EXHIBIT C

EXHIBIT C – AREAS OF BIOLOGICAL WEALTH

As stated in R14-3-219, Exhibits to Application, Exhibit C of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee:

"Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state the effects, if any, the proposed facilities will have thereon."

INTRODUCTION

The exhibit includes a description of special-status plant and wildlife species that may occur in the areas to be affected by the proposed Project-related facilities and areas of biological wealth along with a discussion of the regulatory framework.

The biological wealth study area includes the Project footprint for the CEC New Build Route, the CEC Upgrade Route, and CEC Substations. The CEC New Build Route includes 66 miles of new-345 kV transmission line and less than 1 mile of 115-kV or 230-kV transmission line from the Arizona border to the Apache Substation. The right-of-way ("ROW") width will be 200 feet for the CEC New Build Route.

The CEC Upgrade Route includes approximately 5 miles of new non-Western Area Power Administration ("WAPA") owned 138-kV and 230-kV connection lines and associated facilities to interconnect the upgraded WAPA 230-kV transmission lines to existing substations owned and operated by other Arizona load-serving utilities.. The connection lines will have a ROW width of 150 feet.

The CEC Substation expansions will occur outside the ROW in the New Build Section at Apache Substation (69.4 acres); and in the Upgrade Section at the Pantano (25.4 acres), Vail (27.7 acres), DeMoss Petrie (4.2 acres), and Tortolita Substations (16.1 acres).

Impacts to areas of biological wealth were considered by evaluating the presence or absence of suitable habitat within the study area, the potential for direct mortality, and habitat fragmentation.

REGULATORY FRAMEWORK

I. FEDERAL

A. National Environmental Policy Act

The National Environmental Policy Act ("NEPA") requires the federal government to assess the environmental impacts of major federal actions, which include actions undertaken (1) on federal land, (2) by a federal agency, (3) with federal funds, or (4) where the federal government will be issuing a permit.

B. Endangered Species Act

Section 7 of the Endangered Species Act ("ESA") of 1973, as amended requires federal agencies to consult with the U.S. Fish and Wildlife Service ("USFWS") to ensure that undertaking, funding, permitting, or authorizing an action is not likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat, as defined under the act, exists only after USFWS officially designates it. Critical habitats are (1) areas within the geographic area that have features essential to the conservation of the species and that may require special management consideration or protection; and (2) those specific areas outside the geographic area occupied by a species at the time it is listed that are essential to the conservation of the species.

C. Migratory Bird Treaty Act

The Migratory Bird Treaty Act ("MBTA") of 1918, as amended, gives federal protection to all migratory birds, including nests and eggs. This law states that it is unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird" (16 U.S.C. § 703). More than 800 species of migratory birds are protected under this law. The MBTA includes protection for all raptor species. This regulation does not discriminate between live or dead birds, and it also grants full protection to any bird parts, including feathers, eggs, and nests. In order to relocate or destroy any nest and maintain compliance with the MBTA, it is necessary to obtain a permit from the

USFWS, the responsible agency for regulating this law. Only those entities permitted by the USFWS can assist in the relocation of birds or nests. Section 1 of the USFWS Region 2 "Interim Empty Nest Policy" states that if the nest is completely inactive at the time of destruction or movement, a permit is not required to comply with the MBTA. If an active nest is observed during any activities related to the Project, measures should be taken to protect the nest from destruction and to avoid a violation of the MBTA.

D. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1934, as amended, requires coordination with federal and state wildlife agencies (USFWS and the Arizona Game and Fish Department ("AGFD")) for the purpose of mitigating losses of wildlife resources caused by a Project that impounds, diverts, or otherwise modifies a stream or other natural body of water.

E. Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act ("BGEPA") of 1940 (16 U.S.C. §§ 668-668c), as amended, prohibits "taking" bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), including their parts, nests, or eggs, without a permit from the USFWS. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle . . . [or any golden eagle], alive or dead, or any part, nest, or egg thereof."

The BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." The USFWS defines "disturb" under the BGEPA as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

F. Bureau of Land Management Sensitive Plant Species

The Arizona offices of the Bureau of Land Management ("BLM") maintain lists of sensitive species that are known to occur on BLM lands and are listed by BLM districts that are managed by various field offices. These species are believed to be declining in numbers and may need special conservation measures. Potential threats to these species

are likely to include those for the ESA-listed species. BLM Sensitive Species in the Safford and Tucson Field Offices, which include Pinal, Pima, and Cochise Counties, Arizona, are listed in the Arizona Sensitive Species List (BLM 2010).

G. BLM Manual 6840

The BLM policy (Manual 6840) dictates that the BLM must carry out management for the conservation of state-listed plants and animals in addition to species protected under the ESA (BLM 2008e). BLM Manual 6840 is a federal guidance document that outlines the criteria for listing species as Sensitive on BLM-administered lands and provides direction on management of these species. BLM Sensitive Species are species that the USFWS currently lists under status review; species whose populations are declining rapidly and may warrant federal protection in the future; species that have small, widely distributed populations; and species that are located in special or unique habitats.

H. BLM Safford District Resource Management Plan

The Safford District Resource Management Plan ("RMP"), finalized in December 1991, establishes management direction for lands administered by the Safford District Office, extending from the New Mexico border to west of Benson. The CEC New Build Route of the proposed Project passes through this area. The Safford RMP identifies objectives and policies for lands managed by the BLM and identifies avoidance and exclusion areas that include wilderness areas.

I. BLM Phoenix District Resource Management Plan

The Phoenix District RMP, finalized in 1988, covers the BLM lands within the Phoenix District called the Phoenix Resource Area. It includes portions of the proposed Project's CEC Upgrade Route in Pima County from east of Benson to the Project terminus. The Phoenix District RMP identifies objectives and policies for lands managed by the BLM and avoidance and exclusion areas including wilderness study areas. This area is now managed by the Tucson Field Office.

II. STATE

A. Arizona Native Plant Law

The Arizona Native Plant Law (Arizona Department of Agriculture ("ADA") 2013a) and Revised Statutes (ADA 2013b) regulate the destruction and transportation of native plants that are growing wild in Arizona. This law establishes a list of protected plants in Arizona and prohibits removal or destruction of wild-growing, protected plants without a permit, whether on public, state, or private land. Parties interested in removing native plants in Arizona must complete an application with the ADA to receive a permit.

The ADA maintains a list of sensitive species separated into the categories of highly safeguarded, salvage restricted, salvage assessed, and harvest restricted (ADA 2013c). Highly safeguarded ("HS") species are those "whose prospects for survival in this State are in jeopardy or which are in danger of extinction throughout all or a significant portion of their ranges, and those native plants which are likely within the foreseeable future to become jeopardized or in danger of extinction throughout all or a significant portion of their ranges" (Arizona Revised Statutes ("ARS") § 3-903.B.1) (ADA 2013b). Salvage restricted ("SR") species are those "which are not included in the highly safeguarded category but are nevertheless subject to a high potential for damage by theft or vandalism" (ARS § 3-903.B.2) (ADA 2013b). Salvage assessed ("SA") species are those "which are not included in either the highly safeguarded or salvage restricted categories but nevertheless have a sufficient value if salvaged to support the cost of salvage tags and seals" (ARS § 3-903.B.3) (ADA 2013b). Harvest restricted species are those "which are not included in the highly safeguarded category but are subject to excessive harvesting or overcutting because of the intrinsic value of their by-products, fiber, or woody parts" (ARS § 3-903.B.4) (ADA 2013b). Permitting procedures for collection or salvage of protected plants are provided in ARS 3-906.

B. Arizona State Wildlife Action Plan

Per the Arizona State Wildlife Action Plan, the State of Arizona lists various wildlife species as SGCN, which is an AGFD status listing defined as wildlife of conservation priority – described nationally as Wildlife of Greatest Conservation Need. As discussed in the 2012 AGFD's Comprehensive Wildlife Conservation Strategy (AGFD 2012a), SGCN are species of vertebrates, crustaceans, and mollusks that rank high in the vulnerability category and have been identified for immediate action.

III. COUNTY

A. Pima County Sonoran Desert Conservation Plan

The Sonoran Desert Conservation Plan (SDCP), prepared by Pima County (2009), was developed as an ESA Section 10 consultation with USFWS. The plan includes 23 species in Pima County of which four are plant species.

B. Pima County Native Plant Protection Ordinance

Pima County regulates the loss of native plant material associated with ground-disturbing activities through their Native Plant Protection Ordinance ("NPPO") (Pima County 1998). The NPPO requires inventory of the site, along with protection and mitigation of certain plant species slated for destruction. There are various tables that determine the mitigation ratio for different native plant species (*e.g.*, saguaros (*Carnegiea gigantea*), ironwood trees (*Olneya tesota*), and Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*).

METHODOLOGY

Areas of biological wealth include areas of designated critical habitat, wildlife corridors, areas managed for conservation of biological resources, and other areas identified during the NEPA process (Figure C-1 Areas of Biological Wealth). Special status species that may occur in the study area are included in Final EIS Table C-1. These include species listed under the ESA, BLM Sensitive Species, State of Arizona Wildlife Species of Concern, State of Arizona Species of Greatest Conservation Need, and species covered under the Pima County Multi-species Conservation Plan. These species are discussed in further detail below.

INVENTORY AND EFFECTS OF THE PROPOSED FACILITIES

I. AREAS OF BIOLOGICAL WEALTH

A. Willcox Playa Wildlife Area

The AGFD owns and administers the Willcox Playa Wildlife Area on the southeastern edge of the Playa for hunting and wildlife recreation. The Willcox Playa Wildlife Area is considered to be high value habitat for Arizona wildlife species. The original management emphasis for the Willcox Playa Wildlife Area was waterfowl and

waterfowl habitat (AGFD 2015); however, because sandhill cranes have increased in number at the wildlife area, the management emphasis now is sandhill crane winter habitat, wildlife education, and viewing. The Wildlife Area is considered to be Resource Category 1 under the AGFD's habitat compensation policy (AGFD, 2010a). Resource Category 1 areas have a compensation goal of no loss of existing in-kind habitat value. With the implementation of Project mitigation and Proponent committed environmental measures ("PCEMs") to relocate Crane Lake and to further enhance the Wildlife Area with pond renovations and vegetation management (*see* Final EIS Table 2-8 in Exhibit B-1 and Exhibit J-3), the policy goal will be met and possibly exceeded.

