima Pineapple Cactus	E	0

[a] Documented within 4.8 km (3.0 miles) of the study area (Arizona Game and Fish Department Heritage Data Management System).

Key: E = Endangered (U.S. Fish and Wildlife Service); T = Threatened (U.S. Fish and Wildlife Service); 1A, B = Species of Greatest Conservation Need Tier (Arizona Game and Fish Department).

4.2 Special Status Species Assessment

4.2.1 Lesser Long-nosed Bat *(Leptonycteris curasoae yerbabuenae)*

Distribution and Habitat

In Arizona, Lesser Long-nosed Bat's known distribution is from the Picacho Mountains southwest to the Agua Dulce Mountains and southeast to the Chiricahua Mountains. It is a seasonal visitor to Arizona, usually arriving in early April and departing in mid- to late September. It also has been seen visiting hummingbird feeders in Tucson during January and February. There are nine major roost sites in Arizona (AZGFD 1998). Known Lesser Long-nosed Bat post-maternity roost sites are located in the Patagonia, Huachuca, and Chiricahua Mountains in central Santa Cruz and southwestern and east-central Cochise Counties. Known maternity roosts are located in south-central Pinal County and eastern Pima County (FWS 2007). The Lesser Long-nosed Bat recovery plan states that "protection of all known roost sites and food plants within a 50-mile radius around known roost sites will help to prevent this species from going extinct" (FWS 1995).

Habitat requirements of the Lesser Long-nosed Bat are two-fold. Both suitable day roosts and suitable concentrations of food plants are critical to the survival of the Lesser Long-nosed Bat. Day roosts can be found in both caves and mines, but the criteria for suitable caves and mines have yet to be identified. In addition to roosting requirements, this species needs adequate numbers of flowers or fruit within foraging range of day roosts and along migration routes to support large numbers. In Arizona, this bat feeds on Saguaro and Organ Pipe Cactus *(Cereus thurberi)* in early summer, and on agaves from later in the summer into early fall. Locations of good feeding sites therefore play an important role in determining the availability of potential roosting sites, and roost and food requirements must be considered jointly when discussing the habitat requirements of this bat (FWS 1995).

Results and Recommendations

No potential Lesser Long-nosed Bat roost sites were observed in the study area at the time of Tierra's survey; however, a cluster of Saguaros was observed in the landscaped median of Campbell Avenue at 33rd Street in the Alternative 2 and 5 corridors that could be potentially used by this species as forage. These Saguaros can easily be spanned by the proposed transmission line; therefore, it is extremely unlikely that construction of the proposed transmission line in the Alternative 2 and 5 corridors would result in indirect impacts to Lesser Long-nosed Bat through removal of potential forage species. Transmission line construction in the remaining five corridors would have no impact on Lesser Long-nosed Bat because forage species are not present along these corridors.

5.0 CONCLUSIONS

Each of the alternatives was assigned a score based on its individual potential to impact five general biological resource areas, including special status species, water resources, wildlife linkages, riparian habitat, and native plants. Alternatives 4, 6, and C were not assigned resource impact scores because these three alternatives were removed from further consideration by TEP.

A score of "3" indicated that no impacts to the resource area in question would occur due to selection of the alternative. A score of "2" was given to those alternatives that may impact a resource, but the impact can be mitigated, or if a specific alternative intersected a greater quantity of a resource relative to the other alternatives (see below). A score of "1" was given to those alternatives that would likely impact a resource and the impact either could not be mitigated or would likely be cost-prohibitive.

Mitigation, for the purposes of this assessment, was considered to be avoidance of specific resource features, such as areas with occupied burrowing owl burrows; relocation of special status species (e.g., burrowing owls); and transplantation or revegetation of disturbed areas.

5.1 Native Plants Weighted Score Modifiers

To account for variations between the alternatives in the amount of native plants that may be impacted, a weighted modifier was applied to the score for each of the alternatives to aid in making a relative comparison between them. For example, if there are Alternatives X, Y, and Z; with 400, 1,200, and 800 units of native vegetation intersected and potentially impacted, respectively, the impact scores would be as follows:

- Alternative X: base score = 2, weighted modifier = 0, final score = 2 – 0 = 2
- Alternative Y: base score = 2, weighted modifier = 1, final score = 2 – 1 = 1
- Alternative Z: base score = 2, weighted modifier = 800/1200 = 0.67, final score = 2 – 0.67 = 1.33

In the example above, all three of the alternatives have a base score of 2 because they all intersect native vegetation; this would serve to set these alternatives apart from additional alternatives that do not intersect native vegetation (score = 3). Alternative X has a weighted modifier of zero because it intersects the least amount of native vegetation of the three alternatives, and Alternative Y has a modifier of 1 because it intersects the most. Alternative Z intersects native vegetation at an intermediate level in comparison to the other alternatives, so it's amount of native vegetation intersected is compared relative to Alternative Y, which has the most, by dividing the 800 units of habitat for Alternative Z by the 1,200 units for Alternative Y, resulting in a weighted modifier of 0.67. This is subtracted from the base score of 2, yielding a final score of 1.33 for Alternative Z's native vegetation impacts. For the purposes of this analysis, length in meters was the unit used for the alternative weighted modifier values.

Table 5.1 below presents the combined impact scores for each alternative corridor and resource area evaluated in this report; a higher impact score indicates that the specific alternative would have correspondingly lower impacts on resources than an alternative with a lower score. Our evaluation found that Alternative 1 would result in the least amount of impacts to resources for the southern portion of the proposed transmission line between the Kino Substation and the planned UA North Substation, and that Alternatives A, B, D, and E would result in the least amount of impacts for the northern portion of the proposed line from the DMP Substation to UA North. The combined alternative corridor scores for the functional combinations of northern and southern routes are summarized in Table 5.2. Impact scores of the alternatives for each resource area analyzed in this report are summarized in Sections 5.2–5.6.

Table 5.1. Alternative Corridor Impact Score Summary

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Special Status Species	3	2	3	2	3	3	3	3
Water Resources	3	3	3	3	3	3	3	3
Wildlife Linkages	3	3	3	3	3	3	3	3
Riparian Habitat	3	3	3	3	3	3	3	3
Native Plants	3	2	1.46	1	3	3	3	3
Total	**15**	**14**	**13.46**	**13**	**15**	**15**	**15**	**15**

Table 5.2. Functional Alternative Route Combination Scores

Alternative Combination	Score
1, A	30
1, B	30
1, D	30
1, E	30
2, A	29
2, B	29
2, D	29
2, E	29
3, A	28.46
3, D	28.46
5, A	28
5, D	28

5.2 Special Status Species

The study area was assessed for 16 special status species listed by FWS and/or AZGFD. Of the 16 species, 7 are listed as Threatened or Endangered and therefore warrant full protection under the Endangered Species Act. It was determined that the study area either does not currently contain suitable habitat for, or is located outside the known range of, 15 of the 16 special status species assessed in this report.

Tierra determined that one or more of the alternative transmission line corridors in the study area contains suitable habitat for one State SGCN, Lesser Long-nosed Bat (Table 5.3).

Tierra recommends that construction of the proposed transmission line would have no impact on Lesser Long-nosed Bat. Tierra also recommends that a "No Effect" determination would be appropriate for the project regarding its potential impacts to species listed under the Endangered Species Act.

