

**EXHIBIT C: BIOLOGICAL WEALTH**

---

## Exhibit C: Biological Wealth

As stated in Arizona Administrative Code 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 effects, if any, the proposed facilities will have thereon.”*

### PROTECTED OR SPECIAL STATUS SPECIES

#### Study Methods

The U.S. Fish and Wildlife Service (“USFWS”) Arizona Ecological Services website was accessed to assemble a list of species protected under the Endangered Species Act (“ESA”) for Maricopa and Pinal counties. Habitat requirements of these species and their known range were compiled. The PSA was also analyzed using the Arizona Game and Fish Department’s (“AGFD”) Environmental Review On-line Tool. In addition, the PSA was also examined to determine if any designated critical habitat was present.

Transcon biologists performed a reconnaissance level survey in June 2008 to document vegetation and wildlife habitat of the PSA. U.S. Geological Survey (“USGS”) 7.5’ quadrangle maps and recreational Global Positioning System (“GPS”) units were used for locating the Project boundaries, elevation information, and for general orientation.

#### Study Results

The majority of sensitive species were evaluated and eliminated from further review based on the following criteria:

- The species known geographic range does not extend to within the PSA
- The action area does not contain necessary conditions known to support the species
- Project implementation would not remove or adversely affect habitat of the species

Table C-1 contains species listed under the ESA for Maricopa and Pinal counties and the Wildlife Species of Concern identified using the AGFD’s Environmental Review On-line Tool. One sensitive species, the burrowing owl, has the potential to occur within the PSA and is discussed following the table. There is no designated critical habitat in the PSA.

<b>TABLE C-1</b> Habitat Suitability Assessment for Protected Species in Maricopa and Pinal Counties			
<b>Species</b>	<b>Status</b>	<b>Suitable Habitat</b>	<b>Rationale of Habitat Assessment</b>
Acuna cactus <i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	C	No	Acuna cacti inhabit Sonoran desertscrub on well-drained knolls or dry ridges from 1,300-2,000 feet in elevation. The five documented populations are located in or near Organ Pipe Cactus National Monument, Florence, Ajo, Coffee Pot Mountain, and Sonoyta, Mexico. The habitat supporting the species does not occur in the PSA. The known populations of this species are not located in the PSA.

Exhibit C: Biological Wealth

**TABLE C-1**

Habitat Suitability Assessment for Protected Species in Maricopa and Pinal Counties

Species	Status	Suitable Habitat	Rationale of Habitat Assessment
Arizona cliffrose <i>Purshia subintegra</i>	E	No	Four distinct populations of Arizona cliffrose occur in central Arizona near Bylas; Horseshoe Lake; Burro Creek; and Cottonwood in the Verde Valley. It grows in white limestone soils derived from tertiary lakebed deposits. The PSA is not located near the known localities of the species. There are no white limestone soils present within the PSA to support this species.
Arizona hedgehog <i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	E	No	The species is associated with the ecotone between interior chaparral and madrean evergreen woodland on open slopes in cracks of boulders from 3,700-5,200 feet. Known populations in Arizona are found from the Superstition and Pinal Mountains, Dripping Springs and the highlands located between Superior and Globe. The Project is not located within the known range of this species. The ecotone between interior chaparral and madrean evergreen woodland is not found in the PSA. There is no suitable boulder habitat.
Bald eagle <i>Haliaeetus leucocephalus</i>	T	No	Bald eagles inhabit areas with large trees or cliffs near water (reservoirs, rivers and streams) associated with abundant prey at various elevations. This species occurs throughout Arizona primarily as a winter resident or migrant. Nest locations are generally concentrated along perennial rivers such as the Agua Fria, Bill Williams, Gila, Salt, San Pedro, Verde, etc. and associated reservoirs. The aquatic habitat known to support the species is not present in the PSA.
Burrowing owl <i>Athene cunicularia hypugaea</i>	SC	Yes	See species analysis following this table.
California brown pelican <i>Pelecanus occidentalis californicus</i>	PD	No	California brown pelicans nest in coastal areas and islands. They can be seen around lakes and rivers in Arizona, but are uncommon. There are no known breeding pairs in Arizona. Suitable aquatic habitat for this species does not occur within the PSA.
Chiricahua leopard frog <i>Rana chiricahuensis</i>	T	No	This species occurs in montane habitats from 3,300-8,900 feet in elevation. The species inhabits rivers, streams, ponds, lakes. There is no suitable aquatic habitat in the PSA.
Desert pupfish <i>Cyprinodon macularius</i>	E	No	The desert pupfish lives in small streams, springs and marshes and can tolerate warm, saline water. There are no known natural populations of this species remaining in Arizona. Populations have been introduced in AD Wash (Yavapai County), Cold Springs (Graham County), and Finley Tank (Santa Cruz County). The aquatic habitat required to support this species is not present in the PSA.
Gila chub <i>Gila intermedia</i>	E	No	The Gila chub inhabits small streams, cienegas, pools, springs, and deep pools, with undercut banks. Currently, the Gila chub is extirpated from most major drainages. Critical habitat is designated for Middle Creek, a tributary of the Gila River, and several tributaries of the San Pedro River in Cochise and Graham County. The PSA does not contain the necessary aquatic environment to support this species.