Sandhill cranes utilize Willcox Playa and the agricultural fields to the south and east for foraging and roosting habitat and make a daily migration between the Playa and the fields. The Project will pass northwest of Crane Lake through the AGFD managed Willcox Playa Wildlife Area, an important winter roosting area for the sandhill cranes. There is the potential for sandhill crane collisions with the transmission line during daily migration that could impact individual sandhill cranes. With the implementation of PCEMs such as line marking devices and mitigation measures requested by the AGFD, including (1) funding the relocation of Crane Lake away from P7, (2) funding riparian emergent wetlands along Kansas Settlement Road, and (3) funding the management of non-native vegetation; the intensity of impacts to habitat in the Willcox Playa Wildlife Area will be reduced. Based on the amount of habitat available within the study area and implementation of PCEMs, impacts on sandhill cranes will be minor and both short- and long-term. As such, there will be no detectable effect on the viability of this species by Project-related activities or contribution toward a downward population trend or listing of this species as threatened or endangered.

B. Willcox Playa /Lake Cochise Important Bird Area

The National Audubon Society considers the Willcox Playa/Lake Cochise as an Important Bird Area ("IBA") of global priority because of the large concentration (greater than 1 percent of the North America population simultaneously or greater than 5 percent of the entire population over a single season) of sandhill cranes that use the Playa as overwintering habitat (National Audubon Society 2013). Ducks Unlimited (2013) considers the Playa as an important part of the Pacific flyway for waterfowl and performs some habitat projects in the area, though it does not consider the flyway where the playa is situated to be one of high conservation concern. Local birding organizations, including Wings over Willcox (2013), consider the Playa and immediately adjacent habitats to be important for bird populations.

The alkaline lakebed itself supports large numbers (5,000 to 9,000) (see National Audubon Society 2013) of roosting sandhill cranes in the winter months, which garners much of the attention of birding enthusiasts. However, when the lakebed fills with water from seasonal precipitation, it also supports thousands of waterfowl, gulls, and other shorebirds of more than 100 species, particularly during migratory periods. While the lakebed is sparsely covered by a variety of grasses, the shrub cover on its margins can be quite extensive, consisting of saltbush, mesquite, and tamarisk (*Tamarix ramosissima*). A few Goodding's willows (*Salix gooddingii*) and Fremont cottonwoods (*Populus fremontii*) also persist in the drainages ditches that have been constructed around the playa (Northern Arizona University 2011b). These habitats support a variety of avian species ranging from migrating warblers to several raptor species.

Also in the immediate vicinity of the Willcox Playa are two networks of manmade lakes named Twin Lakes or Cochise Lakes. They are located just south of Willcox, Arizona, near a municipal golf course and are fed by effluent discharges from the nearby wastewater treatment plant and the golf course. The second network was created by the Arizona Electric Power Cooperative near the Apache generating station on the west side of the playa. Both of these wetlands support foraging habitat for migrating waterfowl and shorebirds.

C. Designated Critical Habitat

There is no designated critical habitat in the study area.

D. Wildlife Linkages

Potential wildlife linkage zones ("PLZs") are areas identified as important areas for wildlife movement. There are three PLZs within the study area. They include the Ironwood - Tortolita PLZ, the Pinaleño – Dos Cabezas – San Simon Valley PLZ; and the Willcox Playa – Winchester – Pinaleño – Dos Cabezas PLZ (Figure C-1).

Ironwood – Tortolita PLZ

The Ironwood – Tortolita PLZ provides a roughly northeast-southwest linkage between the habitat blocks in the Ironwood Forest National Monument and the Tortolita Mountains (Figure C-1). Focal species include black bear (*Ursus americanus*), Chiricahua leopard frog (*Lithobates chiricahuensis*), giant-spotted whiptail (*Aspidoscelis stictogramma*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentalis*), javelina (*Tayassu tajacu*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), longfin dace (*Agosia*

chryogaster chryogaster), lowland leopard frog (*Lithobates yavapaiensis*), Mexican long-tongued bat (*Choeronycteris mexicana*), Mexican spotted owl (*Strix occidentalis lucida*), mountain lion (*Puma concolor*), northern gray hawk (*Buteo plagiatus*), ornate box turtle (*Terrapene ornata ornata*), Sonoran desert tortoise (*Gopherus morafkai*), western red bat (*Lasiurus blossevillii*), western yellow-billed cuckoo (*Coccyzus americanus*), and white-tailed deer (*Odocoileus virginianus*). The Project intersects this PLZ on approximately 44 acres.

Pinaleño - Dos Cabezas - San Simon Valley PLZ

The Pinaleño - Dos Cabezas - San Simon Valley PLZ provides north-south and east-west linkages among the habitat blocks in the Pinaleño Mountains, San Simon Valley, and Dos Cabezas Mountains (Figure C-1). Focal species include-California leaf-nosed bat (*Macrotus californicus*), fringed myotis (*Myotis thysanodes*), jaguar (*Panthera onca*), long-legged myotis (*Myotis volans*), Mexican spotted owl, mule deer (*Odocoileus hemionus*), ornate box turtle, Pale Townsend's big-eared bat (*Corynorhinus townsendii*), Texas horned lizard (*Phrynosoma cornutum*), white-nosed coati (*Nasua narica*), and yellow-nosed cotton rat (*Sigmodon ochrognathus*). The Project crosses this PLZ on approximately 697 acres.

Willcox Playa - Winchester - Pinaleño - Dos Cabezas PLZ

The Willcox Playa- Winchester – Pinaleño – Dos Cabezas PLZ provides north-south and east-west linkages among the habitat blocks in Willcox Playa, the Winchester Mountains, the Pinaleño Mountains, and the Dos Cabezas Mountains (Figure C-1). Focal species include bobcat (*Lynx rufus*), Chiricahua leopard frog, javelina, kit fox (*Vulpes macrotis*), Mexican spotted owl, mountain lion, mule deer, ornate box turtle, Plain's leopard frog (*Lithobates blairi*), Texas horned lizard, and western burrowing owl (*Athene cunicularia hypugaea*). The Project crosses this PLZ on approximately 282 acres.

E. Pima County Conservation Lands System

The Project crosses lands managed by Pima County as Biological Core Management Areas and Important Riparian Areas (Figure C-1). The Pantano Substation expansion will impact these two areas. The expansion will occur on approximately 25 acres of the Biological Core Management Area and on approximately 0.5 acre of an Important Riparian Area.

Biological Core Management Areas are primarily distinguished from other lands within the Conservation Land System ("CLS") by their potential to support high-value habitat for five or more priority vulnerable species as identified by the SDCP (Regional Plan Policy 6 Environmental Element 2005). At least 80 percent of the total acreage of lands within this designation shall be conserved as undisturbed natural open space. As such, land use changes will result in 4:1 land conservation (*i.e.*, 4 acres conserved for every 1 acre developed) and may occur through a combination of onsite and/ or offsite conservation inside the Biological Core Management Area or Habitat Protection Priority Areas.

Important Riparian Areas are valued for their higher water availability, vegetation density, and biological productivity. In addition to the inherent high biological value of these water-related communities, important riparian areas including their associated upland areas provide a framework for linkages and landscape connections. Important riparian areas are essential elements in the CLS (Regional Plan Policy 6 Environmental Element 2005). At least 95 percent of the total acreage of lands within this designation shall be conserved in a natural or undisturbed condition. Every effort should be made to protect, restore, and enhance the structure and functions of Important Riparian Areas, including their hydrological, geomorphological, and biological functions. Areas within an Important Riparian Area that have been previously degraded or otherwise compromised may be restored and/or enhanced. Such restored and/or enhanced areas may contribute to achieving the 95 percent conservation guideline for Important Riparian Areas. (Regional Plan Policy 6 Environmental Element 2005).

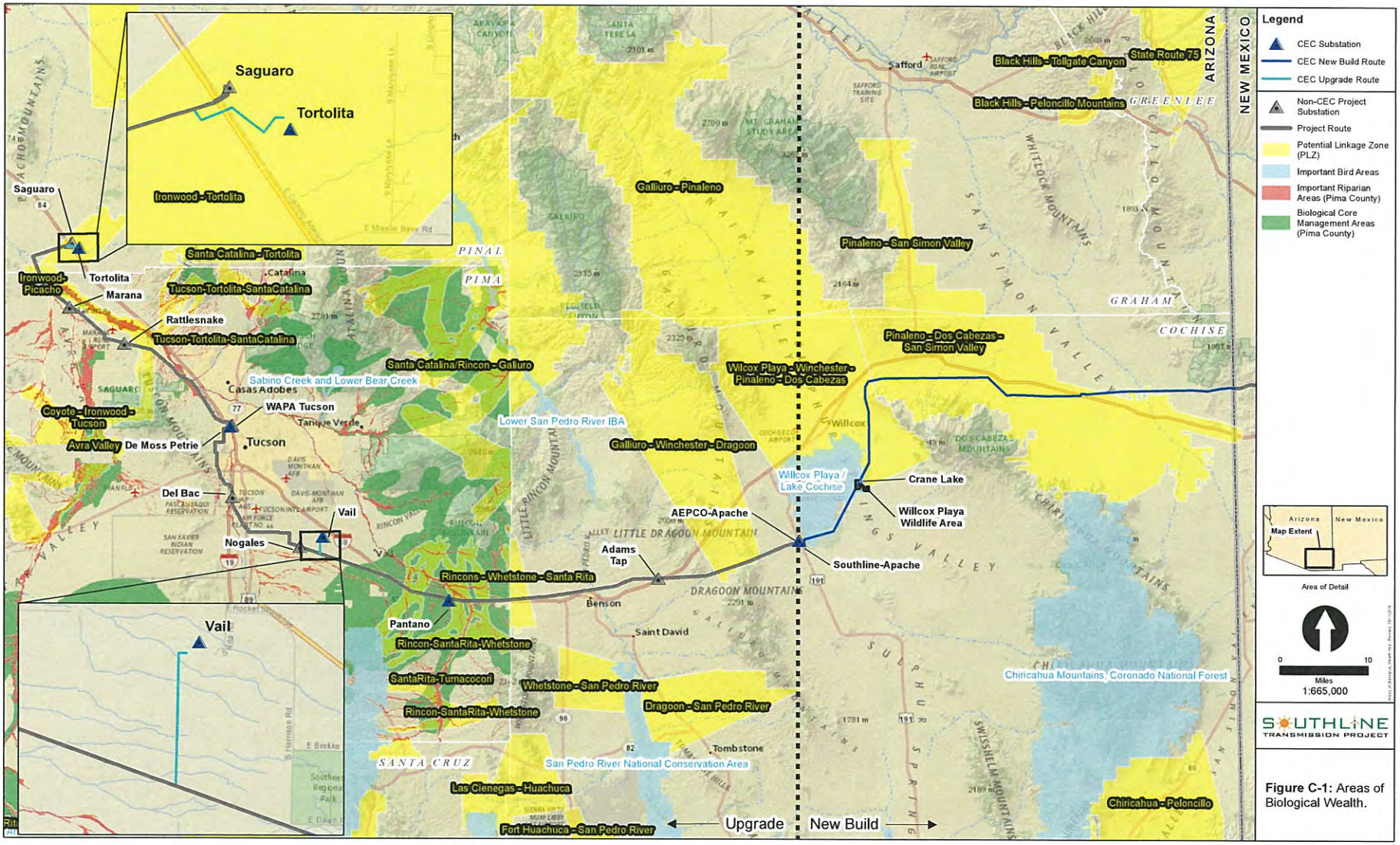

Figure C-1: Areas of Biological Wealth.

