

Upper New River Area Drainage Master Plan

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Environmental Overview Report



EcoPlan Associates, Inc.
Environmental Science & Resource Economics



Stantec

Upper New River Area Drainage Master Plan Environmental Overview

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Environmental Overview Executive Summary

Upper New River Area Drainage Master Plan

The Upper New River Area Drainage Master Plan watershed encompasses approximately 169 square miles located in Townships 5, 6, 7, and 8 North, Ranges 1, 2, and 3 East of the Gila and Salt River Baseline and Meridian. The study area of this Final Environmental Overview (EO) includes an area approximately 10 miles long by 2 miles wide, extending from the Anthem Master Planned Community on the north to just below the Central Arizona Project canal on the south. This area of potential effect (APE), referred to in this EO as the “study area,” is where structural solutions to flood control are necessary, thus creating the most permanent impacts to the river corridor and associated Waters of the United States (Waters).

The purpose of this EO is to identify and describe the existing ecological resources within a ½-mile buffer around the APE. It will include notable or special natural features such as wildlife nesting, foraging, watering, roosting, or denning areas that may warrant protection. Washes used as wildlife corridors will be identified and documented. Finally, each alternative chosen for the various reaches in the project area will be evaluated in regard to its potential impact of the area’s wildlife and associated habitats. A specific section of the report will outline general design guidelines to reduce or eliminate impacts to wildlife and habitat or enhance a chosen alternative to encourage wildlife usage. Further recommendations will be made to minimize or eliminate fragmentation of habitat that could occur as a result of structural alternatives implemented.

Ecological surveys were conducted in the study area by a four-wheel-drive vehicle and on foot over 10 days in 2006 and early 2007 by Senior Biologist Timothy Wade of EcoPlan Associates, Inc. Additional site visits were conducted in April 2008 to update originally obtained information and gather information on the specific alternatives once their locations were determined.

The study area is composed of upland Sonoran desert habitat with xeroriparian habitat along the various washes and the New River corridor. These xeroriparian areas, on average, tend to have a higher density and diversity of vegetation. In addition to the areas of increased vegetation density along the wash corridors, two small mesquite bosques are in the study area. These areas appear to hold moisture after rainfall events, resulting in higher than normal vegetation densities. This higher density and diversity of trees and shrubs, as well as larger individuals of the species present along xeroriparian washes, provide more, higher quality habitat for wildlife than adjacent upland areas.

New River serves as a valuable wildlife corridor for wildlife of all sizes, and any structural solution implemented should take this function and value into account in the design, construction, and maintenance of such structures.

Numerous stock tanks and one wildlife guzzler are in the study area. Stock tanks, while originally intended for cattle, provide valuable watering areas for wildlife. Catchments are valuable to all species of wildlife that inhabit this area and, if they are negatively impacted either directly through destruction resulting from home or road construction or indirectly by encroaching development, should be relocated to an area that will be preserved.

The northern third of the study area has been affected by the construction of a public facility. To construct the New Waddell Dam, earth fill was needed from nearby areas. Large portions of the northern third of the study area were used as a source of fill. Soil was scraped and used to construct the dam. Much of this area has been ripped and replanted with native species. Though attempts have been made to revegetate the area, the vegetation is sparse, and opportunities may exist for native vegetation enhancement.

Due to the permanent impacts of the structural alternatives chosen, compensatory mitigation may be required. This report will provide an approximate acreage of impacts to presumed jurisdictional areas defined as Waters. Exact acreages will not be provided because no jurisdictional delineation has been conducted for the project area.

If compensatory mitigation is required, several opportunities exist in the project area, including the restoration of the FNF Sand and Gravel operation's settling ponds once the material pits are fully excavated and the operation moves to another location. Material pit ponds provide an excellent opportunity for wetland and riparian habitat establishment.

Another opportunity would be to make another attempt at revegetating the area that was used for material for the New Waddell Dam.

Environmental Overview

Upper New River Area Drainage Master Plan

Introduction

The Upper New River Area Drainage Master Plan (ADMP) watershed encompasses approximately 169 square miles located in Townships 5, 6, 7, and 8 North, Ranges 1, 2, and 3 East of the Gila and Salt River Baseline and Meridian. The study area of this Environmental Overview (EO) includes an area approximately 10 miles long by 2 miles wide, extending from the Anthem Master Planned Community on the north to just below the Central Arizona Project (CAP) canal on the south (Figures 1, 2, and 3). In this Area of Potential Effect (APE), referred to in this EO as the “study area,” structural solutions to flood control are necessary, thus creating the most permanent impacts to the river corridor and associated Waters.

The purpose of this EO is to identify and describe the existing ecological resources within a ½-mile buffer around the APE. It will include notable or special natural features such as wildlife nesting, foraging, watering, roosting, or denning areas that may warrant protection. Washes used as wildlife corridors will be identified and documented. Each alternative chosen for the various reaches in the project area will be evaluated in regard to its potential impact on the area’s wildlife and associated habitats. A specific section of the report will outline general design guidelines to reduce or eliminate impacts to wildlife and habitat or enhance a chosen alternative to encourage wildlife usage. Further recommendations will be made to minimize or eliminate fragmentation of habitat that could occur as a result of structural alternatives implemented.

Methodology

The original field surveys employed the use of nine aerial photos to identify unique or dense vegetation, unique topographical characteristics, man-made areas or features of interest, and other areas that warranted further field investigation. Two of the aerials were 1":500' and depicted the northern and southern boundaries of the study area. Six aerials were 1":200' and were extensively used to locate unique features and illustrate photo points and Global Positioning System (GPS) points. The final map used was a 1":1,000' reference map.

Ecological surveys were conducted in the study area (Figures 2 and 3; Appendix A) by four-wheel-drive vehicle and on foot over 10 days: September 19, 27, 28; October 11, 12, 13, 30; and November 2, 2006; and January 10 and 18, 2007. Follow-up surveys were conducted on April 8, 9, 18, 2008 to update the original information obtained and gather information on the impacts of the specific structural alternatives. Senior biologist Timothy Wade conducted the surveys. Survey routes, for the most part, followed previously established two-track dirt roads and utility corridors and the alignment of the various levees.

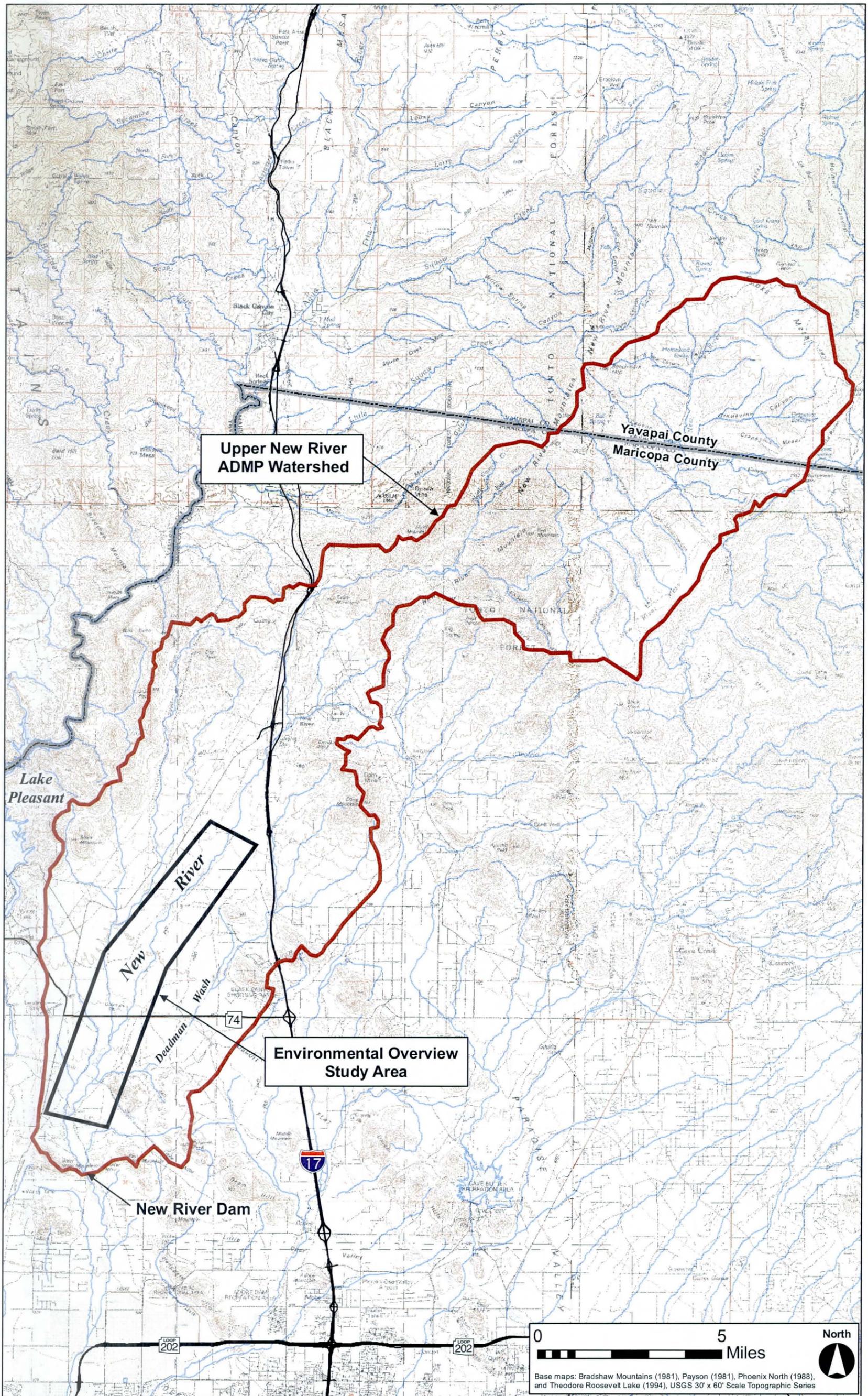


Figure 2. Project vicinity.

W06-871BIO/EO/FIG2

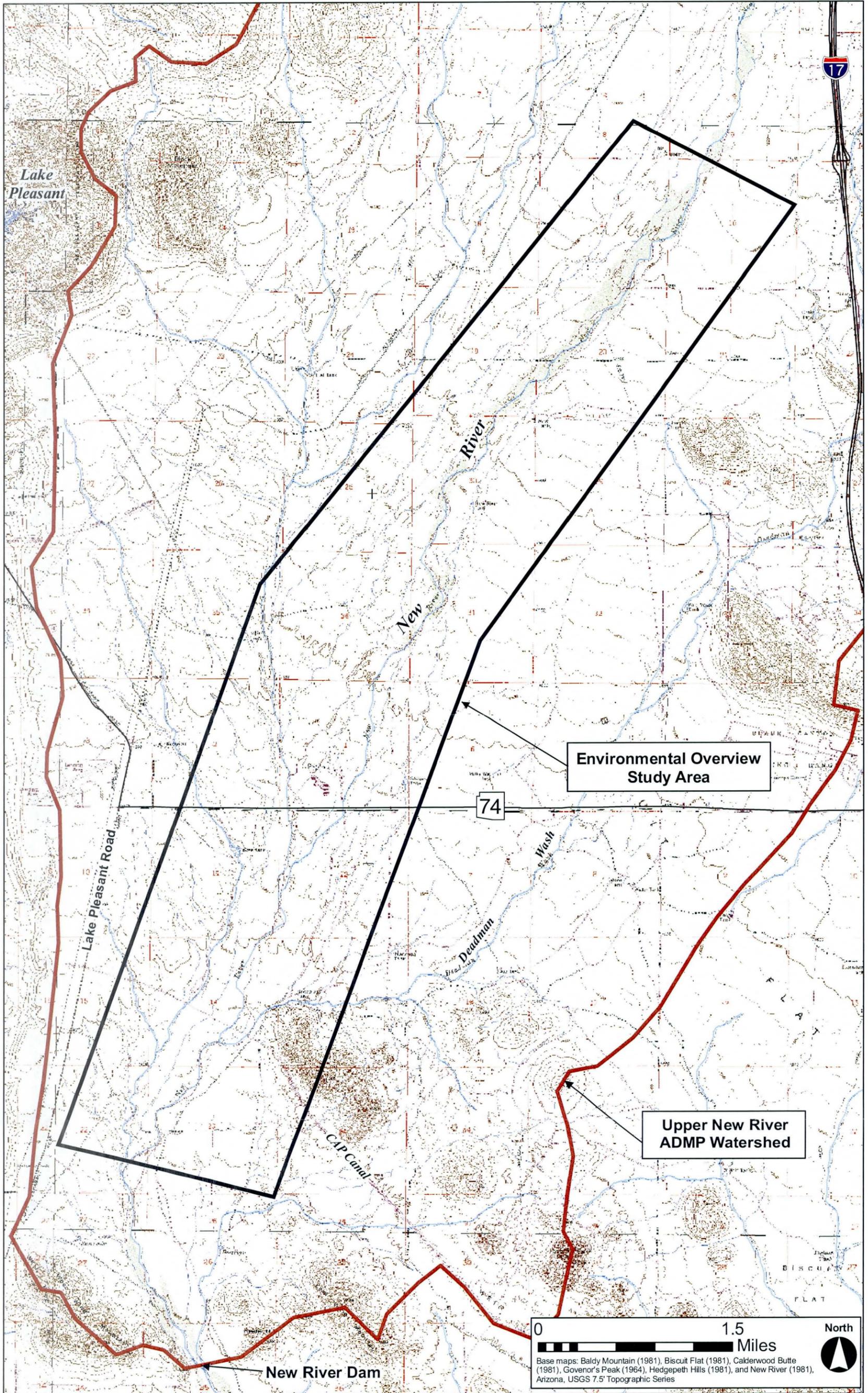


Figure 3. Overview study area.

In the study area, the New River corridor was difficult and often impossible to traverse due to the widely dispersed large cobble and boulders. Routes were chosen that bisected the majority of the washes or were adjacent to the river and associated washes to obtain representative photos. Observations were made during the surveys regarding dominant plants, community species compositions, their relative densities, and any unique and sensitive wildlife habitat areas.

Vegetation Communities, Habitat Types, and Terrain Features

The vegetation community in the study area lies in the Lower Colorado River and the Arizona Upland subdivisions of the Sonoran Desertscrub biome. Vegetation consisting of creosote bush (*Larrea tridentata*), triangle leaf bursage (*Ambrosia deltoidea*), and various species of cholla, including teddy bear (*Cylindropuntia bigelovii*), chain fruit (*Cylindropuntia fulgida*), buckhorn (*Cylindropuntia acanthocarpa*), and staghorn (*Cylindropuntia versicolor*), dominate areas between the xeroriparian washes. Dominant species associated with those washes include blue paloverde (*Parkinsonia florida*), foothill paloverde (*Parkinsonia microphylla*), western honey mesquite (*Prosopis glandulosa* var. *torreyana*), velvet mesquite (*Prosopis velutina*), and ironwood (*Olneya tesota*).

Xeroriparian Habitat

Dominant plant species include ironwood, saguaro (*Carnegiea gigantea*), foothill paloverde, teddy bear cholla, wolfberry (*Lycium* spp.), and ocotillo (*Fouquieria splendens*). Due to the increased vegetation density and structural diversity adjacent to New River proper and numerous washes, these areas support a diverse wildlife population.

Xeroriparian areas, on average, have greater availability of surface and subsurface water than areas not associated with washes. As a result, xeroriparian washes, including the New River corridor project area, tend to have a higher density and diversity of vegetation and often larger individuals of a particular plant species than adjacent upland areas. This higher density and diversity of trees and shrubs, as well as larger individuals of the species present along xeroriparian washes, provides more resources for wildlife than adjacent upland areas. Resources for wildlife commonly associated with the xeric riparian plant communities supported by these washes include cover, food, nesting substrates, denning areas, and movement corridors. For example, enhanced cover along these washes provides opportunities for movement by larger mammals, such as mule deer (*Odocoileus hemionus*), javelina (*Tayassu tajacu*), and coyote (*Canis latrans*), and habitat for smaller mammals, passerine birds, and reptiles (Appendix B).