Table 5.3. Summary of Special Status Species Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt E.
Special Status Species	3	2	3	2	3	3	3	3

5.3 Water Resources

Construction of the proposed transmission line in any of the alternative corridors is not likely to have impacts on water resources (Table 5.3). Waters of the U.S. would not be impacted because none of the drainages crossed by the alternative corridors are considered jurisdictional. Similarly, construction of the proposed transmission line would have no impacts on wetlands because none are present along the alternative corridors. Finally, construction of the proposed transmission line in any of the alternative corridors would not result in impacts to floodplains because the topography of the area would not be substantially modified during construction and surface flows would not be altered.

Table 5.3. Summary of Water Resources Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Water Resources	3	3	3	3	3	3	3	3

5.4 Wildlife Linkages

Construction of aboveground linear utilities, such as the proposed transmission line in any of the alternative corridors, would not likely have any long-term impacts on urban wildlife movement or create barriers to wildlife (Table 5.4).

Table 5.4. Summary of Wildlife Linkages Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Wildlife Linkages	3	3	3	3	3	3	3	3

5.5 Riparian Habitat

Construction of the proposed transmission line in any of the alternative corridors would have no impacts on riparian habitat because none of the alternative corridors intersect this type of habitat (Table 5.5).

Table 5.5. Summary of Riparian Habitat Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Riparian Habitat	3	3	3	3	3	3	3	3

5.6 Native Plants

Native plants in the study area are protected by Arizona Native Plant Law (ANPL) and are also subject to additional local regulations within the City limits of Tucson and unincorporated Pima County. While it is anticipated that vegetation would mostly be spanned by the proposed transmission line, construction of the line may impact native plants through their removal to gain equipment access (Table 5.6). The Alternative 1, A, B, D, and E corridors intersect the least amount of native vegetation of the alternatives. Alternative 2 intersects native vegetation in the vicinity of the main post office on Cherrybell Stravenue, and Alternative 3 intersects native vegetation in the vicinity of Arroyo Chico south of Broadway; Alternative 5 intersects native vegetation at both of these locations. The City of Tucson and Pima County have standards (COT LUC 3.8.0 and Pima County Chapter 18.72) for native plant preservation within construction areas and guidance for mitigation of impacts.

Table 5.6. Summary of Native Plants Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Native Plants	3	2	1.46	1	3	3	3	3

6.0 REFERENCES

AZGFD (Arizona Game and Fish Department)

1998 *Leptonycteris curasoae yerbabuenae*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

AZWIPG (Arizona Wildlands Invasive Plant Working Group)

2005 Invasive Non-native Plants that Threaten Wildlands in Arizona. Available at: http://sbsc.wr.usgs.gov/research/projects/swepic/SWVMA/InvasiveNon-NativePlantsThatThreatenWildlandsInArizona.pdf. Accessed on April 3, 2012.

Brown, David E. (editor)

1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City. 341 pp.

Corman and Wise-Gervais (editors)

2005 *Arizona Breeding Bird Atlas*. University of New Mexico Press, Albuquerque.

FWS (U.S. Fish and Wildlife Service)

1995 *Lesser Long-nosed Bat Recovery Plan*. U.S. Fish and Wildlife Service, Albuquerque.

2007 *Lesser Long-nosed Bat 5-Year Review: Summary and Evaluation*. U.S. Fish and Wildlife Service, Phoenix.

APPENDIX A. ALTERNATIVE DETAIL AND RESOURCE MAPS

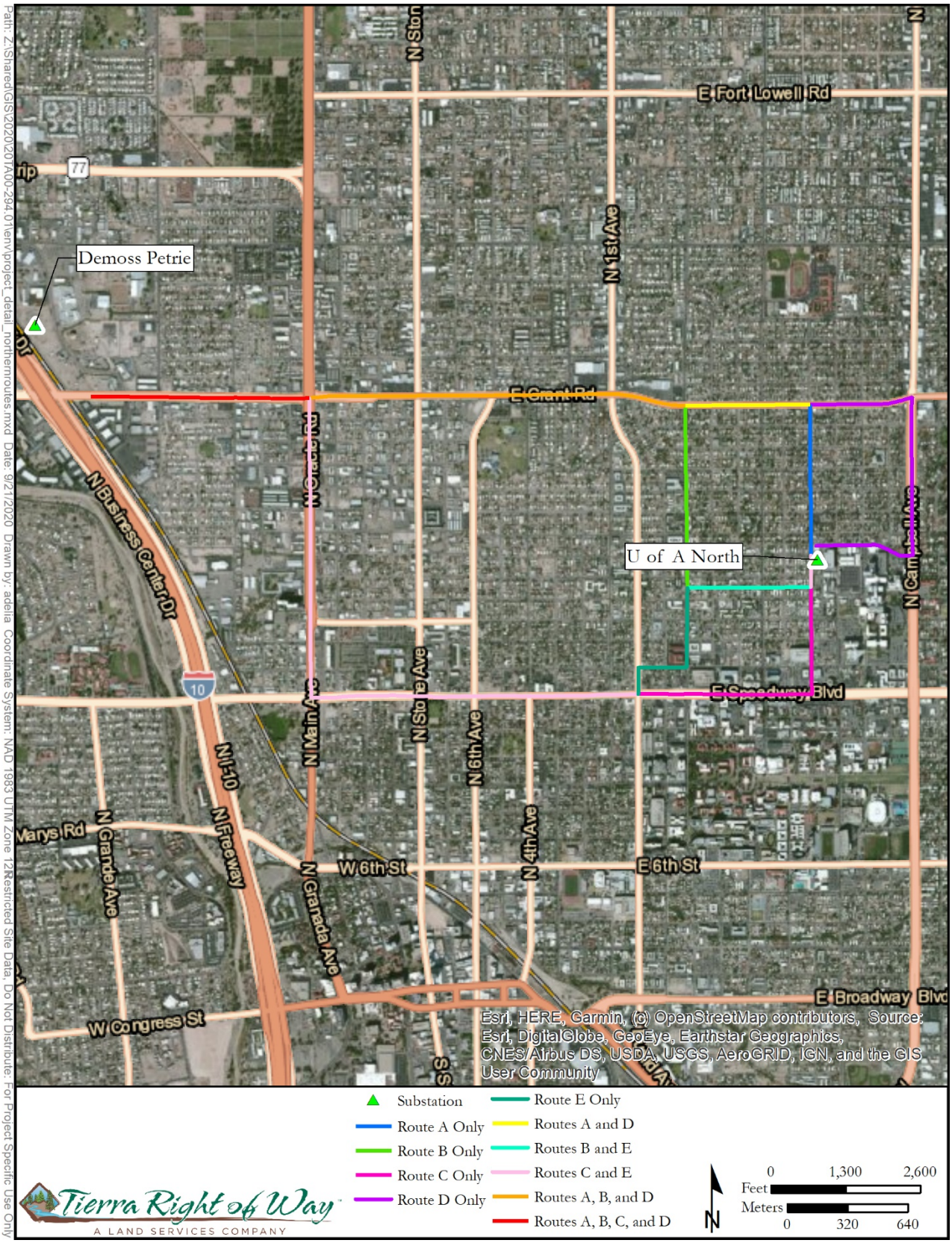

Figure A.1. Alternatives A–D Corridor Detail.

