EXHIBIT C AREAS OF BIOLOGICAL WEALTH

As stated in ACC Rules of Practice and Procedure R14-3-219:

"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."

Exhibit C includes summaries of areas of biological wealth and rare or endangered species that could potentially occur within the project study area, as well as summaries of the potential impacts to these resources and resource impacts specifically associated with the proposed and alternative routes and switchyard/substations.

BIOLOGICAL WEALTH

Areas of Biological Wealth

This analysis originally looked at the regional study area that encompassed all of the project alternative alignments and included areas outside those that could potentially be impacted by the project (see Figure 1 – Project Location Map). A subset of the regional study area consisting of a 2-mile buffer around project alternatives (project study area) was used for the analysis of potential impacts to biological resources that could result from project development, operation, and maintenance (Exhibit A-1). Pima County has developed the Pima County Multi-species Conservation Plan (MSCP). The MSCP was recently submitted to the U.S. Fish and Wildlife Service (USFWS) as part of Pima County's request for an incidental take (Section 10) permit, which will allow development within the county to occur with minimal need for repeated consultations with the USFWS on multiple projects authorized by the county and to minimize impacts to significant biological resources. This plan has yet to be approved. The entire project study area occurs within Pima County and is contained within the area covered by the Pima County MSCP (unapproved). In addition, a draft Biological Assessment has been prepared pursuant to Section 7 consultation with the USFWS. Within the project study area there are five specific areas and/or resources that stand out as important elements for several rare or endangered species. These are the Box Canyon riparian area; several manmade earthen livestock catchments; numerous abandoned mine shafts and adits; limestone substrates; and populations of agaves, primarily the Palmer agave (*Agave palmeri*). These resources are discussed individually below.

Pima County Multi-species Conservation Plan

The 2010 Pima County MSCP is the result of a long-term biological resource management and urban planning effort that provides protocols for protection of regional biological resources in compliance with the federal Endangered Species Act under an incidental take (Section 10) permit that will be in effect for 30 years once approved. The goal of the biological element of the

MSCP was stated as: *"To ensure the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County through maintaining or improving the habitat conditions and ecosystem functions necessary for their survival"* (Pima County 2010). The plan identifies 49 species (priority vulnerable species) and individual species Priority Conservation Areas (PCAs) for many of these species. Within the Conservation Land System the MSCP also identifies Biological Core Management Areas, Important Riparian Areas (IRAs), Multiple Use Management Areas, Special Species Management Areas (with potential for restoration or enhancement), Scientific Research Areas, and Critical Landscape Connections.

Species PCAs designated by the MSCP that occur within the project study area are listed under the discussion for each species. The uplands of the Santa Rita Mountains within the project study area are identified in the MSCP as a Biological Core Management Area. Several MSCP IRAs occur within the project study area including portions of the Santa Cruz River, Box Canyon, Enzenberg Canyon, Sycamore Canyon, and an unnamed canyon west of Sycamore Canyon. Of these, only the Box Canyon IRA could potentially be affected by the project. There are no MSCP Multiple Use Management Areas within the project study area. Special species management areas occur along the Santa Cruz River for four wildlife species, which are addressed in the following species (except the Mexican gartersnake *Thamnophis eques megalops*], which does not occur within the project study area). The only Scientific Research Area in the regional study area is the SRER. The entire Range is within the regional study area, and all project alternatives cross the Range. The only Critical Landscape Connection within the project study area is a segment of the Santa Cruz River considered important for habitat connectivity for the Mexican gartersnake. This landscape connection will not be affected by project development.

Box Canyon Riparian Area

The Preferred Route, Alternative Routes 1, 2, and 3 would not cross the Box Canyon Riparian area. Box Canyon supports some broadleaf riparian vegetation and seasonal flow that supports several deep perennial pools of water. The broadleaf riparian component could potentially support or be seasonally attractive to the following special status species: Western red bat *Lasiurus blossevillii*), Northern buff-breasted flycatcher (*Empidonax fulvifrons pygmaeus*), and Abert's towhee (*Pipilo aberti*). Perennial pools could support both the Chiricahua leopard frog (*Lithobates chiricahuensis*; present) and the lowland leopard frog (*Lithobates yavapaiensis*). The shaded bedrock walls of the canyon could support the Bartram stonecrop (*Graptopetalum bartramii*). Box Canyon is the type of locality for Box Canyon muhly (*Muhlenbergia dubioides*), which is a Forest Service sensitive species.

Alternative Route 4 would span Box Canyon at two locations. Potential impacts to aquatic habitat at Box Canyon could include sedimentation of waters from ground clearing induced erosion and contamination from construction related spills. However, project plans will contain mitigation, such as best management practices for erosion and spill prevention, and no impacts to aquatic wildlife or their habitats in Box Canyon are anticipated from project development due to these sources. Construction activity could disturb wildlife in the area, particularly nesting birds if construction occurs during the bird breeding season. If construction will occur during the bird breeding season (March 1 through August 31) a preconstruction clearance for nesting birds will be conducted by a qualified biologist and any nests with young or eggs that need to be salvaged will be removed by a licensed and permitted wildlife rehabilitation contractor.

Earthen Livestock Catchments

There are several earthen livestock tanks in the project study area that could potentially support species of leopard frogs, the Great Plains narrow-mouthed toad (*Gastrophryne olivacea*) and other aquatic-dependent species. The Chiricahua leopard frog was located at four of these tanks during the leopard frog surveys conducted within the Rosemont operations study area in 2008 and 2009 (Westland Resources 2008; 2009b).

Earthen livestock tanks are isolated features that are easily avoided during site-specific design and placement of project facilities. Erosion protection and spill prevention mitigations will preclude impacts to livestock tanks that support aquatic habitats, plants, and wildlife.

Abandoned Mines

Abandoned mine shafts and adits in the north end of the Santa Rita Mountains within the project study area provide roosting habitat for several species of bats. Surveys for the lesser long-nosed bat (*Leptonycteris yerbabuenae*) conducted in the Rosemont operations study area between 2006 and 2009 revealed use of abandoned mines by the lesser long-nosed bat, Mexican long-tongued bat (*Choeronycteris mexicana*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), cave myotis (*Myotis velifer*), and the fringed myotis (*Myotis thysanodes*) (Westland Resources 2009a). The survey conducted for the project did not cover all potential habitats within the transmission line project study area. Other abandoned mine sites in the area may also be used by bats as roosts.

Because of construction and safety considerations, abandoned mine sites are typically avoided during the determination of structure placement. This precludes most potential impacts to bat roosts. However, if blasting is required to create pads for transmission structures, shock waves could affect roost stability and potentially disturb or injure bats present in roosts in the vicinity of blast sites during such activity.

Limestone Outcrops

Limestone outcrops support a variety of sensitive plant and wildlife species, some of which are endemic species (Clements et al. 2008; Perez-Garcia and Meave 2004). Three special status plant species potentially occurring within the project study area that are associated with limestone or limestone derived soils are Santa Rita yellowshow (*Amoreuxia gonzalezii*), Arizona manihot (*Manihot davisiae*), and the needle-spined pineapple cactus (*Echinomastus e. erectocentrus*). Some talussnails (*Sonorella* spp.) are endemic to limestone outcrops or talus. The Rosemont talussnail (*Sonorella rosemontensis*), a candidate for federal listing as threatened or endangered under the ESA, has been recorded within the project study area (Westland Resources [2010a]). If this species becomes listed prior to project development, consultation with the USFWS will be required to address potential impacts to the species. Limestone strata may contain hidden (cryptic) karst features, such as fissures and caves, which may support endemic troglobitic species (Culver and Pipan 2009; Elliott 2000).

Small areas containing limestone habitat could be disturbed by ground clearing activities for pole sites or access roads. Ground-disturbing activities, particularly vegetation removal, could provide

suitable habitat for colonization by non-native invasive plant species that could compete with sensitive plant species for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Ground disturbance could also result in loss of individual animals such as talus snails.

Agaves

Two paniculate agave species that occur at middle to higher elevations in the project study area are the Palmer agave and Huachuca agave (*A. parryi*). These agave species support foraging by the nectarivorous lesser long-nosed and Mexican long-tongued bats. Some agaves are likely to be lost during project construction, but the numbers of plants involved represent only a very small fraction of a percent of the plants available, and loss of these agaves will not constitute a substantial impact on any special status wildlife species.

Rare and Endangered Species

Introduction

A review of regional natural resource information was conducted for the regional study area to determine which special status plant and wildlife species (biological wealth, in part) could potentially be present. A subset of this area, a two-mile buffer around project alternatives (project study area), was then evaluated to determine potential for special status biological resources occurring within these refined limits. Table C-1, near the end of this exhibit, is a list of special-status species that are known or may potentially occur within the project study area. Information reviewed included USFWS and Arizona Game and Fish Department (AZGFD) Internet website sources, and the current BLM and U.S. Forest Service (USFS) sensitive species lists (BLM 2010; USFS 2007). Reports prepared by Westland Resources for special status species in the vicinity of the Rosemont operations project, construction of which would be supported by this Project, were also reviewed. The current USFWS list for Pima County includes 16 Endangered Species Act [ESA] – threatened or endangered species; 7 ESA candidate species; 2 conservation agreement species; and 2 formerly listed (currently delisted) species, one of which, the cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), has been petitioned for relisting. Approximately 250 special-status species were reviewed, with 87 of these species determined to be present or have some potential for occurring within the project study area. See Table C-1 near the end of this exhibit for a list of those species. These 87 species are briefly discussed in the individual sensitive species accounts below. Potential impacts that the project could have on these species are discussed for each.

Sensitive Species Accounts and Impacts

Mammals

Cockrum's Desert Shrew

This species is considered a rare endemic whose distribution is generally poorly known. However, records occur over a wide area and potential for the species occurring in the project study area is moderate. Ground-disturbing project activities could impact habitat for the species

and result in loss of individual animals. Due to the small acreage of disturbance that would occur in areas that may support these animals no substantial impacts to the Cockrum's desert shrew or its habitat are anticipated from construction of this project.