II. SPECIAL STATUS SPECIES

Final EIS Table C-1 lists each special-status species reviewed, and provides a rationale for whether each species may occur in the study area. Detailed discussions of individual species that may occur are provided following the table.

Impacts to ESA-listed species were assessed in detail during Section 7 consultation for the Project (*see* Exhibit B-1, Final EIS Section 5.5.2). The BLM provided a Biological Assessment ("BA") and additional communications reflecting new information on ESA-listed species to the USFWS to support Section 7 consultation. This section incorporates terms and conditions provided in the Biological Opinion ("BO") and amendment issued by the USFWS, for each ESA-listed species that may be affected by the Project. These terms and conditions were also incorporated as requirements in the BLM and WAPA's Records of Decision (*see* Exhibits B-3 and B-4, respectively).

Table C-1. Special Status Species that May Occur in the Vicinity of the Project in Arizona

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Mammals			
Allen's big-eared bat *Idionycteris phyllotis*	Ponderosa pine, pinyon-juniper woodlands, Mexican woodlands and riparian areas. Roosts in caves and mines.	BLM Sensitive	May occur.
Antelope jackrabbit *Lepus alleni*	Desertscrub and grasslands.	AZ WSC	May occur.
Arizona pocket mouse *Perognathus amplus*	Desertscrub and grasslands.	AZ WSC	May occur.
Banner-tailed kangaroo rat *Dipodomys spectabilis*	Areas with sparse cover in desertscrub.	BLM Sensitive	May occur.
Big free-tailed bat *Nyctinomops macrotis*	Coniferous and mixed woodland, Chihuahuan tarbush creosote and Sonoran mesquite creosote desertscrub, and riparian areas. Roosts in cliffs.	BLM Sensitive	May occur.
California leaf-nosed bat *Macrotus californicus*	Desertscrub with roosts in mines, caves and rock shelters.	BLM Sensitive	May occur.
Cave myotis *Myotis velifer*	Desertscrub communities. Roosts in caves and mines.	BLM Sensitive	May occur.
Fringed myotis *Myotis thysanodes thysanodes*	Mid-elevation desert habitats including desertscrub and grasslands, but typically associated with oak-pinyon woodlands. Roosts in caves and abandoned mines.	BLM Sensitive	May occur.
Greater western mastiff bat *Eumops perotis californicus*	Lower and upper Sonoran Desertscrub near cliffs. Roosts in crevices within high cliff walls.	BLM Sensitive	May occur.
Harris' antelope squirrel *Ammospermophilus harrisii*	Desertscrub habitat in areas with dense vegetation.	AZ WSC	May occur.
Kit fox *Vulpes macrotis*	Desertscrub.	AZ WSC	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	Desertscrub habitat with agave and columnar cacti present as food source. Roosts in caves and abandoned mines.	USFWS Endangered	May occur.
Little brown myotis *Myotis lucifugus occultus*	Roosts in buildings, cavities, and abandoned mines. Forages along water surfaces. Utilizes areas near water in pine-oak woodlands, desertscrub, ponderosa pine forests, spruce-fir forests, coniferous forests, and deciduous riparian habitats. Throughout Arizona except southeastern portion. Elevations range from 1,000 to 8,000 feet	BLM Sensitive	May occur
Little pocket mouse *Perognathus longimembris*	Desertscrub and grasslands in western and southwestern Arizona.	AZ WSC	May occur.
Long legged-myotis *Myotis volans interior*	Montane communities, desertscrub, riparian areas, and oak-juniper woodlands. Roosts in snags, caves, abandoned mines, rocky cliffs and buildings.	BLM Sensitive	May occur.
Mexican free-tailed bat *Tadarida brasiliensis*	Desert scrub, coniferous forests, and coniferous woodlands.	AZ SGCN	May occur.
Mexican long-nosed bat *Leptonycteris nivalis*	Caves and mines near ocotillo, yucca, agave, manzanita, oaks, and juniper. Animas and Guadalupe Canyon of the southernmost Peloncillo Mountains of extreme southwestern Hidalgo County of New Mexico. Also may occur in eastern Arizona. Elevations range from 4,600 to 6,200 feet	USFWS Endangered	May occur
Mexican long-tongued bat *Choeronycteris mexicana*	Mesic areas of mixed oak-conifer communities and desert grasslands. Roosts in caves and abandoned mines.	BLM Sensitive	May occur.
Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*	Xeric habitats including sagebrush, desertscrub, chaparral, deciduous forests and coniferous forests. Roosts in caves and abandoned mines.	BLM Sensitive	May occur
Pocketed free-tailed bat *Nyctinomops femorosaccus*	In Arizona, forages in riparian corridors dominated by sycamore and mesquite and bounded by large cliffs. Roosts in cliffs and tall, rocky outcrops.	AZ WSC	May occur.
Spotted bat *Euderma maculatum*	Roosts in crevices and high cliff walls. Inhabits desertscrub, riparian, pinyon-juniper woodlands, and coniferous forests.	BLM Sensitive	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Yuma myotis *Myotis yumanensis yumanensis*	Roosts in buildings, cliffs, caves, trees and abandoned mines. Forages in a variety of habitats near open water.	BLM Sensitive	May occur.
Desert bighorn sheep *Ovis canadensis Mexicana*	Pinyon-juniper, Sonoran desertscrub, and Chihuahuan Desert communities. Rocky, arid, and open areas. Near (within 1 mile) water sources.	AZ SGCN	May occur.
Birds			
Abert's towhee *Melozone aberti aberti*	Lowland riparian thickets and adjacent dry desert washes, irrigated parks and backyards.	AZ WSC	May occur.
American bittern *Botaurus lentiginosus*	Marshes and very wet meadows with dense, emergent vegetation along rivers lakes and ponds.	AZ WSC	Unlikely to occur.
American peregrine falcon *Falco peregrinus anatum*	Woodlands and riparian areas, rocky areas with steep cliffs primarily near water where prey concentrations are high. Nests on ledges of cliffs.	AZ SGCN	May occur.
Bald eagle *Haliaeetus leucocephalus*	Areas with large trees or cliffs near water (reservoirs, rivers, and streams) and abundant prey.	Bald Eagle and Golden Eagle Protection Act	May occur.
Bank swallow *Riparia riparia*	Low areas along rivers, streams, reservoirs and oceans, often with cliffs or vertical banks.	AZ WSC	Unlikely to occur.
Bell's vireo *Vireo bellii*	Dense, shrubby vegetation along woodland edges, especially with a mesquite component.	AZ WSC	May occur.
Buff collared nightjar *Antrostomus ridgwayi*	Desert drainages with dense vegetation.	AZ SGCN	May occur.
Cactus ferruginous pygmy-owl *Glaucidium brasilianum cactorum*	Sonoran desertscrub and occasionally in riparian drainages and woodlands within semidesert grassland communities.	BLM Sensitive	May occur.
Crested caracara *Caracara cheriway*	Sonoran desertscrub, pastures, and cultivated areas.	AZ WSC	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Desert purple martin *Progne subis hesperia*	Nests in tree or cactus cavities. Sonoran Desert populations nest almost exclusively in large saguaros	AZ SGCN	May occur.
Eared grebe *Podiceps nigricollis*	Shallow lakes and ponds.	AZ SGCN	Unlikely to occur.
Gila woodpecker *Melanerpes uropygialis uropygialis*	Sonoran desert uplands with large saguaros.	AZ WSC	May occur.
Gilded flicker *Colaptes chrysoides*	Sonoran Desert uplands, utilizes saguaro cacti.	BLM Sensitive	May occur.
Golden eagle *Aquila chrysaetos*	Inhabits open areas with cliffs for nesting.	Bald Eagle and Golden Eagle Protection Act	May occur.
Loggerhead shrike *Lanius ludovicianus*	Variety of forest types, xeric habitats, desertscrub, mixed shrub, and agricultural fields. Throughout Arizona. Elevations range from 2,800 to 7,500 feet.	BLM Sensitive	May occur.
Northern aplomado falcon *Falco femoralis septentrionalis*	Grasslands and savannas, Nonessential experimental population designated in Arizona, In Arizona this species is extremely rare. Elevations range from 3,500 to 9,000 feet.	USFWS E, Experimental Population, Non-Essential	May occur.
Northern harrier *Circus cyaneus*	Grasslands and wetlands, wintering habitat includes deserts, sand dunes, agricultural fields, grasslands and marshes.	AZ WSC	May occur.
Northern pintail *Anas acuta*	Found in shallow wetlands with low vegetation. Wintering habitat include shallow inland freshwater habitats.	AZ SGCN	Unlikely to occur.
Sandhill crane *Grus canadensis*	Agricultural fields, annual grasslands, farmlands, and playas. Shallow waters. Willcox Playa in Arizona.	AZ SGCN	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Southwestern willow flycatcher *Empidonax traillii extimus*	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	USFWS E	Unlikely to occur, no habitat present in the CEC Proposed Route.
Sprague's pipit *Anthus spragueii*	Native grasslands with vegetation of intermediate height and lacking woody shrubs.	BLM Sensitive	May occur.
White-faced ibis *Plegadis chihi*	Vegetation along shorelines, marshes, and open water. Nests in shrubs and low trees. Found in desert riparian woodlands with sufficient permanent water for emergent plants, moist grasslands, and irrigated agricultural fields. Nest at Cibola Lake, migrate throughout Arizona.	BLM Sensitive	May occur.
Western burrowing owl *Athene cunicularia hypugaea*	Open grasslands and agricultural areas.	BLM Sensitive	May occur.
Yellow warbler *Setophaga petechia*	Streams and wetlands.	AZ WSC	May occur.
Reptiles			
Canyon spotted whiptail *Aspidoscelis burti*	Primarily in Semidesert Grassland and Madrean Evergreen Woodland communities and in drainages in Sonoran desertscrub.	AZ WSC	May occur
Desert ornate box turtle *Terrapene ornata [luteola]*	Semi-arid regions with plains, grasslands, and pastures. Often associated with prairie dog towns.	BLM Sensitive	May occur.
Gila monster *Heloderma suspectum*	Sonoran desertscrub and less often in semidesert grasslands.	AZ WSC	May occur.
Goode's horned lizard *Phrynosoma goodie*	Lower Colorado River Valley Subdivision of Sonoran desertscrub.	AZ SGCN	May occur
Ground snake *Sonora semiannulata*	Desertscrub, semidesert grassland, interior chaparral, and Great Basin grassland.	Pima County	May occur.
Regal horned lizard *Phrynosoma solare*	Sonoran desertscrub, Chihuahuan desertscrub and semidesert grassland	AZ WSC	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Saddled leaf-nosed snake *Phyllorhynchus browni*	Sonoran desertscrub.	AZ WSC	May occur.
Sonoran collared lizard *Crotaphytus nebrius*	Sonoran desertscrub.	AZ WSC	May occur.
Sonoran coralsnake *Micruroides euryxanthus*	desertscrub to semidesert grassland	AZ WSC	May occur.
Sonoran desert tortoise *Gopherus morafkai*	Sonoran desertscrub but may also use semidesert grassland and Madrean evergreen woodland.	BLM Sensitive	May occur.
Sonoran mud turtle *Kinosternon sonoriense sonoriense*	Creeks, streams, and rivers as well as ditches, ponds, and cattle tanks in Lower Colorado River desertscrub through woodlands.	BLM Sensitive	May occur.
Sonoran whipsnake *Coluber bilineatus*	Desertscrub, semidesert grassland, Madrean evergreen woodland and into Great Basin conifer woodland	AZ WSC	May occur.
Texas horned lizard *Phrynosoma cornutum*	Chihuahuan desertscrub and semidesert grassland, Flat, dry, open country with low plant cover. Sandy, loamy or rocky soils.	BLM Sensitive	May occur.
Tiger rattlesnake *Crotalus tigris*	Desertscrub, interior chaparral, and Madrean evergreen woodland.	AZ WSC	May occur.
Variable sandsnake *Chilomeniscus stramineus*	Sonoran desertscrub.	AZ WSC	May occur.
Amphibians			
Chiricahua leopard frog *Lithobates chiricahuensis*	Springs, streams in upper portions of watersheds, and livestock tanks free from non-native predators or in marginal habitats. Southern population is in the mountains and valleys south of the Gila River in the southeastern part of the State. Elevations range from 3,300 to 8,900 feet.	USFWS T	Unlikely to occur.
Colorado River toad (aka Sonoran desert toad). *Bufo alvarius*	Sonoran and Chihuahuan desertscrub, semidesert grassland, and Madrean evergreen woodland. Breeds in temporary pools caused by monsoon rains. Adults can be found far from water. Southern Arizona.	BLM Sensitive	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Lowland leopard frog *Lithobates yavapaiensis*	Desert grasslands to pinyon-juniper forests near water. Habitat generalists. Central and southeastern Arizona with the majority found below the Mogollon Rim. Elevations below 6,200 feet.	BLM Sensitive	Unlikely to occur.
Great Plains narrow-mouthed toad *Gastrophryne olivacea*	Found near streams, springs, and rain pools in Sonoran desertscrub, semidesert grasslands, and oak woodlands.	BLM Sensitive	May occur.
Sonoran green toad *Bufo retiformis*	Sonoran Desertscrub near rain pools, wash bottoms, and areas near water.	BLM Sensitive	May occur.
Plants			
Button cactus *Epithelantha micromeris*	Found in the Chihuahuan Desert in semi-desert grasslands on ridges and hillsides with limestone and sometimes igneous soils.	Salvage Restricted	May occur.
Chihuahua scurfpea *Pediomelum pentaphyllum*	Desert grasslands in sandy, loamy soils.	BLM Sensitive	Unlikely to occur.
Devilthorn hedgehog cactus *Echinocereus pseudopectinatus*	Found in the Chihuahuan desert, primarily in grasslands, desertscrub, igneous substrates and rocky slopes.	Salvage Restricted	May occur.
Dune prickly pear *Opuntia arenaria*	Sandy areas in Chihuahuan desertscrub.	Salvage Restricted.	Unlikely to occur.
Gregg night-blooming cereus *Peniocereus greggii*	Desert grasslands and Chihuahuan desertscrub.	Salvage Restricted	May occur.
Huachuca water umbel *Lilaeopsis schaffneriana var. recurva*	Semi-aquatic and aquatic systems.	ESA Endangered	Unlikely to occur.
Needle-spined pineapple cactus *Echinomastus erectocentrus* var. *erectocentrus*	Desert grasslands on low gravelly hills with igneous and limestone substrates.	Salvage Restricted	Unlikely to occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Parish's alkali grass *Puccinellia parishii*	Restricted to alkali springs, seeps, and seasonally wet areas near the heads of drainages	Highly Safeguarded	May occur.
Pima pineapple cactus *Coryphantha scheeri* var. *robustispina*	Found in semi-desert grassland or Sonoran desertscrub.	ESA Endangered	May occur.
Playa spider plant *Cleome multicaulis*	Found in in wet, saline, or alkaline soils in playas or alkaline meadows.	Salvage Restricted	May occur.
San Carlos wild-buckwheat *Eriogonum capillare*	Disturbed, gravelly areas free from competition as well as on slopes and in washes.	Salvage Restricted	May occur.
Slender needle corycactus *Coryphantha scheeri* var. *valida*	Found in deep, sandy soils in the bottomlands or grasslands and deserts.	Salvage Restricted	May occur.
Varied fishhook cactus *Mammillaria viridiflora*	Found in in semi-desert grassland, interior chaparral and pinyon-juniper woodlands on gravelly igneous substrates.	Salvage Restricted.	May occur.
Wilcox pincushion cactus *Mammillaria wrightii* var. *wilcoxii*	Found in low hills in semi-desert grassland, along the edges of pine-oak woodlands as well as on steep alluvial slopes.	Salvage Restricted.	May occur.
San Pedro River wild buckwheat *Eriogonum terrenatum*	Found in limestone and clay soils of the St. David formation. It is found in gravelly soils in association with creosotebush and whitethorn acacia. It is known range is limited to two disjunct populations, one on the San Pedro River south of St. David and the other on Cienega Creek near Pantano Road.	BLM Sensitive	Unlikely to occur.
Littleleaf false tamarind *Lysiloma watsonii*	Found in the Arizona Upland subdivision of Sonoran desertscrub and in desert grasslands on rocky hillsides as well as the slopes of creeks and tributaries.	Salvage Restricted	May occur.
Thornber fishhook cactus *Echinocereus fasciculatus*	Found in Sonoran desertscrub under shrubs on valley floors in silty or sandy substrates.	Salvage Restricted	May occur.
Magenta-flowered hedgehog cactus *Mammillaria thornberi*	Found in Sonoran desertscrub, semi-desert grassland, and interior chaparral.	Salvage Restricted	May occur.