Stock Tanks and Wildlife Guzzlers

Due to current and historical cattle grazing, there are numerous stock tanks (Appendix B and C) throughout the study area. Though the stock tanks at GPS points 1CT3, 1CT4, and NRDTNK (Appendix A) are outside the study area, due to their importance, they are noted on the base map. Originally intended for cattle, stock tanks provide valuable watering areas for wildlife. Though the plant density associated with some of these tanks is higher than normal, many have been degraded due to wildcat dumping, off-road vehicles, target shooting, and other human activities. In spite of this degradation, wildlife species using these areas include javelina, coyote, bobcat (*Felis rufus*), feral burros (*Equus asinus*), and numerous species of shore and wading birds. The stock tanks are still used by cattle where grazing allotments are active. The associated vegetation

provides valuable cover for nesting, movement corridors for bird and mammal species, and habitat for various species of amphibians. While stock tanks of these types have been used as refugia ponds for endangered fish such as desert pupfish (*Cyprinodon macularius*) or Gila topminnow (*Poeciliopsis occidentalis*), all non-native fish that could prey on these species would have to be removed prior to introduction of these endangered species.

One wildlife guzzler, north of the Arizona Game and Fish Department (AGFD) Ben Avery Shooting Facility, consists of a concrete gravity-fed wildlife guzzler and associated concrete apron to gather rainfall (Appendix C, Photos 20, 21). One ring tank was located that did not contain water at the time of the survey (Appendix C, Photo 14).

Mesquite Bosques and Xeroriparian Habitat

Aside from the increased density of mesquite and other native upland tree and shrub species associated with the xeroriparian washes, several small mesquite bosques are located at the southern end of the study area. These areas appear to hold moisture after rainfall events, resulting in higher than normal vegetation densities (Appendix B; Appendix C, Photos 23 and 24). None of these areas will be affected by the chosen alternatives.

Riparian Forest

Though there are no significant stands of deciduous riparian forest in the study area, large stands of riparian habitat occur upstream of the study area. EcoPlan Associates, Inc., completed an EO of a riparian area located along the New River corridor in the community of New River in October 2006 (Wade 2006). This report was submitted to the Flood Control District of Maricopa County (District) and the Bureau of Land Management.

Jurisdictional Areas

It appears that all of the xeroriparian washes that exhibit signs of an ordinary high water mark are Waters of the United States (Waters) as defined by the Clean Water Act. These washes would fall under the jurisdiction of the U.S. Army Corps of Engineers and the Environmental Protection Agency. A jurisdictional delineation for each of these washes will have to be performed to determine the extent of the jurisdictional area.

The four levee locations were evaluated for their potential impacts to presumed jurisdictional areas. Washes that appear to have the typical functions and values of ephemeral jurisdictional areas were assumed to be jurisdictional. Aerial photos in 1":200' scale were used to locate areas in the footprint of each levee and associated construction road that appeared to be jurisdictional. These locations were assigned GPS points. Each point was ground-truthed, and photos were taken to illustrate jurisdictional characteristics (Table 1, Appendix E, and Appendix F). If the GPS point appeared not to be properly aligned with the jurisdictional area, the photo was retaken to correctly align with the assumed crossing of the levee.

From location 5 northeast along the proposed levee alignment for approximately 1,600 feet, the area of impact was difficult to estimate. Numerous small braids are in this area of the river. Depending on the final alignment of the levee and associated construction disturbance, the area of impact could be much greater than previously estimated.

Table 1. Area of potential impact to Waters of the United States by location and levee.

Levee Designator	Number of Potential Impact Locations	GPS Points	GPS ¹ Coordinates of Location	Potential Area of Impact (sq. feet)	Photo Numbers
New River Levee East	5	1	0387244E 3740238N	6,000	1
		2	0387692E 3741130N	20,000	2, 3
		3	0387825E 3741265N	3,000	4, 5
		4	0387866E 3741304N	2,500	6, 7
		5	0388328E 3741850N	3,000	8, 9
Subtotal			34,500 (.79 acre)		
New River Levee West	1	6	0388554E 3742752N	3,500	10, 11
Subtotal			3,500 (.080 acre)		
Sweat Canyon Levee South	2	7	0387118E 3742814N	1,000	12, 13
		8	0387225E 3742981N	1,000	14, 15
Subtotal			2,000 (.046 acre)		
Sweat Canyon Levee North	0		Not applicable	Not applicable	
West Split Levee	3	9	0390901E 3746593N	600	16, 17
		10	0390985E 3747010N	2,000	18, 19
		11	0390991E 3747041N	600	20, 21
Subtotal			3,200 (.073 acre)		
Total ² Potential Impact of All Levee Structures (acres)				.989 acre	

¹ GPS coordinates are in UTM, NAD 27.

² Potential impacts were based upon a 100-foot-wide area of impact, including levee and construction road.

Agricultural Lands

There is no farming in the study area. The study area has been or is currently being grazed by cattle and feral burros, as exhibited by numerous stock tanks, extensive fencing, and cattle-loading areas.

Residential Development

Only one residential development is in the study area—the Anthem Master Planned Community along the northern boundary east and west of Interstate 17 (I-17). Only a small portion of the infrastructure associated with the community, on the western side of I-17, is in the study area. Future development will most likely occur outside the New River floodway; however, due to the lack of utilities and infrastructure, it is not likely to occur in the near future.

Commercial and Public Facilities Development

Three locations in the study area have active commercial or public facilities development. In the far northern portion of the study area is an active material source operation, FNF Sand and Gravel, with numerous source pits and two settling ponds (Appendix C, Photos 11–13). Just south of this area along the western border of the study area off New River Road is a regional landfill. Just north of State Route 74, west of New River Road, is a recently completed water treatment facility for the City of Phoenix. The pipeline and associated maintenance corridor bisect the southern portion of the study area from east to west.

The northern third of the study area has been affected by the construction of a public facility. To construct the New Waddell Dam, earth fill was needed from nearby areas. Large portions of the northern third of the study area were used as a source of fill. Soil was scraped and used to construct the dam. Much of this area has been ripped and replanted with native species (Appendix D, Photos 24–26). Though attempts have been made to revegetate the area, the vegetation is sparse, and opportunities may exist for native vegetation enhancement.

Wildlife and Plant Species

Formal wildlife and plant species inventories were not conducted as part of this EO; however, species observed during the surveys were noted. Wildlife Species without special status designations and likely to occur in the study area are listed in Table 2. Special status wildlife and plant species that could appear in the study area are listed in Table 3.

Amphibians and Reptiles

No amphibians were observed during the surveys. However, exotic bullfrogs (*Rana catesbeiana*) and other amphibians associated with the numerous stock tanks are most likely in the study area.

The only reptiles observed were the western whiptail lizard (*Cnemidophorus tigris*), desert horned lizard (*Phrynosoma platyrhinos*), and tree lizard (*Urosaurus ornatus*). Numerous species of lizards and snakes are known to be present in the study area. Other species that may be present include the western banded gecko (*Coleonyx variegatus*), desert tortoise (*Gopherus agassizii*) in the rocky outcropping areas of the foothills, Gila monster (*Heloderma suspectum*), common kingsnake (*Lampropeltis getula*), western diamondback rattlesnake (*Crotalus atrox*), and gopher snake (*Pituophis melanoleucus*).

Birds

Twenty-seven bird species were observed during the surveys. Avian species diversity increased as the vegetation became denser near two small mesquite bosques and xeroriparian washes. Common species observed include the turkey vulture (*Cathartes aura*), common raven (*Corvus corax*), Phainopepla (*Phainopepla nitens*), cactus wren (*Campylorhynchus brunneicapillus*), Gila woodpecker (*Melanerpes uropygialis*), Gambel's quail (*Callipepla gambelii*), and mourning dove (*Zenaida macroura*). Numerous other bird species common to the Sonoran desert are known to occur in the study area (Table 2). One hawk nest was located in a saguaro in the study area (Appendix C, Photo 22).

Mammals

Four species of mammals were observed during the surveys: coyote, desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and rock squirrel (*Spermophilus variegatus*). The tracks of bobcat and javelina were observed adjacent to several of the cattle tanks during the surveys.

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
PLANTS						
White-thorn acacia*	<i>Acacia constricta</i>	X	X			
Catclaw acacia*	<i>Acacia greggii</i>	X	X			
Palmer's amaranth*	<i>Amaranthus palmeri</i>	X	X	X	X	
Canyon ragweed*	<i>Ambrosia ambrosioides</i>	X	X	X		X
Triangle-leaf bursage*	<i>Ambrosia deltoidea</i>	X	X	X	X	
Three-awn grass*	<i>Aristida</i> spp.	X	X	X	X	
Four-wing saltbush*	<i>Artiplex canescens</i>		X	X		X
Desert saltbush*	<i>Artiplex polycarpa</i>		X	X	X	X
Desert broom*	<i>Baccharis sarothroides</i>	X	X	X		
Sweetbush*	<i>Bebbia juncea</i>	X				
Mustard* (several genera and species)	<i>Brassicaceae</i>	X	X	X	X	X
Saguaro*	<i>Carnegiea gigantea</i>	X	X		X	
Desert hackberry*	<i>Celtis pallida</i>	X	X	X		X
Buffelgrass	<i>Pennisetum ciliare</i>	X	X		X	
Sacred datura*	<i>Datura innoxia</i>	X	X	X	X	X
Desert willow*	<i>Chilopsis linearis</i>		X	X		
Rabbitbrush*	<i>Chrysothamnus</i> spp.	X	X			
Bermuda grass*	<i>Cynodon dactylon</i>		X	X	X	X
Engelmann's hedgehog cactus*	<i>Echinocereus engelmannii</i>	X				
Brittlebush*	<i>Encelia farinosa</i>	X	X		X	
Fluffgrass	<i>Erioneuron pulchellum</i>	X	X		X	
California poppy, Mexican goldenpoppy*	<i>Eschscholzia californica</i> ssp. <i>mexicana</i>	X	X	X	X	X
Eucalyptus*	<i>Eucalyptus</i> spp.				X	
Spurge*	<i>Euphorbia</i> spp.	X	X	X	X	X
Barrel cactus*	<i>Ferocactus wislizenii</i>	X	X			
Ocotillo*	<i>Fouquieria splendens</i>	X	X		X	
Broom snakeweed*	<i>Gutierrezia sarothrae</i>	X	X			
Alkali goldenbush*	<i>Isocoma acradenia</i>	X	X		X	
Burro bush*	<i>Hymenoclea</i> sp.	X	X			
Desert lavender*	<i>Hyptis emoryi</i>	X	X			
Creosote bush*	<i>Larrea tridentata</i>	X	X		X	
Wolfberry*	<i>Lycium</i> spp.	X	X	X	X	X
Pincushion cactus*	<i>Mammillaria microcarpa</i>	X				
Ironwood*	<i>Oleña tesota</i>	X	X			
Buckhorn cholla*	<i>Cylindropuntia acanthocarpa</i>	X	X			
Pencil cholla*	<i>Cylindropuntia arbuscula</i>	X				

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Beavertail pricklypear*	<i>Opuntia basilaris</i>	x				
Teddybear cholla*	<i>Cylindropuntia bigelovii</i>	x				
Chain fruit cholla*	<i>Cylindropuntia fulgida</i>	x				
Engelmann's prickly pear cactus*	<i>Cylindropuntia phaeacantha</i>	x				
Staghorn cholla*	<i>Cylindropuntia versicolor</i>	x				
Mexican paloverde*	<i>Parkinsonia aculeata</i>	x	x		x	
Blue paloverde*	<i>Parkinsonia florida</i>	x	x			
Foothill paloverde*	<i>Parkinsonia microphylla</i>	x	x			
Mistletoe*	<i>Phoradendron</i> sp.	x	x	x	x	x
Arrow weed*	<i>Pluchea sericea</i>			x		x
Fremont cottonwood*	<i>Populus fremontii</i>			x		x
Western honey mesquite*	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	x	x	x	x	x
Velvet mesquite*	<i>Prosopis velutina</i>	x	x	x	x	x
Prickly Russian thistle*	<i>Salsola tragus</i>	x	x		x	x
Hairy milkweed, rambling milkweed	<i>Funastrum (Sarcostemma) hirtellum</i>		x			
Jojoba*	<i>Simmondsia chinensis</i>	x	x			
Silverleaf nightshade*	<i>Solanum elaeagnifolium</i>	x	x	x		x
Johnson grass*	<i>Sorghum halapense</i>	x	x	x		x
Globemallow*	<i>Sphaeralcea ambigua</i>	x	x	x	x	x
Tamarisk, salt cedar*	<i>Tamarix</i> sp.		x	x	x	x
Woolly tidestromia	<i>Tidestromia lanuginosa</i>	x	x		x	
Graythorn*	<i>Zizyphus obtusifolia</i>	x	x			
MAMMALS						
Harris' antelope squirrel	<i>Ammospermophilus harrisi</i>	x	x	x		
White-tailed antelope ground squirrel	<i>Ammospermophilus leucurus</i>	x	x	x		
Round-tailed ground squirrel	<i>Spermophilus tereticaudus</i>	x	x		x	
Rock squirrel*	<i>Spermophilus variegatus</i>	x	x	x		
Botta's pocket gopher	<i>Thomomys bottae</i>	x	x	x		
Merriam's kangaroo rat	<i>Dipodomys merriami</i>	x				
Desert kangaroo rat	<i>Dipodomys deserti</i>		x			
White-throated wood rat	<i>Neotoma albigula</i>	x	x	x		
Desert wood rat	<i>Neotoma lepida</i>	x	x	x		
Arizona cotton rat	<i>Sigmodon arizonae</i>	x	x	x		x
Bailey's pocket mouse	<i>Chaetodipus baileyi</i>	x	x			
Rock pocket mouse	<i>Chaetodipus intermedius</i>	x				
Desert pocket mouse	<i>Chaetodipus penicillatus</i>	x	x	x		
House mouse	<i>Mus musculus</i>				x	x
Southern grasshopper mouse	<i>Onychomys torridus</i>	x	x			
Arizona pocket mouse	<i>Perognathus amplus</i>	x	x	x		
Long-tailed pocket mouse	<i>Perognathus formosus</i>	x	x	x		
Cactus mouse	<i>Peromyscus eremicus</i>	x	x	x	x	x

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Deer mouse	<i>Peromyscus maniculatus</i>	x	x	x		
Western harvest mouse	<i>Reithrodontomys megalotis</i>	x	x	x	x	x
Desert shrew	<i>Notiosorex crawfordi</i>	x	x	x		
Black-tailed jackrabbit*	<i>Lepus californicus</i>	x	x	x	x	
Desert cottontail*	<i>Sylvilagus audubonii</i>	x	x	x	x	x
Spotted skunk	<i>Spilogale gracilis</i>	x	x	x		
Striped skunk	<i>Mephitis mephitis</i>		x	x	x	
Raccoon	<i>Procyon lotor</i>		x	x		x
Badger	<i>Taxidea taxus</i>	x	x	x		x
Pallid bat	<i>Antrozous pallidus</i>	x	x	x	x	x
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	x	x	x	x	x
Big brown bat	<i>Eptesicus fuscus</i>	x	x	x	x	
Southern yellow bat	<i>Lasiurus ega</i>	x	x	x	x	
Lesser leaf-nosed bat	<i>Leptonycteris curasoae</i>	x	x	x	x	x
Western mastiff bat	<i>Eumops perotis</i>	x	x	x	x	x
California leaf-nosed bat	<i>Macrotis californicus</i>	x	x	x	x	x
California myotis bat	<i>Myotis californicus</i>	x	x	x	x	x
Cave myotis bat	<i>Myotis velifer</i>	x	x	x	x	
Yuma myotis bat	<i>Myotis yumanensis</i>	x	x	x	x	
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	x	x	x	x	
Western pipistrelle	<i>Pipistrellus hesperus</i>	x	x	x		
Mule deer	<i>Odocoileus hemionus</i>	x	x	x		x
Feral burro*	<i>Equus asinus</i>	x	x	x		
Coyote*	<i>Canis latrans</i>	x	x	x	x	x
Bobcat	<i>Felis rufus</i>	x	x	x		
Javelina	<i>Tayassu tajacu</i>	x	x	x		x
Gray fox	<i>Urocyon cinereoargenteus</i>	x	x	x		x
Kit fox	<i>Vulpes macrotis</i>	x	x	x		x
BIRDS						
Cooper's hawk*	<i>Accipiter cooperii</i>	x	x	x	x	x
Sharp-shinned hawk	<i>Accipiter striatus</i>	x	x	x	x	x
Gray hawk	<i>Asturina nitida</i>			x		
Red-tailed hawk*	<i>Buteo jamaicensis</i>	x	x	x	x	x
Ferruginous hawk	<i>Buteo regalis</i>	x	x	x		x
Swainson's hawk	<i>Buteo swainsoni</i>	x	x	x	x	
Northern harrier*	<i>Circus cyaneus</i>	x	x	x	x	x
Harris' hawk*	<i>Parabuteo unicinctus</i>	x	x	x	x	x
Peregrine falcon	<i>Falco peregrinus anatum</i>	x	x	x	x	x
Prairie falcon	<i>Falco mexicanus</i>	x	x	x	x	x
American kestrel*	<i>Falco sparverius</i>	x	x	x	x	x
Turkey vulture*	<i>Cathartes aura</i>	x	x	x	x	x
Common raven*	<i>Corvus corax</i>	x	x	x	x	x
Western screech-owl	<i>Otus kennicottii</i>	x	x	x	x	
Burrowing owl	<i>Athene cunicularia</i>	x	x		x	
Great horned owl	<i>Bubo virginianus</i>	x	x	x	x	