California Leaf-Nosed Bat

Potential for the California leaf-nosed bat occurring within the project study area is low, but they could use abandoned mines in the area for roosts. There are no MSCP designated PCAs for the California leaf-nosed bat within the project study area (Pima County 2004). Abandoned mines within the project alignment will be avoided and roosts are not likely to be affected by project development. Removal of vegetation could impact insects that could be used by these bats, but the quantity involved is considered inconsequential. No substantial impacts to the California leaf-nosed bat or its habitat are anticipated from construction of this project.

Mexican Long-Tongued Bat

The Mexican long-tongued bat has been recently documented within the project study area during the bat survey conducted for the Rosemont mine operations project. One individual bat was observed and others were documented feeding in the area during acoustic surveys (Westland Resources 2009a). Approximately the eastern half of the project study area is within a MSCP Level 2 PCA for the Mexican long-tongued bat (Pima County 2004). Bat roosts in mines are unlikely to be affected by construction, but removal of some food plants (saguaros and agaves) will certainly occur. Plants removed represent only a fraction of a percentage of those present in the project study area. No substantial impacts to the Mexican long-tongued bat or its habitat are anticipated from construction of this project.

Lesser Long-Nosed Bat

The project study area occurs near the approximate geographic center of the post-maternity dispersal region for the lesser long-nosed bat in Arizona, and evidence of nectar-feeding bats—both the lesser long-nosed bat and the Mexican long-tongued bat—has recently been recorded at abandoned mine features within the project study area (Westland Resources 2009a). A small number of lesser long-nosed bats were observed roosting at one of these mines on the CNF just northeast of the Rosemont holdings, approximately 1 mile from the nearest portion of the mine footprint. An additional four mine sites showed recent evidence (guano) of use by nectar-feeding bats (Westland Resources 2009a). One roost used by the bats is located about 0.6 mile west of Link 190 about a mile south of Weigles Butte (Westland Resources 2009a). Other potential roosts may exist in the project study area in abandoned mines west of the area covered by the Westland Resources study. Acoustic sampling for the lesser long-nosed bat in the Rosemont holdings vicinity documented widely scattered foraging activity by the bats (Westland Resources 2009a). The entire project study area is within a Pima County MSCP Level 2 Priority Conservation Area (PCA) for the lesser long-nosed bat (Pima County 2004).

Lesser long-nosed bats are known to be capable of flying long distances in a single night, to forage from their roost (Horner et al. 1998; USFWS 1994), and they are thus capable of occurring anywhere within the project study area where their primary foraging resources (paniculate agaves or saguaros) are present. Saguaros are generally frost-limited to elevations

below 4,000 feet, and occur only in the western portion of the project study area, where they are relatively uncommon. To facilitate efficiency of foraging, lesser long-nosed bats typically forage where blooming agaves or cacti occur in large numbers, and their use of saguaros in the project study area is likely to be low due to low density of the plants.

There are many mines in the project study area, not all of which have been surveyed for bats. Some of these mine sites could provide roosting habitat for lesser long-nosed bats. Roosts may be spanned and are unlikely to be affected by construction. Removal of some food plants (saguaros and agaves) will likely occur. Plants removed represent a very small number of those present in the project study area. No substantial impacts to the lesser long-nosed bat or its habitat are anticipated from construction of this project.

Cave Myotis

The cave myotis is documented within the project study area (Westland Resources 2009a) and may use several abandoned mines in the area as roosts. A maternity roost of the cave myotis is known in proximity to Link 140. Because of construction related safety issues, abandoned mines will be avoided during construction of the transmission line and project development impacts on bats using mines as roosts are not likely. Removal of vegetation may affect some insects that could be used as prey by the cave myotis, but the quantity of prey involved will be inconsequential for the species. No substantial impacts to the cave myotis or its habitat are anticipated from construction of this project.

Western Red Bat

Potential habitat for this species in the project study area is very limited and is likely confined to portions of Box Canyon supporting broad-leaf riparian trees. The eastern portion of the project study area, in the Santa Rita Mountains, is within a MSCP Level 2 PCA for the Western red bat (Pima County 2004). Potential for the species occurring within the project study area is very low. Removal of vegetation could impact insects that could be used by these bats, but the quantity involved is considered inconsequential. No substantial impacts to the Western red bat or its habitat are anticipated from construction of this project.

Spotted Bat

Potential for the spotted bat occurring within the project study area is low. There are few records of this species in Arizona, and most are from higher montane elevations. However, the species is recorded from desertscrub habitats, and there is some potential for occurrence in the area. Suitable habitat for the spotted bat may be present in the project area. However, roosts are typically situated in openings in cliffs and are unlikely to be affected by project development due to difficulty of construction in such terrain. Impacts to the spotted bat will be limited to removal of vegetation that might result in loss of insects that could be used as prey. Such impacts are considered inconsequential for the species. No substantial impacts to the spotted bat or its habitat are anticipated from construction of this project.

Allen's Big-eared Bat

Allen's big-eared bat is uncommonly encountered and populations of the species in most areas may be small. There is likely suitable habitat for this species at higher project elevations where steep rocky terrain, cliffs, and abandoned mines may provide suitable roost sites. The potential for the species occurring in the project study area is moderate. Removal of vegetation could impact insects that could be used by these bats, but the quantity involved is considered inconsequential. No substantial impacts to the Allen's big-eared bat or its habitat are anticipated from construction of this project.

Pale Townsend's Big-eared Bat

The pale Townsend's big-eared bat was recently documented during bat surveys for the Rosemont mine operations project (Westland Resources 2009a). The bats are likely to occur in small numbers in the project study area where they find suitable roosts in mine tunnels, caves, or old buildings. A portion of a MSCP Level 2 PCA for the pale Townsend's big-eared bat occurs within the eastern portion of the project study area (Pima County 2004). Because of the potential for unstable substrates in the vicinity of abandoned mines, they are typically avoided during transmission pole siting. Because of this, bat roosts are unlikely to be impacted by transmission line development. Vegetation removal may affect small quantities of insect prey used by this species, but the quantity involved is anticipated to be inconsequential for the species. No substantial impacts to the pale Townsend's big-eared bat are anticipated from construction of this project.

Pocketed Free-tailed Bat

There is a moderate potential for the pocketed free-tailed bat to occur within the project study area. Roosts that might be used by this species would occur in steep rocky terrain with vertical cliffs, which would be unlikely to occur within the project ROW. Potential impacts to this species will be limited to loss of some insects that might be used by the bats as prey. The quantity of insects involved is considered inconsequential for the species. No substantial impacts to the pocketed free-tailed bat are anticipated from construction of this project.

Big Free-tailed Bat

The potential for the big free-tailed bat occurring within the project study area is low. Roosts that might be used by this species would occur in steep rocky terrain with vertical cliffs, which would be unlikely to occur within the project alignment. Potential impacts to the big free-tailed bat will be limited to loss of some insects that might be used by the bats as prey. The quantity of insects involved is considered inconsequential for the species. No substantial impacts to the big free-tailed bat are anticipated from construction of this project.

Western Bonneted Bat

The potential for the Western bonneted bat occurring within the project study area is very low. Habitats that might support roosts used by this species are not anticipated to be impacted by project development. Impacts will be limited to removal of vegetation that might result in loss of insects that could be used as prey. Such impacts are considered inconsequential for the species. No substantial impacts to the Western bonneted bat are anticipated from construction of this project.

Underwood's Bonneted Bat

Arizona records for Underwood's bonneted bat are limited to the south-central portion of Pima County, where the bats have been documented on the Tohono O'odham Reservation and the southern Altar Valley (Hoffmeister 1986). Based on existing records, the project study area is near but outside of the known range for this species. However, suitable habitat may be present.

Underwood's bonneted bat is apparently at the extreme northern limit of its range in southern Arizona (Hoffmeister 1986; Kiser 1995), and the potential for the species occurring within the project study area is very low. Habitats that might support roosts used by this species are not likely to be impacted by project development. Impacts will be limited to removal of vegetation that might result in loss of insects that could be used as prey. Such impacts are considered inconsequential for the species. No substantial impacts to Underwood's bonneted bats are anticipated from construction of this project.

Banner-Tailed Kangaroo Rat

Banner-tailed kangaroo rats are present in the project study area in Sonoran desertscrub and semi-desert grassland habitats west of the Santa Rita Mountains. Impacts to banner-tailed kangaroo rats may include loss of individual animals and their young from collapse of burrows during project ground-disturbing activities. Forage and cover may be removed during vegetation removal activities. Quantities of forage and cover lost are not considered significant for banner-tailed kangaroo rats occurring in the project study area. No substantial impacts to banner-tailed kangaroo rats are anticipated from construction of this project.

Plains Harvest Mouse

There is very limited potentially suitable grassland habitat in the project study area that might support the plains harvest mouse, and its potential for occurrence is low. Project ground-disturbing activities could impact habitat for the species and individual animals could be lost. No substantial impacts to the plains harvest mouse or its habitat are anticipated from construction of this project.

Fulvous Harvest Mouse

There is a moderate potential for the fulvous harvest mouse occurring in the project study area. Impacts to the species could include loss of habitat and individual animals during project ground-disturbing activities. No substantial impacts to the fulvous harvest mouse or its habitat are anticipated from construction of this project.

Merriam's Mouse

Merriam's mouse has suffered declines primarily due to habitat loss, with mesquite being cut for firewood and lowland areas being converted to agriculture (Hoffmeister 1986). Little suitable habitat remains for this species in southern Arizona, with the few recognized habitat remnants occurring along segments of the Santa Cruz River, Arivaca and Cienega creeks, and the Tanque Verde Wash (Pima County 2004). Recent genetic studies (SWCA 2006) suggest that this mouse is much more common than previously thought and is present in suitable habitat in numbers. During the SWCA studies (2006), the species was found on the SRER within the project study area. There could be impacts to Merriam's mouse or its habitat resulting from development of this project.