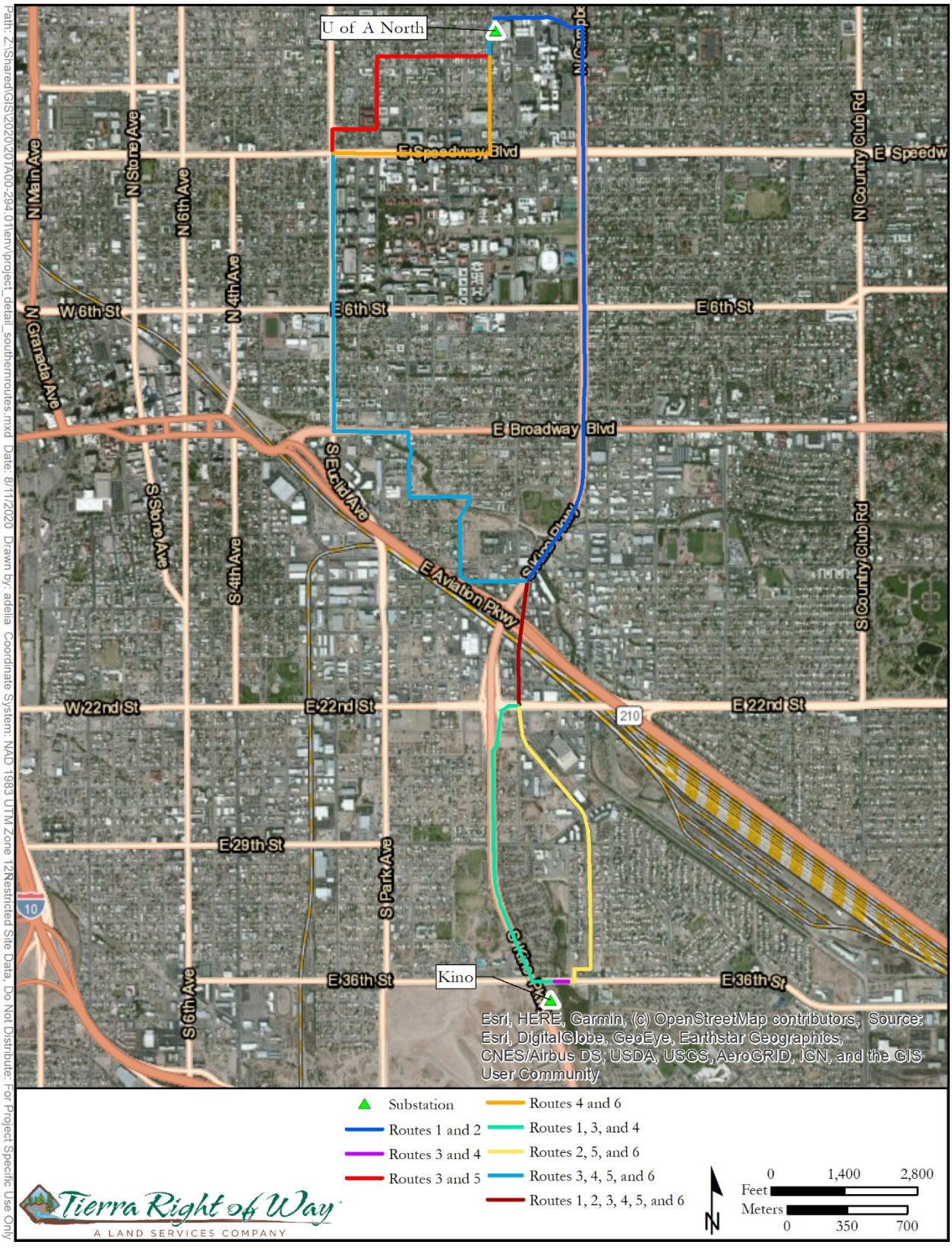

Figure A.2. Alternatives 1–6 Corridor Detail.

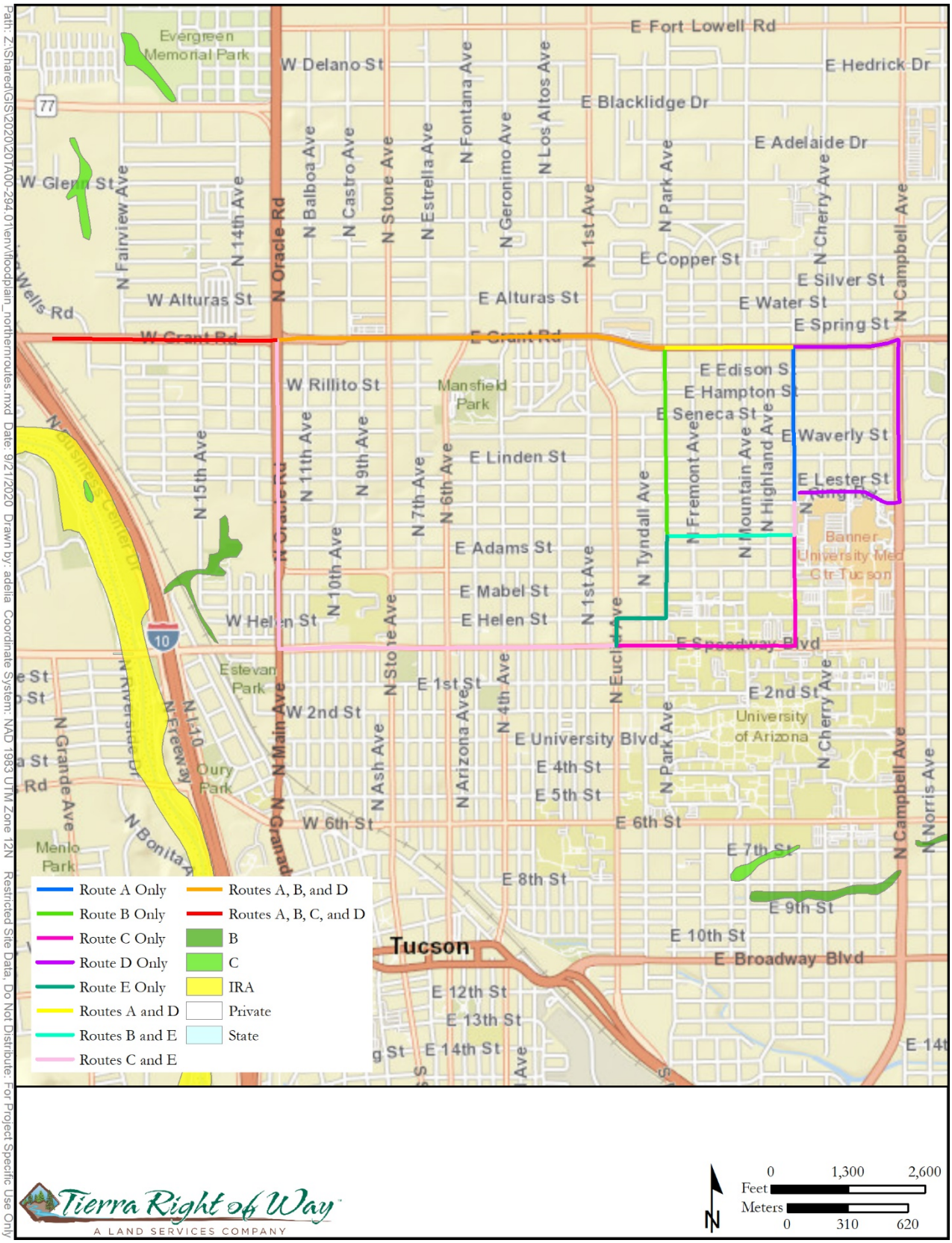

Figure A.3. Alternatives A–D Riparian Habitat.

