

Mitigation and Residual Impacts

Section 3.4 of this Draft EIS did not identify any significant effects to the groundwater recharge and base flow discharge functions of the affected waters of the United States and no mitigation measures were identified.

Section 3.6 of this Draft EIS did not identify any significant effects on the flood-carrying capacity or stormwater storage functions of the affected waters of the United States, and no mitigation measures were identified.

Section 3.9 of this Draft EIS did not identify any significant effects on recreational and aesthetic functions of affected waters of the United States, and no mitigation measures were identified.

Section 3.11 of this Draft EIS identified significant impacts on xeroriparian vegetation supported by affected waters of the United States and identified mitigation measures to reduce those impacts to less than significant.

Section 3.12.1 of this Draft EIS did not identify any significant impact on wetland functions or the affected waters of the United States, and identified mitigation measures to minimize adverse effects not considered to be significant.

Section 3.13 of this Draft EIS identified significant impacts on the wildlife habitat function of affected waters of the United States and identified mitigation measures to reduce those impacts to less than significant, as well as mitigation measures to minimize adverse impacts not considered to be significant.

Section 3.13 of this Draft EIS did not identify any significant effects on the native fish habitat function of the waters of the United States, and no mitigation measures were identified.

Section 3.14 of this Draft EIS identified impacts on threatened and endangered species supported by affected waters of the United States and identified mitigation measures to avoid or reduce these impacts. Section 3.14 of this Draft

EIS did not identify any significant impacts on sensitive species supported by affected waters of the United States and identified measures to avoid or reduce these impacts.

3.13 FISHERIES AND WILDLIFE

This section describes the affected environment and environmental consequences relating to fish and wildlife. Special status species are addressed in Section 3.14.

3.13.1 Affected Environment

This section describes the existing fish and wildlife; this information provides a baseline for the assessment of impacts and environmental consequences.

3.13.1.1 Region of Influence

Fisheries

The region of influence for the analysis for fisheries and aquatic resources includes the entire length of the Big Sandy River. This river originates at the confluence of Knight Creek and Trout Creek and extends downstream 37.8 miles to Alamo Reservoir. The region of influence includes waters within the proposed Project area that could be directly impacted, as well as potentially affected areas downstream from the Project area. The upstream portion of the river was included for additional information.

Wildlife

The region of influence for wildlife resources includes the 120-acre proposed power plant site (a portion of Section 5, T15N, R12W) and its 150-foot-wide access corridor; the proposed pipeline corridor; the alternative pipeline corridors; a 0.5-mile buffer around the proposed power plant site, access road right-of-way, and each pipeline route; the 107-acre proposed agricultural area; and riparian area of the Big Sandy River downstream to Alamo Lake; and the proposed OPGW route.

Sources of Information

Information regarding fish and wildlife was derived primarily from field reconnaissance and the following documents; *Aquatic Baseline Technical Report* (Greystone 2000a) and the *Wildlife Report* (Greystone 2000b). Additional supporting information includes Fresques et al. (1997), Kepner (1979), BLM (1993), Hall (1980), Peck (1979), Jones (1981), raw data from AGFD (1993) and BLM (1994). Other useful references include Minkley (1973), Lee et al. (1980), Stebbins (1985), Hoffmeister (1986), Page and Burr (1991), and National Geographic Society (1999).

3.13.1.2 Existing Conditions

Aquatic Habitat

The perennial reaches of the Big Sandy River north of Granite Gorge have a generally low gradient, with broad floodplains and sandy substrates. Run habitats are the dominant condition in this river. These habitats are characterized by swiftly flowing water; little or no surface agitation, waves, or turbulence; no major flow obstructions; and a water surface roughly parallel to the overall stream gradient. A few isolated pools are also located in some reaches of the river.

Aquatic habitat is present at the wetland on the proposed plant site in the southwest corner of Section 5, T15N, R12W. The affected environment and potential impacts on this area are discussed in detail in Section 3.12.

Water Quantity and Quality

Greystone (2000a) noted that during a 1979 survey on the Big Sandy River, 9 out of 10 sample points were wet and supported fish. The tenth point had no fish. During surveys in 1996 and 2000, five of the original nine sites were dry.

Locations of Aquatic Surveys

Greystone (2000a) surveyed 18 sites on the Big Sandy River, as follows:

Site ID	Location Description
BS1	13,700 feet (2.6 miles) north of the Santa Maria River
BS2	31,300 feet (5.9 miles) upstream of BS1
BS3a	35,700 feet (6.8 miles) upstream of BS2
BS3b	At second Signal Road (County Hwy. 137) crossing as driving west from US 93
BS4	2,600 feet (0.5 miles) downstream of Burro Creek
BS5	At first Signal Road (County Hwy. 137) crossing as driving west from US 93
BS6	26,600 feet (5 miles) upstream of BS5
BS7	1,350 feet (0.3 mile) downstream of Gray Wash
BS8a	3,500 feet (0.7 mile) downstream of US 93 bridge
BS8b	At and upstream of US 93 bridge
BS9	3,020 feet (0.6 mile) upstream of Bronco Creek
BS10a	Just downstream of Chicken Springs Road (County Hwy. 131) on east side of US 93, just west of Back Road (County Hwy. 159) at spring issue point and start of perennial flows
BS10b	Just upstream of Chicken Springs Road (County Hwy. 131) on east side of US 93, just west of Back Road (County Hwy. 159)
BS11	At Back Road crossing (County Hwy. 159), 1,900 feet south of the Mead-Phoenix Project 500-kV transmission line crossing
BS12	18,200 feet (3.5 miles) upstream of BS 11
BS13	15,500 feet (2.9 miles) upstream of Tule Wash
BS14	4,200 feet (0.8 mile) upstream of Tom Brown Canyon, at Upper Trout Creek Road crossing
BS15	1,550 feet (0.3 mile) below Knight Creek/Trout Creek confluence (near Cane Springs Wash)

Twelve of the 18 sites surveyed on the Big Sandy River by Greystone (2000a) were dry, but the field survey followed a long-term drought. It is assumed that the six sites examined that had surface water were perennial. The upper portion of the Big Sandy River, from its origin at the confluence of Knight Creek and Trout Creek to

a point just east of Wikieup, was dry. Perennial flow began east of Wikieup and continued downstream, with long stretches of flowing water and some dry reaches down to Alamo Reservoir.

At the time of the aquatic site reconnaissance, the aquatic habitat of the Big Sandy River was of particularly poor quality as the result of low flow rates. Flow rates tabulated by Greystone (2000a) at the sample points with flowing water ranged from 0.05 cubic feet per second (cfs) at point BS4 to 3.26 cfs at BS6. A USGS gaging station (#09424450) near sample point BS3a recorded a median flow of 5.0 cfs between 1966 and 1999 (USGS 2001). This river system is subject to occasional flooding associated with unusually heavy storm events. The highest measured discharge rate was 68,700 cfs in February 1993.

A summary of water quality data for the Big Sandy River at the USGS gaging station south of Wikieup is presented in Table 3.5-1. Results of the water quality analyses completed by Greystone (2000a) are listed in Table 3.13-1. High temperatures were recorded at sample point BS4 (31.6 degrees Celsius [$^{\circ}\text{C}$]) and BS6 (28.8 $^{\circ}\text{C}$), and dissolved oxygen was low at sample point BS10a (3.46 milligrams per liter [mg/L]). These measurements are one-time readings, and are of limited use in assessing overall water quality.