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Elf owl	<i>Micrathene whitneyi</i>	x	x	x		
Northern pintail	<i>Anas acuta</i>					x
American wigeon	<i>Anas americana</i>					x
Northern shoveler	<i>Anas clypeata</i>					x
Green-winged teal	<i>Anas crecca</i>					x
Cinnamon teal	<i>Anas cyanoptera</i>					x
Blue-winged teal	<i>Anas discors</i>					x
Mallard	<i>Anas platyrhynchos</i>					x
Gadwall	<i>Anas strepera</i>					x
Lesser scaup	<i>Aythya affinis</i>					x
Redhead duck	<i>Aythya americana</i>					x
Ring-necked duck	<i>Aythya collaris</i>					x
Canvasback duck	<i>Aythya valisineria</i>					x
Bufflehead duck	<i>Bucephala albeola</i>					x
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>					x
Ruddy duck	<i>Oxyura jamaicensis</i>					x
Common merganser	<i>Mergus merganser</i>					x
American coot	<i>Fulica americana</i>					x
Common moorhen	<i>Gallinula chloropus</i>					x
Eared grebe	<i>Podiceps nigricollis</i>					x
Pied-billed grebe	<i>Podilymbus podiceps</i>					x
Canada goose	<i>Branta canadensis</i>					x
Spotted sandpiper	<i>Actitis macularia</i>			x	x	x
Baird's sandpiper	<i>Calidris bairdii</i>					x
Western sandpiper	<i>Calidris mauri</i>					x
Pectoral sandpiper	<i>Calidris melanotos</i>					x
Least sandpiper	<i>Calidris minutilla</i>					x
Semipalmated plover	<i>Charadrius semipalmatus</i>					x
Killdeer*	<i>Charadrius vociferus</i>				x	x
Forester's tern	<i>Sterna forsteri</i>					x
Wilson's snipe	<i>Gallinago delicata</i>					x
Red-necked phalarope	<i>Phalaropus lobatus</i>					x
Wilson's phalarope	<i>Phalaropus tricolor</i>					x
Sora rail	<i>Porzana carolina</i>					x
Virginia rail	<i>Rallus limicola</i>					x
American avocet	<i>Recurvirostra americana</i>					x
Black-necked stilt	<i>Himantopus mexicanus</i>			x		x
Lesser yellowlegs	<i>Tringa flavipes</i>					x
Greater yellowlegs	<i>Tringa melanoleuca</i>					x
Long-billed dowitcher*	<i>Limnodromus scolopaceus</i>					x
Long-billed curlew	<i>Numenius americanus</i>					x
Western least bittern	<i>Ixobrychus exilis hesperis</i>					x
American bittern	<i>Botaurus lentiginosus</i>					x
Black-crowned night-heron	<i>Nycticorax nycticorax</i>					x
Great egret	<i>Ardea alba</i>					x
Cattle egret	<i>Bubulcus ibis</i>					x

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Snowy egret	<i>Egretta thula</i>					X
Great blue heron*	<i>Ardea herodias</i>					X
Green heron	<i>Butorides virescens</i>					X
Ring-billed gull	<i>Larus delawarensis</i>					X
White-throated swift	<i>Aeronautes saxatalis</i>			X	X	X
Barn swallow	<i>Hirundo rustica</i>			X	X	X
Cliff swallow	<i>Petrochelidon pyrrhonota</i>			X	X	X
Bank swallow	<i>Riparia riparia</i>			X		X
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>			X	X	X
Tree swallow	<i>Tachycineta bicolor</i>			X		X
Violet-green swallow	<i>Tachycineta thalassina</i>			X		X
Black-chinned sparrow	<i>Spizella atrogularis</i>	X	X	X		
Black-throated sparrow	<i>Amphispiza bilineata</i>	X	X	X		
Lark sparrow	<i>Chondestes grammacus</i>	X	X	X		
Song sparrow*	<i>Melospiza melodia</i>	X	X	X	X	X
House sparrow*	<i>Passer domesticus</i>		X	X	X	
Savannah sparrow	<i>Passerculus sandwichensis</i>	X				
Brewer's sparrow	<i>Spizella breweri</i>	X			X	
Chipping sparrow	<i>Spizella passerina</i>	X	X	X	X	
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	X	X	X	X	X
Dark-eyed junco	<i>Junco hyemalis</i>	X	X	X	X	
American pipit	<i>Anthus rubescens</i>		X	X	X	X
Verdin	<i>Auriparus flaviceps</i>	X	X	X	X	X
Red-winged blackbird	<i>Agelaius phoeniceus</i>			X	X	X
Brewer's blackbird	<i>Euphagus cyanocephalus</i>			X		X
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>			X		X
Brown-headed cowbird	<i>Molothrus ater</i>		X	X	X	
Great-tailed grackle*	<i>Quiscalus mexicanus</i>		X	X	X	X
European starling*	<i>Sturnus vulgaris</i>	X	X	X	X	
Cedar waxwing	<i>Bombycilla cedrorum</i>			X	X	
Northern cardinal	<i>Cardinalis cardinalis</i>	X	X	X	X	
Pyrrhuloxia	<i>Cardinalis sinuatus</i>	X	X			
Blue grosbeak	<i>Passerina caerulea</i>		X	X		
Black-headed grosbeak	<i>Pheucticus melanocephalus</i>			X	X	
Phainopepla*	<i>Phainopepla nitens</i>	X	X	X		X
Costa's hummingbird	<i>Archilochus alexandri</i>	X	X	X		X
Black-chinned hummingbird	<i>Archilochus alexandri</i>		X	X	X	X
Anna's hummingbird*	<i>Calypte anna</i>		X	X	X	X
Rufous hummingbird	<i>Selasphorus rufus</i>		X	X	X	
Lark bunting	<i>Calamospiza melanocorys</i>	X				
Lazuli bunting	<i>Passerina amoena</i>		X	X	X	
Lesser goldfinch	<i>Carduelis psaltria</i>		X	X	X	
House finch*	<i>Carpodacus mexicanus</i>	X	X	X	X	X

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Western wood pewee	<i>Contopus sordidulus</i>		x	x	x	
Yellow-rumped warbler	<i>Dendroica coronata</i>		x	x	x	
Black-throated gray warbler	<i>Dendroica nigrescens</i>			x	x	
Yellow warbler	<i>Dendroica petechia</i>			x	x	
Townsend's warbler	<i>Dendroica townsendii</i>			x	x	
MacGillivray's warbler	<i>Oporornis tolmiei</i>			x	x	
Orange-crowned warbler	<i>Vermivora celata</i>		x	x	x	x
Lucy's warbler	<i>Vermivora luciae</i>	x	x	x		x
Nashville warbler	<i>Vermivora ruficapilla</i>			x	x	
Wilson's warbler	<i>Wilsonia pusilla</i>		x	x	x	
Common yellowthroat	<i>Geothlypis trichas</i>			x	x	x
Yellow-breasted chat	<i>Icteria virens</i>			x		
Bullock's oriole	<i>Icterus bullockii</i>	x	x	x	x	x
Hooded oriole	<i>Icterus cucullatus</i>		x	x	x	
Western tanager	<i>Piranga ludoviciana</i>		x	x	x	
Summer tanager	<i>Piranga rubra</i>			x		
Abert's towhee	<i>Pipilo abertii</i>		x	x	x	x
Green-tailed towhee	<i>Pipilo chlorurus</i>		x	x	x	
Canyon towhee	<i>Pipilo fuscus</i>	x	x			
Red-naped sapsucker	<i>Melanerpes uropygialis</i>		x	x	x	
Cactus wren*	<i>Calypte anna</i>	x	x		x	
Canyon wren	<i>Catherpes mexicanus</i>	x				
Marsh wren	<i>Cistothorus palustris</i>				x	x
Rock wren	<i>Salpinctes obsoletus</i>	x	x			
Bewick's wren	<i>Thryomanes bewickii</i>		x	x	x	
House wren	<i>Troglodytes aedon</i>		x	x		
Western bluebird	<i>Sialia mexicana</i>	x	x	x	x	x
Loggerhead shrike	<i>Lanius ludovicianus</i>	x	x	x	x	x
Black-tailed gnatcatcher	<i>Polioptila melanura</i>	x	x	x		
Blue-grey gnatcatcher	<i>Polioptila caerulea</i>	x	x	x		
Hammond's flycatcher	<i>Empidonax hammondii</i>		x	x		
Dusky flycatcher	<i>Empidonax oberholseri</i>	x	x	x		
Pacific-slope flycatcher	<i>Empidonax difficilis</i>	x	x	x	x	
Gray flycatcher	<i>Empidonax wrightii</i>		x	x		
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	x	x	x	x	
Brown-crested flycatcher	<i>Myiarchus tyrannulus</i>	x	x	x		x
Vermillion flycatcher	<i>Pyrocephalus rubinus</i>		x	x		x
Black phoebe*	<i>Sayornis nigricans</i>		x	x		x
Say's phoebe	<i>Sayornis saya</i>	x	x	x	x	
Ruby-crowned kinglet	<i>Regulus calendula</i>	x	x	x	x	
Western kingbird*	<i>Tyrannus verticalis</i>	x	x	x	x	x
American robin	<i>Turdus migratorius</i>	x	x	x	x	x
Bell's vireo	<i>Vireo bellii</i>		x	x		
Cassin's vireo	<i>Vireo cassinii</i>	x	x	x		
Warbling vireo	<i>Vireo gilvus</i>	x	x	x		
Plumbeous vireo	<i>Vireo plumbeus</i>	x	x	x		
Gilded flicker*	<i>Colaptes auratus</i>	x	x	x	x	x
Northern flicker	<i>Colaptes auratus</i>	x	x	x	x	
Belted kingfisher*	<i>Ceryle alcyon</i>					x
Lesser nighthawk	<i>Chordeiles acutipennis</i>	x			x	

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Greater roadrunner*	<i>Geococcyx californianus</i>	X	X	X	X	
Gila woodpecker*	<i>Melanerpes uropygialis</i>	X	X	X	X	
Ladder-backed woodpecker	<i>Picoides scalaris</i>	X	X	X		
Northern mockingbird*	<i>Mimus polyglottos</i>	X	X	X	X	
Common poorwill	<i>Phalaenoptilus nuttallii</i>	X				
Western meadowlark	<i>Sturnella neglecta</i>	X			X	
Sage thrasher	<i>Oreoscoptes montanus</i>	X				
Bendire's thrasher	<i>Toxostoma bendirei</i>	X	X	X		
Crissal thrasher	<i>Toxostoma crissale</i>		X	X		
Curve-billed thrasher*	<i>Toxostoma curvirostre</i>	X	X	X	X	
Le Conte's thrasher	<i>Toxostoma lecontei</i>	X	X	X	X	
Gambel's quail*	<i>Callipepla gambelii</i>	X	X	X	X	X
Common ground-dove	<i>Columbina passerina</i>		X	X	X	
Inca dove*	<i>Columbina inca</i>	X	X	X	X	
Rock dove	<i>Columba livia</i>	X	X	X	X	
White-winged dove*	<i>Zenaida asiatica</i>	X	X	X	X	X
Mourning dove*	<i>Zenaida macroura</i>	X	X	X	X	X
REPTILES AND AMPHIBIANS						
Sonoran desert toad	<i>Bufo alvarius</i>		X	X		X
Great plains toad	<i>Bufo cognatus</i>		X	X		X
Red-spotted toad	<i>Bufo punctatus</i>	X	X	X		X
Woodhouse toad	<i>Bufo woodhousii</i>		X	X	X	X
Couch's spadefoot toad	<i>Scaphiopus couchii</i>			X	X	X
Western spadefoot toad	<i>Scaphiopus hammondi</i>		X	X		X
Lowland leopard frog	<i>Rana yavapaiensis</i>			X		X
Bullfrog	<i>Rana catesbeiana</i>			X	X	X
Glossy snake	<i>Arizona elegans</i>	X	X			
Banded sand snake	<i>Chilomeniscus cinctus</i>	X	X			
Western shovel nose snake	<i>Chionactis occipitalis</i>	X	X			
Night snake	<i>Hypsiglena torquata</i>	X	X	X		
Common kingsnake	<i>Lampropeltis getula</i>	X	X	X		X
Western blind snake	<i>Leptotyphlops humilis</i>	X	X	X		
Coachwhip	<i>Masticophis flagellum</i>	X	X	X	X	X
Sonoran whipsnake	<i>Masticophis bilineatus</i>	X	X	X		
Western coral snake	<i>Micruroides euryxanthus</i>	X	X	X		
Saddled leaf-nosed snake	<i>Phyllorhynchus browni</i>	X	X			
Spotted leaf-nose snake	<i>Phyllorhynchus decurtatus</i>	X	X			
Long-nosed snake	<i>Rhinocheilus lecontei</i>	X	X			
Western patch-nosed snake	<i>Salvadora hexalepis</i>	X	X			
Western ground snake	<i>Sonora semiannulata</i>	X	X	X		
Checkered garter snake	<i>Thamnophis marcianus</i>			X	X	X
Gopher snake	<i>Pituophis melanoleucus</i>	X	X	X	X	X
Western diamondback rattlesnake	<i>Crotalus atrox</i>	X	X	X	X	X
Sidewinder	<i>Crotalus cerastes</i>	X	X			
Mohave rattlesnake	<i>Crotalus scutulatus</i>	X	X			
Tiger rattlesnake	<i>Crotalus tigris</i>	X	X			
Zebra-tailed lizard	<i>Callisaurus draconoides</i>	X	X			

Table 2. Plants and animals that were observed* or could occur in the study area.

Common Name	Scientific Name	Arizona Upland	Xeroriparian Washes	Riparian Washes	Urban Areas	Stock Tanks
Western whiptail lizard*	<i>Cnemidophorus tigris</i>	x	x	x	x	x
Collared lizard	<i>Crotaphytus collaris</i>	x	x	x		
Long-nosed leopard lizard	<i>Gambelia wislizenii</i>	x				
Desert iguana	<i>Dipsosaurus dorsalis</i>	x	x			
Gila monster	<i>Heloderma suspectum</i>	x	x	x		
Desert horned lizard*	<i>Phrynosoma platyrhinos</i>	x	x			
Regal horned lizard	<i>Phrynosoma solare</i>	x	x			
Chuckwalla	<i>Sauromalus obesus</i>	x	x			
Desert spiny lizard	<i>Sceloporus magister</i>		x	x		
Long-tailed brush lizard	<i>Urosaurus graciosus</i>	x	x	x	x	x
Tree lizard*	<i>Urosaurus ornatus</i>	x	x	x	x	x
Side-blotched lizard	<i>Uta stansburiana</i>	x	x	x	x	x
Desert tortoise	<i>Gopherus agassizii</i>	x	x			
Western banded gecko	<i>Coleonyx variegatus</i>	x	x	x	x	x

Endangered, Threatened, Proposed, and Special Status Species

A list of endangered, threatened, proposed, candidate and other special status species known to occur in Maricopa County was compiled from information obtained from the U.S. Fish and Wildlife Service (USFWS), the AGFD, and the Arizona Department of Agriculture (AZDA). In addition, an AGFD On-line Environmental Review Tool was conducted to obtain a list of special status species that may occur in the study area (Appendix G).