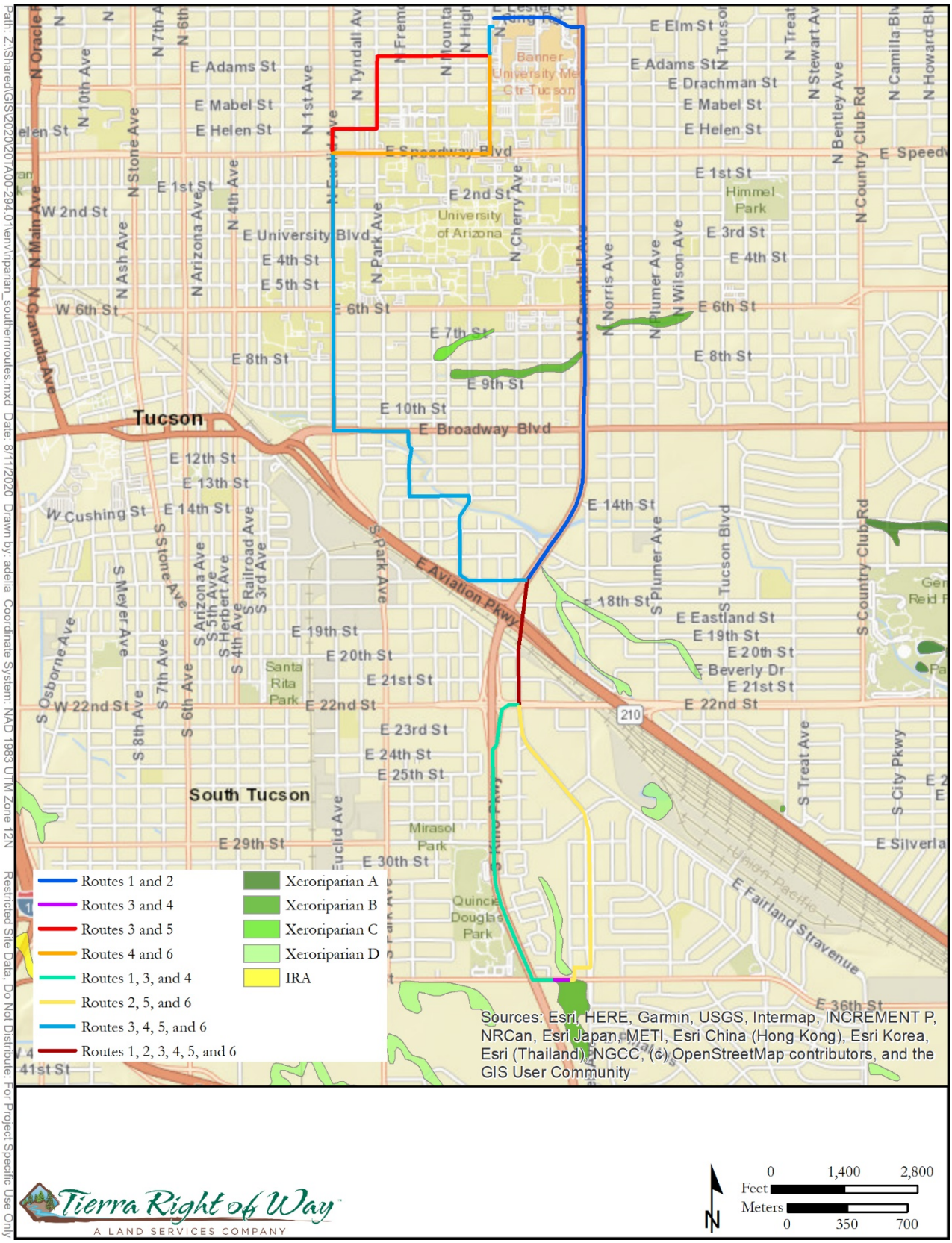

Figure A.4. Alternative 1–6 Riparian Habitat.

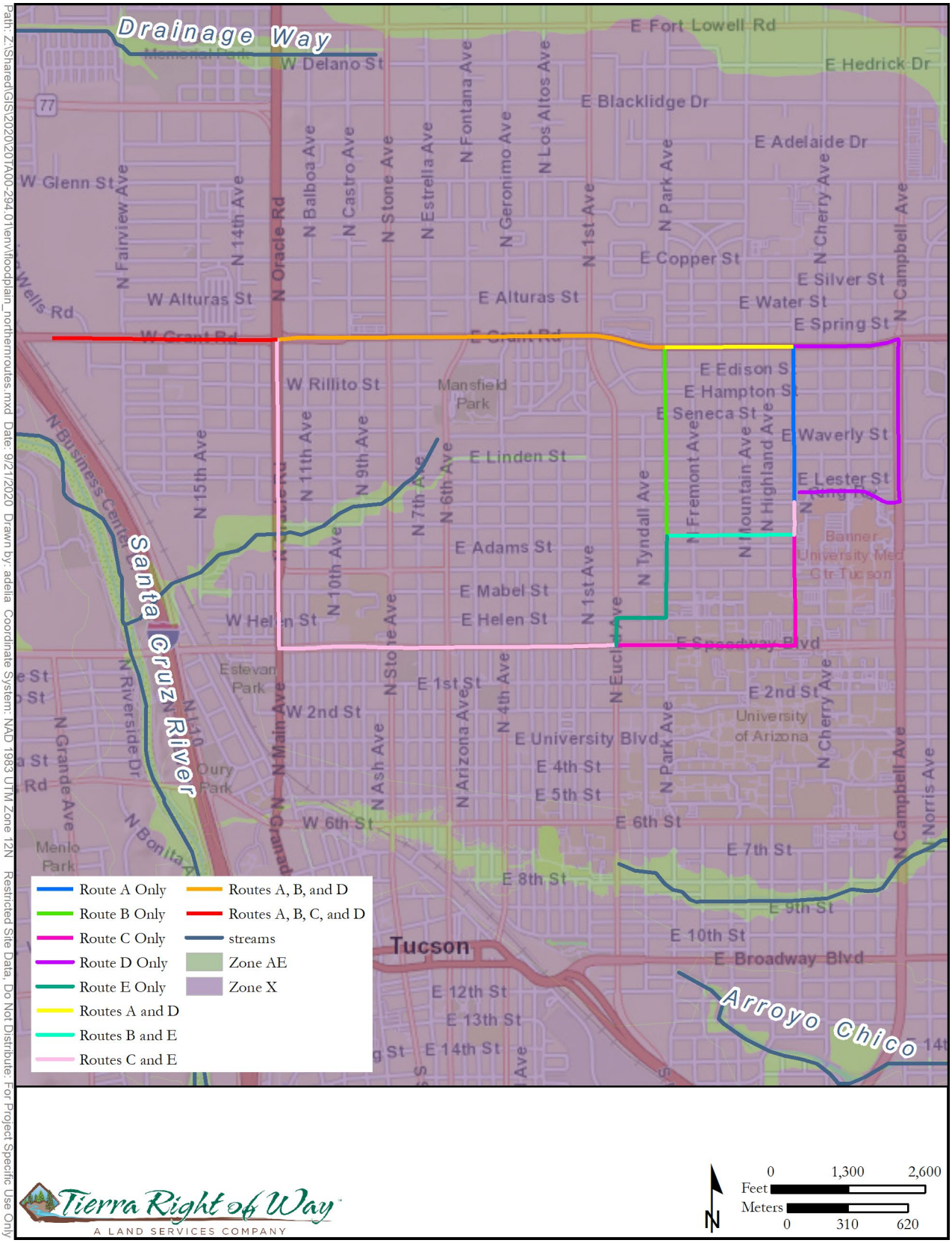

Figure A.5. Alternatives A–D waterways/floodplains.