Common Name *Scientific Name*	Habitat	Status	Potential for Occurrence
Kelvin cholla *Cylindropuntia x kelvinensis*	Found in the edges of grasslands, desertscrub, rolling hills, and rocky flats and slopes.	Salvage Restricted	May occur.
Night blooming cereus *Peniocereus greggii* var. *transmontanus*	Found in Sonoran Desert, desertscrub in creosote-bursage flats, along the edges of washes, and on the slopes of small hills with sandy or gravelly loam substrates.	Salvage Restricted	May occur.
Pima Indian mallow *Abutilon parishii*	Found in Sonoran desertscrub on rocky hillsides, cliff bases, canyon bottoms, and among rocks and boulders on canyon edges.	BLM Sensitive	May occur.
Staghorn cholla *Cylindropuntia versicolor*	Found in Sonoran Desert, desertscrub, in canyons, washes, flats, and rocky hillsides.	Salvage Restricted	May occur.
Desert barrel cactus *Ferocactus cylindraceus*	Found in the Sonoran and Mohave deserts on gravelly or rocky hillsides, canyon walls, alluvial fans, and wash margins.	Salvage Restricted	May occur.
Engelmann prickly pear *Opuntia engelmannii* var. *flavispina*	Found in Sonoran desert on sandy bajadas.	Salvage Restricted	May occur.

A. Mammal Species Accounts

Allen's big-eared bat (*Idionycteris phyllotis*): BLM Sensitive

Allen's big-eared bat is found in ponderosa pine, pinyon-juniper woodlands, Mexican woodlands, and riparian areas with deciduous trees (AZGFD, 2001a). The species is found across most of Arizona, except the southwestern deserts at elevations from 1,320 to 9,800 feet. The species is most common at 3,500 to 7,500 feet (AZGFD, 2001a). Allen's big-eared bat may occur in the CEC New Build Route in segments P6a and P6b and in the CEC Upgrade Route segments U3l and U4 as well as the Vail Substation expansion area.

Antelope jackrabbit (*Lepus alleni*): AZ WSC

The antelope jackrabbit is found in grasslands and desertscrub (Best 1993). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Arizona pocket mouse (*Perognathus amplus*): AZ WSC

The Arizona pocket mouse is found in grasslands and desertscrub. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Banner-tailed kangaroo rat (*Dipodomys spectabilis*): BLM Sensitive

The Banner-tailed kangaroo rat is found in areas with sparse cover in desertscrub (Best 1988). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Big free-tailed bat (*Nyctinomops macrotis*): BLM Sensitive

The big free-tailed bat roosts in cliffs and forages in coniferous and mixed woodland; Chihuahuan tarbush creosote and Sonoran mesquite creosote desertscrub; and riparian areas (BISON-M, 2010a) throughout Arizona (Adams, 2003). The species is found at elevations below 8,000 feet, most commonly below 6,000 feet (BISON-M, 2010a). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

California leaf-nosed bat (*Macrotus californicus*): BLM Sensitive

The California leaf-nosed bat is found in desertscrub. The species roosts in mines, caves, and rock shelters and is found at elevations from 160 to 3,980 feet (AGFD 2014). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Cave myotis (*Myotis velifer*): BLM Sensitive

The cave myotis roosts in caves and mines and forages in desertscrub communities (AZGFD, 2002a). The species is found throughout the southern half of Arizona at elevations from 300 to 5,000 feet (AZGFD, 2002a). The cave myotis may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7 and P8 as well as the Apache Substation expansion area. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Desert bighorn sheep (*Ovis canadensis mexicana*): AZ SGCN

Desert bighorn sheep use rocky, arid, and open areas with cliffs within 1 mile of water sources. The species is found in pinyon-juniper, Sonoran desertscrub, and Chihuahuan Desert communities at elevations from 5,500 to 6,500 feet. It avoids elevations below 4,500 or above 7,500 feet (BISON-M, 2010b). The species may occur in the CEC New Build Route in segments P5b, P6a, and P6b.