Individuals and their young could be lost during ground disturbance activities. Habitat could be impacted or lost if mesquite stands that support the species are impacted by project development. Selection of structure sites that avoid areas of dense vegetation, particularly mesquite and cacti, will help minimize potential impacts to Merriam's mouse. No substantial impacts to Merriam's mouse or its habitat are anticipated from construction of this project.

Northern Pygmy Mouse

Due to a general lack of suitable habitat for this species in the project study area the potential for its occurrence is low. Impacts to the Northern pygmy mouse could include loss of habitat and individual animals during project ground-disturbing activities. No substantial impacts to the northern pygmy mouse or its habitat are anticipated from construction of this project.

Yellow-nosed Cotton Rat

The yellow-nosed cotton rat normally inhabits xeric, rocky slopes of desert mountains, among scattered bunch grasses where agaves, beargrass, or yuccas predominate within piñon-juniper or oak woodlands, but is known to occur up to ponderosa pine and Douglas fir woodlands (Baker and Shump 1978; Hoffmeister 1986). The potential for the yellow-nosed cotton rat occurring within the project study area is high. Impacts to the species could include loss of individuals and habitat during the ground-clearing phase of construction. No substantial impacts to the yellow-nosed cotton rat or its habitat are anticipated from construction of this project.

White-nosed Coati

In southern Arizona the white-nosed coati is usually associated with riparian corridors and adjacent habitats. Suitable terrain and forage is available for the species in the project study area, but riparian habitat is somewhat limited, occurring primarily in Box Canyon and a few canyons on the east of the crest of the Santa Rita Mountains in the vicinity of the proposed mine site. The potential for occurrence is moderate. Project ground-disturbing activities may impact foraging resources for coatis, but such impacts would be inconsequential for the species. No substantial impacts to the white-nosed coati or its habitat are anticipated from construction of this project.

Hooded Skunk

Suitable habitat is present for the hooded skunk in many portions of the project study area, and potential for its occurrence is moderate. Impacts to the hooded skunk would result from project ground-disturbing activities that would remove cover and forage used by the animals. Due to the small acreage of disturbance that would occur in areas that may support these animals no substantial impacts to hooded skunk habitat are anticipated from construction of this project.

Jaguar

The potential for the jaguar occurring within the project study area is very low. However, suitable and mostly contiguous habitat for the species is present along a chain of sky island ranges from northern Mexico through the Patagonia Mountains, and includes the Santa Rita Mountains (McCain and Childs 2008). Development of the transmission line will not fragment habitat for the jaguar and will be unlikely to impact the potential for movement of jaguars in the region. No substantial impacts to the jaguar or its habitat are anticipated from construction of this project.

Ocelot

Like the jaguar, occurrences of ocelots in Arizona have historically been infrequent, and potential for ocelots occurring within the project study area is very low. There have been two recent confirmed sightings of ocelots in southern Arizona (2009 and 2011), both in Cochise County (AZGFD 2011). In spite of these records, the species is probably not a permanent resident in southern Arizona. Development of the transmission line will not fragment habitat for the animals and will be unlikely to impact the potential for movement of ocelots that may occur in the area. No substantial impacts to the ocelot or its habitat are anticipated from construction of this project.

Birds

Golden Eagle

There is a moderate potential for golden eagles to occur in the project study area. Cliffs in the Santa Rita Mountains within the project study area could support nesting golden eagles. Impacts

to the golden eagle could include disturbance of breeding or nesting birds. Small numbers of prey that could be used by golden eagles may be lost during project ground-disturbing activities. However, vegetation removal along access roads and the ROW may increase prey visibility, and placement of poles could provide perches that raptors could use for hunting. Elevated perches, including power line structures, are used by raptors as hunting perches (Glinski and Hall 1998; Wheeler 2003). Impacts to nesting birds would be mitigated by conducting a preconstruction avian clearance survey in accordance with the Migratory Bird Treaty Act for any activities performed during the avian nesting season. The small quantity of golden eagle prey that could be lost during project construction is unlikely to be significant for any birds using the area. No substantial impacts to the golden eagle or its habitat are anticipated from construction of this project.

Swainson's Hawk

The potential for Swainson's hawk occurring within the project study area is moderate. Much of the eastern portion of the project study area is within a MSCP Level 1 PCA for the Swainson's hawk (Pima County 2004). Impacts to the species will likely be limited to loss of some small animal prey during vegetation clearing. No substantial impacts to the Swainson's hawk or its habitat are anticipated from construction of this project.

American Peregrine Falcon

The potential for peregrine falcons occurring within the project study area is low. Peregrine falcons will occasionally be present within the project area during migration or may forage in the area when they are present in winter, but would not be common. Potential impacts to the peregrine falcon will be limited to loss of some potential prey. No substantial impacts to the American peregrine falcon or its habitat are anticipated from construction of this project.

Gould's Wild Turkey

Gould's wild turkeys have been reintroduced into the Santa Rita Mountains and suitable habitat is present in the project study area. However, middle to upper elevation habitat preferred by the species is limited and numbers of the birds are likely low in the northern portions of the Santa Rita Mountains. Potential for occurrence within the project area is considered low. Impacts to Gould's wild turkey would primarily be associated with project ground-disturbing activities, which could remove cover and foraging habitat for the species. Eggs or nestlings would be vulnerable to vegetation removal activities. No substantial impacts to the Gould's wild turkey or its habitat are anticipated from construction of this project.

Whiskered Screech Owl

There is a moderate potential for whiskered screech owls occurring in the project study area. The owls would be most likely to be present on the eastern flank of the Santa Rita Mountains in the vicinity of the proposed mine site. Impact to whiskered screech owls could include loss of

nesting trees and prey animals during project vegetation clearing. No substantial impacts to the whiskered screech owl or its habitat are anticipated from construction of this project.

Cactus Ferruginous Pygmy-owl

While there may not be any suitable nesting habitat for the cactus ferruginous pygmy-owl within the project study area, most of the valley west of the Santa Rita Mountains could serve as dispersal habitat for the species. There are no MSCP PCAs for the cactus ferruginous pygmy-owl within the project study area (Pima County 2004). There are very few pygmy-owls remaining in southern Arizona, and the potential for this species occurring within the project study area is very low. Potential impacts could include disturbance of birds nesting in saguaros or trees with suitable nest cavities and loss of some prey during project ground-disturbing activities. Due to the low number of the birds remaining in Arizona and a general lack of nesting habitat in the project area, it is unlikely owls would be impacted. Minimizing impacts to saguaros or potential nesting trees will lessen potential impacts to cactus ferruginous pygmy-owl habitat. No substantial impacts to the cactus ferruginous pygmy-owl or its habitat are anticipated from construction of this project.

Western Burrowing Owl

There is moderate potential for the Western burrowing owl occurring within the project study area. The greatest potential is in the western portion of the project study area where gradients are low and vegetation is sparse. There are no MSCP PCAs for the Western burrowing owl within the project study area (Pima County 2004). Potential impacts to the Western burrowing owl could include disturbance of nesting birds and/or loss of birds, their eggs, or young during project ground-disturbing activities that could collapse burrows. Vegetation removal could impact prey species that could be used by the owls, but due to the small acreages of habitat alteration within any segment of the project, loss of prey that might result from development will be inconsequential for owls in the area. No substantial impacts to the Western burrowing owl or its habitat are anticipated from construction of this project.

Buff-Collared Nightjar

Suitable habitat for the buff-collared nightjar is present in the project study area. The project is at the northern limits of the range for the species, and the potential for occurrence in the project study area is low. Impacts to this ground-nesting species could include loss of eggs or young during project vegetation removal activities. Invertebrate prey used by the birds could also be affected. The amount of project vegetation removal is unlikely to substantially affect birds present in the area. No substantial impacts to the buff-collared nightjar or its habitat are anticipated from construction of this project.

Violet-crowned Hummingbird

The violet-crowned hummingbird is a rare breeder in southeastern Arizona, and the project study area is at the northern limits of its range. Potential for occurrence in the project study area is very low. Clearing of vegetation could include loss of nesting habitat, nectar-producing flowers, and invertebrate prey that may be used by the species. Such losses are not anticipated to substantially affect any of the birds using the area. No substantial impacts to the violet-crowned hummingbird or its habitat are anticipated from construction of this project.

Broad-Billed Hummingbird

The broad-billed hummingbird occurs in southeastern Arizona as far north as the Galiuro Mountains. The species occurs primarily in riparian habitats in Arizona, and there is not much habitat in the project study area that would be attractive to this species. Potential for the broad-billed hummingbird occurring in the project study area is low. Clearing of vegetation could include loss of nesting habitat, nectar-producing flowers, and invertebrate prey that may be used by the species. Such losses are not anticipated to substantially affect any of the birds in the area. No substantial impacts to the broad-billed hummingbird or its habitat are anticipated from construction of this project.

Gilded Flicker

The gilded flicker is present in the project study area in Arizona Upland subdivision saguaro desert on the bajada of the west flank of the Santa Rita Mountains. Flickers commonly nest in saguaro cacti. Potential impacts to gilded flickers could include loss of nesting habitat where saguaros would be removed. Large saguaros cannot be successfully transplanted, but relocation of plants up to 15 feet in height will reduce potential nesting habitat impacts for the gilded flicker. Small quantities of invertebrate prey and plant forage materials would be lost during project ground-disturbing activities. The small quantities of foods that would be impacted would not be significant for gilded flickers living in the project study area. No substantial impacts to the gilded flicker or its habitat are anticipated from construction of this project.

Northern Beardless-Tyrannulet

This species prefers riparian woodlands and adjacent habitats, but will also be present in mesquite scrublands. The potential for the Northern beardless-tyrannulet occurring in the project study area is moderate. Project vegetation-clearing activities may impact nesting habitat, forage, or invertebrates that may be used as food by the birds. No substantial impacts to the northern beardless-tyrannulet or its habitat are anticipated from construction of this project.