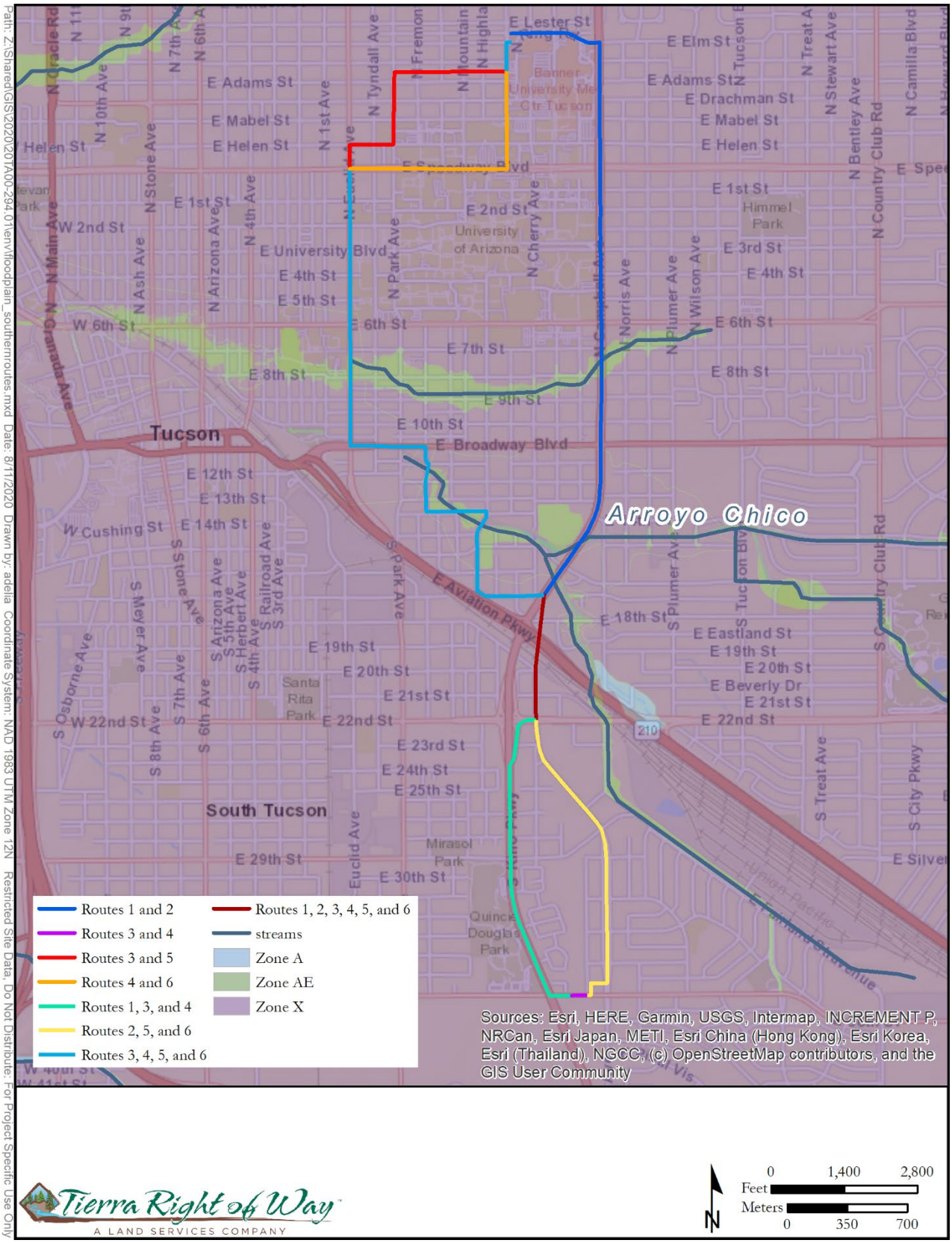

Figure A.6. Alternatives 1–6 waterways/floodplains.

APPENDIX B. REPRESENTATIVE STUDY AREA PHOTOGRAPHS

Photo 1. Alternative 1 and 3 corridor, view to north from 36th and Kino.

Photo 2. Alternative 2 and 5 corridor, view to west from 36th and Kino.

Photo 3. Alternative 2 and 5 corridor, view to north from 36th and Campbell.

Photo 4. Alternative 3 and 5 corridor, view to west from Highland and Manlove.

Photo 5. Alternative 3 and 5 corridor, view to south from Broadway and Fremont.

Photo 6. Alternative 3 and 5 corridor, view to south from Speedway and Helen.

Photo 7. Alternative 3, 5, and B corridor, view to east from Park and alley.

Photo 8. Alternative A, B, and D corridor, view to east from Grant and Oracle.

Photo 9. Alternative A, B, and D corridor, view to east from Grant and Flowing Wells.

Photo 10. Alternative B corridor, view to south from Grant and Park.

Photo 11. Alternative A corridor, view to south from Grant and Vine.

Photo 12. Alternative D corridor, view to south from Grant and Campbell.

Photo 13. Alternative D corridor, view to north from Elm and Campbell.

Photo 14. Alternative D, 3, and 5 corridor, view to west from Elm and Campbell.

APPENDIX C. FWS OFFICIAL SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To: August 07, 2020
Consultation Code: 02EAAZ00-2020-SLI-1278
Event Code: 02EAAZ00-2020-E-02811
Project Name: TEP Kino to DMP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.
Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/
nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:

https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.
If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

Project Summary

Consultation Code: 02EAAZ00-2020-SLI-1278

Event Code: 02EAAZ00-2020-E-02811

Project Name: TEP Kino to DMP

Project Type: TRANSMISSION LINE

Project Description: The proposed project involves an alternative corridor analysis for a proposed aerial electrical transmission line.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.22139553686219N110.95711875644591W

Counties: Pima, AZ

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Jaguar *Panthera onca* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3944	Endangered

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Mexican Spotted Owl *Strix occidentalis lucida* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/129/office/22410.pdf	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northern Mexican Gartersnake *Thamnophis eques megalops* There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened
Sonoyta Mud Turtle *Kinosternon sonoriense longifemorale* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7276	Endangered

Flowering Plants

NAME	STATUS
Pima Pineapple Cactus *Coryphantha scheeri var. robustispina* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4919	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX D. AZGFD HDMS ENVIRONMENTAL ONLINE REVIEW TOOL REPORT

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:
TEP Kino to DMP Transmission Line

User Project Number:
20TA00-294.01

Project Description:
The proposed project involves an alternative corridor analysis for a proposed aerial electrical transmission line.

Project Type:
Energy Storage/Production/Transfer, Energy Transfer, Power line/electric line (new)

Contact Person:
Tim Jordan

Organization:
Tierra ROW Services, Ltd.

