RECLAMATION
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Draft
Environmental Assessment

Marana Regional Sports Complex

Town of Marana
Pima County, Arizona

U.S. Department of the Interior
Bureau of Reclamation
Phoenix Area Office

August 2008

DRAFT ENVIRONMENTAL ASSESSMENT

MARANA REGIONAL SPORTS COMPLEX

Prepared for

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Chapter 1

PURPOSE AND NEED

1.1 INTRODUCTION

This environmental assessment (EA) has been prepared to describe and assess the environmental consequences that are likely to result from construction and operation of the Marana Regional Sports Complex. The Town of Marana (Marana) proposes to construct and operate the Regional Sports Complex (Sports Complex) on approximately 500 acres of vacant Bureau of Reclamation (Reclamation) land associated with the Central Arizona Project (CAP). In order to authorize use of the site for park development, Reclamation proposes to consummate a land use agreement with Marana for a 50-year term subject to renewal.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500–1508), and Reclamation's 2000 Draft NEPA Handbook. Reclamation is the lead agency responsible for preparing this document. Marana is a cooperating agency, as defined in 40 CFR 1501.6.

1.2 PURPOSE OF AND NEED FOR THE PROJECT

The purpose of and need for the proposed land use agreement is to provide review and approval by Reclamation for the construction and operation of the Sports Complex on Reclamation land in accordance with the Federal Water Project Recreation Act (Act) of 1965 (Public Law [PL] 89-72, as amended). The Act authorizes Reclamation to assist in developing public recreational facilities on water resource projects and to permit uses of project lands. Recreational development would affect lands that were acquired for the CAP in accordance with the Colorado River Basin Act of 1968 (PL 90-537).

The purpose of and need for the Sports Complex stems from the strong residential growth in northeast Pima County and Marana in particular. Areas of open desert are being turned into housing, retail, commercial, and industrial developments at an unprecedented rate. Marana is responding to this growth by planning open space and recreational opportunities. As part of this planning process, Marana determined that the 500-acre parcel of Reclamation land along Avra Valley Road and west of the Santa Cruz River is ideally situated to meet the projected demand for park facilities.

1.3 LOCATION

The project area, which totals approximately 500 acres, adjoins the CAP canal and is located approximately ¼-mile east of the Marana Regional Airport between Twin Peaks Road and the Santa Cruz River in Township 12 South, Range 11 East, Sections 2, 3, 10, 11, 14, and 15, Gila and Salt River Baseline and Meridian (Figures 1 and 2).

1.4 PUBLIC INVOLVEMENT/SCOPING PROCESS

Reclamation, in cooperation with Marana, began the public involvement process on April 17, 2007, when Reclamation mailed a scoping letter to approximately 80 potentially interested parties, including Native American tribes with traditional ties to southern Arizona. The scoping letter was also posted on the

Reclamation web site[1] during the same period. The scoping period ended on May 18, 2007. Reclamation received two responses to the scoping letter (Appendix A). The first response expressed support for the proposed project. In the second letter, the Hopi Tribe requested to review any proposed mitigation for adverse effects to archaeological resources of the project (see Chapter 4 of this EA).

The White Mountain Apache Tribe and the San Carlos Apache Tribe have verbally indicated they have no concerns about the project; additionally, the San Carlos Apache Tribe and the Ak-Chin Indian Community (who later responded to Reclamation in writing) defer to the comments of the Tohono O'odham Nation. The Tohono O'odham Nation and the Pascua Yaqui Tribe requested the opportunity to visit the proposed project area. On June 21, 2007, Reclamation and Marana archaeologists met with Tohono O'odham and Pascua Yaqui representatives to visit a sample of sites and discuss tribal concerns. After the field visit, the Pascua Yaqui representative stated that the Pascua Yaqui would defer to the Tohono O'odham. Subsequently, Reclamation received a letter from the Tohono O'odham expressing a preference for the avoidance of the archaeological sites where possible, or for burying and preserving the sites in place if appropriate. More specifically, there was a request to preserve site AZ AA:12:457(ASM) intact to safeguard not only the remaining archaeological features, but also the natural vegetation, including mature saguaros and mesquites. The Tohono O'odham and Hopi will continue to be consulted as an archaeological treatment plan is prepared for the proposed project. See Section 3.6 for information regarding the proposed treatment of cultural resources on the project site.