Exhibit C: Biological Wealth

**TABLE C-1**

Habitat Suitability Assessment for Protected Species in Maricopa and Pinal Counties

Species	Status	Suitable Habitat	Rationale of Habitat Assessment
Gila topminnow <i>Poeciliopsis occidentalis occidentalis</i>	E	No	The Gila topminnow inhabits vegetated shallows in small streams, cienegas, pools, and springs. Six distinct populations remain: Sharp Spring, Bylas Spring, Sonoita Creek, Redrock Canyon, Santa Cruz River, Fresno Canyon). Three populations remain relatively stable and secure (Cottonwood Spring, Monkey Spring, Cienega Creek). The aquatic environment needed to support the species is not present in the PSA.
Lesser long-nosed bat <i>Leptonycteris curasoae yerbabuena</i>	E	No	This species range in Southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua mountains and then southerly into Mexico and beyond. Uses caves or abandoned tunnels for roosts at elevations approximately 1,190 to 7,320 feet. No suitable roosting locations were identified in the PSA. The species is generally found south of the PSA.
Loach minnow <i>Tiaroga cobitis</i>	T	No	This benthic species is found in small and shallow perennial streams located at less than 8,000 feet elevation. Occupies the bottoms of turbulent, rocky streams composed of gravel or cobble substrate. Prefers a moderate to fast paced current. Regular occurrence of floods and natural hydrograph are important. The aquatic habitat known to support this species does not occur in the PSA.
Mexican spotted owl <i>Strix occidentalis lucida</i>	T	No	The Mexican spotted owl is found in dense multi-storied closed canopy forests with many snags and downed logs as well as canyons. This species is patchily distributed in forested subalpine and montane coniferous forest, statewide. Found at elevations from 4,100 to 9,000 feet. The vegetation topography and elevation suitable for the species does not occur in the PSA.
Nichol Turk's head cactus <i>Echinocactus horizionthalonius</i> var. <i>nicholii</i>	E	No	Nichol Turk's head cactus is a succulent perennial found in open vegetation with few trees and scattered low shrubs on gravelly bajadas with limestone clasts. They occur from 2,000 to 3,600 feet in elevation. The substrate known to support the species is not found in the PSA.
Razorback sucker <i>Xyrauchen texanus</i>	E	No	This species is currently found in Lake Havasu, Lake Mead, and Lake Mohave. The species is found among large rivers and occupies slow backwaters of medium and large streams and river, flooded bottomlands, side channels, and reservoirs. This species may be found in a variety of habitats during the non-breeding season. The aquatic habitat required to support the species is not present in the PSA.
Sonoran desert tortoise <i>Gopherus agassizii</i>	SC, WSC	No	The Sonoran desert tortoise occurs among rocky foothills. They use large boulders and caliche caves formed in banks of washes as shelter sites. There are no rocky foothills, large boulders, or caliche caves in the PSA.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	E	No	This species occurs and breeds at elevations less than 8,500 feet in dense riparian habitats composed of cottonwood, willow, box elder, Russian olive, buttonbrush, arrowweed and tamarisk communities. The species constructs nests in dense thickets. An important habitat component is the presence of water during mid-summer months. The riparian habitat needed to support this species is not located in the PSA.

Exhibit C: Biological Wealth

**TABLE C-1**

Habitat Suitability Assessment for Protected Species in Maricopa and Pinal Counties