Fringed myotis (*Myotis thysanodes thysanodes*): BLM Sensitive

The fringed myotis roosts in caves and abandoned mines. The species forages in middle-elevation desert habitats including desertscrub and grasslands, but is typically associated with oak-pinyon woodlands (BISON-M, 2010c). The species is found throughout Arizona except in the southwestern deserts (Adams, 2003) at elevations from 4,000 to 8,437 feet (BISON-M, 2010c). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Greater western mastiff bat (*Eumops perotis californicus*): BLM Sensitive

The greater western mastiff bat forages in lower and upper Sonoran Desertscrub near cliffs. The species roosts in crevices within high cliff walls (AZGFD, 2014). Records of the species are scattered throughout Arizona at elevations from 240 to 8,475 feet (AZGFD, 20014). The species may occur in the CEC New Build Route in segments P5b,

P6a, P6b, P6c, P7, and P8. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Harris' antelope squirrel (*Ammospermophilus harrisii*): AZ WSC

Harris' antelope squirrel is found in desertscrub habitat in areas with dense vegetation. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Kit fox (*Vulpes macrotis*): AZ WSC

The kit fox is found in desertscrub habitats. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*): USFWS Endangered

The lesser long-nosed bat is found in desertscrub habitat with agave and columnar cacti present as food source. The species roosts in caves and abandoned mines (USFWS, 2001). Roosts in Arizona are found in several sky island mountains in southeastern Arizona including Big Dragoons, Rincons, and Santa Catalina Mountains. The lesser long nosed bat is found at elevations from 1,600 to 11,500 feet (USFWS, 2001). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Little brown myotis (*Myotis lucifugus occultus*): BLM Sensitive

The little brown myotis roosts in buildings, cavities, and abandoned mines and forages along water surfaces. It utilizes areas near water in pine-oak woodlands, desertscrub, ponderosa pine forests, spruce-fir forests, coniferous forests, and deciduous riparian habitats (BISON-M, 2008). The little brown myotis is found throughout Arizona except the southeastern portion (Adams, 2003) at elevations from 1,000 to 8,000 feet (BISON-M, 2008). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Long-legged myotis (*Myotis volans interior*): BLM Sensitive

The long-legged myotis roosts in snags, caves, abandoned mines, rocky cliffs and buildings. The species forages at temperatures between 12 to 18° Celsius. The species

primarily uses montane communities with open areas for foraging; it also uses desertscrub, riparian areas, and oak-juniper woodlands (BISON-M, 2010d). The long-legged myotis is found throughout Arizona except the southwestern portion (Adams, 2003) at elevations below 11,500 feet (BISON-M, 2010d). This species utilizes a variety of roosts including abandoned buildings, cracks in the ground, crevices in cliff faces and spaces behind exfoliating tree bark. Caves and mine tunnels are used as hibernacula. In the summer, they apparently do not use caves as a daytime roost site. The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Little pocket mouse (*Perognathus longimembris*): AZ WSC

The little pocket mouse is found in desertscrub and grassland habitats. The species is found in western and southwestern Arizona and may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Mexican free-tailed bat (*Tadarida brasiliensis*): AZ SGCN

The Mexican free-tailed bat is found in desertscrub and coniferous forests (AZGFD, 2004a). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Mexican long-nosed bat (*Leptonycteris nivalis*): USFWS Endangered

The Mexican long-nosed bat is found in caves and mines near ocotillo, yucca, agave, manzanita, oaks, and juniper at elevations from 4,600 to 6,200 feet (BISON-M, 2010e). Southeastern Arizona is the western extent of the species' range. The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Mexican long-tongued bat (*Choeronycteris mexicana*): BLM Sensitive

Mexican long-tongued bats roost in caves and abandoned mines in mesic areas of mixed oak-conifer communities and desert grasslands in southern Arizona (AZGFD, 2006a). The species is found at elevations from 2,540 to 7,320 feet in Arizona (AZGFD, 2006a). The species may occur in the CEC New Build Route in segments P6a, P6b, P6c, P7, and P8. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*): BLM sensitive

Pale Townsend's big-eared bat roosts in caves and abandoned mines. Maternity colonies form from May through July and disperse in August. The species inhabits a variety of xeric habitats including sagebrush, desertscrub, chaparral, deciduous forests, and coniferous forests (AZGFD, 2003a). The species is widespread in Arizona at elevations from 4,000 to over 8,000 feet (AZGFD, 2003a). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Pocketed free-tailed bat (*Nyctinomops femorosaccus*): AZ WSC

The pocketed free-tailed bat roosts in cliffs and tall, rocky outcrops. In Arizona, the species forages in riparian corridors dominated by sycamore and mesquite and bounded by large cliffs in the southern part of the state at elevations up to 4,100 feet (Adams, 2003). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P7, and P8 as well as the Apache Substation expansion area. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Spotted Bat (*Euderma maculatum*): BLM Sensitive

The spotted bat roosts in crevices and high cliff walls in desertscrub, riparian, pinyon-juniper woodlands, and coniferous forests at elevations of 110 to 8,670 feet (AZGFD, 2003b). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Yuma myotis (*Myotis yumanensis yumanensis*): BLM Sensitive

Yuma myotis roosts in buildings, cliffs, caves, trees, and abandoned mines. The species forages in a variety of habitats near open water (BISON-M, 2010f). Yuma myotis is a summer resident throughout Arizona at elevations from 4,000 to 8,000 feet (BISON-M, 2010f). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

B. Bird Species Accounts

Abert's towhee (Melozone aberti aberti): AZ WSC

Abert's towhee is found in lowland riparian thickets and adjacent dry desert washes as well as irrigated parks and backyards (Corman and Wise-Gervais, 2005). The species is found in western, central, and southern Arizona at elevations from 80 and 4,900 feet (Corman and Wise-Gervais, 2005). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

American peregrine falcon (*Falco peregrinus anatum*): AZ SGCN

The American peregrine falcon uses rocky areas with steep cliffs primarily near water where prey (mainly shorebirds, songbirds, and waterfowl) concentrations are high. Nests are found on ledges of cliffs, and sometimes on human-made structures such as office towers and bridge abutments. The species forages primarily in woodlands and riparian areas, but also in xeric and urban areas when prey is available throughout Arizona (AZGFD, 2002b). The species is found at elevations from 3,500 to 9,000 feet (AZGFD, 2002b). No nesting habitat for the species is present in the CEC Proposed Route. The species may forage in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species may also forage in the CEC Upgrade Route in the Vail Substation expansion area and in segments U3l and U4.

Bald Eagle (*Haliaeetus leucocephalus*): Bald Eagle and Golden Eagle Protection Act

Bald eagles breed and winter in areas with large trees or cliffs near water (reservoirs, rivers, and streams) and abundant prey. Known breeding areas are located on the Gila and San Pedro rivers in Arizona (AZGFD, 2011). No breeding habitat is present in the CEC Proposed Route; however, the species could forage in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Bell's vireo (*Vireo bellii*): AZ WSC

Bell's vireo utilize dense, shrubby vegetation along woodland edges, especially with a mesquite component (Corman and Wise-Gervais, 2005). The species is widespread through central and southern Arizona at elevations from 160 to 4,800 feet (Corman and Wise-Gervais, 2005). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P7, and P8 as well as the Apache Substation expansion area.

Buff-collared nightjar (*Antrostomus ridgwayi*): AZ SGCN

The buff-collared nightjar is found in Arizona in desert drainages with dense vegetation (Audubon 2016a). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*): BLM Sensitive Species

Cactus ferruginous pygmy-owls are resident of desert woodlands with tall canopy cover. They are primarily found in Sonoran desertscrub and occasionally in riparian drainages and woodlands within semidesert grassland communities. The species prefers to nest in cavities of saguaro cacti but has been found in low-density suburban developments that include natural open spaces (AZGFD, 2001b). The species is found in southcentral Arizona, primarily in Pima County. There are no records of the species from Cochise County (AZGFD, 2001b). The species is found in elevations below 4,000 feet. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Crested caracara (*Caracara cheriway*): AZ WSC

In Arizona the crested caracara is found in Sonoran desertscrub, pastures, and cultivated areas at elevations from 1,890 to 3,360 feet amsl (AZGFD, 2003c). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species may also occur in the CEC Upgrade Route in the Vail Substation expansion area and segments U3l and U4.

Desert purple martin (*Progne subis hesperia*): AZ SGCN

The desert purple martin nests in tree or cactus cavities. Sonoran Desert populations nest almost exclusively in large saguaros (Corman and Wise-Gervais, 2005). In Arizona they are found in the Salt River Canyon and Roosevelt Lake south along San Pedro River and near San Carlos Indian Reservation and Markham Creek. The species is also found throughout Pima County west to Organ Pipe Cactus National Monument in Arizona (Corman and Wise-Gervais, 2005). Elevations range from 2,800 to 11,000 feet (BISON-M, 2010g). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Gila woodpecker (*Melanerpes uropygialis uropygialis*): AZ WSC

The Gila woodpecker is found in Sonoran desert uplands with large saguaros and less commonly in lowland riparian woodlands (Corman and Wise-Gervais, 2005). The species is found in southern Arizona at elevations from 150 and 4,800 feet (Corman and Wise-Gervais, 2005). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Gilded flicker (*Colaptes chrysoides*): BLM Sensitive

The gilded flicker nests in cavities within Sonoran Desert uplands (Corman and Wise-Gervais, 2005) utilizing saguaro cacti (BLM, 2010). The species is found throughout southern Arizona (NatureServe, 2011bb) at elevations from 3,000 to 9,000 feet (BISON-M, 2007). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Golden Eagle (*Aquila chrysaetos*): Bald Eagle and Golden Eagle Protection Act

Golden eagles are found in areas with significant cliffs and large undeveloped areas (BLM, 2010). The species utilize a wide range of habitats at elevations from 4,000 to 10,000 feet (AZGFD, 2002c). The species may occur in the CEC Upgrade Route in segment U3l.