Fish

Fish species observed in the Big Sandy River and its tributaries are listed in Table 3.13-2 (AGFD 1993; BLM 1994; Fresques et al. 1997; Kepner 1979). Seven species of fish were identified and counted in the Big Sandy River during Greystone's survey (2000a), as listed in Table 3.13-3. These species were longfin dace, common carp, green sunfish, mosquitofish, red shiner, black bullhead, and yellow bullhead. Additional details on these earlier studies are provided in Greystone (2000a).

Greystone (2000a) documented increases in the abundance and diversity of exotic species and the loss of native species by comparing the results of its 2000 survey with the results of the 1979 and 1996 surveys by others. Two native species, Sonora sucker and roundtail chub, were recorded in 1979 but were not found in 1996 (Fresques et al. 1997) or 2000 (Greystone 2000a) at these same sites (roundtail chubs were found at a separate location by BLM in 1994). Native fish species accounted for 57.8 percent of the total fish counted in 1979, but only 8 percent in 2000. The longfin dace was the most abundant fish species in most sites sampled in 1979, but it was not most abundant at any of the revisited sites in 2000. Mosquitofish were not present in 1979; by 1996 they were common but not most abundant; and in 2000, mosquitofish was the most abundant species at most of the monitoring sites.

Macroinvertebrates

Macroinvertebrates were sampled at three sites with surface water during June and July 2000 (Greystone 2000a). The results were analyzed and several standard metrics were calculated, including total abundance, species richness, EPT (Ephemeroptera, Plecoptera, and Trichoptera) taxa, percent contribution of the dominant taxon, percent chironomidae, ratio of EPT and chironimidae abundances, Shannon Diversity Index, evenness, Hilsenhoff Biotic Index, and Community Tolerance Quotient. Definitions of these metrics are provided in Greystone (2000a). Although some of these metrics may not be directly applicable to the Big Sandy River System, they are presented for general information purposes.

Macroinvertebrate sampling was completed once at each of the three sample sites. Because these are one-time samples and because all samples were collected during June and July, these data are of limited use in describing

Water Quality Characteristics	Sample Point Numbers				
	BS4	BS6	BS8a	BS9	BS10a
pH (s.u.)	9.44	7.71	7.70	8.34	7.17
Conductivity (µs/cm)	507	1149	1311	832	602
Dissolved oxygen (mg/l)	-	8.42	8.59	4.30	3.46
Temperature (°C)	31.6	28.8	24.1	19.9	23.2
Flow rate (cfs)	0.05	3.26	2.35	0.99	.033

Scientific Name	Common Name	Status
Black Bullhead	<i>Ictalurus melas</i>	Exotic
Common Carp	<i>Cyprinus carpio</i>	Exotic
Green Sunfish	<i>Lepomis cyanellus</i>	Exotic
Longfin Dace	<i>Agosia chrysogaster</i>	Native
Mosquitofish	<i>Gambusia affinis</i>	Exotic
Red Shiner	<i>Cyprinella lutrensis</i>	Exotic
Roundtail Chub	<i>Gila robusta</i>	Native
Sonora Sucker	<i>Catostomus insignis</i>	Native
Yellow Bullhead	<i>Ictalurus natalis</i>	Exotic

Fish Species	Sample Point Numbers							Total	%
	BS4	BS6	BS8a	BS8b	BS9	BS10a			
Green Sunfish	1	-	-	-	3	-	4	0.2	
Common Carp	130	-	-	-	-	-	130	4.9	
Longfin Dace	10	2	65	78	-	63	218	8.2	
Red Shiner	24	-	7	-	-	41	72	2.7	
Black Bullhead	-	-	-	-	35	-	35	1.3	
Yellow Bullhead	7	2	-	-	-	-	9	0.3	
Mosquitofish	343	223	672	59	474	412	2183	82.3	
Total Abundance	515	227	744	137	512	516	2651	100.0	
Number of Species	6	3	3	2	3	3	-	-	
Minimum population (fish/100m)	844	1081	2657	761	1679	1147	-	-	

overall macroinvertebrate populations in the Big Sandy River.

The results of the Greystone (2000a) sampling are summarized in Table 3.13-4. The macroinvertebrate communities found in the Big Sandy River generally are species considered to be tolerant of low to intermittent base flows,

sandy substrates, high water temperature, and low dissolved oxygen.

The Modified Hilsenhoff Biotic Index (HBI) is an indicator of the benthic community's overall tolerance to pollution (Hilsenhoff 1987; Plafkin et al. 1989). This index originally was developed as an indicator of organic enrichment, but it also

Metrics	Sampling Sites			
	BS4	BS8b	BS9	BS10a
General Metrics				
Total Abundance (#/ft ²)	35	13	63	206
Total Number of Taxa	14	7	11	19
Number of EPT Taxa	1	2	1	1
Percent EPT Taxa	11.4	61.5	4.7	1.3
Percent Dominant Taxon	34.3	53.8	66.0	67.2
Percent Chironomidae	-	2.6	2.1	3.2
EPT/Chironomidae ratio	-	24.00	2.25	0.40
Diversity Indices				
Shannon Index	2.75	1.90	1.88	2.09
Evenness	0.64	0.57	0.36	0.26
Biotic Indices				
Hilsenhoff Biotic Index	7.2	4.9	5.0	5.4
Community Tolerance Quotient	99.1	78.6	105.1	78.5
Percent Composition by Order				
Ephemeroptera	11.4	61.5	4.8	1.3
Plecoptera	0.0	0.0	0.0	0.0
Trichoptera	0.0	0.0	0.0	0.0
Odonata	35.2	5.1	2.7	8.7
Diptera	8.6	2.6	3.2	3.2
Coleoptera	0.0	0.0	1.6	78.2
Hemiptera	1.0	0.0	0.0	0.6
Miscellaneous Taxa	39.0	2.6	87.8	7.9

is believed to be a good indicator of inorganic pollution. Values range from 3.75 to 10.0, with higher numbers indicating more stressed conditions or communities more tolerant of polluted conditions. Observed values in the Big Sandy River ranged from 4.9 to 7.2 (Greystone 2000a).

The Community Tolerance Quotient (CTQ) was developed for use in western streams to assess non-point source pollution (Winget and Mangum 1979). Average values for a sample range from 40 to 108. Values in the Big Sandy River ranged from 78.5 to 105.1 (Greystone 2000a).

Riparian Habitat

The Big Sandy River in the Wikieup vicinity (near corridor segment R5) provides riparian habitat that is valuable to many terrestrial or semi-aquatic vertebrates. This reach of the Big

Sandy River exhibits a number of characteristics of the Sonoran desert cottonwood-willow riparian forest community, which is among the most threatened habitat types in the United States. This habitat is described in more detail in Section 3.11.

Riparian areas and springs in the arid Southwest provide habitat for many wildlife species that use these sites for food, shelter, or water. Almost all of the wildlife species present in the adjacent upland areas would depend on these riparian habitats to some degree. The vegetation components most important to wildlife (tree species and densities, foliage height diversity and volume, and patchiness) are all provided in healthy cottonwood-willow communities (Ohmart et al. 1988). Although the cumulative impacts to wildlife are not fully understood, it is believed that the survival of 85 percent of the wildlife species in Arizona depends directly on the few remaining riparian areas (Richter 1987).