The USFWS lists species as endangered, threatened, proposed, or candidate. However, there is currently no suitable habitat for endangered or threatened species in the study area.

The AGFD lists species whose existence in Arizona may be in jeopardy. The AZDA lists species as highly safeguarded if their future survival in Arizona is in jeopardy. Other categories of plants include those that are salvage-restricted, export-restricted, salvage-assessed, and harvest-restricted, which may require a permit to destroy or salvage. Of the 40 sensitive species listed (Table 2), only 13 could occur in the study area. Life histories for each species that may occur in the study area follow Table 3. Some of these species, though not documented in the study area, occur upstream in the New River drainage, where perennial surface water exists.

Table 3. Special status wildlife and plant species known to occur in Maricopa County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	Habitat	Occurrence
BIRDS					
American bittern	<i>Botaurus lentiginosus</i>		WSC	Freshwater marshes	Possibly near stock tanks
American peregrine falcon	<i>Falco peregrinus anatum</i>		WSC	Open country, fields, lakes near cliff roosting and nesting areas, urban buildings	Yes
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	WSC	Found in close proximity to water; nests are isolated high in trees and on cliffs Elevation: varies	No suitable habitat

Table 3. Special status wildlife and plant species known to occur in Maricopa County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	Habitat	Occurrence
Belted kingfisher	<i>Ceryle alcyon</i>		WSC	Ponds, streams, marshes, and irrigation ponds and canals	Yes
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>		WSC	Ponds	Possibly near stock tanks
California brown pelican	<i>Pelecanus occidentalis californicus</i>	E		Lakes and large ponds	No suitable habitat
Common black hawk	<i>Buteogallus anthracinus</i>		WSC	Riparian areas in Sonoran zones	No suitable habitat
Ferruginous hawk	<i>Buteo regalis</i>		WSC	Dry, open country and fields	Yes
Gray hawk	<i>Asturina nitida</i>		WSC	Riparian area in Sonoran zones	Outside normal range
Great egret	<i>Ardea alba</i>		WSC	Ponds, streams, marshes, and irrigation ponds and canals	Possibly near stock tanks; common in Maricopa County
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	WSC	Mature montane forest and woodland, shady wooded canyons, and steep canyons	No suitable habitat
Mississippi kite	<i>Ictinia mississippiensis</i>		WSC	Riparian areas of upper Gila and San Pedro rivers	Outside normal range
Northern goshawk	<i>Accipiter gentilis</i>		WSC	Pinyon-juniper to mixed conifer zones	Outside normal range
Osprey	<i>Pandion haliaetus</i>		WSC	Near lakes, streams, and irrigation channels and ponds	No suitable habitat
Snowy egret	<i>Egretta thula</i>		WSC	Ponds, streams, marshes, and irrigation ponds and canals	Possibly near stock tanks; common in Maricopa County
Snowy plover	<i>Charadrius alexandrinus</i>		WSC	Ponds	Outside normal range
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	WSC	Dense riparian habitats along streams and other wetlands where cottonwood, willow, boxelder, buttonbush, tamarisk, and arrowhead are present	No suitable habitat in study area but record of occurrence within 3 miles (Appendix F)
Tropical kingbird	<i>Tyrannus melancholicus</i>		WSC	Lowlands near water, often nesting in native riparian corridors	No suitable habitat
Western least bittern	<i>Ixobrychus exilis hesperis</i>		WSC	Freshwater marshes	Possibly near stock tanks
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	WSC	Large blocks of riparian woodlands (cottonwood, willow, or Tamarisk galleries)	No suitable habitat
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	E	WSC	Freshwater and brackish marshes	No suitable habitat

Table 3. Special status wildlife and plant species known to occur in Maricopa County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	Habitat	Occurrence
FISH					
Desert pupfish	<i>Cyprinodon macularius</i>	E	WSC	Shallow springs, small streams, and marshes; tolerates saline and warm water Elevation: <5,000 feet.	Unlikely to occur due to presence of predatory nonnative fish
Gila chub	<i>Gila intermedia</i>	E	WSC	Deep water or near cover in smaller creeks and water impoundments	Unlikely to occur due to presence of predatory nonnative fish
Gila topminnow	<i>Poeciliopsis occidentalis</i>	E	WSC	Small streams, springs, and cienegas with aquatic vegetation for cover Elevation: <4,500 feet	Unlikely to occur due to presence of predatory nonnative fish
Razorback sucker	<i>Xyrauchen texanus</i>	E	WSC	Backwaters or other areas with slow-moving water; found near strong currents	Unlikely to occur due to presence of predatory nonnative fish
Roundtail chub	<i>Gila robusta</i>		WSC	Eddies and pools but often in swift currents below rapids	Unlikely to occur due to presence of predatory nonnative fish
Woundfin	<i>Plagopterus argentissimus</i>	E		Runs and quiet waters adjacent to riffles over sand and gravel substrates	No suitable habitat; unlikely to occur due to presence of predatory nonnative fish
MAMMALS					
California leaf-nosed bat	<i>Macrotus californicus</i>		WSC	Caves, mines, and rock shelters in Sonoran desertscrub	Possibly in cave and mine areas
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	E		Desertscrub with agave and columnar cacti as food plants	Current range is limited to southeastern Arizona with northern limits at Picacho Peak, 120 miles south of the study area.
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	E	WSC	Plains and meadows from the deserts in southern Arizona to grasslands and high plateaus of northern Arizona	No suitable habitat
Spotted bat	<i>Euderma maculatum</i>		WSC	Cliffs within 1 mile of riparian system	No suitable habitat

Table 3. Special status wildlife and plant species known to occur in Maricopa County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	Habitat	Occurrence
Western red bat	<i>Lasiurus borealis</i>		WSC	Near open water, oak cottonwood, and pinyon-fir forest	No suitable habitat
Western yellow bat	<i>Lasiurus ega</i>		WSC	Associated with Washington fan palms	No suitable habitat
REPTILES AND AMPHIBIANS					
Lowland leopard frog	<i>Rana yavapaiensis</i>		WSC	Permanent waters, pools of foothill streams, and stock tanks	Possibly in stock tanks and outside of study area in New River drainage
Mexican garter snake	<i>Thamnophis eques</i>		WSC	Pine-oak and pinyon-juniper canyons to mesquite grasslands in south-central Arizona, near water	No suitable habitat
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>		WSC	Pinyon-juniper and oak-pine belts to ponderosa pine forests along clear perennial or semi-perennial streams	No suitable habitat
Sonoran desert tortoise	<i>Gopherus agassizii</i>		WSC	Riverbanks, washes, dunes, and rocky slopes	Yes (Appendix F)
PLANTS (Note: Only those in the HS category occurring in Maricopa County have been listed.)					
Arizona cliffrose	<i>Purshia subintegra</i>	E	HS	Found only on tertiary limestone lakebed deposits	No suitable habitat
Crested or fan-topped saguaro	<i>Carnegiea gigantea</i>		HS	Rocky hillsides and general Sonoran desert areas	None found; could occur
Hohokam agave	<i>Agave murpheyi</i>		HS	Found only in Paradise Valley area in Maricopa County	None found; could occur
Tonto basin agave	<i>Agave delamateri</i>		HS	Foothills of Sierra Ancha and Mazatzal Mountains, Tonto Basin, and Globe vicinity	No

Shaded cells in Occurrence column: species that may occur

Federal status: C = Candidate, E = Endangered, T = Threatened

State status: HS = Highly Safeguarded, WSC = Wildlife of Special Concern

Special Status Species—Life Histories

American Bittern (*Botaurus lentiginosus*)

The American bittern, a wading bird of the heron family Ardeidae, is large, chunky, and brown, similar to the Eurasian great bittern (*Botaurus stellaris*). It is 23–27 inches long, with a 37- to 45-inch wingspan.

Though common in much of its range, the American bittern is usually well hidden in bogs, marshes, and wet meadows. Usually solitary, it walks stealthily among cattails or bulrushes. If it senses that it has been seen, the American bittern becomes motionless, with its bill pointed upward to blend into the reeds. It is most active at dusk. More often heard than seen, this bittern has a call that resembles a congested pump. Like other members of the heron family, the

American bittern feeds in marshes and shallow ponds, dining on amphibians, fish, insects, and reptiles.

This bittern winters in the southern United States and Central America. It summers throughout Canada and much of the United States. This bird nests in isolated places, with the female building the nest and the male guarding it. Two or three eggs are incubated by the female for 29 days, and the chicks leave after 6–7 weeks.

Habitat Evaluation and Suitability

Though most of the study area does not contain suitable habitat for the species, the numerous stock tanks may serve as foraging areas. Protection of these areas as foraging sites for bitterns and other wading birds should be considered.

American Peregrine Falcon (*Falco peregrinus anatum*)

The peregrine falcon has a diverse distribution. Formerly widespread in North America, the species currently ranges through much of the Rocky Mountain west, throughout northern Canada and Alaska, south into central Mexico, and along the eastern and western coasts of the United States. The peregrine falcon is represented by three subspecies in North America.

The American peregrine falcon ranges north to Alaska in the summer and south to at least central Mexico. The Arizona population represents migrants and resident breeders. The species ranges statewide into lower desert areas but prefers cliffs and steep terrain above 5,000 feet elevation,¹ frequently near water in woodland habitats. It preys mainly on birds found in wetlands, riparian areas, meadows, parks, croplands, mountain valleys, and lakes within a 10- to 20-mile radius of a nest site (eyrie). Prey items may include bats and other small mammals (Glinski 1998a). Peregrine falcons return to breeding areas mid-February to mid-March, with eggs laid mid-March to mid-May.

Though a decline in Arizona's peregrine population was never observed, the population began to increase in the mid-1980s. It is currently estimated that over 200 pairs breed in the state. As a result of the significant recovery of peregrine falcon populations over much of its range, it has been removed from the Endangered Species List.

Habitat Evaluation and Suitability

Protection of the falcon's foraging area and potential nesting and perching sites in the study area is important.

Belted Kingfisher (*Ceryle alcyon*)

Belted kingfishers have a huge bill, a large head with a shaggy crest, and distinctive coloring. They are 11 to 13 inches long, with a blue-gray head and upperparts contrasting with white underparts. Both sexes have a white collar and broad band of blue-gray across the chest. Females have chestnut flanks (usually concealed below the folded wing) and a second chestnut band across the belly. The large head and bill contrast with tiny legs and a short tail, giving a top-heavy appearance to belted kingfishers.

¹ Elevations in this document are referenced to mean sea level.

Belted kingfishers subsist mostly on fish. However, they occasionally consume other prey, including crayfish, shellfish, squid, and terrestrial prey such as small birds, mammals, lizards, and insects. They make steep dives head-first into the water.

The nest site of a belted kingfisher is mostly a tunnel excavated near the top of a vertical bank. Nests may be several miles from fishing grounds. The species prefers sandy soil at the nest site but may use gravel pits and soil caught in the roots of fallen trees. A pair takes turns digging a burrow 3 to 4 inches in diameter using their beaks and feet until the nesting chamber is 3 to 6 feet from the entrance and slightly uphill of it. The female lays six or seven white eggs. Both parents incubate the eggs for 23 to 24 days.

Habitat Evaluation and Suitability

The numerous stock tanks throughout the study area provide valuable foraging areas for belted kingfishers. These tanks contain high densities of small fish that provide foraging areas for kingfishers, wading birds, and shore birds.

Black-bellied Whistling Duck (*Dendrocygna autumnalis*)

The black-bellied whistling duck breeds in the southernmost United States and tropical Central America and South America.

The black-bellied whistling duck is a common but wary species. It is largely resident, apart from local movements, and usually nests in hollow trees.

Its habitat is quiet freshwater lakes, cultivated land, or reservoirs with plentiful vegetation, where this duck feeds mainly at night on seeds and other plant food. It is highly gregarious, forming large flocks when not breeding.

The black-bellied whistling duck is 19–21 inches long. It has a long, red bill; a long, pale gray head; longish legs; and mostly gray-brown plumage. The belly is black, and the large white wing bar is visible in flight.

Habitat Evaluation and Suitability

Though most of the study area does not contain suitable habitat for the species, the numerous stock tanks may serve as foraging areas. Protection of these areas as foraging sites for wading birds should be considered.

California Leaf-nosed Bat (*Macrotus californicus*)

The California leaf-nosed bat is one of four Phyllostomid bats ranging into the United States. Breeding takes place in the early fall, and females form maternity colonies between May and July, when they rear their young. Males join the females in late summer or early fall and remain with the females during the winter (AGFD 1993).

In Arizona, the California leaf-nosed bat is primarily found below 4,000 feet elevation in Sonoran desertscrub. The species does not hibernate and roosts in caves and mines. The California leaf-nosed bat primarily feeds on night-flying beetles, grasshoppers, moths, and sometimes fruits, including those of cacti (Hoffmeister 1986).

Habitat Evaluation and Suitability

Though no mine shafts or cave areas were located during field surveys, they may be present and were not detected. A more complete survey of the mine and outcropping areas may be warranted to determine whether mines or caves are in the study area and, if present, whether they are occupied or have been used in the past. Occupied caves and mines should be protected, and openings should be secured with suitable fencing to allow bats ingress and egress while providing public safety.

Crested Saguaro (*Carnegiea gigantea*)

Crested or fan-top saguaros are rare. Less than 1 percent of saguaros exhibit the condition, and the cause is still a subject of debate. Some researchers cite the causative factors as freezing, developmental problems, or mechanical injury to the saguaro's apical meristem.

No crested saguaros were located in the study area during the surveys. If any are located during the course of future development, they should be avoided or salvaged carefully.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is a medium-sized inhabitant of dry, open country. The ferruginous hawk occurs from southwest Canada through the western United States and south into northern Mexico. From September through April, wintering individuals can regularly be seen in any portion of Arizona with open environments. They can be seen perching in trees, on poles, or on the ground (National Geographic Society 2003). The nest of the ferruginous hawk is a large structure of coarse sticks, built in rock piles, cliffs, on the ground, or in trees (Glinski 1998b).

Habitat Evaluation and Suitability

The species feed on jackrabbits, cottontails, rodents, reptiles, and large insects. Creosote flats, agricultural fields, and open desert areas provide foraging areas for ferruginous hawks. Loss of these foraging areas may have an impact on the local populations of this species.

Great Egret (*Ardea alba*)

The great egret is a member of the heron family and has also been called the American or common egret. Its food includes small fish, crayfish, mice, insects, lizards, and frogs. Egrets generally stalk their prey in the shallow margins of ponds, lakes, marshes, and canals.

The great egret is often seen alone, but its social life includes gathering into large colonies. Roosts are made in trees and bushes in swamps and other watery habitats. The nest of these birds is a large, somewhat loose assembly of sticks lined with twigs, vines, and similar materials.

Aside from socializing with its own kind, the great egret can be found in the company of other members of the heron family, including the snowy egret. It will commonly be found roosting in the same areas with these birds.

Habitat Evaluation and Suitability

Though most of the study area does not contain suitable habitat for the species, the numerous stock tanks may serve as foraging areas. Protection of these areas as foraging sites for egrets and other wading birds should be considered.

Hohokam Agave (*Agave murpheyi*)

Agave murpheyi is native from central Arizona to Sonora, Mexico, at elevations from 400 to 900 meters. Plants are usually found in close proximity to major drainage systems on open, hilly slopes or alluvial terraces in desert scrub with pre-Columbian agricultural and settlement features, having been cultivated by the Hohokam. The Tohono O'odham (Papago) and ranchers in Sonora, Mexico continue to cultivate the plant. Individual rosettes are 1.97 to 7.2 feet high and 2.62 to 7.87 feet broad, but plants sucker readily, forming large stands. Leaves are 234 to 312 inches long and 2.34 to 7.8 inches wide, ranging in color from light, glaucous green to yellowish-green, often with light, cross-zoned patterns. Leaf margins are undulate with small, .12 to .16 inch teeth. The flower stalk is a 9.84 to 13.12 feet tall panicle with congested umbels of cream flowers. The woody seed capsules are 1.95 to 2.73 inches long, with thin seeds .35 to .82 inches long and .23 to .27 inches broad. Bulbils are produced abundantly on the pedicels.