1.5 CONFORMANCE WITH COMPREHENSIVE PLANS AND ZONING

The Proposed Action conforms to the existing Marana General Plan (Plan) and the Plan Update, which was adopted by Town Council on December 11, 2007 (Marana 2003, 2007). More specifically, the Proposed Action advances the goals of the Public Facilities and Services Element, Recreation and Open Space Element, and Environment Element of the Plan Update.

Public Facilities and Services Element: Plan for future service and facility needs. The proposed park project would help meet the facility needs of the expanding Marana residential population.

Recreation and Open Space Element: Plan and develop a comprehensive system of trails that connects regional trails with local trails, parks, neighborhoods, and recreational amenities. The proposed project incorporates regional trails, such as the CAP trail, into its design.

Recreation and Open Space Element: Provide a system of developed parks and recreational facilities throughout the community. The proposed project creates an additional park and recreational facility for the area southeast of the Marana Airport.

Recreation and Open Space Element: Provide a balanced range of recreation programs for the entire community. The proposed project provides a variety of recreational programs.

Environment Element: Reclaim, restore, or redevelop land no longer viable for mining or agriculture. The proposed project redevelops disturbed lands that are no longer irrigated for agriculture.

[1] Available at: http://www.usbr.gov/lc/phoenix.

Figure 1. Location of the proposed regional sports park.