Reptiles and Amphibians

Relatively few species of reptiles and amphibians were observed during the data collection in aquatic habitats (near corridor segment R5; Greystone 2000a). Observed species are listed in Table 3.13-5. Lowland leopard frogs were found at upstream sites on the Big Sandy River at the US 93 bridge and near the head of the perennial flow reach just east of Wikieup. Arizona toads were found farther downstream below the US 93 bridge, below the confluence with Burro Creek, and at the wetland at the proposed power plant site. A Sonoran mud turtle was seen in the Big Sandy River at the US 93 bridge. Additional species observed in the area include a red-spotted toad, Woodhouse's toad, and spiny soft-shelled turtle (Smith, personal communication, 2001).

Upland areas in the region of influence have vegetation characteristic of Sonoran desertscrub, semi-desert grassland, and Great Basin conifer woodland (refer to Section 3.11). These habitats support a variety of reptiles, including the western whiptail, gila monster, and desert tortoise.

The following reptile species were observed during wildlife inventories in the region of influence: common chuckwalla, desert iguana, zebra-tailed lizard, black-necked garter snake, long-nosed leopard lizard, lesser earless lizard, and western diamondback rattlesnake (Greystone 2000b; EPG, unpublished data). Additional species observed in the area include canyon tree frog (Smith, personal communication, 2001). These species, and additional species that may occur in the region of influence, are listed in Table 3.13-5.

Mammals

The riparian and upland regions in the region of influence (refer to Section 3.11) support a variety of small mammals such as pocket mice, black-tailed jackrabbits, and kangaroo rats; and large mammals such as coyotes and mule deer. Mammal species that may occur in the region of

influence are listed in Table 3.13-6. Of these species, the following were observed during wildlife inventories: desert cottontail, black-tailed jackrabbit, Ord's kangaroo rat, Merriam's kangaroo rat, white-throated wood rat, coyote, javelina, and mule deer (Greystone 2000b). Additional species observed in the area include porcupines, and gray fox (Smith, personal communication). Riparian areas in the region of influence (near corridor segment R5) support additional mammal species. Raccoon and beaver have been observed in the area (Greystone 2000b; Smith, personal communication, 2001). Although there are no records of coati in the area, coati tracks were observed and photographed during a site reconnaissance in November 2000.

A small wetland adjacent to the proposed power plant site and water at the proposed crossing of the Big Sandy River near the Highway 93 bridge provide foraging habitat for insectivorous bats. Three bat species—Yuma myotis, pallid bat, and California leaf-nosed bat—were captured during a single evening of mist-netting at the wetland (Greystone 2000b). Several bat roosts also were identified along pipeline corridor segments R3, C3, R4, and R5. The US 93 bridge over the Big Sandy River (in corridor segment R5) was used as both a day and night roost by at least two species of bats. Four additional bridges showed signs of use as a night roost, and 41 of 63 concrete box culverts showed signs of roost activity. Culverts close to water features tended to have a higher level of use than those farther from water (Greystone 2000b). For further information on bats, refer to Section 3.14.

Wild Horses and Burros

The southernmost part of the region of influence (corridor segment T5) is within the Big Sandy Herd Management Area (BLM 1993). Burros, although not considered a wildlife species, were sighted within the region of influence during site reconnaissance visits.

**TABLE 3.13-5
REPTILES AND AMPHIBIANS THAT MAY OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name
Arizona Toad	<i>Bufo microscaphus</i>
Banded Gila monster	<i>Heloderma suspectum cinctum</i>
Banded sand snake	<i>Chilomeniscus cinctus</i>
Black-necked garter snake	<i>Thamnophis cyrtopsis</i>
Black-tailed rattlesnake	<i>Crotalus molossus</i>
Canyon tree frog	<i>Hyla arenicolor</i>
Chuckwalla	<i>Sauromalus obesus</i>
Coachwhip	<i>Masticophis flagellum</i>
Colorado River toad	<i>Bufo alvarius</i>
Common kingsnake	<i>Lampropeltis getulus</i>
Couch's spadefoot	<i>Scaphiopus couchii</i>
Desert horned lizard	<i>Phrynosoma platyrhinos</i>
Desert iguana	<i>Dipsosaurus dorsalis</i>
Desert night lizard	<i>Xantusia vigilis</i>
Desert spiny lizard	<i>Sceloporus magister</i>
Desert tortoise	<i>Gopherus agassizii</i>
Gila spotted whiptail	<i>Cnemidophorus flagellicaudus</i>
Arizona skink	<i>Eumeces gilberti arizonensis</i>
Gopher snake	<i>Pituophis catenifer</i>
Great Plains skink	<i>Eumeces obsoletus</i>
Great Plains toad	<i>Bufo cognatus</i>
Greater earless lizard	<i>Cophosaurus texanus</i>
Ground snake	<i>Sonora semiannulata</i>
Lesser earless lizard	<i>Holbrookia maculata</i>
Long-nosed leopard lizard	<i>Gambelia wislizenii</i>
Long-nosed snake	<i>Rhinocheilus lecontei</i>
Long-tailed brush lizard	<i>Urosaurus graciosus</i>
Lowland leopard frog	<i>Rana yavapaiensis</i>
Lyre snake	<i>Trimorphodon biscutatus</i>
Mojave black-collared lizard	<i>Crotaphytus bicinctores</i>
Mojave rattlesnake	<i>Crotalus scutulatus</i>
New Mexico spadefoot	<i>Spea multiplicata</i>
Night snake	<i>Hypsiglena torquata</i>
Plateau lizard	<i>Sceloporus undulates</i>
Plateau striped whiptail	<i>Cnemidophorus velox</i>
Red-spotted toad	<i>Bufo punctatus</i>
Rosy boa	<i>Charina trivirgata</i>
Short-horned lizard	<i>Phrynosoma douglassii</i>
Side-blotched lizard	<i>Uta stansburiana</i>
Sonoran mud turtle	<i>Kinosternon sonoriense</i>
Southwestern black-headed snake	<i>Tantilla hobartsmithi</i>
Speckled rattlesnake	<i>Crotalus mitchellii</i>
Spiny softshell	<i>Trionyx spiniferous</i>
Spotted leaf-nosed snake	<i>Phyllorhynchus decurtatus perkinsi</i>
Tree lizard	<i>Urosaurus ornatus</i>
Western banded gecko	<i>Coleonyx variegatus</i>

TABLE 3.13-5 REPTILES AND AMPHIBIANS THAT MAY OCCUR IN THE PROJECT AREA	
Common Name	Scientific Name
Western blind snake	<i>Leptotyphlops humilis</i>
Western diamondback rattlesnake	<i>Crotalus atrox</i>
Western glossy snake	<i>Arizona occidentalis</i>
Western patch-nosed snake	<i>Salvadora hexalepis</i>
Western rattlesnake	<i>Crotalus viridis</i>
Western shovel-nosed snake	<i>Chionactis occipitalis</i>
Western whiptail	<i>Cnemidophorus tigris</i>
Woodhouse's toad	<i>Bufo woodhousei</i>
Zebra-tailed lizard	<i>Callisaurus draconoides</i>