Northern Buff-Breasted Flycatcher

The potential for the Northern buff-breasted flycatcher occurring within the project study area is very low. The project alignment is unlikely to pass through habitat suitable for this species. No

substantial impacts to the northern buff-breasted flycatcher or its habitat are anticipated from construction of this project.

Black-Capped Gnatcatcher

The potential for the black-capped gnatcatcher occurring within the project study area is very low. Potential impacts to the species will likely be associated with vegetation removal and could include disturbance of nesting birds, loss of eggs or young, and invertebrates that could be used by the birds as food. The quantity of potential prey that might be lost will be inconsequential for birds using the area. No substantial impacts to the black-capped gnatcatcher or its habitat are anticipated from construction of this project.

Bell's Vireo

The potential for Bell's vireo occurring within the project study area is moderate. No MSCP PCAs for the Bell's vireo occur within the project study area (Pima County 2004). Potential impacts to the species would be associated with vegetation removal and could include disturbance of nesting birds, loss of eggs or young, and invertebrates that could be used by the birds as food. The quantity of potential prey that might be lost will be inconsequential for birds using the area. No substantial impacts to the Bell's vireo or its habitat are anticipated from construction of this project.

Desert Purple Martin

There is a low potential for desert purple martins to occur within the project study area in saguaro forest habitat west of the Santa Rita Mountains. Impacts to birds would primarily be associated with loss of saguaros that are used by these cavity nesting birds. Salvaging and transplanting of saguaros in the project area will minimize habitat impacts for the species. Some insect prey that could be used by desert purple martins would be lost during project ground-disturbing activities, but does not represent a measurable impact for any of the birds using the area. No substantial impacts to the desert purple martin or its habitat are anticipated from construction of this project.

Abert's Towhee

There is a moderate potential for Abert's towhee to occur within the project study area along moderately- or well-developed xeroriparian habitats. The species is unlikely to be present in the higher elevations of the Santa Rita Mountains in the eastern portion of the project study area. A Level 1 MSCP PCA for Abert's towhee occurs in the western portion of the project study area along the Santa Cruz River, but this area will not be affected by project development (Pima County 2004). Potential impacts to the species would likely be associated with vegetation removal and could include disturbance of nesting birds, loss of eggs or young, and loss of invertebrates and seeds that could be used by the birds as food. Since the project will avoid riparian habitats, no substantial impacts to habitat and forage for Abert's towhees are anticipated

from construction of this project. No substantial impacts to the Abert's towhee or its habitat are anticipated from construction of this project.

Rufous-winged Sparrow

Rufous-winged sparrows are present within the project study area. Much of the western half of the project study area occurs within a MSCP Level 1 PCA for the Rufous-winged sparrow (Pima County 2004). Potential impacts to the species would be associated with vegetation removal and could include disturbance of nesting birds, loss of eggs or young, and loss of invertebrates and seeds that could be used by the birds as food. The quantity of forage that might be lost will be inconsequential for birds using the area. No substantial impacts to the rufous-winged sparrow or its habitat are anticipated from construction of this project.

Baird's Sparrow

The potential for Baird's sparrow occurring within the project study area is very low. Potential impacts to the species would be associated with vegetation removal and could include loss of invertebrates and seeds that could be used by the birds as food. The quantity of forage that might be lost will be inconsequential for birds using the area. No substantial impacts to the Baird's sparrow or its habitat are anticipated from construction of this project.

Varied Bunting

There is a moderate potential for the varied bunting to occur in the project study area along brushy desert washes. Potential impacts to the species would be associated with vegetation removal and could include loss of invertebrates and seeds that could be used by the birds as food. The quantity of forage that might be lost will be inconsequential for birds using the area. No substantial impacts to the varied bunting or its habitat are anticipated from construction of this project.

Amphibians

Great Plains Narrow-mouthed Toad

The potential for the Great Plains narrow-mouthed toad occurring within the project study area is very low. Project construction will avoid any aquatic habitats that might support this species. No substantial impacts to the Great Plains narrow-mouthed toad or its habitat are anticipated from construction of this project.

Western Barking Frog

The portion of the Santa Rita Mountains north of Box Canyon is somewhat lower and drier than the central section of the range, and may be less likely to support this species. The potential for the Western barking frog occurring within the project study area is, therefore, thought to be very

low. Potential impacts to the species could include loss of individuals and habitat during project ground-disturbing activities. The project alignment is unlikely to pass through terrain that would support this species. No substantial impacts to the Western barking frog or its habitat are anticipated from construction of this project.

Chiricahua Leopard Frog

The Chiricahua leopard frog was recently documented within the project study area at four distinct locations, including Box Canyon and three earthen livestock tanks (Westland Resources 2008; 2009b), and may potentially occur at any livestock watering site, including some not covered by the Westland surveys. There is proposed critical habitat for the Chiricahua leopard frog within the project study area (Figure 1). Critical Habitat Unit 8 at Greaterville is within the project study area, but is in an upstream segment of the watershed to the south, and would be unaffected by project development. Unit 9, which includes the lower reach of Empire Gulch near Cienega Creek, is not within the project study area, but the project is within the upper portion of the watershed, approximately six miles to the west (USFWS 2011). MSCP PCAs for the Chiricahua leopard frog occur within the project study area. Most of the eastern portion of the project study area is within a Level 2 PCA, and a Level 1 PCA is present from the vicinity of Box Canyon and to the south (Pima County 2004). Habitat avoidance is the primary mitigation for this species. Structures would not be placed in proximity to livestock tanks and the line would span Box Canyon. Erosion potential is high in the portion of Link 150 north of Box Canyon and access road development could be problematic. Helicopter construction of some of transmission structures in this area may be appropriate. Project erosion protection and spill prevention BMPs will help mitigate for the potential effects of ground-disturbing erosion and construction related spills that could affect water quality and Chiricahua leopard frog habitat. No substantial impacts to the Chiricahua leopard frog or its habitat are anticipated from construction of this project.

Lowland Leopard Frog

The lowland leopard frog was recently documented in the upper reach of Davidson Canyon (Westland Resources 2009b). This location is just outside of the project study area. No lowland leopard frogs were documented by Westland Resources in any of the earthen livestock tanks that were surveyed in 2008 and 2009 for the Rosemont mine operations project (Westland Resources 2008; 2009b). Potential for the lowland leopard frog occurring within the project study area is low. There are no MSCP PCAs for the lowland leopard frog within the project study area. A portion of the Santa Cruz River within the project study area is considered a Special Species Management Area for the lowland leopard frog (Pima County 2004). This area will not be affected by project development. Project development will avoid aquatic habitats at livestock ponds. Mitigation such as best management practices for erosion and spill prevention will minimize potential impacts to aquatic habitats. No substantial impacts to the lowland leopard frog or its habitat are anticipated from construction of this project.

Reptiles

Desert Box Turtle

The potential for the desert box turtle occurring within the project study area is moderate. A portion of the Santa Cruz River within the project study area is considered a Special Species Management Area for the desert box turtle (Pima County 2004). This area will not be affected by project development. Impacts to desert box turtles could include loss of individuals or eggs during ground-disturbing construction activity and potential for loss of individuals on project access roads. Ground disturbance could also adversely affect habitat and food sources for the species. No substantial impacts to the desert box turtle or its habitat are anticipated from construction of this project.

Sonora Mud Turtle

The potential for the Sonora mud turtle occurring within the project study area is moderate. Because the project will avoid aquatic habitats and will include mitigation such as best management practices for erosion and spill prevention, no substantial impacts to the Sonora mud turtle or its habitat are anticipated from construction of this project.

Sonoran Desert Tortoise

The potential for the Sonoran Desert tortoise occurring within the project study area is high. There is abundant suitable habitat for the species in the low foothills of the Santa Rita Mountains within the project study area. Desert tortoises are unlikely to occur on the lower portions of the bajada on the west flank of the Santa Rita Mountains. Potential impacts to desert tortoises include mortality of individual tortoises on project access roads or during construction related ground-disturbing activities. Individuals and/or their eggs could be lost due to construction equipment or vehicles, either on the surface or by collapse of burrows containing the animals. Removal of vegetation could impact forage potentially used by the species, and associated ground disturbance could provide opportunity for colonization by non-native invasive plant species. Invasive plants can compete with native vegetation that may be important to tortoises and can alter the local fire regime, which can adversely affect the native plant community. Changes in native plant composition within tortoise habitat can have substantial negative impacts on tortoises. Placement of transmission line support structures increases potential roosting and nesting sites for common ravens (*Corvus corax*), known predators on juvenile tortoises. Because of the small acreage of project disturbance, no substantial impacts to the Sonoran Desert tortoise or its habitat are anticipated from construction of this project.

Giant Spotted Whiptail

There is modeled potential habitat for the giant spotted whiptail in the core of the northern portion of the Santa Rita Mountains within the project study area as far south as Box Canyon and this area is within a Level 2 PCA. A portion of the Santa Cruz River within the project study area is considered a Special Species Management Area for the giant spotted whiptail (Pima County

2004). This area will not be affected by project development. The potential for the giant spotted whiptail occurring within the project study area is high. Potential impacts to the giant spotted whiptail could include loss of individuals or their eggs during ground-disturbing activities or travel on project access roads. Vegetation removal could impact some invertebrates that could be used as prey by the species. Because of the small acreage of ground disturbance associated with the project, quantities of prey involved will be inconsequential for any of the lizards present in the area. No substantial impacts to the giant spotted whiptail or its habitat are anticipated from construction of this project.

Reticulate Gila Monster

There is a moderate potential for the Gila monster occurring in the project study area in most habitats above the low valley floor west of the Santa Rita Mountains. Impacts to the Gila monsters resulting from ground-disturbing project activities could include loss of animals, their eggs or young and potential prey during these activities. Construction traffic could kill animals on roadways. No substantial impacts to the Gila monster or its habitat are anticipated from construction of this project.