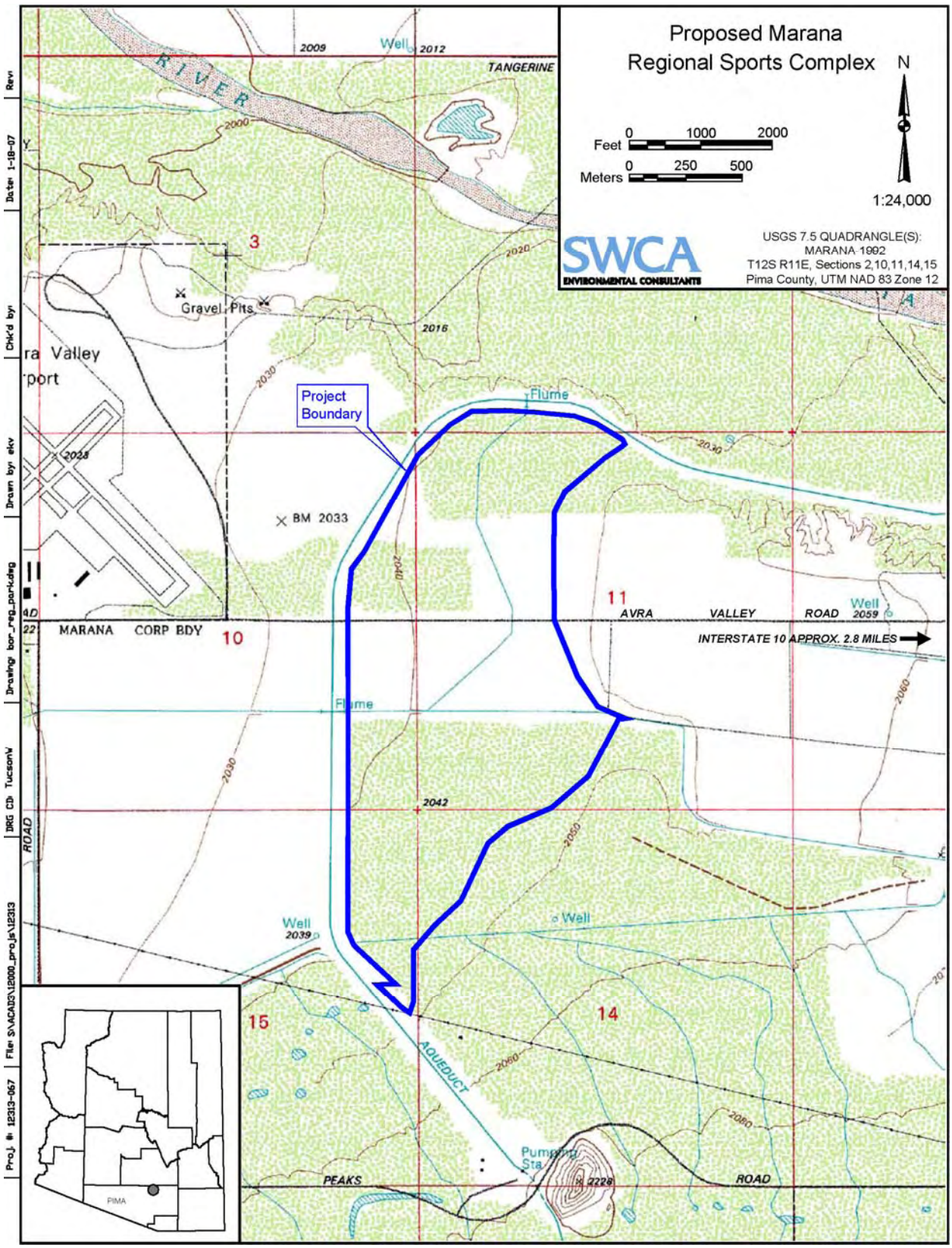

Figure 2. Project location.

Chapter 2

DESCRIPTION OF ALTERNATIVES

2.1 NO ACTION

In accordance with CEQ Regulations at 40 CFR 1502.14(d), the No Action alternative must be considered in each NEPA review. The No Action alternative serves as the baseline for comparing the environmental effects of the action alternatives. If no action is taken, Reclamation would not execute the land use agreement, and the park with associated facilities and landscaping would not be constructed.

2.2 PROPOSED ACTION

Under the Proposed Action, Reclamation would execute a land use agreement authorizing Marana's use of the 500-acre site for recreational development. Marana, in cooperation with Reclamation, would develop a mutually acceptable management and development plan for the site. The plan would identify the types and quantities of recreational areas and facilities that Marana would construct and manage in accordance with the land use agreement. Reclamation anticipates that Federal cost-share funds would be available to support development of the Sports Complex.

Preliminary conceptual plans for the Sports Complex include accommodations for various team sports (e.g., softball, baseball, and soccer), trails, community events, picnicking, and equestrian use, with associated facilities, including restrooms and parking. The park would be developed primarily for day use; no overnight uses (e.g., camping) would be allowed. The various amenities of the park would be phased in over a 10-year period, starting in 2010, as the Marana area develops and park use increases. Marana anticipates developing 125 acres for the softball complex by 2012, 125 acres for the baseball complex by 2014, 125 acres for the soccer field by 2016, and 125 acres for the equestrian center–events complex by 2020.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY

The project proponent has not considered additional locations for the proposed Sports Complex. The availability of alternative parcels of sufficient size is limited by the real estate market and financial resources of Marana. Acquiring a large parcel elsewhere in the community would inherently be much more expensive than using the Reclamation-owned site.

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Chapter 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and environmental consequences in the proposed project area. The elements considered include: air quality, lands and soil, water resources, biological resources, cultural resources, socioeconomics, health, safety, noise, and environmental justice. Elements considered but eliminated from further analysis are listed at the end of the chapter.

3.1 GENERAL SETTING

The project area is located approximately 2.5-miles west of Interstate 10 (I-10) in Marana, Pima County, Arizona. The project area is characterized by flat, disturbed land and is located southwest of the ephemeral Santa Cruz River and southeast of the Marana Regional Airport (see Figure 2). Avra Valley Road bisects the project area.