TABLE 3.13-6 MAMMAL SPECIES THAT MAY OCCUR IN THE PROJECT AREA	
Common Name	Scientific Name
Allen's lappet-browed bat	<i>Idionycterus phyllotis</i>
Arizona pocket mouse	<i>Perognathus amplus</i>
Badger	<i>Taxidea taxus</i>
Beaver	<i>Castor canadensis</i>
Big brown bat	<i>Eptesicus fuscus</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Bobcat	<i>Felis rufus</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
Brush mouse	<i>Peromyscus boylii</i>
Burro	<i>Equus asinus</i>
Cactus mouse	<i>Peromyscus eremicus</i>
California leaf-nosed bat	<i>Macrotus californicus</i>
California myotis	<i>Myotis californicus</i>
Cave myotis	<i>Myotis velifer</i>
Cliff chipmunk	<i>Eutamias dorsalis</i>
Coati	<i>Nasua nasua</i>
Collared peccary	<i>Tayassu tajacu</i>
Coyote	<i>Canis latrans</i>
Desert cottontail	<i>Sylvilagus audubonii</i>
Desert pocket mouse	<i>Chaetodipus penicillatus</i>
Desert shrew	<i>Notiosorex crawfordi</i>
Desert woodrat	<i>Neotoma lepida</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Harris' antelope squirrel	<i>Ammospermophilus harrisi</i>
Kit fox	<i>Vulpes velox</i>
Merriam's kangaroo rat	<i>Dipodomys merriami</i>
Mountain lion	<i>Puma concolor</i>
Mule deer	<i>Odocoileus hemionus</i>
Ord's kangaroo rat	<i>Dipodomys ordii</i>
Pallid bat	<i>Antrozous pallidus</i>
Porcupine	<i>Erethizon dorsatum</i>
Raccoon	<i>Procyon lotor</i>
Red bat	<i>Lasiurus borealis</i>

Common Name	Scientific Name
Ringtail	<i>Bassariscus astutus</i>
Rock pocket mouse	<i>Chaetodipus intermedius</i>
Rock squirrel	<i>Spermophilus variegatus</i>
Round-tailed ground squirrel	<i>Spermophilus tereticaudus</i>
Southern grasshopper mouse	<i>Onychomys torridus</i>
Spotted bat	<i>Euderma maculatum</i>
Stephen's woodrat	<i>Neotoma stephensi</i>
Striped skunk	<i>Mephitis mephitis</i>
Townsend's big-eared bat	<i>Plecotus townsendii</i>
Western harvest mouse	<i>Reithrodontomys megalotis</i>
Western pipistrelle	<i>Pipistrellus hesperus</i>
Western small-footed myotis	<i>Myotis ciliolabrum</i>
Western spotted skunk	<i>Spilogale gracilis</i>
White-throated woodrat	<i>Neotoma albigula</i>
Yuma myotis	<i>Myotis yumanensis</i>

Raptors

Three habitat types were identified as having a high potential for nesting raptors (Greystone 2000b). These habitats were the mesquite and cottonwood/willow areas along the Big Sandy River (near corridor segment R5), sandstone cliffs along tributary drainages (corridor segment T5), and the Mead-Phoenix Project 500-kV transmission structures (corridor segments T1, T2, T3, T4, T5, and C3). Good quality cottonwood/willow habitat exists along the Big Sandy River from Sections 10 and 11, T17N, R13W south to the proposed power plant site. This habitat typically supports a high abundance of raptors.

Surveys for nesting raptors were completed in these areas throughout the region of influence (Greystone 2000b). No active raptor nests were located. Surveys along the Big Sandy River were completed when trees were leafed out, and any existing nests may have been missed. Four red-tailed hawks were observed soaring over the proposed power plant site, and two sharp-shinned hawks and one Cooper's hawk were sighted in mesquite bosque areas during the raptor surveys. A golden eagle was sighted at the northern end of Hackberry Road during a separate site reconnaissance.

Other Birds

Birds common to the Sonoran desertscrub, semi-desert grassland, and Great Basin conifer woodland habitats found in the region of influence include the verdin, cactus wren, curve-billed thrasher, black-tailed gnatcatcher, and Gambel's quail. Riparian areas along the Big Sandy River provide nesting habitat and migratory corridors for neotropical migratory birds. Several obligate riparian species such as summer tanager, yellow-breasted chat and Arizona Bell's vireo have been sighted in the region of influence (Smith, personal communication, 2001). Bird species observed in the region of influence and additional species that may occur in the region of influence are listed in Table 3.13-7.

3.13.2 Environmental Consequences

This section considers potential Project impacts on specific species as well as impacts on all classes of wildlife except threatened and endangered, proposed, and otherwise sensitive species, which are addressed in Section 3.14.2.4.

3.13.2.1 Identification of Issues

The following issues were identified to guide impact assessment relating to fisheries and wildlife:

- impacts on raptors and raptor nesting activities
- impacts on aquatic and riparian habitats that could affect wildlife
- impacts on habitat for obligate and facultative riparian species
- exposure of wildlife to brine in evaporation ponds
- indirect impacts from employees associated with power plant construction and operation
- disturbance to known wildlife movement corridors
- habitat fragmentation

3.13.2.2 Significance Criteria

The effects of the Proposed Action and alternative pipeline route would be considered significant if any of the following were to occur:

- unpermitted violation of any protection provision of statutes and regulations pertaining to fish and wildlife
- substantial reduction in breeding opportunities for birds
- nest loss by one pair of common black-hawk, zone-tailed hawk, ferruginous hawk, Swainson's hawk, or golden eagle; or nest loss by two or more pairs of any other raptor species
- any unmitigated loss of aquatic habitat greater than 0.5 acre or long-term adverse effects on native fish species
- any physical barrier that permanently prevents movement within the Big Sandy River, Sycamore Creek, or Carrow-Stephens Ranches ACEC movement corridors

Common Name	Scientific Name	Season of Occurrence
Abert's towhee	<i>Pipilo aberti</i>	R
American crow	<i>Corvus brachyrhynchos</i>	R
American goldfinch	<i>Carduelis tristis</i>	W
American kestrel	<i>Falco sparverius</i>	R
American pipit	<i>Anthus rubescens</i>	W
American robin	<i>Turdus migratorius</i>	W
Anna's hummingbird	<i>Calypte anna</i>	R
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	S
Bald eagle	<i>Haliaeetus leucocephalus</i>	W
Barn owl	<i>Tyto alba</i>	R
Bell's vireo	<i>Vireo bellii</i>	S
Bendire's thrasher	<i>Toxostoma bendirei</i>	S
Bendire's thrasher	<i>Toxostoma bendirei</i>	S
Bewick's wren	<i>Thryomanes bewickii</i>	R
Black phoebe	<i>Sayornis nigricans</i>	R
Black-chinned hummingbird	<i>Archilocus alexandri</i>	S
Black-chinned sparrow	<i>Spizella atrogularis</i>	W
Black-crowned night heron	<i>Nycticorax nycticorax</i>	R
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>	S