Loggerhead shrike (*Lanius ludovicianus*): BLM Sensitive

The loggerhead shrike is found in a variety of forest types, xeric habitats, desertscrub, mixed shrub, and agricultural fields throughout Arizona (Corman and Wise-Gervais, 2005). Elevations range from 2,800 to 7,500 feet (AZGFD, 2004b). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Northern aplomado falcon (*Falco femoralis septentrionalis*): USFWS Endangered, Experimental Population, Non-Essential

The northern aplomado falcon is found in grasslands and savannas (AZGFD, 2001c). The species is listed as a nonessential experimental population designated in Arizona and New Mexico in 2006. In Arizona, this species is extremely rare (AZGFD, 2001c) Elevations range from 3,500 to 9,000 feet. The species may occur in the CEC New Build

Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Northern harrier (*Circus cyaneus*): AZ WSC

The northern harrier utilizes grasslands and wetlands, wintering habitat such as that in the CEC Proposed Route includes desertscrub, agricultural fields, grasslands and marshes (USGS 2016). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species may also occur in the CEC Upgrade Route at the Pantano Substation expansion area.

Sandhill crane (*Grus canadensis*): AZ SGCN

The sandhill crane winters near agricultural fields, annual grasslands, farmlands, and playas at elevations form 2,800 to 4,500 feet (BISON-M, 2010). The species may occur near Willcox Playa in the CEC New Build Route in segments P5b, P6a, P6b, P7, and P8 as well as the Apache Substation expansion area.

Sprague's pipit (*Anthus spragueii*): BLM Sensitive

Sprague's pipits are found in native grasslands with vegetation of intermediate height and lacking woody shrubs. The species winters in grasslands of the San Rafael, Sonoita, and Sulphur Spring valleys in southeastern Arizona (AZGFD, 2010b). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as Apache Substation expansion.

White-faced ibis (*Plegadis chihi*): BLM Sensitive

The white-faced ibis if found near vegetation along shorelines, marshes, and open water. The species nests in shrubs and low trees. The species is found in desert riparian woodlands with sufficient permanent water for emergent plants, moist grasslands, and irrigated agricultural fields. The species nests at Cibola Lake and migrate throughout Arizona (Corman and Wise-Gervais, 2005). The species may occur in the CEC New Build Route in segment P6b.

Yellow Warbler (*Setophaga petechia*): AZ WSC

The yellow warbler is found in streamside thickets and the edges of cultivated areas (Audubon 2016b). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, and P6c.

Western burrowing owl (*Athene cunicularia hypugaea*): BLM Sensitive

Western burrowing owls are found in areas with open grasslands and agricultural areas (AZGFD, 2001d). The species is found at elevations from 650 to 6,140 feet in Arizona (AZGFD, 2001d). The species may occur in the CEC New Build Route in segment P6b and in the CEC Upgrade Route in segments U3l and U4 as well as the Pantano Substation expansion area.

C. Reptile Species Accounts

Canyon spotted whiptail (*Aspidoscelis burti*): AZ WSC

The canyon spotted whiptail is found primarily in Semidesert Grassland and Madrean Evergreen Woodland communities and in drainages in Sonoran desertscrub. The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Desert ornate box turtle (*Terrapene ornata [luteola]*): BLM Sensitive

The desert ornate box turtle is found in semi-arid regions with plains, grasslands, and pastures and is often associated with prairie dog towns. The species is found in Cochise, Pima, and Santa Cruz Counties of Arizona at elevations from 3,000 to 7,000 feet (AZGFD, 2008a). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Gila monster (*Heloderma suspectum*): AZ WSC

The Gila monster is found in Sonoran desertscrub and less often in semidesert grasslands (AZGFD, 2013a). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Goode's horned lizard (*Phrynosoma goodie*): AZ SGCN

Goode's horned lizard is found in the Lower Colorado River Valley Subdivision of Sonoran desertscrub (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Ground snake (*Sonora semiannulata*): Pima County

The ground snake is found in desertscrub, semidesert grassland, interior chaparral, and Great Basin grassland (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Regal horned lizard (*Phrynosoma solare*): AZ WSC

The regal horned lizard is found in Sonoran desertscrub, Chihuahuan desertscrub and semidesert grassland (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Saddled leaf-nosed snake (*Phyllorhynchus browni*): AZ WSC

The saddled leaf-nosed snake is found in Sonoran desertscrub in several Arizona counties including Pima and Pinal counties (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Sonoran collared lizard (*Crotaphytus nebrius*): AZ WSC

The Sonoran collared lizard is found in Sonoran desertscrub (AZGFD, 2007). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Sonoran coralsnake (*Micruroides euryxanthus*): AZ WSC

The Sonoran coralsnake is found in habitats from desertscrub to semidesert grassland. The species is usually found below 6,000 feet and near rocky drainages and mesquite lined washes (AZGFD, 2008b). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

Sonoran desert tortoise (*Gopherus morafkai*): BLM Sensitive

The Sonoran desert tortoise is primarily found in Sonoran desertscrub but may also use semidesert grassland and Madrean evergreen woodland (AZGFD, 2015a). The species is primarily found at elevations below 5,000 feet. The species may occur in the CEC Upgrade Route segments U3l and U4 as well as the Vail Substation expansion area.

Sonoran whipsnake (*Coluber bilineatus*): AZ WSC

The Sonoran whipsnake is found in areas of desertscrub, semidesert grassland, Madrean evergreen woodland, and into Great Basin conifer woodland (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Texas horned lizard (*Phrynosoma cornutum*): BLM Sensitive

The Texas horned lizard is found in Chihuahuan desertscrub and semidesert grassland (Brennan and Holycross, 2006). The species utilizes flat, dry, open country with low plant cover with sandy, loamy, or rocky soils. In Arizona the species is found in the valleys of southeastern Arizona, primarily in Cochise County (Brennan and Holycross, 2006). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Tiger rattlesnake (*Crotalus tigris*): AZ WSC

The tiger rattlesnake is found in desertscrub, interior chaparral, and Madrean evergreen woodlands at elevations from 1,000 to 5,000 feet (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route segments U3l and U4 as well as the Vail Substation expansion area.

Variable sandsnake (*Chilomeniscus stramineus*): AZ WSC

The variable sandsnake is found in Sonoran desertscrub in several Arizona counties including Pima and Pinal counties (Reptiles of Arizona 2016). The species may occur in the CEC Upgrade Route segments U3l and U4 as well as the Vail Substation expansion area.

D. Amphibian Species Accounts

Colorado River toad (aka Sonoran desert toad) (*Bufo alvarius*): BLM Sensitive

The Colorado River toad is found in Sonoran and Chihuahuan desertscrub, semidesert grassland, and Madrean evergreen woodland. It breeds in temporary pools caused by

monsoon rains. Adults can be found far from water (Brennan and Holycross, 2006). The species is found in southern Arizona (Brennan and Holycross, 2006). The species may occur in the CEC New Build Route in segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species also may occur in the CEC Upgrade Route at the Vail Substation and Pantano Substation expansion area and in segments U3l and U4.

Great Plains narrow-mouthed toad (*Gastrophryne olivacea*): BLM Sensitive

The Great Plains narrow-mouthed toad is found near streams, springs, and rain pools in Sonoran desertscrub, semidesert grasslands, and oak woodlands. The species requires water for breeding (AZGFD, 2013b). The species occupies south-central Arizona, including Tucson area at elevations from 1,400 to 4,700 feet (AZGFD, 2013b). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation and Pantano Substation expansion areas.

Sonoran green toad (*Bufo retiformis*): BLM Sensitive

The Sonoran green toad is found in Sonoran desertscrub near rain pools, wash bottoms, and areas near water (AZGFD 2005ba). The species is known from south-central Arizona with the easternmost records from the San Xavier Mission near Tucson, Arizona. The species utilizes elevations range from 500 to 3,225 feet (AZGFD, 2005a). The species may occur in the CEC Upgrade Route in segments U3l and U4 as well as the Vail Substation expansion area.

E. Plant Species Accounts

Pima pineapple cactus

The Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) is listed as endangered under the ESA. The Pima pineapple cactus is a small cactus normally found in semi-desert grassland or Sonoran desertscrub plant associations. Within Arizona, its range is primarily in the Santa Cruz and Altar valleys, west of the Santa Rita Mountains, east of the Baboquivari Mountains, and south of Tucson.

The Pima pineapple cactus is found in south-central Arizona and north-central Sonora, Mexico. Within Arizona the species is found in Pima and Santa Cruz counties and is bounded by the Santa Rita Mountains to the east, Baboquivari Mountains to the west, City of Tucson to the north, and the Arizona/Mexico border to the south (AZGFD, 2001e).

Pima pineapple cactus is found in alluvial basins and on ridges in desert grasslands and Sonoran desertscrub with little to no slope and sparse vegetation, between 2,300 and 4,500 feet amsl. The species blooms only once—at midday on one day—per year and reproduces by both seed and asexually. Pollination is by small black and white bees (AZGFD, 2001e).

Pima pineapple cactus has potential to occur near segment U4 and the Vail Substation. The Project will cross approximately 1.9 miles (61.4 acres) of the known range of the Pima pineapple cactus in segment U4. In addition, the Vail Substation expansion will occur on 1.2 acres within the known range of the species.

Gregg-night blooming cereus

The Gregg night-blooming cereus (*Peniocereus greggii* var. *greggii*) is an obscure cactus that typically grows through other plant species. The species is listed as a salvage restricted plant under the AZNPL. It is generally found in desert grasslands and Chihuahuan desert scrub (New Mexico Rare Plants Technical Council 1999). This variety is not the same variety that is common in the Tucson vicinity (*P. greggii* var. *transmontanus*). It has potential to be present in the CEC New Build Route portion of the study area in segments P5b, P6a, P6b, and P6c.

Parish's alkali grass

Parish's alkali grass (*Puccinellia parishii*) is a dwarf annual grass restricted to alkali springs, seeps, and seasonally wet areas near the heads of drainages. The species is listed as Highly Safeguarded under the AZNPL (AZGFD, 2015b). It has potential to be present in the CEC New Build Route in segment P5b, although alkali seeps and springs are relatively rare in this vicinity.

Slender needle corycactus

The slender needle corycactus (*Coryphantha scheeri* var. *valida*) is listed as a salvage restricted species under the AZNPL. The species is found in deep, sandy soils in the bottomlands or grasslands and deserts (AZGFD, 2005b). It is known from grasslands in the San Simon Valley near Willcox and may occur in the CEC New Build Route including segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area. The species also may occur in the CEC Upgrade Route in the Vail Substation and Pantano Substation expansion areas and in segments U3l and U4.