Habitat Evaluation and Suitability

Though there is suitable habitat for the species in the study area, there are no known occurrences in this area.

Lowland Leopard Frog (*Rana yavapaiensis*)

The lowland leopard frog is most frequently associated with permanent and semi-permanent streams and springs in intermontane valleys and the foothills of the desert mountains of central and southern Arizona, south into central Sonora, Mexico. In southern Arizona, the species frequents stock ponds, developed springs, and other impoundments. Usually restricted to these situations for most of the year, during the summer rainy season, dispersing individuals can be found along seasonal streams and, under optimal conditions, moving over land in search of new habitat (Stebbins 1966).

At lower elevations, breeding may occur in mid-May and early July, though it may decrease during high temperature months and increase once the summer rains start (AGFD 2001). Male lowland leopard frogs attract mates with calls characterized by a series of faint, high-pitched chuckling notes and short guttural grunting sounds (Platz and Frost 1984, Stebbins 2003). Egg masses can be observed from January to late April and October. Larvae of the lowland leopard frog metamorphose to adult in 3–9 months and can overwinter (Collins and Lewis 1979). Adults will eat a wide variety of prey, including snails, spiders, insects, and fish, while larvae are herbivorous, eating algae, organic debris, and plant tissue (AGFD 2001).

Habitat Evaluation and Suitability

The site contains numerous stock ponds throughout the study area that could support lowland leopard frogs; potential leopard frog habitat is present. Leopard frogs are present in the Upper New River ADMP area north of the study area.

Snowy Egret (*Egretta thula*)

The snowy egret is a typical member of the heron family. Snowy egrets are marshland birds and, in Maricopa County, are encountered as often as Arizona's other common diurnal herons. Cattle egrets are common in meadows and pastures, and great blue herons and great egrets are common along rivers and streams.

In Arizona, they occur year-round along the lower Gila River from Phoenix to the Colorado River. In summer, they breed inland through the southern states and as far west as California. Arizona breeding colonies exist near Yuma, below Painted Rock Dam, and along the lower Salt and Gila rivers.

The snowy egret is one of the more actively foraging herons. Species-preferred foods include fish, reptiles, amphibians, crabs, crayfish, and aquatic insects.

Management of this species could be improved by better information on key roosting and nesting habitats statewide. Habitat requirements should be documented, as should the effects of specific recreational uses of occupied areas.

Habitat Evaluation and Suitability

Though most of the study area does not contain suitable habitat for the species, the numerous stock tanks may serve as foraging areas. Protection of these areas as foraging sites for egrets and other wading birds should be considered.

Sonoran Desert Tortoise (*Gopherus agassizii*)

The Sonoran population of desert tortoise is usually associated with rolling, often rocky terrain in foothills and desert mountain ranges. Here, the relief provides more naturally occurring shelter sites than in flatter terrain (Barrett 1990, Fritts and Jennings 1994; Germano et al. 1994). The Germano et al. (1994) distribution map for the species includes nearly all hilly and mountainous Arizona Upland habitat, excluding the intermontane valleys in the area.

The desert tortoise ranges in length from 6–10 inches. Its color varies from light to dark brown. Its shell is composed of large plates (scutes) containing concentric growth rings, with a new ring added for each year of growth. The legs and head of the tortoise are covered with scales. The shell and tough scales provide a natural armament against desert predators. In addition, the tortoise's coloration, shape, and rocklike appearance are a natural camouflage. The desert tortoise inhabits the Mojave and Sonoran desert regions of California, southern Nevada, southwestern Utah, and western and southern Arizona in the United States, as well as northwestern Mexico (Stebbins 1954).

Sonoran desert tortoises most often use, and modify for their use, natural shelter sites. Such sites include caliche bank holes along arroyos, rock crevices, spaces under and among boulder piles (Germano et al. 1994, Martin 1995), debris piles created by woodrats (*Neotoma* spp.; Bailey 1992, Lowe 1990, Martin 1995), and thick vegetation (Bailey 1992, Martin 1995, Vaughan 1984). Sonoran desert tortoises will dig soil burrows to provide additional shelter sites (Bailey 1992, Fritts and Jennings 1994).

Habitat Evaluation and Suitability

The site contains Lower Colorado River Sonoran desertscrub between desert mountain ranges, with cobble for natural shelter sites and thick vegetation for cover and food adjacent to the ephemeral washes for the Sonoran Desert tortoise. Suitable desert tortoise habitat is present.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

The Southwestern willow flycatcher is a riparian obligate species that prefers dense, mature cottonwood-willow forests and tamarix (*Tamarix* spp.) thickets near slow-moving watercourses for breeding (low elevations) (AGFD 2002). In general, habitat contains a large volume of foliage, dense canopy cover, and surface water during mid-summer (AGFD 2002).

The Southwestern willow flycatcher is one of four subspecies of *Empidonax traillii*. The Southwestern willow flycatcher's summer breeding range includes Arizona, southern California, New Mexico, southern Nevada, southern Utah, southwestern Colorado, western Texas, and extreme northwestern Mexico (Sferra et al. 1997). The winter range includes southern Mexico, Central America, and northern South America. Spring migration is between mid-May to early July, and fall migration is from mid-August to mid-October (Corman and Wise-Gervais 2005). The historic range in Arizona included portions of all major river systems and most major tributaries (USFWS 1993, 1995).

The Southwestern willow flycatcher prefers large patches of habitat at least 33 feet in diameter (Tibbitts et al. 1994). The nest is a small woven cup made out of shredded bark in the upright fork of a narrow tree limb or shrub usually 13 to 23 feet above the ground (Udvardy 1977, AGFD 2002). This species is insectivorous (AGFD 2002).

In Arizona, much of the species' historical riparian habitat has been significantly altered and is currently unsuitable and unoccupied (Phillips et al. 1964). Additional threats to the Southwestern willow flycatcher's survival is brood parasitism by the brown-headed cowbird. The Southwestern willow flycatcher was listed by the USFWS as endangered in 1995 (USFWS 1995). The first recovery action listed in the recovery plan is to increase and improve occupied, suitable, and potential breeding habitat (USFWS 2002).

Habitat Evaluation and Suitability

The study area has no significant stands of deciduous riparian forest. Though there are records of the Southwestern willow flycatcher occurring within 3 miles of the study area, there is no suitable habitat for this species in the study area.

Western Least Bittern (*Ixobrychus exilis hesperis*)

The Western least bittern rests, roosts, nests, and hides in dense, emergent vegetation and in adjacent thickets of saltcedar in desert riparian habitat. The emergent vegetation may be interspersed with clumps of woody vegetation and open water. It uses dense, emergent vegetation for cover and nesting, and feeds in such vegetation, as well as in small openings. Its nesting habitat is usually near open water or a small opening in vegetation. It often feeds along the edge of emergent vegetation on the open-water side.

The least bittern eats small fishes, aquatic and terrestrial insects, and crayfish, as well as amphibians, small mammals, and miscellaneous invertebrates.

The least bittern lays eggs mid-April to early July. It typically nests solitarily but sometimes in high densities in good habitat. Nests made of dried and living plants are built low in cattails. The clutch size is usually four to five eggs, with a range of two to seven eggs. The incubation is 19–20 days.

Habitat Evaluation and Suitability

Though most of the study area does not contain suitable habitat for the species, the numerous stock tanks may serve as foraging areas. Protection of these areas as foraging sites should be considered.

Special Status Species Conclusions and Recommendations

- Though most of the study area does not contain suitable habitat for wading and shore birds, areas adjacent to the numerous stock tanks serve as foraging areas.
- Occupied caves and mines should be protected, and openings should be secured with suitable fencing to allow bats ingress and egress while providing public safety. Though no mines and caves have been located in the study area, a more complete survey of rock outcropping areas should be conducted to determine whether mines or caves are present and whether they are being used. It is unlikely, however, that caves are present due to the relatively flat terrain and lack of cliffs. The only areas that may contain caves are the hills at the southern end of the study area near the CAP canal and the hills just north of the AGFD Ben Avery Shooting Facility.
- Desert tortoise surveys of suitable habitat in the study area should be conducted prior to disturbance.
- Though no crested saguaros were located in the study area during the surveys, specimens located during the course of future development should be avoided or salvaged carefully.
- Though no Hohokam agave were located in the study area during the surveys, specimens located during the course of future development should be avoided or salvaged carefully.

General Wildlife Habitat Conclusions and Recommendations

- Local raptor populations, such as the red-tailed hawk and the Harris' hawk, may be negatively impacted by the future loss of foraging areas, mature xeroriparian habitat, and saguaros, which serve as observation points.
- The larger, more densely vegetated washes should be preserved not only for their habitat values but for the connectivity they provide throughout the project area. The New River serves as a valuable wildlife corridor for wildlife of all sizes, and any structural solution considered should take this function and value into account in the construction and maintenance of such structures.

The xeroriparian washes in the study area are more densely vegetated than the uplands and provide a higher quality of habitat for wildlife than the somewhat monotypical uplands. Xeroriparian areas, on average, have greater availability of surface and subsurface water than areas not associated with washes. As a result, xeroriparian washes, including the New River corridor in the entire project area, tend to have a higher density and diversity of vegetation and often larger individuals of a particular plant species than adjacent upland areas. This higher density and diversity of trees and shrubs, as well as larger individuals of the species present along xeroriparian washes, provides more resources for wildlife than adjacent upland areas. Resources for wildlife commonly associated with the xeric riparian plant communities supported by these washes include cover, food, nesting substrates, denning areas, and

movement corridors. For example, enhanced cover along these washes provides opportunities for movement by larger mammals, such as mule deer, javelina, and coyote, and habitat for smaller mammals, passerine birds, and reptiles.

- Valuable features of this area are the numerous stock tanks and the wildlife water guzzler. This man-made water catchment system was located just north of the Ben Avery Shooting Facility (Appendix B, Photos 20, 21). This catchment consists of a concrete apron and gravity-fed concrete guzzler. Though this catchment was full of water and appeared to be working correctly, it is in need of repair to maximize its efficiency.

Catchments are valuable to all species of wildlife that inhabit this area and, if they are negatively impacted either directly through destruction resulting from home or road construction or indirectly by encroaching development, should be relocated to an area that will be preserved.

- Stock tanks provide valuable watering areas for wildlife and, if impacted, should be replaced with new stock tanks in areas where wildlife will use them.

Numerous man-made stock tanks are located throughout the study area (Appendix B, Photos 1–8, 14, and 19). With the exception of one tank (ICT3), all tanks were full and being frequented by numerous species of wildlife. These stock tanks provide valuable watering areas for wildlife and, if impacted, should be replaced with new stock tanks in areas where wildlife will use them.

- Any structural alternatives considered should take the needs of wildlife into account. If the alternative will directly or indirectly negatively impact wildlife habitat or movement corridors, then the structures should be constructed to be more wildlife-friendly. Examples of negative impacts include, but are not limited to, steep drop structures that become a barrier to movement of wildlife in a wash or river corridor, concrete culverts that are undersized and have a non-natural floor material, and side slopes on lined channels that are steeper than 3:1 (horizontal to vertical).

General Alternative Descriptions

Alternatives identified for the District's Upper New River ADMP are organized in general alternative categories: Non-structural, Structural, No-action Alternatives, and ADMP Guidelines. General descriptions of alternatives are provided in the following sections.

Non-structural

The watercourse reach retains its natural condition and appearance and is managed through regulatory solutions (Current Development or ADMP Guidelines) that do not require capital improvement funds. Non-structural solutions are applied to reaches where structural solutions are not required to mitigate identified flood hazards. Solutions include promoting and continuing sound floodplain management, such as floodplain delineations and erosion hazard delineations, and providing development guidelines to reduce flooding and erosion risk to new development.

Structural

Structural alternatives or Structural elements of an alternative for the project area include multiuse recreation, channels, levees and grade control structures, and associated erosion

protection that is landscape designed (aesthetic treatments) to be context-sensitive to the surrounding environment. Landscape aesthetic treatments are intended to create features that fit the form and function of the existing landscape character. Typical landscape aesthetic treatments consist of variations in the form (alignment, profile, side slope of 6:1 typical average) of the structural element, use of color or textual patterns, or the use of fill material to hide the structural element. For the channel option, the entire channel would have a landscape treatment. For the levee option, the area between the levees would not require a method of treatment, but the levees would.

No-action Alternative

The No-action Alternative provides flood control management based on current federal, state, and local floodplain management regulations that allow encroachment into the floodway fringe. Typically under current regulations, encroachments into the floodway fringe are allowed in a piecemeal fashion without taking into consideration the effect of the encroachment or collective encroachments on the entire watercourse or environmental and scenic resources.

ADMP Guidelines

ADMP guidelines allow an area to develop according to the adopted land use plan. Watercourses in which specific alternatives have not been developed in the planning area will be managed through ADMP Guidelines, which include Non-structural and Structural guidelines. Flood mitigation solutions include the following:

- Manage the Non-structural alternatives through floodplain and erosion hazard delineations
- Develop and manage flood and erosion hazards through regionally specific guidelines and ordinances
- Promote and continue sound floodplain management
- Develop a flood warning response/emergency access plan for residents
- Provide existing property owners with guidelines to reduce flooding and erosion risk
- Floodprone Property Assistance Program (FPAP)
 - Voluntary program
 - Acquire homes in high hazard areas in New River floodplain
 - Floodproof homes

Specific Alternative Analysis

Each preferred flood control alternative affects wildlife, wildlife movement, and associated habitats in different ways. Methodologies and/or design specifications can be employed that not only minimize adverse effects of a particular alternative on wildlife but may enhance the alternative. Enhancements to the methodologies of employing the alternative or designing and maintaining the alternative may provide additional habitat, movement cover, and/or foraging and watering opportunities. The following sections provide recommendations to enhance each of the preferred alternatives.

Non-structural

This type of alternative may provide enhancement possibilities for wildlife if ADMP guidelines are followed and perhaps new wildlife enhancement guidelines are added to current guidelines.

Flood protection methods such as erosion control setbacks and zoning regulations can, if fully implemented, provide for the preservation of habitats associated with ephemeral and/or perennial washes and streams. The retention of these areas will in addition to providing flood protection, preserve wildlife habitat and movement corridors. Preservation of as many of these areas as possible will also serve to provide connectivity between various wildlife habitats and foraging and watering areas.

Structural

Of the alternatives chosen for this ADMP, Structural, has the greatest potential for negative impacts to wildlife movement and habitats and the greatest potential for enhancement.

In addition, the Structural alternatives will permanently impact the vegetation in the footprint of the alternative and any associated clear zone due to removal of vegetation. Little vegetative diversity is in the proposed footprints of these alternatives. Any diversity present is a function of the higher density of vegetation along the xeroriparian washes due to the greater availability of ephemeral water flows.

The only vegetative community affected by this alternative will be the Lower Colorado River and the Arizona Upland subdivisions of the Sonoran Desertscrub biome. The vegetation that will be affected consists of creosote bush, triangle leaf bursage, and various species of cholla, including teddy bear, chain fruit, buckhorn, and staghorn. Other species which will be affected as the structures impact areas within or adjacent to the wash corridors include blue paloverde, foothill paloverde, western honey mesquite, velvet mesquite, and ironwood.

Channels

The main function of channels is to convey flows as efficiently as possible during normal and peak events. This function can at times be at odds with the preservation and/or enhancement of wildlife habitat and movement corridors. For channels and associated buffer areas to be viable as wildlife habitat or a movement corridor, areas of contiguous dense cover must be retained in the channel. Depending on the species and density of vegetation, flow conveyance may be negatively affected by increasing resistance, slowing flow rates and increasing the amount of sediment drop.

- If a sufficient low-flow channel can be maintained, preferably centered on the channel corridor, habitat and escape cover should be provided on both sides.
- If the entire channel width is not adequate to convey peak flows while retaining tree and shrub vegetation, vegetation with a lower roughness coefficient, such as native grasses and forbs, should be allowed to flourish.
- Unless channel areas are used for active recreation, such as for athletic fields, they should not be denuded of vegetation by mowing. This not only eliminates the majority of habitat but can result in the destruction of nests of ground-nesting birds and the collapse of animal dens.