**TABLE 3.13-7
BIRD SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Season of Occurrence
Black-tailed gnatcatcher	<i>Poliophtila melanura</i>	R
Black-throated sparrow	<i>Amphispiza bilineata</i>	R
Blue grosbeak	<i>Guiraca caerulea</i>	S
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	W
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	W
Brewer's sparrow	<i>Spizella breweri</i>	W
Brown creeper	<i>Certhia americana</i>	R
Brown-crested flycatcher	<i>Myiarchus tyrannulus</i>	S
Brown-headed cowbird	<i>Molothrus ater</i>	R
Bullock's oriole	<i>Icterus bullockii</i>	S
Burrowing owl	<i>Athene cunicularia</i>	R
Cactus wren	<i>Campylorhynchus brunneicapillus</i>	R
Canada goose	<i>Branta canadensis</i>	W
Canyon towhee	<i>Pipilo fuscus</i>	R
Canyon wren	<i>Catherpes mexicanus</i>	R
Cassin's kingbird	<i>Tyrannus vociferans</i>	S
Cedar waxwing	<i>Bombcilla cedrorum</i>	W
Chipping sparrow	<i>Spizella passerina</i>	W
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	S
Common black hawk	<i>Buteogallus anthracinus</i>	S
Common nighthawk	<i>Cordeiles minor</i>	S
Common poorwill	<i>Phalaenoptilus nuttallii</i>	S
Common raven	<i>Corvus corax</i>	R
Common yellowthroat	<i>Geothlypis trichas</i>	S
Cooper's hawk	<i>Accipiter cooperii</i>	R
Costa's hummingbird	<i>Calypte costae</i>	S
Crissal thrasher	<i>Toxostoma crissale</i>	R
Curve-billed thrasher	<i>Toxostoma curvirostre</i>	R
Dark-eyed junco	<i>Junco hyemalis</i>	W
Elf owl	<i>Micrathene whitneyi</i>	S
European starling	<i>Sturnus vulgaris</i>	R
Ferruginous hawk	<i>Buteo regalis</i>	R
Fox sparrow	<i>Passerella iliaca</i>	W
Gambel's quail	<i>Callipepla gambellii</i>	R
Gila woodpecker	<i>Melanerpes uropygialis</i>	R
Golden eagle	<i>Aquila chrysaetos</i>	R
Gray vireo	<i>Vireo vicinior</i>	S
Great blue heron	<i>Ardea herodias</i>	W
Great horned owl	<i>Bubo virginianus</i>	R
Greater roadrunner	<i>Geococcyx californianus</i>	R
Great-tailed grackle	<i>Quiscalus mexicanus</i>	R
Green heron	<i>Butorides virescens</i>	R
Green-tailed towhee	<i>Pipilo chlorurus</i>	W
Hermit thrush	<i>Catharus guttatus</i>	W
Hooded oriole	<i>Icterus cucullatus</i>	S
Horned lark	<i>Eremophila alp estris</i>	R
House finch	<i>Carpodacus mexicanus</i>	R
House sparrow	<i>Passer domesticus</i>	R
House wren	<i>Troglodytes aedon</i>	R

**TABLE 3.13-7
BIRD SPECIES THAT MAY OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Season of Occurrence
Inca dove	<i>Columbina inca</i>	R
Killdeer	<i>Charadrius vociferous</i>	R
Ladder-backed woodpecker	<i>Picoides scalaris</i>	R
Lark bunting	<i>Calamospiza melanocorys</i>	W
Lark sparrow	<i>Chondestes grammacus</i>	R
Lazuli bunting	<i>Passerina amoena</i>	S
Lesser goldfinch	<i>Carduelis psaltria</i>	R
Lesser nighthawk	<i>Cordeiles acutipennis</i>	S
Lincoln's sparrow	<i>Melospiza lincolni</i>	W
Loggerhead shrike	<i>Lanius ludovicianus</i>	R
Lucy's warbler	<i>Vermivora luciae</i>	S
Mallard	<i>Anas platyrhynchos</i>	W
Merlin	<i>Falco columbarius</i>	W
Mountain bluebird	<i>Sialia currucoides</i>	W
Mourning dove	<i>Zenaida macroura</i>	R
Northern cardinal	<i>Cardinalis cardinalis</i>	R
Northern flicker	<i>Colaptes auratus</i>	R
Northern harrier	<i>Circus cyaneus</i>	W
Northern mockingbird	<i>Mimus polyglottos</i>	R
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	S
Orange-crowned warbler	<i>Vermivora celata</i>	W
Osprey	<i>Pandion haliaetus</i>	W
Peregrine falcon	<i>Falco peregrinus</i>	R
Phainopepla	<i>Phainopepla nitens</i>	R
Prairie falcon	<i>Falco mexicanus</i>	R
Red-tailed hawk	<i>Buteo jamaicensis</i>	R
Red-winged blackbird	<i>Agelaius phoeniceus</i>	R
Rock dove	<i>Columba livia</i>	R
Rock wren	<i>Salpinctes obsoletus</i>	R
Rough-legged hawk	<i>Buteo lagopus</i>	W
Ruby-crowned kinglet	<i>Regulus calendula</i>	W
Rufous-crowned sparrow	<i>Aimophila ruficeps</i>	R
Sage sparrow	<i>Amphispiza belli</i>	W
Sage thrasher	<i>Oreoscoptes montanus</i>	W
Savannah sparrow	<i>Passerella sandwichensis</i>	W
Say's phoebe	<i>Sayornis saya</i>	R
Scott's oriole	<i>Icterus parisorum</i>	S
Scrub jay	<i>Aphelocoma californica</i>	R
Sharp-shinned hawk	<i>Accipiter striatus</i>	R
Snowy egret	<i>Egretta thula</i>	R
Song sparrow	<i>Melospiza melodia</i>	R
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	S
Spotted sandpiper	<i>Actitis macularia</i>	W
Spotted towhee	<i>Pipilo maculatus</i>	W
Summer tanager	<i>Piranga rubra</i>	S
Swainson's hawk	<i>Buteo swainsoni</i>	S
Townsend's solitaire	<i>Myadestes townsendi</i>	W
Turkey vulture	<i>Cathartes aura</i>	R
Verdin	<i>Auriparus flaviceps</i>	R

Common Name	Scientific Name	Season of Occurrence
Vermillion flycatcher	<i>Pyrocephalus rubinus</i>	R
Vesper sparrow	<i>Pooecetes gramineus</i>	W
Violet-green swallow	<i>Tachycineta thalissina</i>	S
Virginia's warbler	<i>Vermivora virginiae</i>	S
Western bluebird	<i>Sialia mexicana</i>	W
Western kingbird	<i>Tyrannus verticalis</i>	S
Western meadowlark	<i>Sturnella neglecta</i>	R
Western screech-owl	<i>Otus kennicottii</i>	R
Western tanager	<i>Piranga ludoviciana</i>	S
Western wood pewee	<i>Contopus sordidulus</i>	S
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	W
White-faced ibis	<i>Plegadis chihi</i>	S
White-throated swift	<i>Aeronautes saxatalis</i>	R
White-winged dove	<i>Zenaida asiatica</i>	S
Yellow warbler	<i>Dendroica petechia</i>	S
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	S
Yellow-breasted chat	<i>Icteria virens</i>	S
Yellow-rumped warbler	<i>Dendroica coronata</i>	W
Zone-tailed hawk	<i>Buteo albonotatus</i>	S
Season of occurrence: R=resident W=winter S=summer		

- concentrations known to be toxic of brine or chemical constituents in the evaporation ponds, and time of exposure long enough to cause adverse effects on wildlife

Based on this knowledge of the region of influence and on the Project description, potential impacts on fish and wildlife species were determined.