3.2 AIR QUALITY

Affected Environment

Air quality is determined by the ambient concentrations of pollutants that are known to have detrimental effects. The U.S. Environmental Protection Agency (EPA) has promulgated National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter 10 (PM_{10}) and particulate matter 2.5 ($PM_{2.5}$), ozone, sulfur dioxide, and lead. Areas with air quality that do not meet the standards are designated "nonattainment areas" by the EPA. The nonattainment designation subjects an area to regulatory control of pollutant emissions so that attainment of the NAAQS can be achieved within a specified period. General air quality information in Pima County can be found at the Pima County Department of Environmental Quality (PCDEQ) web site (PCDEQ 2007).

The project area falls within the Rillito PM_{10} nonattainment area. The EPA's Air Quality System database shows no PM_{10} exceedances in the Rillito nonattainment area between 1991 and the first quarter of 2007 (personal communication, Sandra Wardwell, Arizona Department of Environmental Quality [ADEQ] 2007). On August 8, 2006, the EPA (EPA 2006) noted that "the Rillito moderate PM_{10} nonattainment area . . . continues to attain the PM_{10} standards" and that "certain attainment demonstration requirements, along with other related requirements of the CAA [Clean Air Act], are not applicable to the Rillito area." Approval of a maintenance plan for the Rillito area is presently under consideration by the EPA. Maintenance plan approval by the EPA would likely result in redesignation of the area from nonattainment to maintenance status.

The EPA General Conformity Rule (GCR) applies because the proposed project involves a Federal action in a nonattainment area. Under the GCR, established under the CAA (Section 176(c)(4)), Federal actions must conform to the initiatives established in the applicable state implementation plan. The GCR ensures that the actions taken by Federal agencies in nonattainment and maintenance areas meet national standards for air quality. Under the rule, any new project using Federal funds or requiring Federal approval must not cause or contribute to a worsening of air quality in areas that are designated nonattainment or maintenance. The GCR specifies certain emission levels, called *de minimis* levels, for

each pollutant, which establish the minimum threshold at which conformity determinations must be made for pollutants in nonattainment and maintenance areas (EPA 2007a). For PM_{10}, the threshold at which a conformity determination must be performed in moderate nonattainment and maintenance areas (the *de minimis* level) is 100 tons per year (EPA 2007a).

Environmental Consequences

No Action

Under the No-Action Alternative, no construction or visitor use would occur in the project area. The area would remain vacant. Air quality would be influenced by urban growth in surrounding areas and associated increases in emissions from construction and greater traffic volumes.

Proposed Action

Potential sources of PM_{10} from the proposed project include construction and visitor use. Park construction would be intermittent in nature and phased over a 10-year period. During this period, the estimated PM_{10} associated with fugitive dust from earthwork activities and tailpipe emissions from construction vehicles would total approximately 19.8 tons per year after adjusting for control efficiencies (see Appendix B for a description of the analysis and assumptions). Fugitive dust during construction would be controlled by periodic application of water. Construction-related tailpipe emissions would be sporadic and limited to times of equipment operation.

Vehicle traffic emissions from park visitation would total approximately 0.5 ton per year. Park operations, excluding vehicle visitation, would have negligible effects on air quality. Based on the proposed project's total estimated annual PM_{10} from construction and operation (including visitor use), it is highly unlikely the *de minimis* level would be exceeded; therefore, Reclamation has concluded that a conformity determination is not required.

Cumulative Effects

PM_{10} emissions from the Proposed Action would be incremental and additive to PM_{10} emissions from construction and residential or commercial land use development in the project area. Implementation of the Proposed Action would not substantially reduce levels of air quality in the project area or the Rillito nonattainment area.

3.3 LAND USE AND SOILS

Affected Environment

Existing land use in the project area includes abandoned agricultural land and disturbed and undisturbed desert. Surrounding areas consist of active agricultural land, undeveloped desert, and the Marana Regional Airport.