Levees

Based on the current proposed levee alignments, it appears that the Sweat Canyon levee will have the least effect on the wash corridor species because the alignment appears to traverse upland areas that are void of major wash corridors. All of the other alignments have some impact on these species due to their potential impact on various wash corridors or braids of the New River.

- Levees, if not constructed with wildlife in mind, can create localized habitat fragmentation and be an impediment to wildlife movement.
- Levee slopes should be less than 4:1 side slopes.
- Levees and other structures should not have perimeter fencing. If specific areas need to be protected, fencing use should be limited.
- If fencing is absolutely necessary, it should be wildlife fencing that allows for wildlife movement while still providing exclusionary benefits.
- Uncovered riprap should not be used on the face of the levees. This creates a hazardous walking substrate for some wildlife species.
- Runoff from the faces of the levees could provide temporary watering sites for wildlife if the water was funneled into gravity-fed guzzlers. The levee faces could serve as the runoff apron similar to the aprons for created wildlife guzzlers. Gravity-fed guzzlers could be placed periodically along the inside face of a levee in areas that would be least affected by scour during a high river flow event. Locations that have pockets of dense vegetation should be chosen for the guzzler location, and the aboveground or underground storage tank could be placed downstream and adjacent to the vegetation, which would provide natural protection against scour if it occurred.
- Guzzlers could be placed on the protected side (opposite side of the river) of the levee but in an area where natural vegetation provides cover. Otherwise, enhanced vegetation should be planted (i.e., tall pot plantings).
- Artificial burrows for western burrowing owls could be placed in suitable locations in the FRS area. The presence of burrowing owls will assist in protecting the levees from burrowing rodents.

Grade Control Structures and Associated Erosion Protection

- If riprap erosion control is used in areas where mule deer or javelina may be found, the gaps between the riprap should be filled with concrete or other scour-resistant substance. Hooved species try to avoid areas of riprap due to the possibility of leg or ankle breakage. However, if the riprap spans the width of the wash or channel, it becomes an impediment to movement or a hazard for these species.
- If drop structures are needed to slow flow velocities, they should not extend from channel bank to channel bank. Most drop structures are too high to allow unimpeded movement of all types of wildlife, especially small or immature mammals and reptiles and amphibians. A travel corridor should be provided that will allow wildlife to use the channel for movement.
- If possible, perhaps drop structures and/or energy dissipaters could be constructed of natural materials, such as large boulders secured in place instead of concrete structures.

No-action Alternative

This alternative can be detrimental to wildlife and associated habitats. Under the No-action Alternative, encroachment into the floodplain is allowed. Ephemeral wash and river corridors and the adjacent buffer zones of higher density vegetation are highly used by many species of wildlife for nesting, denning, foraging and watering habitat, and movement cover. Encroachment upon these areas causes habitat fragmentation and, typically, permanent loss of valuable habitat. Without construction guidelines and/or zoning restrictions, these valuable areas of habitat will be lost and only the most adaptive wildlife will remain, pushing other species into remaining habitat. As wildlife corridors are lost, historic foraging or watering areas may be cut off. This can be especially true in areas where there has been historic cattle grazing. In these areas, numerous water catchments that have served as historic wildlife watering sites may be located. As habitat is fragmented and movement corridors are lost due to encroachment, these historic routes to the watering sites are also lost, forcing wildlife to find new sources of water and feed, which may be difficult, especially during drought cycles.

ADMP Guidelines

- The District should consider adopting a riparian habitat protection ordinance similar to Pima County.
- To accompany this ordinance, the District should develop an implementation handbook that would outline mitigation standards and guidelines, similar to the one adopted in Pima County.
- As properties are bought out as part of the FPAP program, a site-specific analysis should be done to assess how the property could be best reintegrated into the natural environment and enhanced if necessary.
- The District should continue to work with local jurisdictions to adopt zoning regulations that prohibit floodplain encroachment by residential and/or commercial development.

Mitigation Opportunities and Constraints

Any structural alternatives constructed that impact jurisdictional Waters will be mitigated under the provisions of the associated Clean Water Act Section 404 permit. Though opportunities may be limited due to future residential and commercial growth in the area, some may exist.

If it is determined that one or more of the stock tanks can be preserved, they offer opportunities for restoration and enhancement. Tanks that currently contain water, despite the lack of consistent recent rain, may be candidates for restoration and enhancement. All of the tanks in the study area have been severely degraded by human activities such as shooting, off-highway vehicle use, and wildcat dumping. If these areas were cleaned up, they could be transformed into valuable wildlife habitat. The banks of the ponds could be laid back to provide a bench for an area of emergent vegetation with a strip of riparian vegetation on a higher bench. Finally, an upper bench could be planted with upland vegetation to provide a buffer for the habitat closer to the open water.

Wildlife guzzlers could be constructed adjacent to the levees at strategic locations and intervals. Runoff from the faces of the levees could provide temporary watering sites for wildlife if the water was funneled into gravity-fed guzzlers. The levee faces could serve as the runoff apron similar to the aprons for created wildlife guzzlers. Gravity-fed guzzlers could be placed

periodically along the inside face of a levee in areas that would be least affected by scour during a high river flow event. Locations that have pockets of dense vegetation should be chosen for the guzzler location, and the aboveground or underground storage tank could be placed downstream and adjacent to the vegetation, which would provide natural protection against scour if it occurred.

To assist in the success of the plantings, an archival search of aerial photography over the past few years could determine whether a particular tank has consistently held water, even in dry years.

Another opportunity would be to retain and restore the FNF Sand and Gravel operation's settling ponds once the material pits are played out and the operation moves to another location. Material pit ponds provide an excellent opportunity for wetland and riparian habitat establishment.

The area that was revegetated after being used as a material source to construct the New Waddell Dam may provide an enhancement opportunity. Though revegetation was attempted, much of the vegetation has either failed to become established, has died, or was eaten by cattle or feral burros before it could mature. If irrigation water was not available or was impractical, this area may be an excellent candidate for tall-pot-type plantings so that supplemental watering is not necessary.

One constraint when considering restoration/enhancement opportunities in the project area is that active cattle grazing leases exist in the project area. As long as these are active, the stock tank areas need to remain open for cattle. Another constraint is that numerous herds of feral burros are in and adjacent to the Lake Pleasant area and the Agua Fria and New River corridors. These species are extremely non-selective in their grazing habits, are prolific, and have only one natural predator—mountain lions—which are rare in the central and southern portions of the project area.

Newly planted vegetation would need to be protected from cattle and feral burro grazing with exclusionary fencing to allow it to mature. However, as long as there are active grazing leases in the area, the stock tanks, which were most likely built by a rancher, would have to remain open for cattle. Though feral burros do not belong in the natural landscape and compete with native wildlife for forage, many animal rights groups aggressively protect the right of the burros to exist on open range. It is possible, however, to allow cattle, burros, and wildlife access to water while protecting newly planted vegetation. Exclusionary fencing of some type could be installed around the newly enhanced areas, with a separately defined corridor that would allow access to water. These types of arrangements, however, would have to be negotiated with the lessee.

The main sources of degradation in the area would need to be controlled. These are wildcat dumping, shooting, and off-highway vehicle use. Due to the numerous public access points, restricting access on a large scale may be impossible. Public access restrictions would need to be focused on restoration areas such as the stock tanks. Pole fencing, as opposed to traditional wire fencing, may need to be employed in these areas to prevent public access while protecting the restored areas.

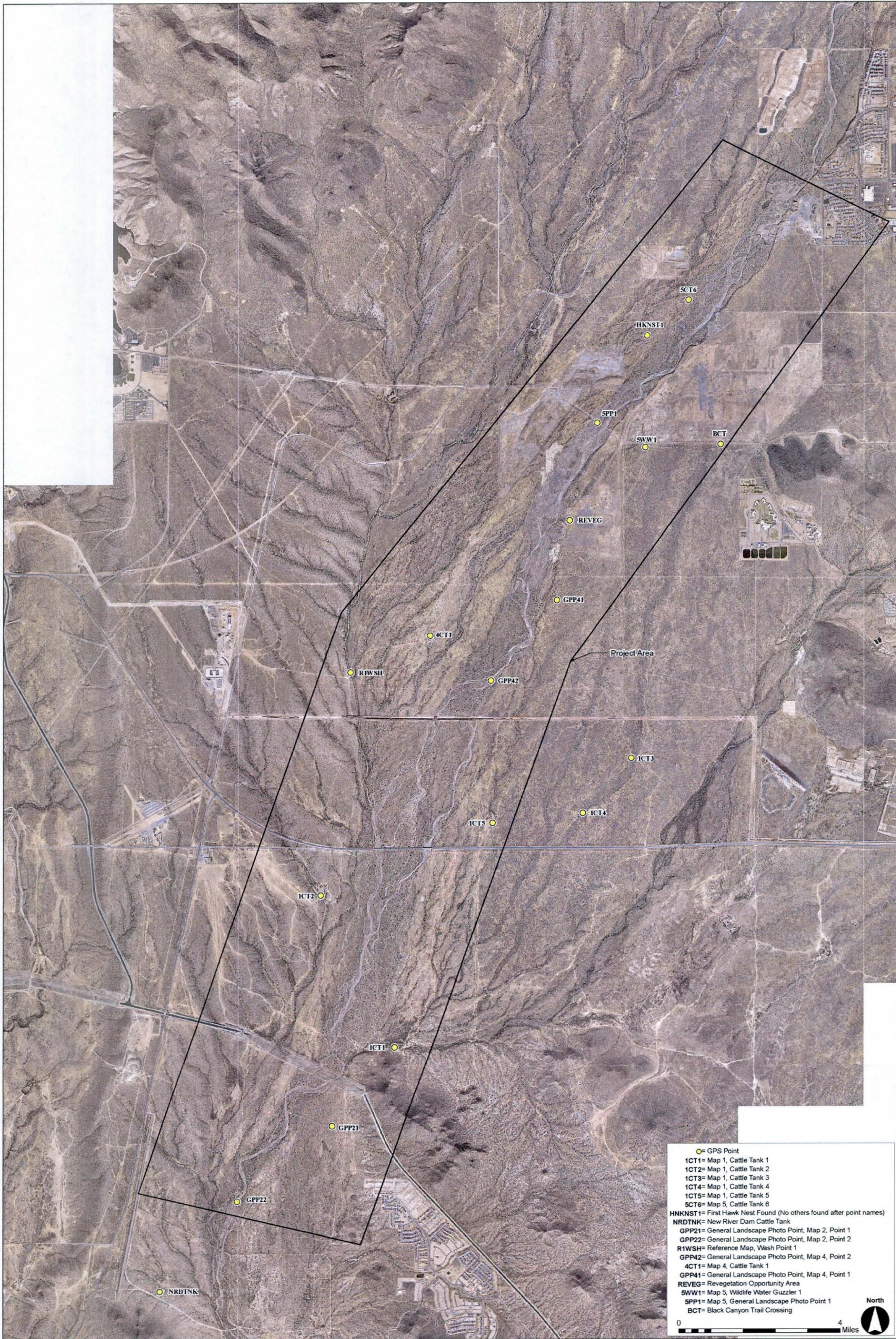
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Appendix A

Map of Study Area with Photo Points Identified



- GPS Point
- 1CT1= Map 1, Cattle Tank 1
- 1CT2= Map 1, Cattle Tank 2
- 1CT3= Map 1, Cattle Tank 3
- 1CT4= Map 1, Cattle Tank 4
- 1CT5= Map 1, Cattle Tank 5
- 5CT6= Map 5, Cattle Tank 6
- HNKST1= First Hawk Nest Found (No others found after point names)
- NRDTNK= New River Dam Cattle Tank
- GPP21= General Landscape Photo Point, Map 2, Point 1
- GPP22= General Landscape Photo Point, Map 2, Point 2
- R1WSH= Reference Map, Wash Point 1
- GPP42= General Landscape Photo Point, Map 4, Point 2
- 4CT1= Map 4, Cattle Tank 1
- GPP41= General Landscape Photo Point, Map 4, Point 1
- REVEG= Revegetation Opportunity Area
- SWW1= Map 5, Wildlife Water Guzzler 1
- SPP1= Map 5, General Landscape Photo Point 1
- BCT= Black Canyon Trail Crossing

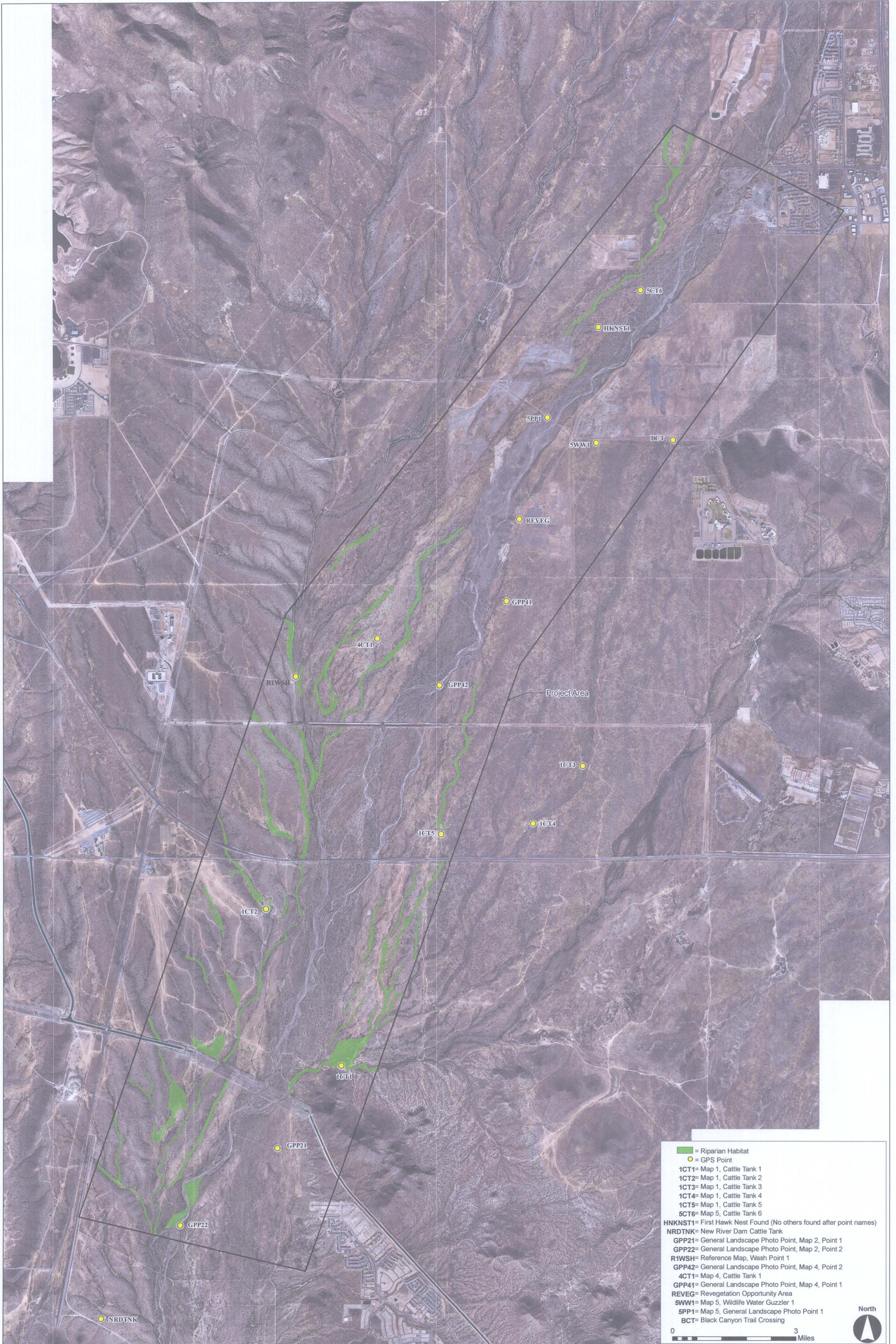
0 4 Miles

North

Base map of study area with photo points.
Environmental Overview

Appendix B

Aerial of Most Significant Riparian Habitats



■ = Riparian Habitat
● = GPS Point

1CT1= Map 1, Cattle Tank 1
 1CT2= Map 1, Cattle Tank 2
 1CT3= Map 1, Cattle Tank 3
 1CT4= Map 1, Cattle Tank 4
 1CT5= Map 1, Cattle Tank 5
 5CT6= Map 5, Cattle Tank 6

HKNST1= First Hawk Nest Found (No others found after point names)
 NRDINK= New River Dam Cattle Tank
 GPP21= General Landscape Photo Point, Map 2, Point 1
 GPP22= General Landscape Photo Point, Map 2, Point 2
 RIWSH= Reference Map, Wash Point 1
 GPP42= General Landscape Photo Point, Map 4, Point 2
 4CT1= Map 4, Cattle Tank 1
 GPP41= General Landscape Photo Point, Map 4, Point 1
 REVEG= Revegetation Opportunity Area
 SWW1= Map 5, Wildlife Water Guzzler 1
 SPP1= Map 5, General Landscape Photo Point 1
 BCT= Black Canyon Trail Crossing

0 3 Miles

North

Aerial of Most Significant Riparian Habitat.
Environmental Overview

Appendix C

Ground Photos of Surface Water Features



Photo 1. View of cattle tank at GPS point 1CT1, facing northwest.