3.13.2.3 Impact Assessment Methods

Biologists from EPG completed a reconnaissance survey of the proposed power plant site on November 27 and 28, 2000. The survey included both vehicular and pedestrian surveys of the region of influence. EPG completed a second reconnaissance survey of the plant site and pipeline corridors on March 29 and 30, 2001. Between May and August 2000, field inventories for wildlife species were conducted concurrently with surveys for nesting raptors, yellow-billed cuckoos, southwestern willow flycatchers, vegetation, and fish (Greystone 2000b). Lists of species expected to occur in the region of influence were compiled based on these surveys and a background literature search (Tables 3.13-5, 3.13-6, and 3.13-7).

3.13.2.4 Actions Incorporated Into the Proposed Action to Reduce or Prevent Impacts

The following surveys (refer to Section 2.2.8) have been incorporated into the Proposed Action and committed to by Caithness (refer to Appendix C):

- The Proposed Action contains measures designed to monitor groundwater levels and provide water to augment shallow groundwater and surface water flows in the Big Sandy River sufficient to prevent changes to these hydrologic systems which may otherwise occur as a result of the Project. Therefore, no changes to shallow groundwater levels or surface water flows in the Big Sandy River are predicted as a result of the Project.

- Pre- construction surveys for breeding raptors would be completed prior to ground disturbance activities.

<i>Protection of Migratory Birds</i>
The United States has ratified international conventions with Canada, Mexico, Japan, and Russia regarding the protection of migratory birds. The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) implements the protective measures of these conventions. The MBTA prohibits “taking,” which is the killing, possession, or transport of any migratory bird or their eggs, parts, or nests except as authorized by a valid permit. These actions may be permitted only for educational, scientific, and recreational purposes, and harvest is limited to levels that prevent overutilization. Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, was issued in January 2001 and emphasizes that Federal actions are subject to the MBTA and directs Federal agencies to evaluate the effects of agency actions in NEPA documents like this Draft EIS.
Permits can be issued by U.S. Fish and Wildlife Service (USFWS) under the MBTA for the intentional take of specific birds and nests that have been identified prior to application for the permit. However, unlike the Endangered Species Act, no permits can be issued for take that is incidental to the action being taken. All bird species likely to be found in the Project region of influence, with the exception of house sparrow, European starling, and rock dove, are protected under the MBTA. Any incidental take (e.g., if birds, nestlings, or eggs are destroyed during construction activities) of these protected species would constitute a violation of the MBTA.

3.13.2.5 Impact Assessment

Proposed Action

Proposed Power Plant Site and Access Road

Construction Impacts – The only aquatic resource in the vicinity of the proposed power plant site is the small wetland in the southwest corner of Section 5, T15N, R12W. The proposed layout for the power plant, substation, and

access road is designed to avoid any direct impacts on this wetland.

There are no large trees at the proposed power plant site that would support nests of large raptor species such as the zone-tailed hawk, common black-hawk, ferruginous hawk, or golden eagle. Saguaros present on the site may support nests of the red-tailed hawk, Swainson’s hawk, American kestrel, elf owl, and western screech owl.

If a saguaro with an active raptor nest is removed during construction activities, loss of the nest would result. Construction activities in close proximity to an active raptor nest also may result in nest failure. Loss of one Swainson’s hawk nest or two or more nests of any other raptor species would be considered a significant impact.

Direct mortality of fossorial mammals and reptiles may occur during construction of the proposed power plant and access road. Construction activities may also interrupt foraging and breeding activities of birds and other animals in proximity to the construction site. These impacts on breeding birds would not be significant because the disturbed habitat is extensive in Arizona and removal of these lands would not result in a substantial reduction of the breeding opportunities for birds on a regional level.

If vegetation at the proposed plant site and along the proposed access road is cleared during the nesting seasons of migratory birds, loss of nests and eggs and mortality of nestlings may occur. Because this would not result in any substantial reduction in breeding opportunities for birds, no significant biological impacts are anticipated. However, losses would violate the Migratory Bird Treaty Act unless permits are obtained from the USFWS prior to construction. These losses without a permit would be considered significant.

The volume of traffic along the proposed access road would be high during construction of the

power plant and may result in mortality of some small mammals and reptiles attempting to cross the road. Construction of the access road and increased traffic may temporarily interrupt the movement of large mammals during construction hours.

Operational Impacts – The only aquatic resource in the vicinity of the proposed power plant site is a small wetland in the southwest corner of Section 5, T15N, R12W. Indirect operational impacts to this aquatic habitat from erosion or sedimentation are not expected because drainage control measures are part of the Proposed Action. Failure of a dike at the evaporation ponds could release concentrated brine into the natural drainage network. However, measures are incorporated into the Proposed Action to avoid this release, and this potential discharge would enter the drainage downstream from the aquatic habitat and perennial flow from this spring. Thus, there would be no direct impact to the aquatic habitat. No long-term impacts are expected for this aquatic habitat.

Because the Proposed Action contains measures to augment shallow groundwater and surface water, groundwater withdrawal for cooling water at the proposed power plant and for agricultural purposes is not likely to impact aquatic resources or wildlife. No habitat for obligate or facultative riparian wildlife would likely be lost, and groundwater pumping would not likely cause adverse impacts on wildlife. Also, there would not likely be long-term impacts on these aquatic resources, nor on any vegetation that depends on surface water.

Traffic to and from the proposed power plant site and noise from operation of the generating facility would result in minor increased daily disturbance to terrestrial wildlife. Where the access road crosses Sycamore Creek a concrete box culvert would be constructed of 10 individual boxes each having a dimension of 8 by 12 by 58 feet. The adjacent boxes would be placed parallel to the stream flow, and at a 60-degree angle to the road, as described in Section

2.2.4. The roadway would be directly on top of the culvert, and the sides would be graded to a 25 percent slope. Although large mammals may be reluctant to cross under the roadway through the culvert, the height, width, and grade of the box culvert should allow for big game and other wildlife movement. There are no plans to fence the roadway, which would otherwise present an impediment to wildlife movement. Because this crossing does not present a physical barrier that prevents wildlife movement, these impacts would not be significant.

Evaporation ponds occupying 18 acres would be established as part of the proposed Project to accommodate wastewater. These evaporation ponds could provide a place where transient, migratory, or wintering waterbirds such as herons, ducks, and shorebirds could feed and rest. Waterbirds would be attracted to the ponds by standing water and by food items such as brine shrimp that may become established in the ponds.

A literature search pertaining to evaporation (brine) ponds at power generation facilities and the potential for wildlife impacts was completed using Cambridge Scientific Abstracts, an internet search tool that provides access to more than 70 databases covering the scientific and technical research literature.

Most recently, Tanner et al. (1999) published a study of the algae, invertebrates, and chemistry of two large, hypersaline, industrial wastewater ponds near Phoenix, Arizona (Tanner et al. 1999). Negative impacts associated with waterbird use of selenium-contaminated evaporation ponds are generally reported for birds that feed and reside at these evaporation ponds for the duration of the breeding season (Adams et al. 1998; Lemly 1997; Robinson and Oring 1996). The presence of a vegetated or barren mud shoreline, shallow wading habitat, and vegetation in deeper water are key factors that attract wildlife, particularly waterbirds, to reside through the breeding season at evaporation ponds (Byron et al. 1999). The absence of attractive habitat for breeding

waterbirds and other wildlife, including bats, can minimize exposure and preclude impacts, even when water and dietary selenium concentrations exceed chronic threshold concentrations (Byron et al., 1999). If chronic toxicity levels of any constituent are reached in the evaporation ponds for this Project and wildlife are attached have access to the ponds, impacts would be considered significant.