Ground Snake

The potential for the ground snake occurring within the project study area is low. There are no MSCP PCAs for the ground snake within the project study area (Pima County 2004). Potential impacts to the ground snake could include loss of individuals or their eggs or young during ground-disturbing activities or travel on project access roads. Vegetation removal could impact some invertebrates that could be used as prey by the species. Quantities of prey involved will be inconsequential for any of the lizards present in the project area. No substantial impacts to the ground snake or its habitat are anticipated from construction of this project.

Green Rat Snake

There is a moderate potential for the green rat snake occurring in the project study area. Impacts to the species could include loss of animals, habitat, and potential prey animals resulting from project ground-disturbing activities. Construction traffic could kill animals on roadways. No substantial impacts to the green rat snake or its habitat are anticipated from construction of this project.

Arizona Ridge-nosed Rattlesnake

Some suitable habitat for this species is present at higher elevations in the project study area, but potential for occurrence is low. Impacts to the Arizona ridge-nosed rattlesnake could include loss of animals, habitat, and potential prey during ground-disturbing project activities. Construction traffic could kill animals on roadways. No substantial impacts to the Arizona ridge-nosed rattlesnake or its habitat are anticipated from construction of this project.

Mollusks

Talussnails

The Santa Rita Mountains (and extending to the northern portion of the Patagonia Mountains outside of the regional study area) contain at least seven species of *Sonorella* talussnails, three of which are widely distributed within this area (Bequaert and Miller 1973). *Sonorella* snails are known to occur within the project study area, and a recently published report conducted for the Rosemont project lists three species occurring within the limits of the Rosemont operations area; the Sonoran talussnail (*S. magdalenensis*), Rosemont talussnail (*S. rosemontensis* [a federal candidate species]), and *S. walkeri* (Westland Resources 2010a). The summary discussion in the Westland Resources study addresses the current uncertainty in the taxonomy of *S. rosemontensis*, and states that additional studies are needed to solidify the taxonomy of the species and its range. The transmission line project alignment just skirts the very northern edge of an area identified in the 2010 WestLand Resources talus snails report as the North Ridge *Sonorella* habitat area. The Westland Resources study looked at talus habitat only in Bolsa Quartzite. Species of *Sonorella* also occupy non-talus habitat, commonly on limestone substrates that are fractured and may provide abundant habitat for the snails. There are also species of *Sonorella* that are endemic to limestone substrates and would be unlikely to occur at the quartzite sites. Pima County recognizes all *Sonorella* species as priority vulnerable species (Pima County 2004). The MSCP does not designate any PCAs for species of *Sonorella* (Pima County 2004).

The Center for Biological Diversity petitioned the USFWS in 2010 to review two *Sonorella* species, the Rosemont and Sonoran talussnails, for potential listing as threatened or endangered species under the Endangered Species Act (Center for Biological Diversity 2010). The recent USFWS candidate review gave the listing priority for the Rosemont talussnail as low (USFWS 2010). The status of the Sonoran talussnail is still pending USFWS review. Impacts to talussnails could include loss of individuals and habitat associated with project ground-disturbing development activities. However, due to the unstable nature of typical talus snail habitat, placement of structures, and the development of access, may possibly avoid these areas. No substantial impacts to the talussnails or their habitat are anticipated from construction of this project.

Insects

Sabino Canyon Damselfly

Due to a general lack of suitable habitat for the species, potential for the Sabino Canyon damselfly occurring within the project study area is considered very low. The only habitat in the project study area that could potentially support this species would be in Box Canyon. Potential impacts to the Sabino Canyon damselfly could include impacts to aquatic habitat from erosion-caused sedimentation of waters, pollution of waters from spills, and impacts to potential invertebrate prey species associated with vegetation removal. Best management practices for erosion and pollution prevention will be implemented; therefore, no substantial impacts to the Sabino Canyon damselfly or its habitat are anticipated from construction of this project.

Santa Rita Mountains Chlorochroan Bug

The potential for the Santa Rita Mountains chlorochroan bug occurring within the project study area is very low. This estimation is based on the paucity of records of the species, likely representing a limited or disjunct range, and the surmised association of the species with aquatic habitats, which are very limited in the project study area. The literature also suggests a possible association of the species with cacti instead of aquatic habitat vegetation (Thomas 1983). Potential impacts to the species could include loss of individuals and eggs during vegetation removal or impacts to aquatic habitats from erosion or spill induced impacts to water quality that may affect aquatic plants on which the species may depend. Best management practices for erosion and pollution prevention control will be implemented to mitigate against such occurrence. Since project development will avoid aquatic resources, no substantial impacts to the Santa Rita Mountains chlorochroan bug or its habitat are anticipated from construction of this project.

Cestus Skipper

The project study area is within the known range of the cestus skipper, but because this species is apparently rare in southern Arizona, the potential for occurrence is considered very low. Suitable habitat for the species is likely present in the project study area. This skipper is believed to feed on grasses. Impacts to the species could include loss of eggs, larvae, and pupae and host plants the species requires. No substantial impacts to the cestus skipper or its habitat are anticipated from construction of this project.

Plants

Pima Indian Mallow

The Pima Indian mallow is recorded from the Santa Rita Mountains and the potential for the species occurring within the project study area is moderate. Impacts to the Pima Indian mallow could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Pima Indian mallow for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, No substantial impacts to the Pima Indian mallow or its habitat are anticipated from construction of this project.

Santa Rita Yellowshow

The potential for this species occurring within the project study area is moderate. Potential impacts to the Santa Rita yellowshow could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with Santa Rita yellowshow for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this

project, no substantial impacts to the Santa Rita yellowshow or its habitat are anticipated from construction of this project.

Lemmon Milkweed

The potential for the Lemmon milkweed occurring within the project study area is moderate. Potential impacts to the Lemmon milkweed could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Lemmon milkweed for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Lemmon milkweed or its habitat are anticipated from construction of this project.

Dalhouse Spleenwort

The project study area occurs between the two mountain ranges that contain the known populations of the Dalhouse spleenwort in Arizona. Suitable habitat for the species is likely present within the project study area. The potential for the species occurring within the project study area is low. Potential impacts to the Dalhouse spleenwort could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Dalhouse spleenwort for resources. Invasive plant species can alter the makeup of native plant communities and may alter the local fire regime by providing an increased fuel load, potentially resulting in permanent alteration of the plant community from fire. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Dalhouse spleenwort or its habitat are anticipated from construction of this project.

Chihuahuan Sedge

Chihuahuan sedge is recorded from the Santa Rita Mountains (AZGFD 2004). Due to a general lack of suitable habitat within the project study area, the potential for the Chihuahuan sedge is very low. Because the project will avoid aquatic habitats and include mitigation such as best management practices for erosion and spill prevention, no substantial impacts to the Chihuahuan sedge or its habitat are anticipated from construction of this project.

Arizona Giant Sedge

The Arizona giant sedge is recorded from the Santa Rita Mountains (AZGFD 2000). The species was recently documented from Scholefield Spring east of the project study area (Westland Resources 2010d). Due to a general lack of suitable habitat within the project study area, the potential for the Arizona giant sedge is low. Because the project will avoid aquatic habitats and include mitigation such as best management practices for erosion and spill prevention, no

substantial impacts to the Arizona giant sedge or its habitat are anticipated from construction of this project.

Pima Pineapple Cactus

Suitable habitat for this species likely occurs over a broad stretch of lands on the western bajada of the Santa Rita Mountains below the pediment level of the west flank of the range. Plants are apparently restricted to soils developed on Quaternary gravels (Qgth: red to brown soil or soil complex covering terrace-capping alluvium) in this area (Drewes 1971; Westland Resources 2010b). The plants have a clustered distribution and overall impacts to the species will vary by project alternative. There is a MSCP Level 1 PCA for the Pima pineapple cactus in the western portion of the project study area, mostly within the Santa Rita Experimental Range (Pima County 2004).

Surveys for the Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) were conducted by Westland Resources along project alignments for both the Preferred Route (and Alternative Route 1) in 2009, and for the alternative 138kV transmission line routes (Alternative Routes 2, 3, and 4; in 2010). The 2010 surveys did not include the segment of the line west of the Toro Switchyard since this area was covered in the 2009 survey. Survey widths were 650 feet west of the Toro Switchyard and 500 feet for the remaining project alignments (Westland Resources 2009c, 2010b). Because these surveys were conducted before the current alternatives were finalized, see the impacts section of this document for clarification of the number of live PPC present along each alternative. Seven PPC located in the 2009 survey were on a segment along Country Club Road that is no longer part of this project. There are 36 live PPC present along the current Preferred Route and 37 along the Alternative 1 alignment.

Potential impacts to the Pima pineapple cactus could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Pima pineapple cactus for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Project development will occupy only a portion of the ROW surveyed for PPC, and only some of the plants will ultimately be affected. Preconstruction surveys for PPC conducted after detailed design and engineering parameters have been established will allow for some plants to be buffered and avoided during construction. Pole spacing may be modified slightly to avoid some of the existing plants. There is potential to impact individual Pima pineapple cacti, but TEP will pursue and incorporate all appropriate mitigations as directed by the USFWS. Impacts from development would potentially affect only those plants. No substantial impacts to the Pima pineapple cactus or its habitat are anticipated from construction of this project.

Metcalfe's Ticktrefoil

There are few records of this species, but it has a rather wide distribution. Suitable habitat for Metcalfe's ticktrefoil is likely present in the project study area, and potential for occurrence is moderate. Impacts to this species could include loss of plants, disturbance of the seed bank and effects resulting from colonization by invasive plant species resulting from project ground-

disturbing activities. No substantial impacts to the Metcalfe's ticktrefoil or its habitat are anticipated from construction of this project.