Species	Status	Suitable Habitat	Rationale of Habitat Assessment
Spikedace <i>Meda fulgida</i>	T	No	This species occurs in moderate to large perennial streams with gravel and cobble substrates and moderate to swift velocities. Prefer runs, pools, and swirling eddies in moving waters less than three feet deep. The aquatic habitat known to support the species is not present in the PSA.
Western yellow-billed cuckoo <i>Coccyzus americanus</i>	C	No	This species is mainly found among streamside cottonwoods-willow galleries, salt cedar and to a lesser extent larger mesquite bosques. Dense understory vegetation appears to be an important habitat component. Found in southern, central, and extreme northeastern Arizona. The habitat necessary to support this species is not present in the PSA.
Woundfin <i>Plagopterus argentissimus</i>	E	No	The only native woundfin population exists in the Virgin River. Experimental non-essential populations have been designated and introduced into the Hassaympa River. There is no aquatic habitat in the PSA that could support this species.
Yuma clapper rail <i>Rallus longirostris yumanensis</i>	E	No	This species breeds in freshwater marshes and inhabits brackish water marshes and side waters, preferring tall dense cattail and bulrush marshes. The species requires a wet substrate such as a mudflat, sandbar, or slough bottom. They are found along the Colorado River from Lake Mead to Mexico and also found from various wetland and rivers in southwestern Arizona. The habitat known to support this species does not occur within the PSA.
<p>FWS categories: <b>Endangered (E)</b>—Taxa in danger of extinction throughout all or a significant portion of its range; <b>Threatened (T)/Proposed Threatened (PT)</b>—Taxa likely to become endangered within the foreseeable future throughout all or a significant portion of its range; <b>Candidate (C)</b>—Species for which the FWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened. Candidate species, however, are not protected legally because proposed rules have not been issued. <b>Proposed Delisted (PD)</b>—Species has been proposed for delisting. <b>Experimental (EX)</b>—Species considered to be experimental and non-essential in its designated use areas. <b>Conservation Agreement (CA)</b>—Species protected by a Conservation Agreement between FWS and other cooperating agency(ies) [Source: FWS database (<a href="http://ifw2es.fws.gov/EndangeredSpecies/lists/">http://ifw2es.fws.gov/EndangeredSpecies/lists/</a>)].</p> <p>AGFD category: <b>Wildlife Species of Concern (WSC)</b>—Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines.</p>			

**Analysis**

One Wildlife Species of Concern, the burrowing owl, was identified in the habitat suitability assessment with potential to occur in the PSA. Analysis of the potential impacts to the burrowing owl is presented below.

**Burrowing Owl**

The western burrowing owl is listed as a Wildlife Species of Concern, but is not provided protection under the ESA. However, it is protected under the Migratory Bird Treaty Act.

**Environmental Baseline**

The western burrowing owl is a small, ground-dwelling owl often occurring in colonies. They inhabit open areas such as grasslands, edges of agricultural fields, sparse desert scrub, golf courses, cemeteries,

airports, and vacant lots. The presence of burrows is a critical habitat requirement because the owls nest in burrows, but they do not excavate their own burrows. They are dependent upon other species to construct burrows. In Arizona, burrowing owls are often found in areas that support prairie dog (*Cynomys gunnisoni*) and round-tailed ground squirrel (*Spermophilus tereticaudus*) populations (deVos 1998, Brown 2001). These burrowing mammals usually occupy open environments, construct burrows, and maintain vegetation at a short height, all of which suit the burrowing owl (deVos 1998).

Burrowing owl diets may include numerous prey items including rodents, small birds, frogs, invertebrates, and carrion. In Arizona, predominant prey items discovered in pellets from burrowing owls were scorpions, beetles, locusts, and small rodents (Haug et al. 1993). Additionally, Estabrook and Mannan (1998) found signs of mourning doves in the diet of burrowing owls in an urban setting.

Impacts

There is potential to encounter burrowing owls in the PSA. Burrowing owls are known to occur in the vicinity of the PSA. All proposed alignments contain habitat that is suitable for burrowing owls. The burrowing owl has become adapted to urban encroachment and will occupy suitable areas within urban settings. It is difficult to exclude the owl where suitable habitat exists, without doing a survey, thus its presence must be assumed where suitable habitat exists. Suitable habitat was considered to include native desert, road rights-of-way with open vegetated areas, agricultural fields, and open space areas such as those found along canals. Potential impacts from Project activities include increased potential for a strike and/or mortality resulting from vehicular traffic, potential entrapment within burrows (partial burrow collapse), and biophysical response (i.e., modification to feeding or reproductive behavior) to elevated disturbance levels (e.g., human presence, elevated noise, ground vibration levels). These impacts would be limited to the period of construction.

**Arizona State Native Protected Plants**

A list of protected plants with the potential to occur in the PSA and the type of protection required is presented in Table C-2. No Highly Safeguarded plants (no collection allowed) as classified under the Arizona Native Plant Law (ARS § 3-904) are known to exist among the PSA.

<b>TABLE C-2</b>	
Arizona Native Protected Plants Observed in the Project Study Area	
<b>Species</b>	<b>Protection</b>
San Carlos buckwheat	Salvage Restricted
Little leaf palo verde	Salvage Assessed
Velvet mesquite	Harvest Restricted; Salvage Restricted
All cacti (cholla, barrel, pincushion, etc.)	Salvage Restricted
<b>Salvage Restricted</b> – Collection by permit only. <b>Harvest Restricted</b> – Permits required to remove plant by-products (fuelwood). <b>Salvage Assessed</b> – Plants have a significant value if salvaged; permits required for plant removal and salvage. <b>Highly Safeguarded</b> – Plants whose prospects for survival in Arizona are in jeopardy or are in danger of extinction (no collection allowed).	