On Behalf Of:
CONSULTING

Project ID:
HGIS-11788

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

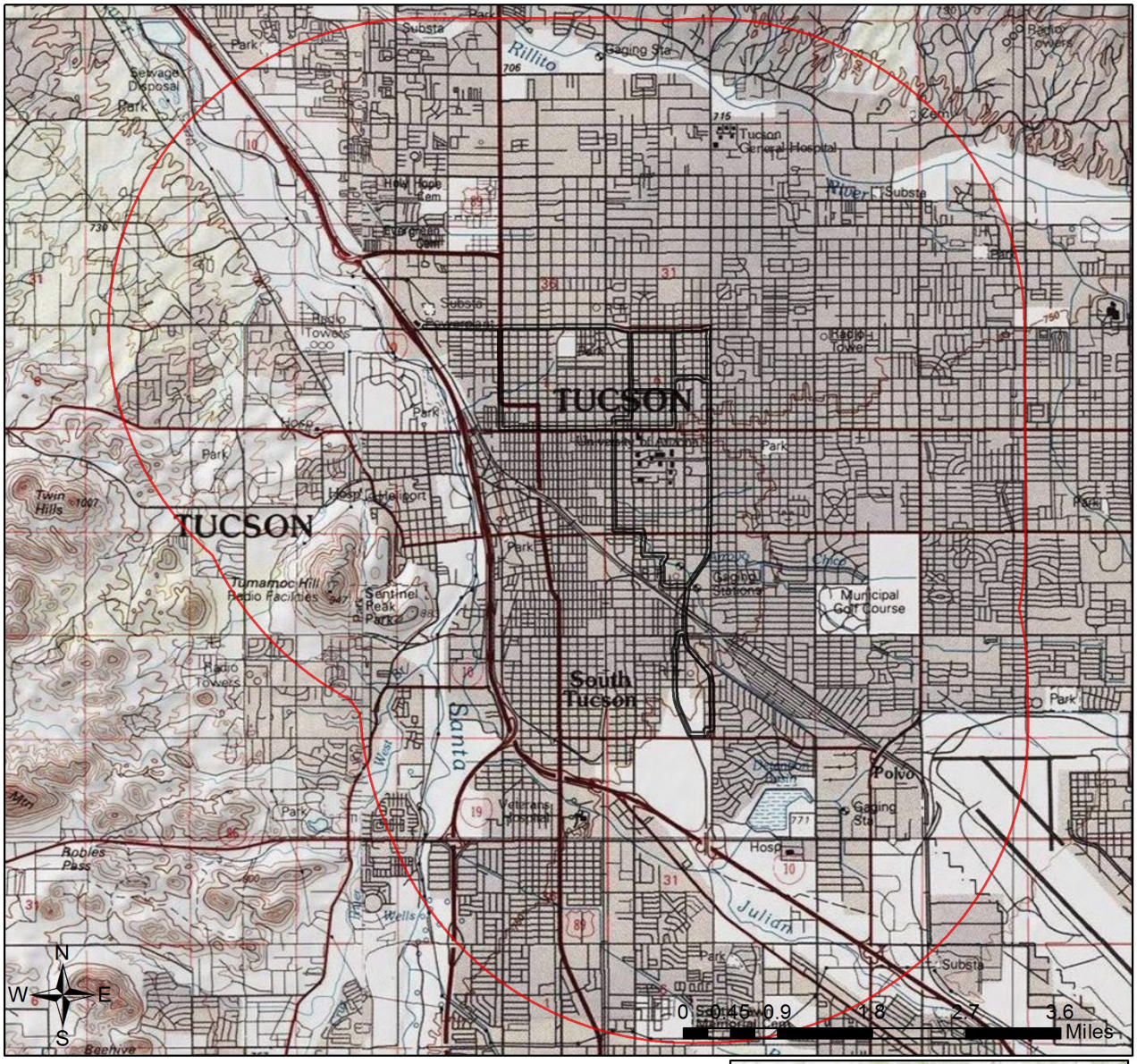
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