Because the evaporation ponds would be adjacent to the existing Mead-Phoenix Project and Mead-Liberty transmission lines, birds moving toward the evaporation ponds to land may strike the existing power lines to the east of the proposed evaporation ponds. These collisions may result in mortality or injury of birds. Because few collisions are likely, this would not likely lead to substantial reductions in breeding opportunities for birds, and no significant biological impacts are anticipated. Any losses would violate the Migratory Bird Treaty Act, unless permits are obtained from USFWS prior to construction. These losses without a permit would be considered significant.

Because the operation of the proposed power plant and access road would not significantly degrade surface water quality in the Big Sandy River downstream watercourses (refer to Section 3.5.2.5), there would be no significant impacts on aquatic resources from these operations.

Agricultural Area

Construction Impacts – There are no aquatic resources in the proposed agricultural area.

Direct mortality of fossorial mammals and reptiles may occur during removal of native vegetation in the proposed agricultural area. Construction activities may interrupt foraging and breeding activities of birds and other animals in proximity to the agricultural area. These impacts on breeding birds would not be significant because the disturbed habitat is extensive in Arizona and removal of these lands would not result in a substantial reduction to the

breeding opportunities for birds on a regional level.

If clearing of vegetation takes place during the nesting seasons of migratory birds, loss of nests and eggs and mortality of nestlings may occur. Because this would not result in any substantial reduction in breeding opportunities for birds, no significant biological impacts are anticipated. However, these losses would violate the Migratory Bird Treaty Act unless permits are obtained from the USFWS prior to construction. These losses without a permit would be considered significant.

If saguaros that contain active raptor nests are removed from the agricultural site, loss of the nest would occur. Nesting raptors may also be affected by human activity near their nests during breeding season, and disturbances in the vicinity of the nest may result in nest failure. Raptor species that might nest on the proposed agricultural site include the red-tailed hawk, Swainson's hawk, elf owl, western screech owl, and American kestrel. If one Swainson's hawk nest or two nests of any other raptor species are lost, these impacts would be considered significant.

Removal of natural vegetation from the proposed agricultural area would result in the permanent loss of breeding and foraging areas for species that use Arizona Upland vegetation. The area that would be occupied by the agricultural land represents a very small percentage of all Arizona Upland habitat.

Operational Impacts –Agricultural activities would include the use of pesticides and herbicides, which could have toxic effects on wildlife using the agricultural area, particularly on insectivorous birds. However, because the Proposed Action contains measures to minimize the application of agricultural chemicals, no significant biological impacts are anticipated. Any losses of migratory birds would violate the Migratory Bird Treaty Act unless permits are obtained from the USFWS prior to construction.

Communication Facilities

The OPGW would cross the Big Sandy River north of Wikieup, upstream from the perennial reach of the river. There is no aquatic habitat associated with the proposed route for the OPGW, and there would be no impact to aquatic habitats.

Although the OPGW option would be installed on existing structures, about 5 acres within the existing right-of-way would be disturbed for pulling and tensioning sites. Construction activities associated with the installation of the OPGW may result in direct mortality of fossorial mammals and reptiles and may interrupt breeding and foraging activities of birds and other animals in the vicinity. These impacts on breeding birds would not be considered significant because the disturbed habitat is extensive in Arizona and removal of these lands would not result in a substantial reduction in breeding opportunities for birds on a regional level.

If construction takes place during the nesting seasons of migratory birds, loss of nests and eggs and mortality of nestlings may occur. Because this would not result in any substantial reduction in breeding opportunities for birds, no significant biological impacts are anticipated. However, losses would violate the Migratory Bird Treaty Act, unless permits are obtained from the USFWS prior to construction. These losses without a permit would be considered significant.

Large raptors such as red-tailed hawks, Swainson's hawks, ferruginous hawks, and golden eagles may nest on the transmission line towers. Construction activities in close proximity to an active nest may result in nest failure. Loss of one Swainson's hawk, ferruginous hawk, or golden eagle nest, or two red-tailed hawk nests would be a significant impact.

The OPGW system would not pose any long-term operation impacts on wildlife.

The primary communication system includes installation of microwave dishes. Since the microwave dishes would be installed on existing towers, no impact on wildlife or wildlife habitat would occur.

Proposed Gas Pipeline Corridor

Construction Impacts – The only direct impacts to the aquatic habitats on the Big Sandy River would be related to construction activities adjacent to the US 93 bridge over the Big Sandy River (corridor segment R5). If the natural gas pipeline is constructed by trenching, installation, and backfill, there would be temporary impacts related to substrate disturbance on the aquatic habitat associated with the river and the riparian area. Assuming a 50-foot wide construction zone and a length of impact of approximately 150 feet across the aquatic habitat, the area of temporary impact would be 7,500 square feet (0.17 acres). Potential indirect impacts include downstream erosion, sedimentation and increased turbidity related to construction activities. Fluid spills from construction equipment could also impact this aquatic habitat and downstream portions of the Big Sandy River. Since appropriate control measures, as described in Section 2.2.8.2, would be implemented, the impacts to this habitat would not be significant.

If the pipeline is installed under the Big Sandy River by directional drilling, there would be no construction impacts on these aquatic habitats.

Direct mortality of fossorial mammals and reptiles may occur during construction of all corridor segments of the natural gas pipeline. Mortality of small mammals and reptiles also may occur as a result of those animals falling into the pipeline trench and being unable to escape. Construction activities may interrupt foraging and breeding activities of birds and other animals in proximity to the pipeline. These impacts on breeding birds would not be considered significant because the disturbed habitat is extensive in Arizona and removal of these lands would not result in a substantial reduction in the breeding opportunities for birds

on a regional level. The trench for the pipeline would be 28 inches wide, which is small enough for wide-ranging mammals such as deer or coyotes to cross easily, and habitat fragmentation would not be an issue.

If vegetation along the pipeline alignment is cleared during the nesting seasons of migratory birds, loss of nests and eggs and mortality of nestlings may occur. Because this would not result in any substantial reduction in breeding opportunities for birds, no significant biological impacts are anticipated. However, these losses would violate the Migratory Bird Treaty Act, unless permits are obtained from the USFWS prior to construction.

If construction of the pipeline results in the removal of large trees or saguaros that contain active raptor nests, loss of the nest would occur. Nesting raptors also may be affected by human activity near their nests during the breeding season, and disturbances in the vicinity of the nest may result in failure of the nest. If one black-hawk, zone-tailed hawk, ferruginous hawk, Swainson's hawk, or golden eagle nest, or two nests of any other raptor species are lost, these impacts would be considered significant.

No access path would be maintained across the aquatic habitat in the Big Sandy River. There would be no impacts on this habitat related to operation of the proposed Project.