Photo 2. View of cattle tank at GPS point 1CT1, facing north.



Photo 3. View of cattle tank at GPS point 1CT1, facing northeast.



Photo 4. View of cattle tank at GPS point 1CT2, facing north.



Photo 5. View of cattle tank at GPS point 1CT2, facing northeast.



Photo 6. View of dry cattle tank at GPS point 1CT3 , outside but adjacent to study area, facing east.



Photo 7. View of cattle tank at GPS point 1CT4, outside but adjacent to study area, facing south.

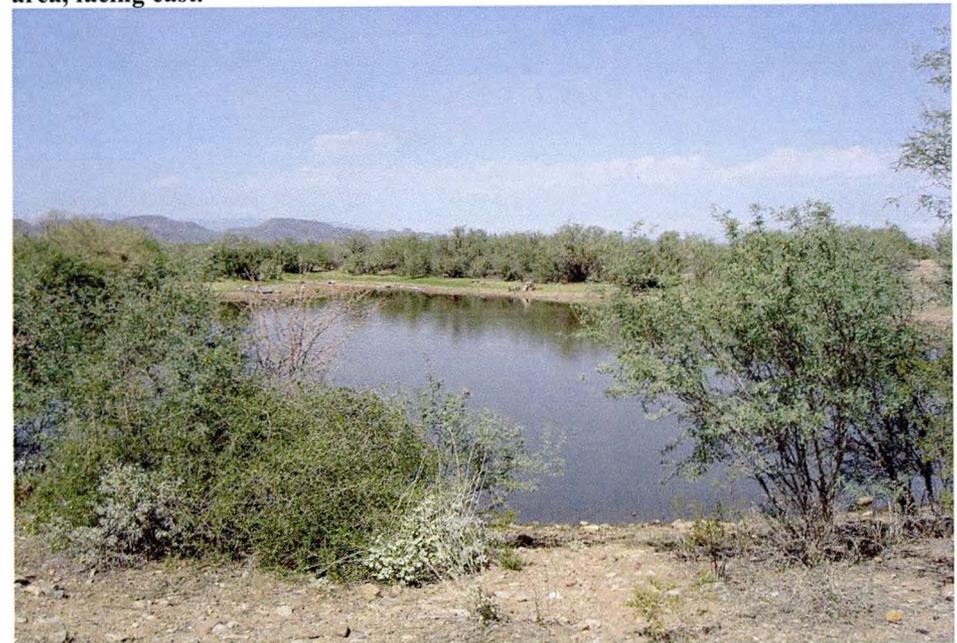


Photo 8. View of cattle tank at GPS point 1CT5, facing north.



Photo 9. View of New River from FNF Sand and Gravel road off New River Road, facing north.



Photo 10. View of New River from FNF Sand and Gravel road off New River Road, facing south.



Photo 11. View of FNF Sand and Gravel pond, facing east.



Photo 12. View of FNF Sand and Gravel pond, facing northeast.



Photo 13. View of FNF Sand and Gravel pond, facing northeast.



Photo 14. View of dry metal ring tank at GPS point 5CT6, facing south.



Photo 15. View of dry cattle tank at GPS point NRDTNK, facing north.



Photo 16. View of dry cattle tank at GPS point NRDTNK, facing west.



Photo 17. View of deeply incised wash at GPS point R1WSH, facing north.



Photo 18. View of deeply incised wash at GPS point R1WSH, facing south.



Photo 19. View of cattle tank at GPS point 4CT1, facing south.



Photo 20. Catchment apron (green arrow) at GPS point 5WW1.



Photo 21. Water guzzler (red arrow) and catchment apron (green arrow) at GPS point 5WW1.

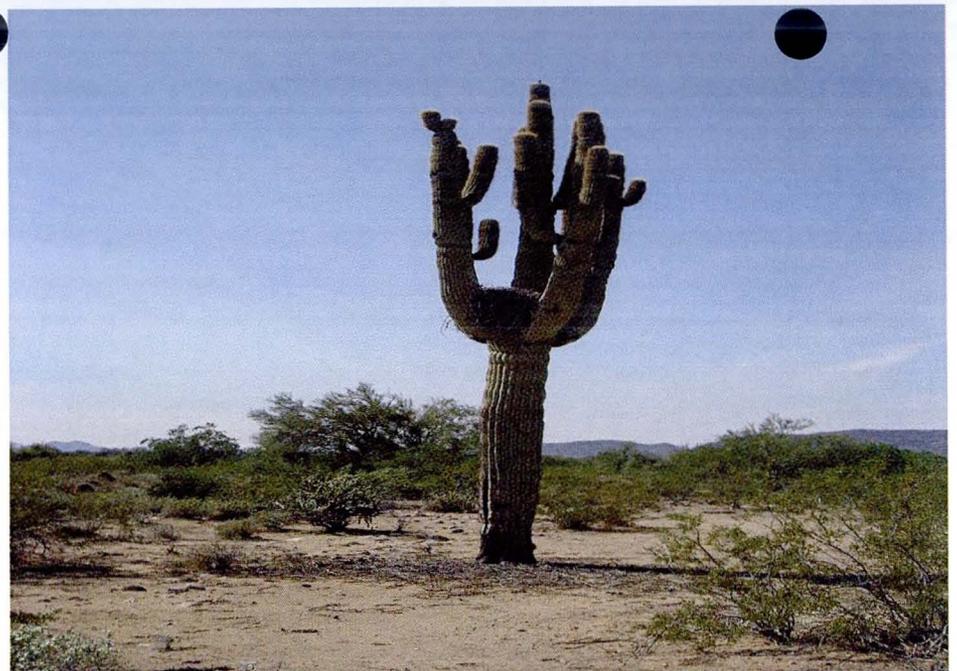


Photo 22. Hawk nest in saguaro at GPS point HKNST1.



Photo 23. View of large mesquite bosque just south of Central Arizona Project canal, facing south.



Photo 24. View of mesquite bosque in Photo 23, facing southeast.

Appendix D

General Photos of Study Area

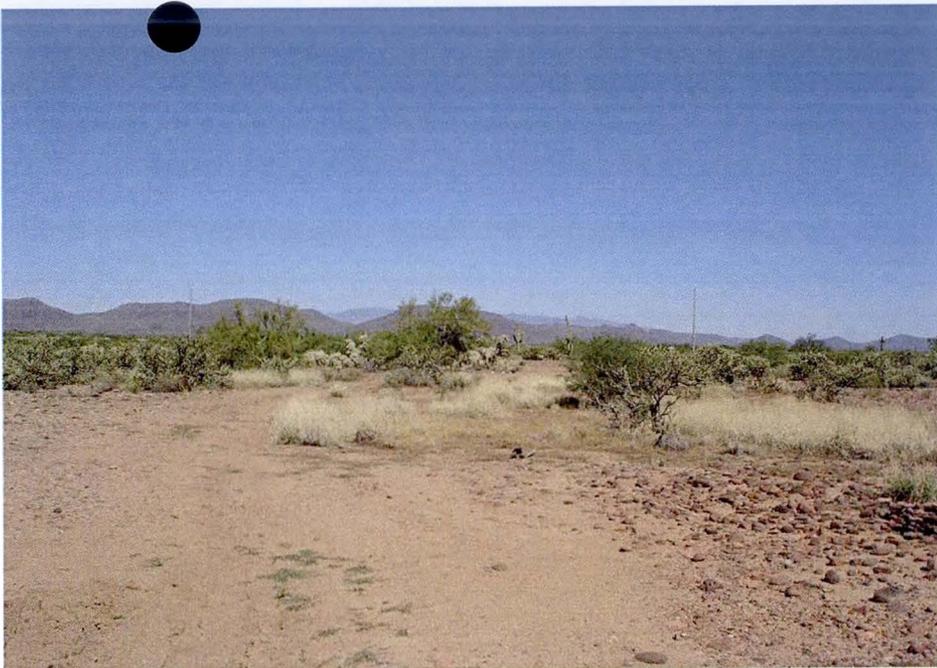


Photo 1. View of general landscape at GPS point GPP41, facing north.



Photo 2. View of general landscape at GPS point GPP41, facing west.



Photo 3. View of general landscape at GPS point GPP41, facing south.



Photo 4. View of general landscape at GPS point GPP41, facing east.

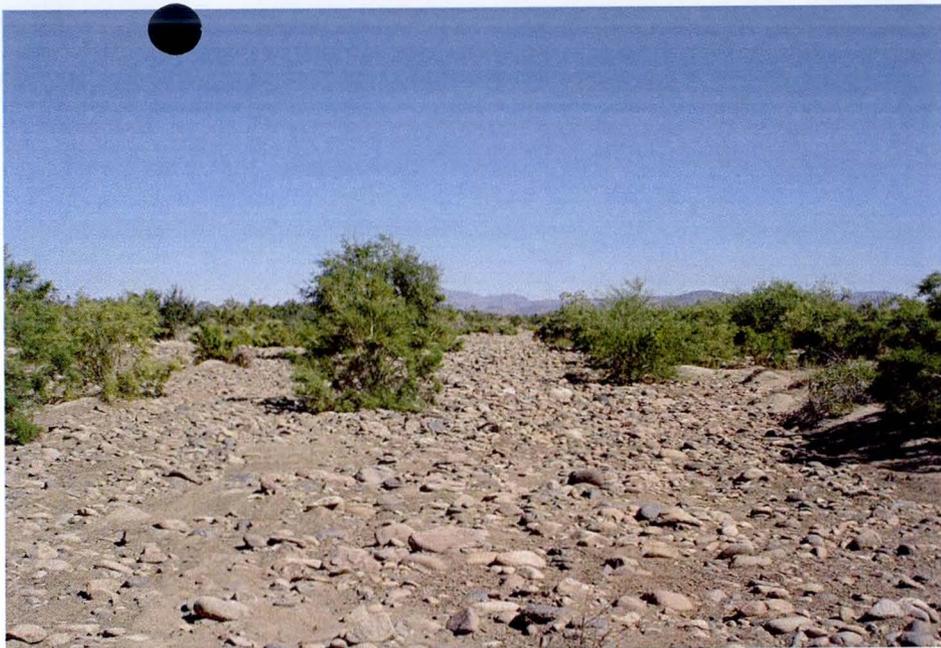


Photo 5. View of general landscape at GPS point GPP42, facing north.



Photo 6. View of general landscape at GPS point GPP42, facing east.



Photo 7. View of general landscape at GPS point GPP42, facing west.



Photo 8. View of general landscape at GPS point GPP42, facing south.



Photo 9. View of general landscape at GPS point GPP21, facing north.



Photo 10. View of general landscape at GPS point GPP21, facing east.



Photo 11. View of general landscape at GPS point GPP21, facing west.



Photo 12. View of general landscape at GPS point GPP21, facing south.



Photo 13. View of general landscape at GPS point GPP22, facing north.



Photo 14. View of general landscape at GPS point GPP22, facing west.



Photo 15. View of general landscape at GPS point GPP22, facing south.



Photo 16. View of general landscape at GPS point GPP22 facing east.



Photo 17. View of impacts of off-highway vehicles and off-road vehicles near ICT1, facing northeast.



Photo 18. View of impacts of off-highway vehicles and off-road vehicles near ICT1, facing east.



Photo 19. Feral burros in study area.



Photo 20. Feral burros in study area.

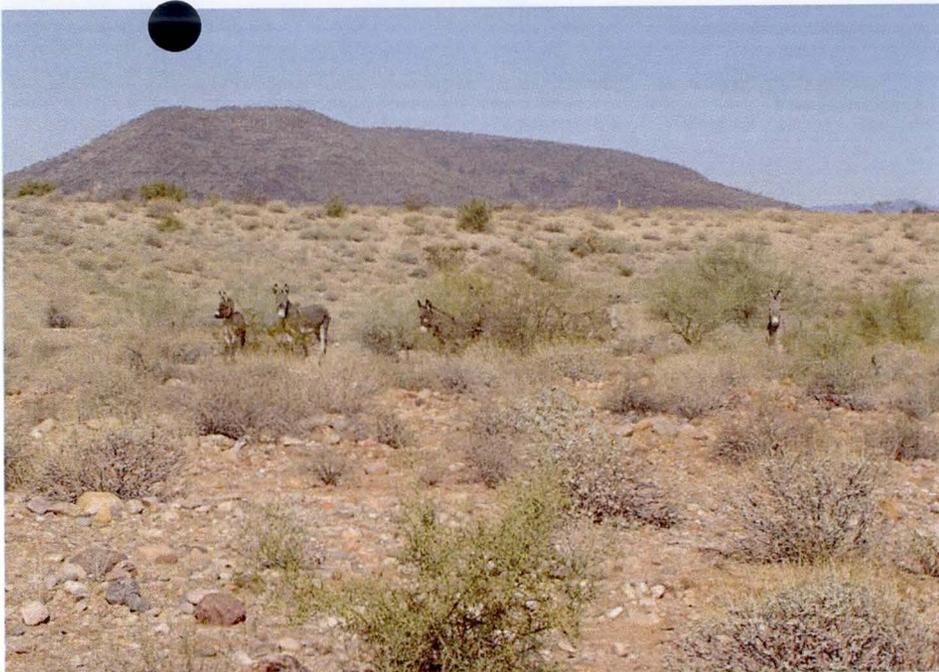


Photo 21. Feral burros in study area.

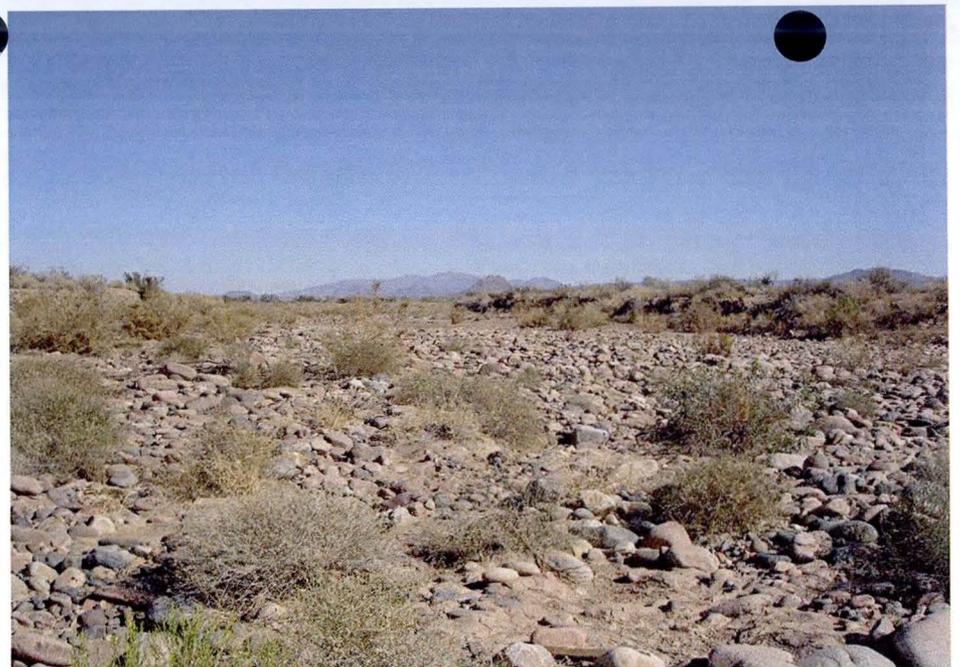


Photo 22. View of New River at GPS point 5PP1, facing north.