Needle-Spined Pineapple Cactus

The project study area is outside of the known range of this species. The closest records for the species are in the foothills at the northeast portion of the Santa Rita Mountains. However, there may be some suitable habitat for the species on the west flank of the Santa Rita Mountains on limestone-derived substrates that occur within the elevation limits for the species. The potential for the species occurring in the project study area is very low. No substantial impacts to the needle-spined pineapple cactus or its habitat are anticipated from construction of this project.

Arid Throne Fleabane

There are several records of this species just southeast of the project study area, and a single record along Box Canyon Road within the project study area. The project study area appears to be at the edge of a localized population of the species in grassland habitat that is mostly outside of the project study area. Potential impacts to the arid throne fleabane could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with this species for resources. No substantial impacts to the arid throne fleabane or its habitat are anticipated from construction of this project.

San Pedro River Wild Buckwheat

The combination of a limited number of occurrences of this species and a likely lack of suitable clayey soils suitable for the species make the potential for occurrence of the San Pedro River wild buckwheat within the project study area very low. Potential impacts to the San Pedro River wild buckwheat could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the San Pedro River wild buckwheat for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the San Pedro River wild buckwheat or its habitat are anticipated from construction of this project.

Bartram Stonecrop

Bartram stonecrop is recorded from the Santa Rita Mountains, suitable habitat is likely to be present within the project study area, and the potential for occurrence is moderate. Potential impacts to the Bartram stonecrop could include loss of individual plants and habitat disturbance. Development of the transmission line will generally avoid the steep, rocky habitat that typically supports this species, where the plants are found hanging in crevices or pockets on rock walls of canyons and along steep-walled, rocky drainages. Such habitat in small canyons will typically be

spanned by the transmission line and this likely precludes any impacts to the Bartram stonecrop or its habitat. No substantial impacts to the Bartram stonecrop or its habitat are anticipated from construction of this project.

Chisos Coral-root

The Chisos coral-root is non-photosynthetic and obtains its nutrients from a soil mycorhizal fungal association. The only above-ground portion of these cryptic plants is the inflorescence, which may not appear every year (Poole et al. 2007). The species is known in Arizona from three mountain ranges in the southern part of the state; the Baboquivari, Dragoon, and the Santa Rita Mountains (Westland Resources 2010c). One of the historic Santa Rita Mountain populations occurs in the project study area within the Rosemont operations project limits (Westland Resources 2010c). The 2010 Westland Resources study located additional plants associated with this population. Populations of the species in the Santa Rita Mountains are concentrated in areas supporting closed or nearly closed canopies of Arizona white oak (*Quercus arizonica*) (Westland Resources 2010c). Suitable habitat for the species in the Rosemont area was completely surveyed by Westland Resources during their 2010 study, and their conclusion was that other populations of the species are unlikely to be present in the area (Westland Resources 2010c). Habitat that may support this species is very limited within the limits of Rosemont Transmission Line Project alternatives. Potential impacts to the Chisos coral-root could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could alter the plant community, potentially affecting the plants. Invasive plant species can alter the local fire regime and adversely affect the native plant community. The coralloid rhizomes of the plants could be lost if topsoil is not retained and replaced. However, because of the small acreage of disturbance associated with this project, no substantial impacts to the Chisos coral-root or its habitat are anticipated from construction of this project.

Arizona Manihot

There is a low potential for Arizona manihot occurring within the project study area. Potential impacts to the Arizona manihot could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Arizona manihot for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Arizona manihot or its habitat are anticipated from construction of this project.

Box Canyon Muhly

Box Canyon in the Santa Rita Mountains is the type locality for this species, and there is a record of the species along the Greaterville Road from 2005 (Jenkins 2010), which is within the project study area. Potential impacts to the Box Canyon muhly could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could

provide suitable habitat for colonization by non-native invasive plant species that could compete with the Box Canyon muhly for resources. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Box Canyon muhly or its habitat are anticipated from construction of this project.

Weeping Muhly

Potential for the weeping muhly to occur within the project study area is moderate. Potential impacts to the weeping muhly could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the weeping muhly for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the weeping muhly or its habitat are anticipated from construction of this project.

Lemmon Cloak Fern

Suitable habitat for the Lemmon cloak fern is likely present, and the potential for the species occurring within the project study area is moderate. Potential impacts to the Lemmon cloak fern could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Lemmon cloak fern for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Spores of the species present in the soil could be lost if topsoil is not retained and replaced. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Lemmon cloak fern or its habitat are anticipated from construction of this project.

Toumey Groundsel

Because of the very limited number of records of the species in the state and considering the widely disjunct nature of these records, the potential for the Toumey groundsel occurring within the project study area is very low. Potential impacts to the Toumey groundsel could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Toumey groundsel for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Toumey groundsel or its habitat are anticipated from construction of this project.

Beardless Chinch Weed

The beardless chinch weed occurs on the east side of the Santa Rita Mountains, but the potential for the species occurring within the project study area is low. Potential impacts to the beardless

chinch weed could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the beardless chinch weed for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the beardless chinch weed or its habitat are anticipated from construction of this project.

Catalina Beardtongue

Most known populations of the Catalina beardtongue are north and east of the project study area, and the potential for occurrence within the project study area is low. Potential impacts to the Catalina beardtongue could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Catalina beardtongue for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Catalina beardtongue or its habitat are anticipated from construction of this project.

Broadleaf Ground-cherry

The broadleaf ground-cherry is recorded from the Madera Canyon area, but has not been recorded within the project study area, and potential for it occurring there is considered very low. Potential impacts to the broadleaf ground-cherry could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the broadleaf ground-cherry for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the broadleaf-ground-cherry or its habitat are anticipated from construction of this project.

Whisk Fern

Due to a probable lack of suitable habitat for the whisk fern within the project study area and the few widely separated records of the species in Arizona, the potential for this species occurring within the project study area is very low. Potential impacts to the whisk fern could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the whisk fern for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the whisk fern or its habitat are anticipated from construction of this project.

Chiricahua Mountain Brookweed

There are at least two records of the species from the Santa Rita Mountains, one from Florida Canyon more than a mile south of the project study area, and one of uncertain origin (SEINet 2010). Due to a general lack of suitable habitat for aquatic species, the potential for the Chiricahua Mountain brookweed occurring within the project study area is very low. Because the project will avoid aquatic habitats and include mitigation such as best management practices for erosion and spill prevention, no substantial impacts to the Chiricahua Mountain brookweed or its habitat are anticipated from construction of this project.

Nodding Blue-eyed Grass

There is only a single record of this species from the Santa Rita Mountains, and the potential for Nodding blue-eyed grass occurring within the project study area is low. Potential impacts to the Nodding blue-eyed grass could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Nodding blue-eyed grass for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the nodding blue-eyed grass or its habitat are anticipated from construction of this project.

Lemmon's Stevia

Lemmon's stevia is recorded from within the project study area at Box Canyon (SEINet 2010). Potential impacts to Lemmon's stevia could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Lemmon's stevia for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Lemmon stevia or its habitat are anticipated from construction of this project.

Sonoran Noseburn

Sonoran noseburn is recorded from the Santa Rita Mountains, with a single record occurring within the project study area near Link 140 (SEINet 2010). Potential impacts to the Sonoran noseburn could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Sonoran noseburn for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Sonoran noseburn or its habitat are anticipated from construction of this project.

Tumamoc Globeberry

Tumamoc globeberry is known from the Santa Rita Mountains and Santa Cruz Valley area (Arizona Rare Plant Committee, no date). Potential for this species occurring in the project study area is moderate. The MSCP does not identify any PCAs for the Tumamoc globeberry (Pima County 2004). Potential impacts to the Tumamoc globeberry could include loss of individual plants and habitat disturbance. Ground-disturbing activities, particularly vegetation removal, could provide suitable habitat for colonization by non-native invasive plant species that could compete with the Tumamoc globeberry for resources. Invasive plant species can alter the fire regime and adversely affect the native plant community. Because of the small acreage of disturbance associated with this project, no substantial impacts to the Tumamoc globeberry or its habitat are anticipated from construction of this project.

POTENTIAL IMPACTS ASSOCIATED WITH ALTERNATIVES

Preferred Route and Alternative Route 1

The Preferred Route and Alternative Route 1 are illustrated on Figure 1 (see Introduction).

Wildlife

Removal of vegetation associated with project pole placement, development of new access roads, and substation structures may impact individual animals, and will likely result in loss of vegetation that could provide nesting sites, cover, and forage for wildlife. Less mobile animals or animals inhabiting burrows in areas to be cleared of vegetation could be killed or injured by construction equipment or associated vehicular traffic. Due to the relatively small acreage involved, loss of wildlife is not anticipated to substantially affect local populations of species impacted. Transmission line support structures typically have small foundations, which cumulatively do not account for substantial impacts to vegetation or wildlife habitat. Transmission lines are porous to most wildlife movements, but there could be some minor habitat fragmentation effects associated with vegetation removal for new road construction. No substantial long-term adverse impacts to any special status wildlife species will likely result from construction and operation of the Preferred Route or Alternative Route 1.

Vegetation

Pima pineapple cacti are known to be present along the Preferred Route. Thirty-six PPC were documented within the surveyed corridor (500-650 feet wide) along the current Preferred Route and 37 within the surveyed corridor along Alternative Route 1 during the survey conducted in 2009 (Westland Resources 2009c). Mitigation will have to be provided for these plants if they cannot be avoided. Mitigation for this species often consists of either avoidance or, if they cannot be avoided, a contribution to the mitigation bank for the species that has been established by the USFWS. The USFWSwill make a determination on appropriate mitigation for these plants through the Section 7 consultation process for the Rosemont Copper Project – operations project. Some agave (*Agave* spp.) plants and saguaro cacti, which are a food sources for nectar-feeding bats including the federally listed endangered lesser long-nosed bat, will likely need to be

removed during vegetation clearing. To minimize impacts to these plants TEP will incorporate mitigations as directed by the USFWS. The level of access along the Preferred Route will reduce the need for disturbance to native vegetation. No other impacts to special status plant species or unique habitats are anticipated to result from construction, operation, and maintenance of the Preferred Route. Similar to that for wildlife, impacts to vegetation will occur during clearing of pole sites, newly constructed access roads, and switchyard/substation sites in relatively undisturbed habitats. The Preferred Route will cross the lower portions of the bajada in the Santa Cruz Valley and will also pass through higher elevation habitats prior to reaching the transmission line terminus.