Devilthorn hedgehog cactus

The devilthorn hedgehog cactus (*Echinocereus pseudopectinatus*) is listed as salvage restricted under the AZNPL. The species is found in the Chihuahuan desert, primarily in grasslands, desertscrub, igneous substrates and rocky slopes (Flora of North America 2016). The species may occur in the CEC New Build Route including segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Willcox pincushion cactus

The Willcox pincushion cactus (*Mammillaria wrightii* var. *wilcoxii*) is listed as a salvage restricted plant under the AZNPL. The species is found in low hills in semi-desert grassland, along the edges of pine-oak woodlands as well as on steep alluvial slopes (Flora of North America 2016). The species may occur in the CEC New Build Route including segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

San Carlos wild buckwheat

San Carlos wild buckwheat (*Eriogonum capillare*) is listed as a salvage restricted plant under the AZNPL. It is found in disturbed, gravelly areas free from competition as well as on slopes and in washes (AZGFD, 2003d). The species may occur in the CEC New Build Route including segments P5b, P6a, P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Varied fishhook cactus

The varied fishhook cactus (*Mammillaria viridiflora*) is listed as a salvage restricted plant under the AZNPL. The species is found in semi-desert grassland, interior chaparral and pinyon-juniper woodlands on gravelly igneous substrates (Flora of North America 2016). The species may occur in the CEC New Build Route including segments P6b, P6c, P7, and P8 as well as the Apache Substation expansion area.

Button cactus

The button cactus (*Epithelantha micromeris*) is listed as salvage restricted under the AZNPL. The species is found in the Chihuahuan Desert in semi-desert grasslands on ridges and hillsides with limestone and sometimes igneous soils (AZGFD, 2005c). The species may occur in the CEC New Build Route in segment P8 as well as the Apache Substation expansion area.

Playa spider plant

The playa spider plant (*Cleome multicaulis*) is listed as a salvage restricted plant under the AZNPL. It is found in wet, saline, or alkaline soils in playas or alkaline meadows (Flora of North America 2016). The species may occur in the CEC New Build Route where it crosses Willcox Playa in segments P7 and P8 as well as the Apache Substation expansion area.

Littleleaf false tamarind

Littleleaf false tamarind (*Lysiloma watsonii*) is listed as a salvage restricted species under the AZNPL. It is found in the Arizona Upland subdivision of Sonoran desertscrub and in desert grasslands on rocky hillsides as well as the slopes of creeks and tributaries (AZGFD, 2005d). The species may occur in the CEC Upgrade Route in segments U4 and U3l.

Thornber fishhook cactus

Thornber fishhook cactus (*Echinocereus fasciculatus*) is listed as a salvage restricted species under the AZNPL. The species is found in Sonoran desertscrub under shrubs on valley floors in silty or sandy substrates (AZGFD, 2005e). The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Magenta flowered hedgehog cactus

Magenta-flower hedgehog cactus (*Mammillaria thornberi*) is listed as a salvage restricted species under the AZNPL. The species is found in Sonoran desertscrub, semi-desert grassland, and interior chaparral (Flora of North America 2016). The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation and Pantano Substation expansion areas.

Kelvin cholla

Kelvin cholla (*Cylindropuntia x kelvinensis*) is listed as a salvage restricted plant under the AZNPL. It is found on the edges of grasslands, desertscrub, rolling hills, and rocky flats and slopes (Flora of North America 2016). The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Night blooming cereus

The night blooming cereus (*Peniocereus greggii* var. *transmontanus*) is listed as a salvage restricted species under the AZNPL the species is found in Sonoran Desert, desertscrub in creosote-bursage flats, along the edges of washes, and on the slopes of small hills with sandy or gravelly loam substrates (Flora of North America 2016). The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Pima Indian mallow

Pima Indian mallow (*Abutilon parishii*) is a BLM sensitive species and is listed as a salvage restricted species under the AZNPL. The species is found in Sonoran desertscrub on rocky hillsides, cliff bases, canyon bottoms, and among rocks and boulders on canyon edges (AZGFD, 2000). The species can be found on slopes of up to 45 degrees. The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Staghorn cholla

Staghorn cholla (*Cylindropuntia versicolor*) is listed as a salvage restricted species under the AZNPL the species is found in Sonoran Desert, desertscrub, in canyons, washes, flats, and rocky hillsides (Flora of North America 2016). The species may occur in areas of Sonoran desertscrub in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Desert barrel cactus

Desert barrel cactus (*Ferocactus cylindraceus*) is listed as a salvage restricted species under the AZNPL the species is found in the Sonoran and Mohave deserts on gravelly or rocky hillsides, canyon walls, alluvial fans, and wash margins (AZGFD, 2005f). The species may occur in Sonoran desertscrub in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

Engelmann prickly pear

Engelmann prickly pear (*Opuntia engelmannii* var. *flavispina*) is listed as a salvage restricted species under the AZNPL the species is found in the Sonoran desert on sandy bajadas (Flora of North America 2016). The species may occur in the CEC Upgrade Route in segments U4 and U3l as well as the Vail Substation expansion area.

III. SUMMARY OF POTENTIAL EFFECTS OF THE PROPOSED FACILITIES

A. Access Roads

There will be approximately 71.2 miles of access roads, 68.7 miles occurring in the CEC New Build Route section with the remaining 2.5 miles in the CEC Upgrade Route section. In most areas the access roads will parallel existing utility roads.

The primary direct and indirect impacts of access roads will include the removal or crushing of native vegetation, decreased plant productivity from fugitive dust, plant community fragmentation, and the introduction or increased spread of noxious weeds. Impacts on wildlife will include the potential for direct collisions with construction and Project equipment, loss of burrowing animals in burrows in areas where grading will occur as well as the loss, degradation, and/or fragmentation of breeding, rearing, foraging, and dispersal habitats.

The access roads for the Project will increase the amount of edge habitat along the ROW. Effects from increased amounts of edge will include decreased habitat block size. Decreased habitat block size may negatively impact those species that require large blocks of contiguous habitat and benefit other species that utilize edge habitats or have more general habitat requirements. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects will be greatest.

Access roads could provide increased access for off-highway vehicle ("OHV") users, which could increase the potential for OHV collisions with wildlife, and increase fire ignition sources from increased OHV access. Required mitigation measures, or PCEMs, are a condition of both the BLM and WAPA's RODs. PCEMs to provide spur and access road closure signage at the entrances to these roads will reduce the potential for impacts from the access roads. While mitigation will minimize OHV use along the transmission line and access roads, trespass use of the area could still occur. The increased potential for fire ignition could lead to fires that dramatically modify habitat over large areas, especially in habitat types that are not adapted to fire.

B. Transmission Line

The CEC New Build Route includes 66 miles of new 345-kV transmission line and less than 1 mile of 115-kV or 230-kV transmission line and associated facilities from the Arizona border to the Apache Substation and the Apache Substation expansion. The

ROW width will be 200 feet for the CEC New Build Route. The total acreage in the CEC New Build section will be approximately 1,518 acres, with 248 acres to be disturbed.

The CEC Upgrade Route will include two 230-kV connection lines. The connection lines will be approximately 5 miles in length and will have a ROW width of 150 feet. The CEC Upgrade section will be approximately 63.1 acres, with 17.9 acres to be disturbed.

Disturbance associated with the CEC Substation expansions will occur at 5 existing substations; the Apache Substation (69.4 acres), the Pantano (25.4 acres), Vail (27.7 acres), DeMoss Petrie (4.2 acres), and Tortolita substations (16.1 acres).

Project activities will involve the removal of vegetation during construction resulting in the direct loss of plant communities. The primary direct and indirect impacts to vegetation during construction and operation and maintenance of the proposed Project will be associated with the removal and/or crushing of natural, native-species dominated vegetation communities or associations from construction of transmission lines, substations, temporary work areas, and access roads; decreased plant productivity from fugitive dust; and plant community fragmentation.

Vegetation removal could have a variety of effects on vegetation communities ranging from changes in community structure and composition along the ROW to alteration of soil moisture or nutrient regimes. The degree of impact depends on the type and amount of vegetation affected, and the rate at which vegetation regenerates after construction. Ultimately, these direct and indirect effects could reduce or change the functional qualities of vegetation, including habitat and forage. Fugitive dust from construction and maintenance traffic has the potential to affect photosynthetic rates and decrease plant productivity. Potential impacts from fugitive dust caused by Project activities will be highest near the ROW and occur during construction activities. The overall impact on vegetation from fugitive dust will be localized along the ROW and will be reduced below significance once construction activities are completed. These impacts will only occur during occasional maintenance activities and will be insignificant after construction activities are complete.

Indirectly, removal of vegetation could cause increased soil desiccation, and will also expose soil to potential wind and water erosion. This could result in further loss of soil and vegetation, as well as increased sediment input to water resources. This impact will occur in areas of disturbance, localized in the ROW; however, as the proposed Project will occur in an area with an arid climate and large existing areas with low vegetation

density the impacts from soil desiccation will be localized and minimal. Increased potential for erosion will occur but will be minimized through PCEMs to limit erosion.

There will also be indirect effects resulting from the fragmentation of connected vegetation types and creation of edge areas. Edge areas have different microclimatic conditions and structure, which could lead to different species composition than interior areas. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects will be greatest. However, portions of the CEC Proposed Route and CEC Substation expansions will occur in areas with low vegetation density. In these areas impacts from fragmentation and edge effects will be minimal. The introduction and colonization of disturbed areas by invasive exotic plant species also will lead to changes in vegetation communities, including the possible shift to more wildfire-prone vegetation that favors invasive exotic species over native species.

Much of the CEC Proposed Route and CEC Substation expansions are collocated with existing roads, railroads, pipelines, and existing transmission lines. In areas where the proposed transmission line will be collocated with existing infrastructure impacts on vegetation will be less than in areas where there is no collocation of facilities. Impacts to native plant associations throughout these collocated portions of the proposed route will therefore be minimal relative to the existing undeveloped portions of the proposed route.

The proposed Project could have direct and indirect impacts on vegetation resources located within areas disturbed by construction activity. These potential impacts will be mitigated through implementation of the required PCEMs VEG-1, VEG-2, VEG-3, VEG-4, VEG-5, or VEG-6 (*see* Exhibit B-1, Final EIS Table 2-8).

PCEM VEG-1 states that every effort will be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access will not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations will be selected to avoid special status vegetation to the greatest extent feasible.

PCEM VEG-2 states that Southline and its construction contractor will develop a Reclamation, Vegetation, and Monitoring Plan that will guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan will address all land disturbances, regardless of ownership. It will be developed in consultation with

appropriate agencies and landowners and will be provided to these entities for review and concurrence. The plan will identify reclamation zones based on the biotic communities within the Project area and reclamation levels based on the construction activity and type of disturbance. The plan will provide details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.