Although all disturbed portions of the pipeline would be revegetated and/or reseeded, full recovery of plant communities following disturbance can be very slow (refer to Section 3.11). Because there would be a permanently disturbed access road and because recovery of vegetation could be slow, the pipeline route may not offer optimal foraging, sheltering, or nesting habitat to local wildlife. This would be a long-term adverse impact but would not be considered significant because they would not result in substantial reduction in breeding opportunities for birds nor present a physical barrier to wildlife movement.

The pipeline would be inspected on a regular basis. Routine monitoring of the pipeline would be completed by vehicle on the 10-foot-wide two-track. In sensitive areas such as riparian areas and ACECs, monitoring would be completed on foot. Monitoring by vehicle may result in the direct mortality of small mammals and reptiles. Because the pipeline trench would be backfilled after completion of the pipeline, construction of the pipeline along the proposed route would not create any permanent physical barriers to wildlife movement in the Sycamore Creek (corridor segment R5), Big Sandy (corridor segment R5), or Carrow-Stephens (corridor segment T4) movement corridors.

Alternative R Gas Pipeline Corridor

Construction Impacts – Impacts to aquatic habitats in corridor segment R5 would be the same as the Proposed Action.

Short-term impacts to mammals, raptors, other birds, and reptiles along all segments of the Alternative R gas pipeline corridor would be the same as the Proposed Action.

Operational Impacts –In the Carrow-Stephens ACEC (corridor segment R4) wildlife movement corridor, future construction on US 93 may move the road several hundred feet to the west. If the gas pipeline were built in fill for the existing highway alignment, it could interfere with restoration of the wildlife movement corridor after the highway is moved. This interference could be a significant impact on wildlife use of this corridor.

Other operational impacts would be the same as those discussed for the proposed gas pipeline corridor.

Alternative T Gas Pipeline Corridor

Construction Impacts –There is no perennial flow in the Big Sandy River at the Alternative T pipeline crossing (corridor segment T5), and there would be no impact to aquatic habitat. Short-term impacts to other mammals, raptors,

other birds, and reptiles would be the same as the Proposed Action.

Operational Impacts –Impacts on wildlife would be the same as the Proposed Action

Crossover Segment C2

Construction Impacts – There are no aquatic resources in corridor segment C2. Impacts on mammals, reptiles, raptors, and other birds as the result of pipeline construction in corridor segment C2 would be the same as the Proposed Action.

Operational Impacts – There are no aquatic resources in crossover segment C2. Impacts on wildlife would be the same as the Proposed Action.

No-Action Alternative

There would be no disturbances on aquatic or terrestrial wildlife. The access roads and well pads constructed on private lands, to serve the wells used to identify and test the lower aquifer, would remain.

3.13.2.6 Mitigation and Residual Impacts

If adopted, the following measures would be implemented to avoid or reduce significant impacts:

- If active raptor nests are located on the plant site during construction, construction would be postponed until young have fledged from the nest to avoid impacts on these species. If active raptor nests are located along the pipeline alignment during construction, and the nest structure would be removed by construction, the pipeline alignment would be adjusted within the pipeline corridor to avoid removal of the nest. If the nest can be avoided but the birds are disturbed by nearby construction activities, significant impacts would be avoided by postponing construction until young have fledged from the nest. If active raptor nests are located on

transmission line towers where the OPGW would be installed, loss of these nests would be avoided by postponing installation of the wire until after young have fledged from the nest.

- To avoid the loss of active nests of migratory birds or the substantial reduction of breeding opportunities for birds, all surface-disturbing activities would be completed outside of the applicable nesting season. If construction cannot be scheduled outside of the breeding season, pre-construction surveys for nesting migratory birds would be completed for all areas where ground disturbance is expected during the breeding season. The location and species of each active nest could be recorded. Caithness would then apply to the USFWS for a depredation permit for all known nests of migratory birds.
- The area around the evaporation ponds and transmission lines would be monitored for bird mortalities, and the location, date, species, and probable cause of death would be recorded for each carcass found. Methods to prevent bird impacts with transmission lines, such as increasing the visibility of the transmission lines to birds by using colored or reflective tags or colored insulating sleeves, would be implemented if collisions are identified as a substantial cause of mortality.
- Impacts on the Carrow-Stephens Ranches ACEC wildlife movement corridor in corridor segment R4 would be avoided by designing the gas pipeline to avoid placement in fill where the existing highway alignment crosses ephemeral stream channels. When the highway is moved, the pipeline would not remain in fill above drainage bottoms as a barrier to wildlife movement.

If adopted, the following measures would be implemented to minimize adverse impacts not considered to be significant:

- To minimize the attractiveness of the evaporation ponds to birds, the ponds would be designed to minimize the creation of vegetated or barren mud shorelines, shallow wading habitat, and vegetation in deeper water.
- Water chemistry of the evaporation ponds, including concentrations of potentially toxic constituents (arsenic and selenium), would be monitored. If concentrations of any constituents approach levels known to be chronically toxic to wildlife, the sampling frequency would be increased to at least quarterly. At least weekly observations of bird use of the evaporation ponds would be recorded. The area around the evaporation ponds would be monitored for wildlife mortalities, and the location, date, species, and probably cause of death would be recorded for each carcass found.
- If the concentrations of any constituents of the evaporation ponds reach levels known to be toxic, and the number of birds using the evaporation ponds for extended periods is high or substantial wildlife mortalities are recorded, then Caithness would implement measures to reduce pond toxicity (such as removing toxic sediments or concentrated brine) or reduce or exclude wildlife (such as construction additional fences or using distractive devices).
- Plugs of soil would be left approximately every 0.25 mile during trenching of the gas pipeline, allowing small mammals and reptiles that fall into the trench a chance to escape.

3.14 THREATENED, ENDANGERED, PROPOSED, AND OTHER SPECIAL STATUS SPECIES

This section describes the affected environment and environmental consequences relating to threatened and endangered species. This section also addresses species that are proposed for

threatened or endangered status, as well as other special status species.

3.14.1 Affected Environment

The following sections describe the current threatened, endangered, and special status species. This information provides a baseline for assessment of impacts and environmental consequences.

Threatened and Endangered Species—Impacts on threatened and endangered species proposed and listed under the Endangered Species Act (ESA) of 1973, as amended, that could occur within the vicinity of the Project are addressed here. Listed species with the potential to occur in the region of influence include southwestern willow flycatcher, bald eagle, Yuma clapper rail, and Arizona cliffrose.

Other Special Status Species—There are additional species that are considered BLM sensitive species and/or species of special concern in Arizona and one species, the mountain plover, which is proposed to be listed as threatened by the U.S. Fish and Wildlife Service (USFWS).

<i>Federal Consultation</i>
Impacts on species listed under the ESA are addressed through consultations by Federal agencies with the U.S. Fish and Wildlife Service (USFWS), as specified in Section 7 of the ESA. Consultations begin informally when a Federal agency requests a list of species listed under the ESA. If a listed species exists in the Project area, a biological assessment (BA) is prepared. The initial determination of effect is made by the lead agency (50 CFR Part 420). If the BA determines that the Proposed Action may adversely affect a listed species or its habitat, then the Federal agency must enter formal consultation with the USFWS. USFWS would then prepare a biological opinion (BO) that determines whether or not the Project will adversely affect listed species or critical habitat. The process of formal consultation with the USFWS ensures that Federal actions conserve listed species and their critical habitat. The BO is based on information provided in the BA, but the BO may concur with or dispute the determination of impact.