Potential impacts associated with Alternative Route 1 are similar to the Preferred Route. Alternative Route 1 links 130, 135, and 95 would require development of a new access road and would likely have a higher level of impact than the Preferred Route. In addition to the Pima pineapple cacti recorded along Santa Rita Road, a single Pima pineapple cactus was recorded on Link 130 (Westland Resources 2010a). This plant and any other Pima pineapple cacti located within the project ROW will need to be avoided or mitigated, as discussed above. No other sensitive species or unique habitats are known to be present along links 130,135, or 95, and are unlikely to be substantially impacted by development of Alternative Route 1.

As for all alternatives, the proposed Toro Switchyard would disturb approximately 3 acres of land. This proposed Toro Switchyard site is in Arizona Upland Sonoran Desertscrub, and no unique habitats are present. There is some potential for the Pima pineapple cactus to occur on this site. No other sensitive species are considered likely to be present on the site, and development of this switchyard is unlikely to substantially impact any sensitive species. The Rosemont Substation would disturb approximately 1 acre of land; however, no sensitive species or unique habitats are known to be present at the Rosemont Substation site.

Alternative Route 2 and Alternative Route 3

Alternative Route 2 and 3 are illustrated on Figure 1 (see Introduction). Potential impacts associated with Alternative Route 2 are similar to those anticipated for the Preferred Route and Alternative Route 1 with the following exceptions: links 120, 130, 135, and 95 would require upgrading to provide access for construction. Creation of new access through relatively undisturbed native habitats would have a higher level of impact to vegetation and wildlife using this area. Alternative Route 2 has 55 Pima pineapple cacti within the surveyed corridor, and one additional plant is present on Alternative 3 (total of 56) (Westland Resources 2010a). Mitigation for these plants will require avoidance or other mitigation to be determined by the USFWS (likely either relocation on site or possibly a contribution to the species mitigation bank for this species). No other sensitive species or unique habitats are known to be present along Alternative Routes 2 or 3.

Potential impacts associated with Alternative Route 3 are similar to those anticipated for Alternative Route 2. In addition to new access roads required for Link 120, alternative links 130, 135, and 95 would also require development of new access roads. In that sense Alternative Route 3 would have a higher level of impact to wildlife and vegetation than Alternative Route 2. Pima pineapple cacti are known to be present on each of these alternative routes, and avoidance, relocation on site, or compensatory mitigation, as determined by the USFWS, will need to be

provided for these plants. No other sensitive species or unique habitats are known to be present along links 120, 130, 135, or 95.

Alternative Route 4

Alternative Route 4 is illustrated on Figure 1 (see Introduction). Alternative Route 4 differs from all other Project alternatives primarily in its crossing of Box Canyon (links 150 and 160). Three sensitive plant and wildlife species may be present or use the Box Canyon area, including Box Canyon muhly and Chiricahua leopard frog (both present), and the Western red bat (very low potential). Some potential for minor impacts to broadleaf riparian-inhabiting wildlife species or their habitat, which are not present on any other project alternatives, exists at the Link 150 crossing. However, since the line will span the drainage, no substantial impacts are anticipated for any sensitive species or the riparian habitat. Potential impacts would be associated primarily with trimming of broad-leaf riparian tree species to maintain conductor clearance. Link 150 would span Box Canyon at the upper limits of broad-leaf riparian habitat where impacts will be minimized. The Link 160 crossing is further upstream in a more xeric section of the drainage, where there is no broad-leaf riparian vegetation. Best management practices (as stated in the DEIS) will minimize the potential for impacts to riparian habitat and water quality. There are 54 Pima pineapple cacti within the Alternative Route 4 surveyed corridor (Westland Resources 2010a). This is similar to the numbers of these plants on alternative routes 2 and 3.