TEP Kino to DMP Transmission Line

USA Topo Basemap With Locator Map



Project Boundary

Buffered Project Boundary

Project Size (acres): 380.10

Lat/Long (DD): 32.2359 / -110.9669

County(s): Pima

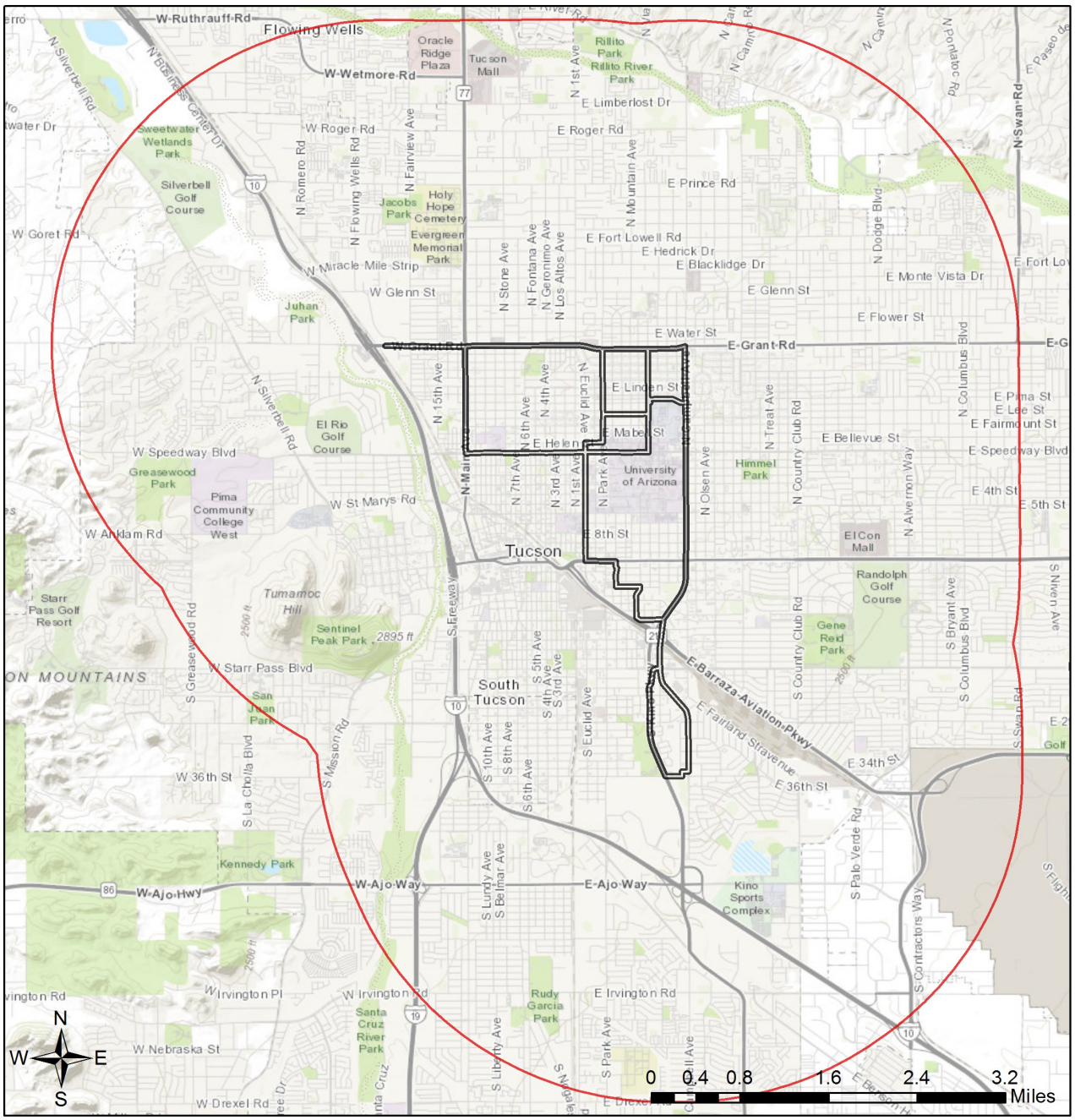
AGFD Region(s): Tucson

Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13E +

USGS Quad(s): TUCSON; TUCSON NORTH

TEP Kino to DMP Transmission Line

Web Map As Submitted By User



Project Boundary

Buffered Project Boundary

Project Size (acres): 380.10

Lat/Long (DD): 32.2359 / -110.9669

County(s): Pima

AGFD Region(s): Tucson

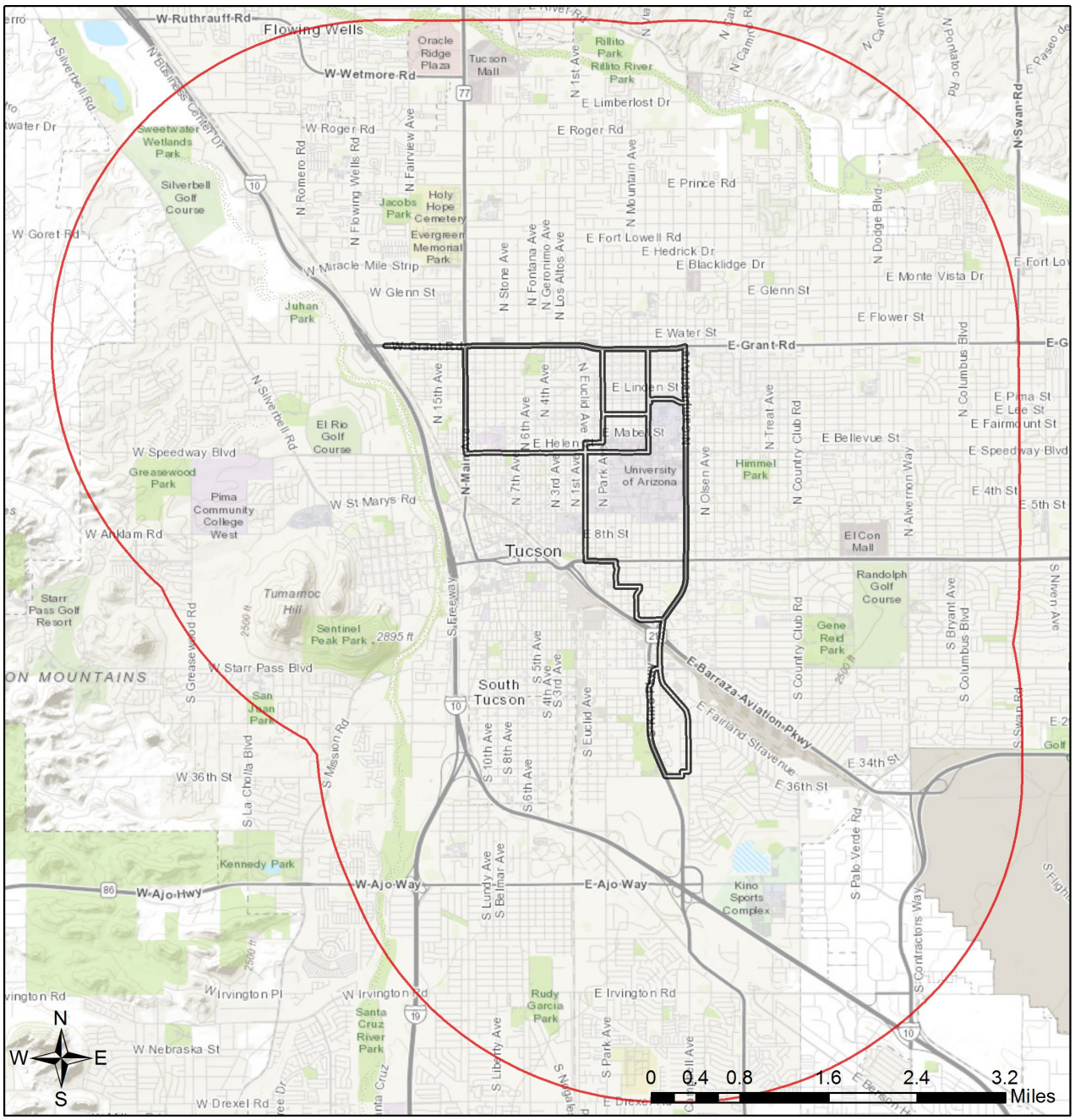
Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13E

USGS Quad(s): TUCSON; TUCSON NORTH

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TEP Kino to DMP Transmission Line

Important Areas



- Project Boundary
- Buffered Project Boundary
- Wildlife Connectivity
- Important Connectivity Zones
- Pinal County Riparian
- Critical Habitat
- Important Bird Areas

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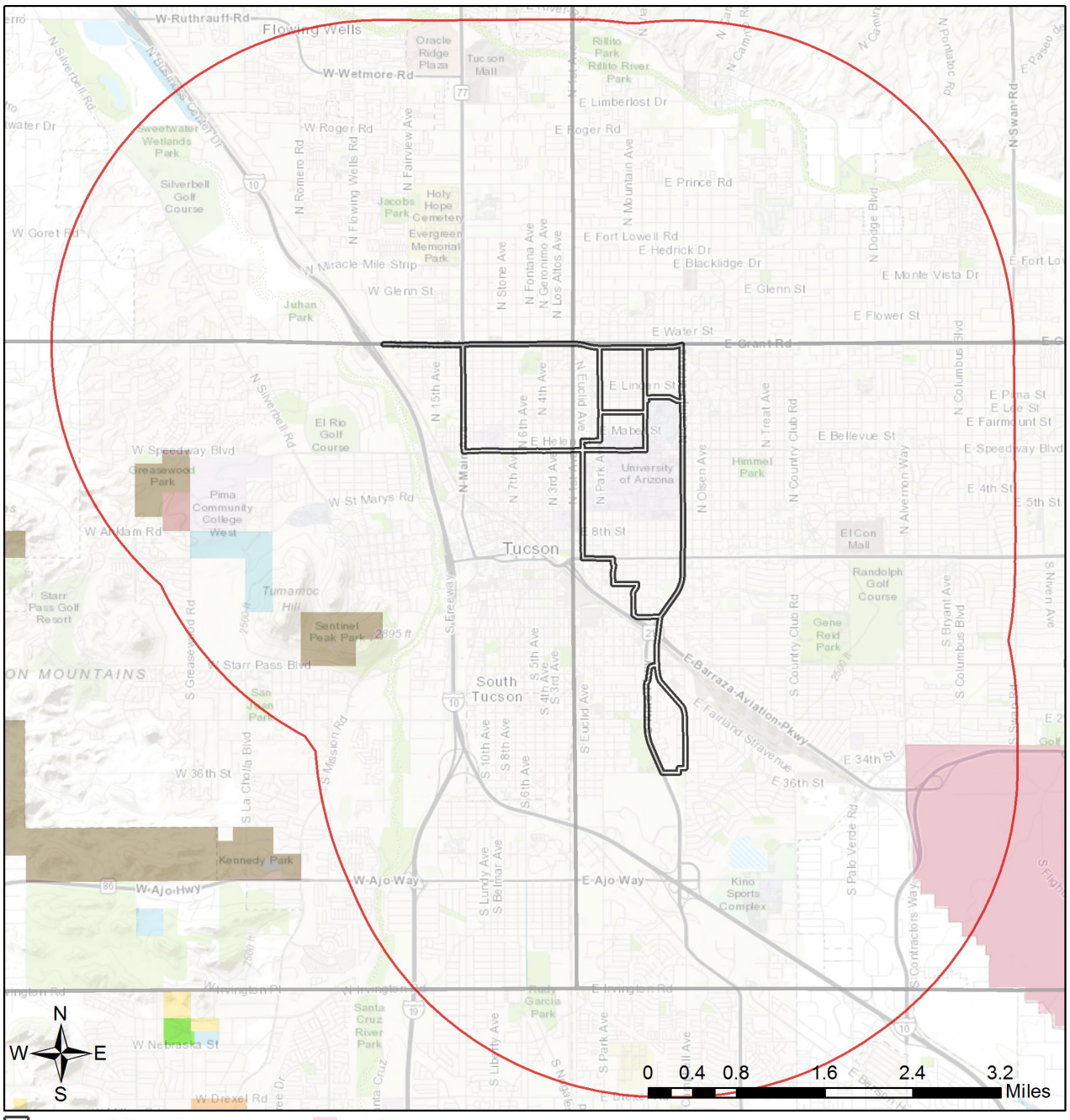
TEP Kino to DMP Transmission Line