PCEM VEG-4 states that removal of riparian scrubland vegetation will be avoided where possible. Natural regeneration of native plants will be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to vegetation communities. Application of measures PCEM VEG 1-6 as discussed above will be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts, PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan, and PCEM VEG-4: Vegetation Clearing. Adherence to these measures will result in short-term, minor impacts to vegetation communities.

Vegetation removal could have a variety of effects on special status species ranging from alteration of soil moisture or nutrient regimes to population loss to the extent that continued existence of the population is threatened. Any changes to the habitats of special status species may negatively affect individuals of those species, including altering soils, microenvironments, and introducing invasive weeds and increasing wildfire potential. These potential impacts will be minimal due to the implementation of PCEMs to avoid individual plants as well as habitat for special status species.

Pre-construction surveys for the species with the potential to occur in the ROW could allow direct impacts to be avoided. Furthermore, application of measures PCEM VEG 1-6 described above will be used to mitigate these impacts, particularly PCEM VEG-1: Minimize Vegetation Impacts; and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species will also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3). Measures that reduce ground disturbance and aid reclamation will also reduce any detrimental effects on sensitive biological soil crusts.

Application of PCEMs to reduce the transfer of invasive species on construction vehicles (as directed under PCEM VEG-5: Noxious Weed Management Plan and PCEM

VEG-6 regarding equipment washing) should also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds during construction. Adherence to measures included in these plans will result in short-term, minor impact to special status species.

Measures to conserve and restore special status plants will be implemented through the Reclamation, Vegetation, and Monitoring Plan. Special status plants, including Pima pineapple cactus, will be restored by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regarding in compliance with local ordinances (State of Arizona, Pima County) and/or measures in the BO and amendment.

Reclamation activities will utilize plant species that are reflective of the local ecosystem and habitat types. Compensatory mitigation planning will be developed as part of the Plant and Wildlife Species Conservation Measures Plan. Compensatory mitigation planning will address residual impacts anticipated following application of the Reclamation, Vegetation, and Monitoring Plan. The plan will be developed in accordance with BLM regulations and approval.

Preconstruction presence/absence surveys will be required in areas where special status species are expected to occur. In consultation with the BLM, Southline will hire qualified biologists to conduct preconstruction surveys in ground-disturbance areas within suitable habitat for appropriate special status species and their habitats.

Routine operation and maintenance activities could increase long-term chances for invasive weed and wildfire threats to special status plant species. Application of measures PCEM VEG 1-6 as previously discussed will be used to mitigate these impacts particularly PCEM VEG-1: Minimize Vegetation Impacts and PCEM VEG-2: Reclamation, Vegetation, and Monitoring Plan. Measures to restore special status species will also be implemented through the Reclamation, Vegetation, and Monitoring Plan (PCEM VEG-3).

Application of PCEMs to reduce the transfer of invasive species on vehicles (as directed under PCEM VEG-5: Noxious Weed Management Plan and PCEM VEG-6: Equipment Washing) should also mitigate most direct and indirect impacts to special status species associated with the spread of noxious weeds. Adherence to these measures will result in short-term, minor impacts to special status species.

Potential impacts from the transmission line will include the potential for birds to strike the electrical transmission lines, ground wires, and towers. Proponent proposed measures to design the transmission lines and structures in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012), utilizing the existing Western transmission line ROW, and route siting will minimize the potential for bird collisions with transmission lines or towers (PCEM WILD-6). However, during poor weather conditions and along elevated terrain migrating birds and raptors will be at greater risk for collisions as they will fly nearer to transmission line facilities. While some individuals could be impacted these impacts will be unlikely to reach population levels. They will be minor and long-term. Small and mobile bird species will be anticipated to have a very low potential for collisions.

Electrocution is not a potential issue for birds as the proposed transmission lines will have conductor spacing that is much larger than the largest wingspan of bird species that could occur in the area. Types of mitigation described by APLIC include collision monitoring, line marking, changing line configurations, and increasing wire diameters (2012). Mitigation measures will be provided in the Avian Protection Plan and will be tailored to Project-specific conditions. With the application of PCEMs, there will be no impact on birds from electrocution.

The presence of transmission poles will provide perches as well as nesting habitat for some species. In some areas the transmission poles may be the only suitable nesting structures for some species. This will allow some species to utilize areas that will otherwise be unsuitable. This will be a beneficial impact to species that utilize the transmission line and could increase impacts on prey species near the ROW.

The increased amount of edge habitat created by the proposed Project will allow for an increase in species that use edge habitats, such as brown-headed cowbirds (Molothrus ater). This will change the species composition of the ROW area and impact species that utilize larger blocks of habitat as they will be subject to increased predation and nest parasitism. Other species that utilize edge habitats or have more general habitat requirements will benefit from the increased amount of edge habitat. In areas where there is higher vegetation density the potential impacts from habitat fragmentation and edge effects will be greatest. However, as portions of the proposed Project occur in areas with low vegetation density or in areas with existing development, impacts from habitat fragmentation and edge effects will be minor and short-term.

Noise and vibration associated with construction activities may temporarily change habitat use patterns for some species. Some individuals will move away from the

source(s) of the noise/vibration to adjacent or nearby habitats; which may increase competition for resources within these areas. Noise/vibration and other disturbances may also lead to increased stress on individuals, which could decrease their overall fitness due to increased metabolic expenditures.

Operation and maintenance impacts will be temporary and will occur sporadically over the life of the proposed Project. It is estimated that maintenance activities will occur once or twice a year under normal circumstances.

C. Construction Activities and Temporary Work Areas

Potential construction-related impacts, including in temporary work areas, from the proposed Project will include the removal of vegetation and plant community fragmentation; loss, degradation, and/or fragmentation of wildlife breeding, rearing, foraging, and dispersal habitats; collisions with and crushing by construction vehicles; loss of burrowing animals in burrows in areas where grading will occur, increased invasive and noxious weed establishment and spread; and increased noise/vibration levels. PCEMs and collocation of the transmission line, and access road with existing infrastructure, and routing of the line to avoid sensitive areas will reduce these impacts and they will be minor/negligible and short-term to long-term.

Project construction and use of temporary work areas will create temporary impacts associated with the presence of workers and equipment that may cause species to avoid using work areas during construction activities. These potential impacts will be temporary and will cease with the completion of construction and reclamation activities. As such, they will be unlikely to be significant at the population level.

Noise and vibration associated with construction activities may temporarily change habitat use patterns for some species. Some individuals will move away from the source(s) of the noise/vibration to adjacent or nearby habitats, which may increase competition for resources within these areas. Noise/vibration and other disturbances may also lead to increased stress on individuals, which could decrease their overall fitness due to increased metabolic expenditures. These effects will be temporary and of short duration and will cease with the completion of construction activities. Impacts from noise/vibration will likely be limited to individuals, will be minor and short-term, and could lead to reproductive failure for one season. However, given the temporary nature of noise/vibration impacts, they will not be significant at the population level.

Design features and mitigation (PCEMs) for vegetation and wildlife will apply and reduce the amount of vegetation and habitat that will be lost or degraded/fragmented during construction activities. Some of the habitat will be restored or reconstructed elsewhere after the completion of construction activities; however, restoration in arid environments is difficult and slow and may require 50 to 100 or more years. The habitat types affected are abundant in the study area. As such, impacts from ground disturbance will be minor and long-term.

A Project speed limit for construction areas and spur roads will be implemented to reduce the potential for construction activities leading to wildlife collisions with construction equipment. Burial of some individuals could occur during ground-disturbing activities. Given the amount of habitat in the study area, implementation of PCEMs, the temporary nature of construction activities, and the ability of many species to leave impacted areas, it is unlikely that there will be population level impacts. The presence of construction-related trash and debris will be an attractant for some wildlife species. This will be minimized by PCEM HAZ-6. As such, impacts from construction will be short- and long-term and minor.

Mitigation measures PCEM VEG-4 and PCEM VEG-5 will minimize the introduction and spread of invasive and noxious weeds within the ROW or to adjacent areas from construction equipment. Minimization of ground-disturbing activities (PCEM VEG-1) will decrease conditions that favor the establishment and spread of invasive and noxious weed species. These species could adversely modify wildlife habitat by changing vegetation composition and altering fire regimes.

In areas that are not adapted to fire, increased frequency and intensity of fires could lead to dramatic changes in the overall vegetation community and available habitat for wildlife. Impacts from fire will be minimized through PCEM HEA-3. Given that vegetation types that will be disturbed are common in the study area and the implementation of PCEMs, impacts from the establishment and spread of invasive and noxious weeds will be short- and long-term and minor.

D. Off-Site and Compensatory Mitigation

Compensatory mitigation could include payment of an in lieu fee; acquiring mitigation land or conservation easements; or a combination of the two. As established in the BO and amendment, for Pima pineapple cactus that cannot be avoided Southline will purchase credits in an USFWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of disturbance to occupied Pima pineapple cactus habitat.

Alternatively, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.

Implementation of PCEMs and mitigation measures requested by the AGFD, including (1) funding the relocation of Crane Lake away from P7, (2) funding riparian emergent wetlands along Kansas Settlement Road, and (3) funding the management of non-native vegetation; will reduce the intensity of impacts to habitat in the Willcox Playa Wildlife Area.

As noted previously, the AGFD managed Willcox Playa Wildlife Area is considered to be habitat of the highest value to Arizona wildlife species. The Wildlife Area is considered to be Resource Category 1 under the AGFD's habitat compensation policy (AZGFD, 2010a). Resource Category 1 areas have a compensation goal of no loss of existing in-kind habitat value. With the implementation of PCEMs to relocate Crane Lake and to further enhance the Wildlife Area with pond renovations and vegetation management, the policy goal will be met and possibly exceeded.

CONCLUSION

Potential impacts to species listed under the ESA were addressed during Section 7 consultation with USFWS. In their BO (USFWS, 2014) the USFWS concluded that the proposed Project was not likely to jeopardize the continued existence of listed species likely to be present in the study area. PCEMs and mitigation measures will minimize or avoid potential impacts to species listed under the ESA.

A total of 91 special status species were reviewed for the proposed Project. Of those species, 75 have the potential to occur in the study area. This includes 4 species listed under the Endangered Species Act, 27 BLM Sensitive Species, 21 AGFD WSC, 7 Arizona SGCN, 2 BGEPA species, 14 AZNPL Species, and 1 Pima County Species.

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