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
Mammals				
Cockrum's desert shrew	*Notiosorex cockrumi*	FS	Rare semi-desert endemic of southeastern Arizona Madrean mountains; broadleaf riparian habitats among sacaton.	Moderate
California leaf-nosed bat	*Macrotus californicus*	SC; BLMS; WSC; PVS	Sonoran desertscrub with caves or mines.	Low
Mexican long-tongued bat	*Choeronycteris mexicana*	SC; FS; BLMS; WSC; PVS	Found in canyons of mixed oak-conifer forests or in semi-desert grassland habitats in mountain ranges surrounded by desert. Roost sites usually near water and riparian vegetation. Roosts in caves, mines, buildings, and wide rock crevices.	Present
Lesser long-nosed bat	*Leptonycteris yerbabuenae*	LE; WSC; PVS	Desertscrub or grassland habitat to lower oak elevations, where agaves and/or saguaros present as food sources.	Present
Cave myotis	*Myotis velifer*	SC; BLMS	Roosts in mines and caves at lower elevations within a couple miles of water.	Present
Western red bat	*Lasiurus blossevillii*	SC; FS; WSC; PVS	1,900 to 7,200 feet elevation in broadleaf deciduous tree riparian forests and woodlands. Summer resident. Mostly solitary, roosting in dense foliage in trees and sometimes in leafy shrubs or herbs, from a few to 40 feet above ground.	Very Low
Spotted bat	*Euderma maculatum*	SC; FS; BLMS	A variety of habitats from low desert up to pine elevations.	Low
Allen's big-eared bat	*Idionycteris phyllotis*	SC; BLMS; FS; PVS	Mostly occurs in montane forested areas associated with cliffs, boulder piles, mines, or caves used as roosts.	Moderate
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	SC; FS; BLMS; PVS	Found in day caves or mine tunnels, rest in abandoned buildings at night, in desertscrub, in shelters in desert mountains, oak woodland, piñon-juniper, coniferous forests.	Present
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	SC; FS	Roosts in crevices in cliffs or in rocky areas.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
Big free-tailed bat	*Nyctinomops macrotis*	SC	Roosts in crevices or rock shelters, usually in high cliffs.	Low
Western bonneted bat	*Eumops perotis californicus*	SC; FS; BLMS	Roosts in crevices and shallow caves on the sides of cliffs and rock walls.	Very Low
Underwood's bonneted bat	*Eumops underwoodii*	SC	Washes and open water bodies associated with mesquites and desertscrub vegetation.	Very low
Banner-tailed kangaroo rat	*Dipodomys spectabilis*	BLMS	Grassy habitats with catclaw, mesquite and *Opuntia*.	Present
Plains harvest mouse	*Reithrodontomys montanus*	FS	Well-developed grasslands.	Low
Fulvous harvest mouse	*Reithrodontomys fulvescens*	FS	Primarily dense grassy habitats with mixed shrubs/brush.	Moderate
Merriam's mouse	*Peromyscus merriami*	FS; PVS	Dense vegetation of mesquite bosques, cacti, or grasses.	Present
Northern pygmy mouse	*Baiomys taylori ater*	FS	Grassland habitats; particularly along drainages.	Low
Yellow-nosed cotton rat	*Sigmodon ochrognathus*	SC; FS	Inhabits grassy, rocky slopes of the oak belt between 3,000 and 8,000 feet elevation. Grassy covering is usually sparse, but the presence of beargrass, agave, or yucca dispersed through the grass provides sufficient refuges and nest sites.	High
White-nosed coati	*Nasua narica*	FS	Canyon woodlands and foothills in rocky areas that provided den and shelter habitat.	Moderate
Hooded skunk	*Mephitis macroura milleri*	FS	Rocky slopes and arroyos near cliffs.	Moderate
Jaguar	*Panthera onca*	LE;WSC	Occurs through a wide range of habitats up to subalpine conifer forest.	Very Low
Ocelot	*Leopardus* (*Felis*) *pardalis*	LE, WSC	Partly cleared forests, second growth woodland, and abandoned cultivated areas reverted to brush	Very Low
Birds				
Golden eagle	*Aquila chrysaetos*	SC;BLMS; BGEPA	Areas with high cliffs for nesting associated with large areas of open country for foraging.	Moderate
Swainson's hawk	*Buteo swainsoni*	PVS	Open country at Semidesert Grassland or grassland elevations.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
American peregrine falcon	*Falco peregrinus anatum*	BLMS; FS; WSC	Prefers open areas with good visibility, usually near water. Normally requires high cliffs for nesting. Uses buildings or bridges as perches for hunting.	Low
Gould's wild turkey	*Meleagris gallopavo mexicana*	FS	Open grassy savannah with a variety of oaks; chaparral; stunted piñon juniper woodland.	Low
Whiskered screech owl	*Megascops trichopsis*	FS	Madrean oak woodland habitats; foothills and canyons of lower elevations in the mountains.	Moderate
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	SC; FS; BLMS; WSC; PVS	Sonoran Desertscrub and Semidesert Grassland; occasionally in riparian woodland or suburban developments retaining adequate habitat elements.	Very Low
Western burrowing owl	*Athene cunicularia hypugaea*	SC; BLMS; PVS	Open areas of low slope where low vegetation provides good visibility. Usually associated with colonial burrowing rodents.	Moderate
Buff-collared nightjar	*Caprimulgus ridgwayi*	FS	Dry, thickly vegetated canyons.	Low
Violet-crowned hummingbird	*Amazilia violiceps*	FS; WSC	Montane and riparian habitats.	Very Low
Broad-billed hummingbird	*Cynanthus latirostris*	FS	Desert canyons, foothills, and low elevation woodlands.	Low
Gilded flicker	*Colaptes chrysoides*	SC; BLMS	Saguaro deserts.	Present
Northern beardless-tyrannulet	*Camptostoma imberbe*	FS	Lowland riparian woodland and adjacent scrub.	Moderate
Northern buff-breasted flycatcher	*Empidonax fulvifrons pygmaeus*	FR;FS; WSC	Open pine or riparian habitats with sycamores.	Very Low
Black-capped gnatcatcher	*Polioptila nigriceps*	WSC	Brushy, riparian woodland.	Very Low
Bell's vireo	*Vireo bellii*	PVS	Low, dense shrubby vegetation along riparian habitats.	Moderate
Desert purple martin	*Progne subis hesperia*	SC; BLMS	Sonoran desertscrub in the presence of saguaros	Low
Abert's towhee	*Pipilo aberti*	FS; PVS	Sonoran riparian deciduous woodland and riparian scrublands; dense understory vegetation.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
Rufous-winged sparrow	*Aimophila carpalis*	PVS	Valley desert grasslands among shrubs and cacti.	Present
Baird's sparrow	*Ammodramus bairdii*	FS;WSC	Grassland habitats above 4,000 feet.	Very Low
Varied bunting	*Passerina versicolor*	FS	Low elevation brushy canyons and desert washes.	Moderate
Amphibians				
Great Plains narrow-mouthed toad	*Gastrophryne olivacea*	FS; BLMS; WSC	Ponds, cattle tanks, and flooded habitats; from Lower Colorado River Desertscrub up to Madrean evergreen woodland.	Very Low
Western barking frog	*Eleutherodactylus augusti cactorum*	FS; WSC	Madrean evergreen woodland.	Very Low
Chiricahua leopard frog	*Lithobates chiricahuensis*	LT; WSC; PVS	Rocky streams with deep pools in oak and pine-oak woodlands and pine forests. Mountainous areas of southeast Arizona, southwest New Mexico, and Mexico.	Present
Lowland leopard frog	*Lithobates yavapaiensis*	SC; BLMS; FS; WSC; PVS	Usually near permanent water, from desert to oak-pine woodland elevations.	Low
Reptiles				
Desert box turtle	*Terrapene ornata luteola*	BLMS; PVS	Sandy soils of Semidesert Grasslands.	Moderate
Sonora mud turtle	*Kinosternon sonoriense sonoriense*	BLMS	Ponds and streams.	Moderate
Sonoran Desert tortoise	*Gopherus agassizii*	C; FS;WSC	Rocky habitats of low hills and bajadas with soils suitable to support burrows or natural cavities, such as bedrock solution holes, rock shelters, or caliche "caves."	High
Giant spotted whiptail	*Aspidoscelis burti stictogrammus*	FS; PVS	Semidesert Grassland and Madrean evergreen woodland; shrubby vegetation along washes, riparian corridors, and low valley bottoms.	High
Reticulate gila monster	*Heloderma suspectum suspectum*	FS	Steep rocky terrain; along washes; primarily in desertscrub, but also in other habitats into chaparral.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
Groundsnake	*Sonora semiannulata*	SC; PVS	Lower Colorado River Desertscrub up to lower woodland elevations.	Low
Green rat snake	*Senticolis triaspis intermedia*	FS	Rocky slopes or associated with riparian habitats in Madrean evergreen woodland	Moderate
Arizona ridge-nosed rattlesnake	*Crotalus willardi willardi*	FS; WSC	Heavily wooded canyons in Madrean evergreen woodland or Petran Montane Conifer Forest; sometimes lower.	Low
Mollusks				
Rosemont talussnail	*Sonorella rosemontensis*	C; PVS	Known from three talus slopes in the Santa Rita Mountains.	Present
Talus snails	*Sonorella* spp.	PVS	Talus or steep rocky habitat, usually shaded and on north or northeastern aspects.	Present
Insects				
Sabino Canyon damselfly	*Argia sabino*	SC; FS	Upper Sonoran riparian habitat with permanent water.	Very Low
Santa Rita Mountains chlorochroan bug	*Chlorochroa rita*	SC	Known only from three specimens in the Santa Rita and Huachuca mountains of southern Arizona. Suspected associations may be with grasses, sedges or rushes at aquatic sites, or with cacti.	Very Low
Cestus skipper	*Atrytonopsis cestus*	FS	Canyons in thornscrub grasslands. Very rare species with few locations; known from Baboquivari, Atascosa, Tumacacori, Santa Catalina, and Galiuro Mountains.	Very Low
Plants				
Pima Indian mallow	*Abutilon parishii*	SC; BLMS; FS	Occurs on rocky slopes and canyon bottoms in desertscrub, and up into Semidesert Grassland from 2,477 to 4,856 feet.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area				
Common Name	**Latin Name**	**Status**	**Habitat**	**Potential for Occurrence Within the Project Study Area**
Santa Rita yellowshow	*Amoreuxia gonzalezii*	SC; FS; HS	Rocky limestone hillsides; 4,200 to 4,500 feet.	Moderate
Lemmon milkweed	*Asclepias lemmonii*	FS	Open woodlands and canyons; 5,050 to 7,200 feet elevation.	Moderate
Dalhouse spleenwort	*Asplenium dalhousiae*	BLMS	Moist soils of shady, rocky habitats in Madrean oak woodland.	Low
Chihuahuan sedge	*Carex chihuahuensis*	FS	Wet meadows and streambed soils; 3,600 to 7,200 feet elevation.	Very Low
Arizona giant sedge	*Carex ultra*	BLMS; FS	Saturated soils at springs, seeps, and streams between 2,500 and 6,000 feet elevation.	Low
Pima pineapple cactus	*Coryphantha scheeri* var. *robustispina*	LE; HS; PVS	Sonoran Desertscrub or Semidesert Grassland to 4,000 feet.	Present
Metcalfe's ticktrefoil	*Desmodium metcalfei*	FS	Occurs on rocky slopes or in canyons of oak or piñon-juniper habitats.	Moderate
Needle-spined Pineapple Cactus	*Echinomastus erectocentrus* var. *erectocentrus*	SC; PVS	Arizona Upland Sonoran Desertscrub or desert grasslands; usually associated with limestone substrates.	Very Low
Arid throne fleabane	*Erigeron arisolius*	FS	Occurs at oak elevations in grassy habitat; often in moist areas.	Present
San Pedro River wild buckwheat	*Eriogonum terrenatum*	BLMS	Gravelly soils of the Pantano Formation in creosote bush or whitethorn acacia habitat.	Very Low
Bartram stonecrop	*Graptopetalum bartramii*	SC; BLMS; FS	Rocky outcrops in canyons; 3,900 to 6,700 feet.	Moderate
Chisos coral-root	*Hexalectris colemanii* (*revoluta*)	SC; FS	Beneath trees or shrubs in canyon bottoms; occasionally among rocky outcrops or cliffs; 4,500 to 5,200 feet elevation.	Present
Arizona manihot	*Manihot davisiae*	FS	Limestone slopes; 3,500 to 4,000 feet elevation.	Low
Box Canyon muhly	*Muhlenbergia dubioides*	FS	Rocky slopes of canyons in grassland or oak woodland habitats; 2,800 to 6,000 feet elevation.	Present
Weeping muhly	*Muhlenbergia xerophila*	FS	On bedrock or rocky slopes at seeps in oak woodland habitat; 3,520 to 6,000 feet elevation.	Moderate
Lemmon cloak fern	*Notholaena lemmonii*	SC	Rocky slopes and cliffs, usually on granitic or volcanic substrates; 3,280 to 4,920 feet.	Moderate

Table C-1. Federally Listed and Other Special Status Species that are Known or May Potentially Occur in the Project Study Area

Common Name	Latin Name	Status	Habitat	Potential for Occurrence Within the Project Study Area
Toumey groundsel	*Packera neomexicana* var. *toumeyi*	FS	Oak chaparral up to lower pine forest elevations.	Very Low
Beardless chinch weed	*Pectis imberbis*	FR; FS	Grasslands and grass-oak savannah; 4,000 to 5,500 feet.	Low
Catalina beardtongue	*Penstemon discolor*	SC; FS;HS	Bedrock outcrops in chaparral or pine-oak woodland; 4,400 to 7,200 feet.	Low
Broadleaf ground-cherry	*Physalis latiphysa*	FS	Along washes in desertscrub or grassland habitats; 3,000 to 4,700 feet elevation.	Very Low
Whisk fern	*Psilotum nudum*	FS; HS	Rocky slopes of low to mesic woods; may be arboreal; to 4,000 feet.	Very Low
Chiricahua Mountain brookweed	*Samolus vagans*	FS	Occurs on wet sand along streams; 3,500 to 6,000 feet elevation.	Very Low
Nodding blue-eyed grass	*Sisyrinchium cernuum*	FS	Along riparian canyon streams; approximately 4,000 feet elevation.	Low
Lemmon's stevia	*Stevia lemmonii*	FS	Rocky canyons, slopes, and streambeds in oak or pine-oak woodlands; 3,000 to 4,580 feet elevation.	Present
Sonoran noseburn	*Tragia laciniata*	FS	Shaded hillsides and canyon bottoms in oak woodland; 3,500 to 5,680 feet elevation.	Present
Tumamoc globeberry	*Tumamoca macdougalii*	BLMS; FS; PVS	Undisturbed soils along washes below 3,000 feet.	Moderate

Status:
- Federal
  - LE – Federally listed endangered (ESA)
  - LT – Federally listed threatened (ESA)
  - C – Federal candidate species for listing as threatened or endangered (ESA)
  - SC – Federal species of concern
  - FR – Currently under review in the candidate or petition process
  - BGEPA – Bald and Golden Eagle Protection Act
- Forest Service
  - FS – Forest sensitive species
- Bureau of Land Management
  - BLMS – BLM sensitive species
- Arizona Game and Fish Department
  - WSC – Wildlife species of concern
- Arizona Department of Agriculture
  - HS – Highly safeguarded species
- Pima County
  - PVS – Pima County Sonoran Desert Conservation Plan – Priority Vulnerable Species

*The Cactus Ferruginous Pygmy-owl has been petitioned for relisting.

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