Township/Ranges and Land Ownership



- Project Boundary
- Buffered Project Boundary
- Township/Ranges

Land Ownership

- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge

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Special Status Species Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Bat Colony						
Capsicum annuum var. glabriusculum	Chiltepin		S			
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gastrophryne olivacea	Western Narrow-mouthed Toad			S		1C
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Heloderma suspectum suspectum	Reticulate Gila Monster					1A
Heloderma suspectum	Gila Monster					1A
Leptonycteris yerbabuenae	Lesser Long-nosed Bat	SC				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mammillaria thornberi	Thornber Fishhook Cactus				SR	
Myotis occultus	Arizona Myotis	SC		S		1B
Opuntia versicolor	Stag-horn Cholla				SR	
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Tumamoca macdougalii	Tumamoc Globeberry		S	S	SR	

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
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Special Areas Documented within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Santa Cruz River	Pima County Wildlife Movement Area - Riparian/Wash					

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
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Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Anaxyrus retiformis	Sonoran Green Toad			S		1B
Anthus spragueii	Sprague's Pipit	SC				1A
Antrostomus ridgwayi	Buff-collared Nightjar		S			1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Aspidoscelis xanthonota	Red-backed Whiptail	SC	S			1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Botaurus lentiginosus	American Bittern					1B
Calypte costae	Costa's Hummingbird					1C
Chilomeniscus stramineus	Variable Sandsnake					1B
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Cynanthus latirostris	Broad-billed Hummingbird		S			1B
Cyprinodon macularius	Desert Pupfish	LE				1A
Dipodomys spectabilis	Banner-tailed Kangaroo Rat			S		1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl	SC	S	S		1B
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Leopardus pardalis	Ocelot	LE				1A
Leptonycteris yerbabuenae	Lesser Long-nosed Bat	SC				1A
Lepus alleni	Antelope Jackrabbit					1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Panthera onca	Jaguar	LE				1A
Peucaea carpalis	Rufous-winged Sparrow					1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Energy Storage/Production/Transfer, Energy Transfer, Power line/electric line (new)

Project Type Recommendations:
Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, https://agriculture.az.gov/. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/quality/?cid=stelprdb1044769 The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information https://www.azgfd.com/hunting/regulations.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

For any powerlines built, proper design and construction of the transmission line is necessary to prevent or minimize risk of electrocution of raptors, owls, vultures, and golden or bald eagles, which are protected under state and federal laws. Limit project activities during the breeding season for birds, generally March through late August, depending on species in the local area (raptors breed in early February through May). Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during the nesting season. For underground powerlines, trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated.

Based on the project type entered, coordination with State Historic Preservation Office may be required (http://azstateparks.com/SHPO/index.html).

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (http://www.fws.gov/southwest/es/arizona/).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Project Location and/or Species Recommendations:
HDMS records indicate that one or more native plants listed on the **Arizona Native Plant Law and Antiquities Act** have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
https://agriculture.az.gov/sites/default/files/Native%20Plant%20Rules%20-%20AZ%20Dept%20of%20Ag.pdf starts on page 44

HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at http://www.fws.gov/southwest/es/arizona/ or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that **Western Burrowing Owls** have been documented within the vicinity of your project area. Please review the western burrowing owl resource page at:
https://www.azgfd.com/wildlife/speciesofgreatestconservneed/burrowingowlmanagement/.

HDMS records indicate that **Sonoran Desert Tortoise** have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: https://www.azgfd.com/wildlife/nongamemanagement/tortoise/

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

APPENDIX E. SPECIAL STATUS SPECIES EXCLUDED FROM FURTHER CONSIDERATION

Scientific Name	Common Name	Status	Habitat	Exclusion Justification
Aspidoscelis stictogramma	Giant Spotted Whiptail	1B		
Coccyzus americanus	Yellow-billed Cuckoo	T, 1A	Streamside cottonwood, willow groves, or larger mesquite bosques mixed with tall isolated cottonwoods.	No suitable riparian habitat present in study area.
Coryphantha scheeri v. robustispina	Pima Pineapple Cactus	E	Ridges and alluvial hillsides in rocky, sandy soils.	No suitable habitat present in study area and study area is outside the range of this species.
Falco peregrinus anatum	American Peregrine Falcon	1A	Steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.	No suitable habitat present in study area.
Heloderma suspectum	Gila Monster	1A	Desert and mesquite grassland, but can also be found in pine-oak and tropical deciduous forests. Usually found in rocky foothill regions and not in open flats.	No suitable habitat present in study area.
Heloderma suspectum suspectum	Reticulate Gila Monster	1A		
Kinosternon sonoriense longifemorale	Sonoyta Mud Turtle	E	Ponds and streams. In the United States, only known from Quitobaquito Springs.	No suitable aquatic habitat present in study area.
Lithobates yavapaiensis	Lowland Leopard Frog	1A	Aquatic systems in desert grasslands and pinyon-juniper woodland at elevations of 146–2,500 m (480–6,200 feet).	No suitable habitat present in study area.
Myotis occultus	Arizona Myotis	1B	Ponderosa pine and oak-pine woodland near water. Also found along permanent water or in riparian forests in desert areas. Roosts in tree snags.	No suitable habitat present in study area.
Panthera onca	Jaguar	E	Wet lowlands and oak/pine woodland.	No suitable habitat present in study area.
Sterna antillarum browni	California Least Tern	E	Open or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems.	No suitable habitat present in study area.

Scientific Name	Common Name	Status	Habitat	Exclusion Justification
Strix occidentalis lucida	Mexican Spotted Owl	T, 1A	Old growth mixed conifer, pine-oak, and evergreen oak forests with high canopy closure, high stand density, a multiple layered canopy, uneven-aged stands, numerous snags, and downed woody matter.	No suitable habitat present in study area.
Tadarida brasiliensis	Brazilian Free-tailed Bat	1B	Primarily found in lowland desertscrub, but sometimes ranges into coniferous forest and woodlands Roosts in caves, mine tunnels, crevices in bridges, parking garages and buildings, and in attics.	No suitable roosting habitat present in study area.
Thamnophis eques megalops	Northern Mexican Gartersnake	T	Cienegas, stock tanks, riparian woodlands and forests, and streamside gallery forests.	No suitable habitat present in study area.

Key: E = Endangered (U.S. Fish and Wildlife Service); T = Threatened (U.S. Fish and Wildlife Service); 1A, B = Species of Greatest Conservation Need Tier (Arizona Game and Fish Department); HS = Highly Safeguarded (Arizona Department of Agriculture).