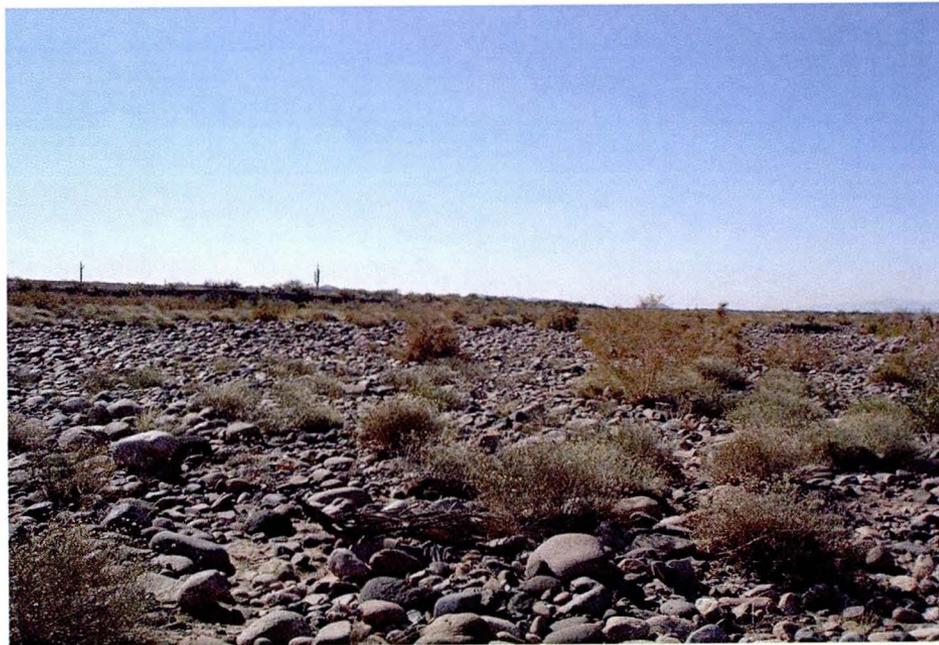


Photo 23. View of New River at GPS point 5PP1, facing south.



Photo 24. View of previously ripped and revegetated area at GPS point REVEG, facing south.



Photo 25. View of previously ripped and revegetated area at GPS point REVEG, facing southeast.

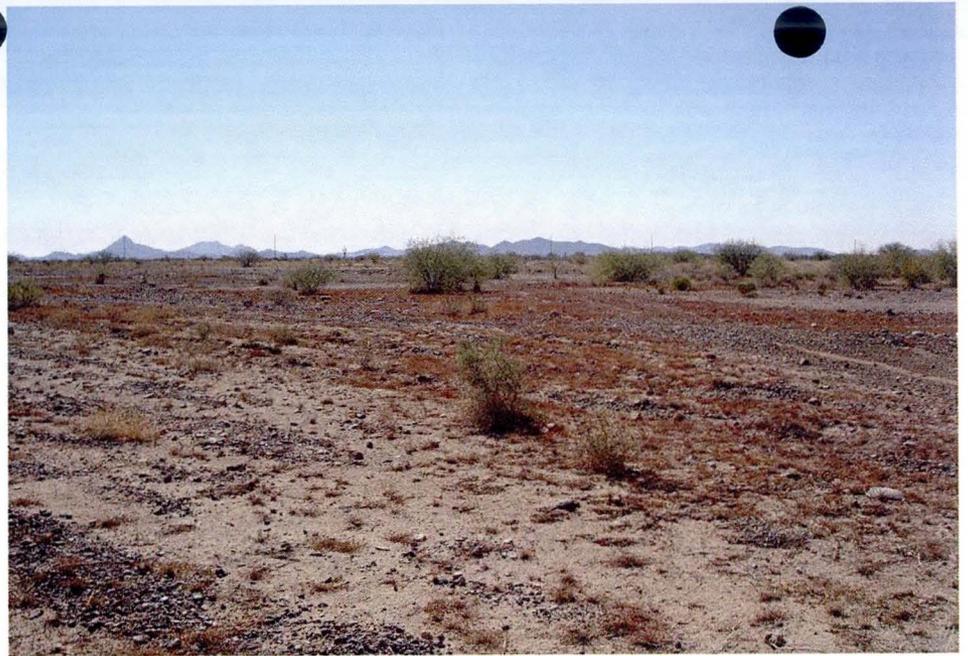


Photo 26. View of previously ripped and revegetated area at GPS point REVEG, facing southwest.

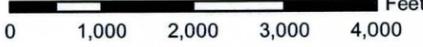
Appendix E

Aerial of Locations of Potential Impact to Waters of the United States

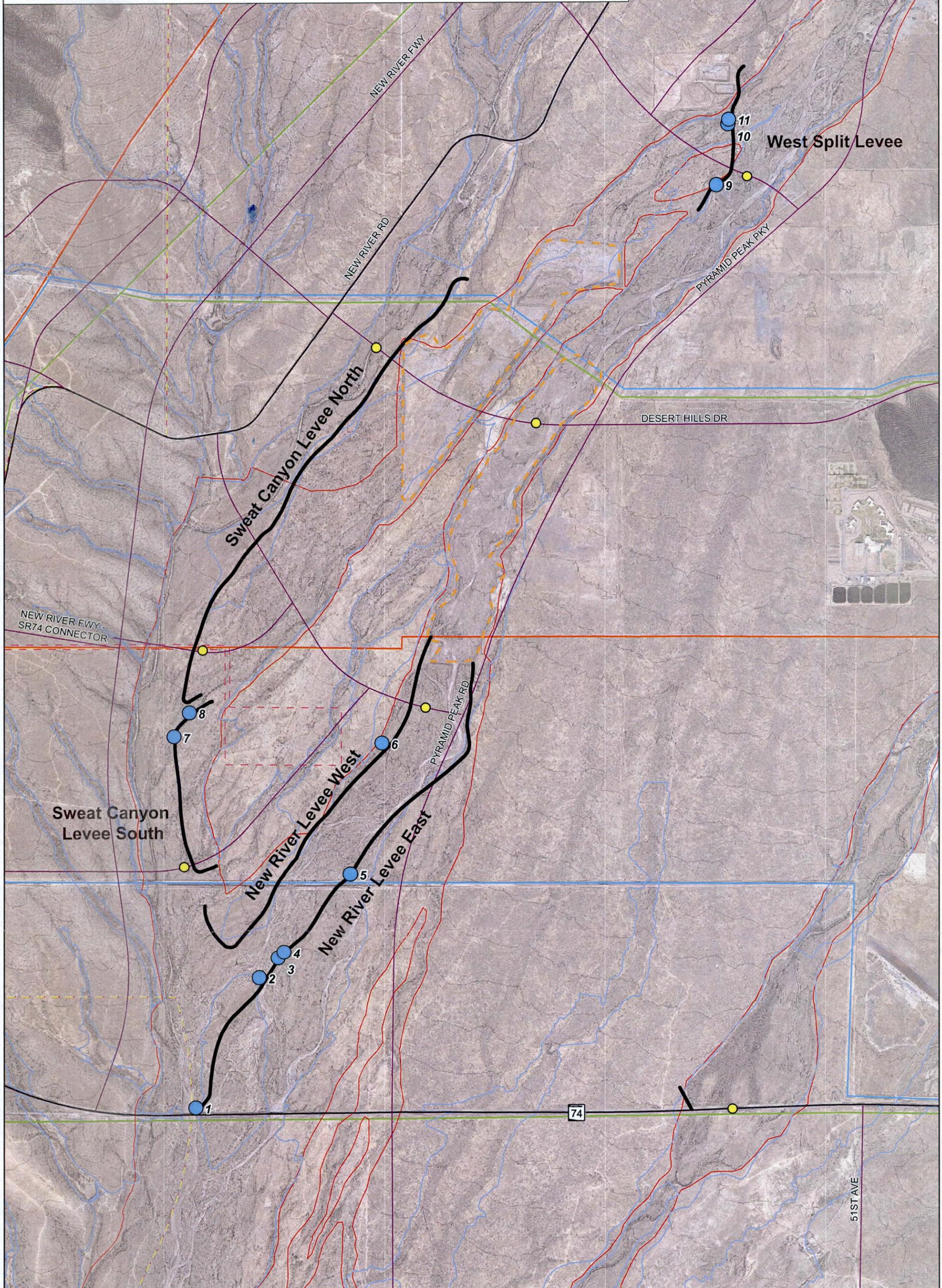
 GPS Point	 Index Contour
 Proposed Bridge	 2 ft Intermediate Contour
 Proposed Levee	 Historic Pit
 Future Roadway Alignment	 FEMA Floodplain
 Roadway	 Erosion Hazard
 Gasline	 Peoria Corporate Boundary
 Powerline	 Phoenix Corporate Boundary
 Waterline	



1" = 2000'



0 1,000 2,000 3,000 4,000 Feet



51ST AVE

Appendix F

Photos of Areas of Potential Impact to Waters of the United States



Photo 1. View of GPS point 1 from State Route 74, facing north.



Photo 2. View from GPS point 2, facing southeast.

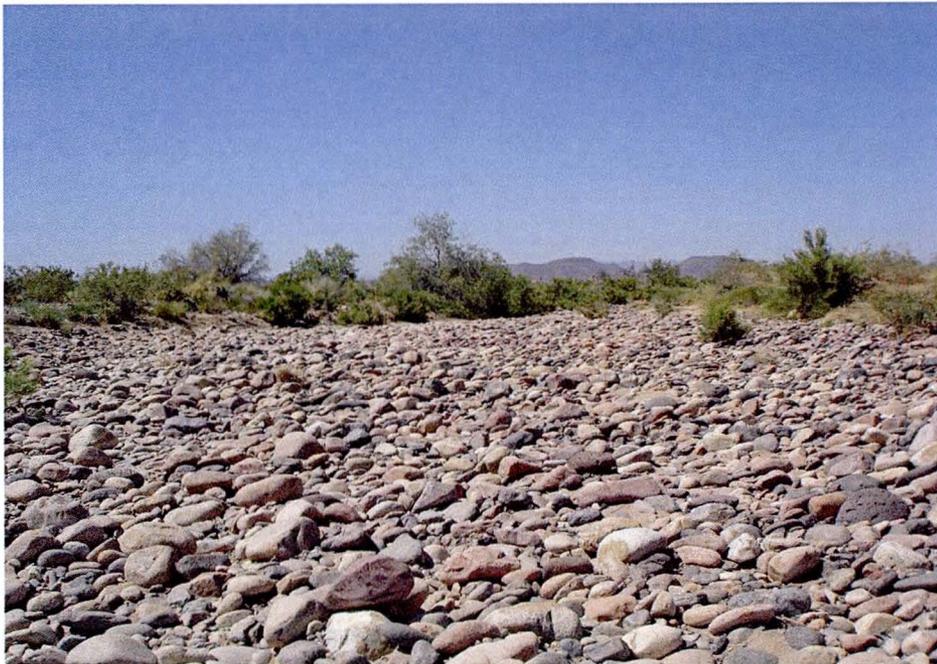


Photo 3. View from GPS point 2, facing northwest



Photo 4. View from GPS point 3, facing southeast.



Photo 5. View from GPS point 3, facing northwest.



Photo 6. View from GPS point 4, facing southeast.



Photo 7. View from GPS point 4, facing northwest.



Photo 8. View from GPS point 5, facing southwest.



Photo 9. View from GPS point 5, facing northeast.



Photo 10. View from GPS point 6, facing southwest.



Photo 11. View from GPS point 6, facing northeast.



Photo 12. View from GPS point 7, facing southwest.



Photo 13. View from GPS point 7, facing northeast.



Photo 14. View from GPS point 8, facing southwest.



Photo 15. View from GPS point 8, facing southeast.



Photo 16. View from GPS point 9, facing northeast.



Photo 17. View from GPS point 9, facing southwest.



Photo 18. View from GPS point 10, facing southeast.



Photo 19. View from GPS point 10, facing northwest.



Photo 20. View from GPS point 11, facing northeast.



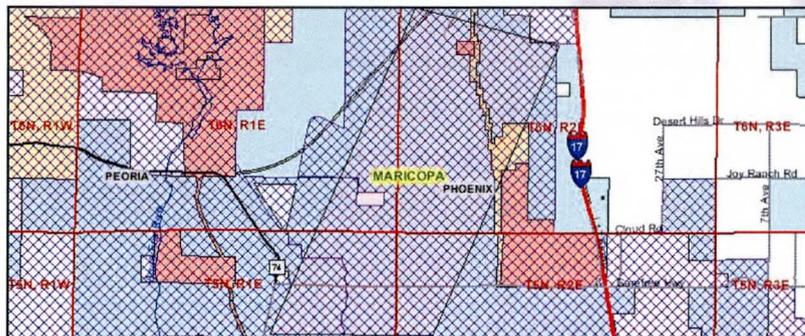
Photo 21. View from GPS point 11, facing southwest.

Appendix G

Arizona Game and Fish Department Online Environmental Review Tool Results

Project Location

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.



Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE	S		WSC
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			WSC

Project Name: Upper New River Study Area (06-871)
Submitted By: Tricia Balluff
On behalf of: CONSULTING
Project Search ID: 20080327005612
Date: 3/27/2008 12:22:08 PM
Project Category: Water Use, Transfer, and Channel Activities, Impoundment (flood control, levee, dam)
Project Coordinates (UTM Zone 12-NAD 83): 389238.674, 3743528.574 meter
Project Area: 11073.615 acres
Project Perimeter: 29485.039 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1161
Quadrangle Name: BISCUIT FLAT
Project locality is not anticipated to change

Location Accuracy Disclaimer

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

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: <http://arizonaes.fws.gov/>.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Water Use, Transfer, and Channel Activities, Impoundment (flood control, levee, dam)

Project Type Recommendations:

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (<http://www.azdeq.gov/>).

Based on the project type entered; coordination with Arizona Department of Water Resources may be required (<http://www.water.az.gov/adwr/>)

Based on the project type entered; coordination with County Flood Control districts may be required.

Based on the project type entered; coordination with State Historic Preservation Office may be required
<http://www.pr.state.az.us/partnerships/shpo/shpo.html#anchor561695>

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required
(<http://www.spl.usace.army.mil/regulatory/phonedir.html>)

Based on the project type entered; coordination with U.S. Fish and

Wildlife Service (Fish and Wildlife Coordination Act) may be required (<http://arizonaes.fws.gov/>)

Consider incorporating project components that may allow for the inclusion to promote, enhance, create, or restore wildlife habitat. Contact Project Evaluation Program for further information and opportunities -
http://www.azgfd.gov/inside_azgfd/agency_directory.shtml.

During planning and construction, minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g. microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g. livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants <http://www.azda.gov/PSD/quarantine5.htm>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control: <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information http://www.azgfd.gov/h_f/hunting_rules.shtml.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of

Arizona's On-line Environmental Review Tool

Search ID: 20080327005612

Project Name: Upper New River Study Area (06-871)

Date: 3/27/2008 12:22:14 PM

prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Project Location and/or Species recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project (refer to page 1 of the receipt). Please contact:
Ecological Services Office
US Fish and Wildlife Service

2321 W. Royal Palm Rd.
Phoenix, AZ 85021-4951
Phone: 602-242-0210
Fax: 602-242-2513

HDMS records indicate that Sonoran desert tortoise have been documented within the vicinity of your project area (refer to the species list on page 1 of the receipt). Please review the Tortoise Handling Guidelines found on the Environmental Review Home Page.

<http://www.azgfd.gov/hgis/guidelines.azpx>

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**

7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

**Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366**

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1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt

indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

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This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature: _____

Date: _____

Contact Name: _____

Proposed Date of Implementation: _____

Address: _____

Please provide point of contact information regarding this Environmental Review.

City, State, Zip: _____

Application or organization responsible for project implementation

Phone: _____

Agency/organization: _____

E-mail: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization: _____