The proposed project area is a relatively flat parcel in the historic floodplain of the Santa Cruz River. No erosion or sedimentation was evident during a site visit in January 2007. A review of soil data indicates that the project area is in the Torrifluvents Association (Hendricks 1985). This association consists of "deep, moderately coarse and coarse-textured, nearly level to strongly sloping soils on floodplains and alluvial fans" (Hendricks 1985). Torrifluvents constitute about 95 percent of this

association, with the major soils being Grebe, Pima, and Anthony. (Hendricks 1985). These soils typically have a slope of 0 to 3 percent, with moderate to low available water capacity and moderately rapid to rapid permeability. Runoff is slow and the hazard of erosion is slight to moderate.

Environmental Consequences

No Action

Under this alternative, no construction or visitor use under the Proposed Action would occur in the project area. Existing land use on the 500-acre site would continue into the foreseeable future, and soils would not be impacted.

Proposed Action

The Proposed Action would convert the vacant property into a regional park with fields, play areas, natural vegetation, open space, pathways, roads, parking lots, and associated facilities. The proposed land use agreement and associated park development would permanently change the existing land use and preclude the project area from being converted to other possible uses. Project development would have no effect on land use on adjoining properties. Erosion resulting from the clearing of vegetation and construction-related soil compaction would be mitigated by sediment barriers and revegetation measures after construction. The erosion- and sediment-control plan will address these impacts.

The Proposed Action does not involve conversion of, or otherwise affect, prime or unique farmland or other farmland of statewide or local importance, as defined in Section 1540(c)(1) of the Farmland Protection Policy Act.

Cumulative Effects

Continued urban development will eventually envelope the project area and result in the conversion of agricultural land and desert to residential and commercial uses. In the long term, the Proposed Action would retain an open space character and provide recreational amenities that are desired in the context of an urban setting.

3.4 WATER RESOURCES

Affected Environment

Surface Water

The project area is in the Santa Cruz River (SCR) floodplain. No permanent surface water exists in the project area. Floodwaters from the SCR generally flow from the southeast to northwest, primarily as sheet flow, north and south of Avra Valley Road.

The dikes that border the CAP aqueduct offer only limited protection from high magnitude floods associated with the SCR. Floodwaters from a 100-year event (or greater) spill across unprotected agricultural land and enter the project area from the east. The CAP dikes interrupt local drainage patterns, which trend north and west away from the project area. Runoff that originates on-site is captured by drainage ditches that bisect the project area on the north and south sides of Avra Valley Road. This runoff is conveyed across the CAP aqueduct through two sets of flumes (see Figure 2). Despite the presence of

these drainage features, excess water can temporarily pond up against the CAP dikes. No Clean Water Act (CWA) Section 404 jurisdictional waters are present onsite.

Sole-Source Aquifer

According to the EPA Region 9 web site, the project area is outside any areas supported by a sole-source aquifer (EPA 2007b).

Floodplain and Storm Water

The project area is predicted to be completely inundated by floodwaters during a regulatory (i.e., 100-year) event according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (No. 04019C0990K, with an effective date of February 8, 1999). During such an event, flow is predicted to average 1-foot deep. Existing storm-water management features are limited to drainage ditches and associated structures that carry flow away from the project area and across the CAP canal.

Environmental Consequences

No Action

Under the No Action alternative, existing drainage patterns would persist into the foreseeable future. Surface and ground-water resources would not be impacted.

Proposed Action

Surface Water

The Proposed Action would result in negligible to minor impacts to surface water quality. In the short term, grading and vegetation removal during construction could result in slight increases in sediment transport associated with storm runoff. Marana would implement appropriate storm water Best Management Practices (BMPs) and engineering controls during design and construction in association with the Arizona Pollutant Discharge Elimination System (AZPDES) construction general permit. Mitigation measures are provided in Chapter 4. New landscaping, storm water-retention basins, and other features would mitigate this impact and protect surface water quality over the long term.

No new flood protection dikes are anticipated in the design of the park. Post-construction storm water drainage from the project area would be consistent with existing drainage patterns, with little or no impact on adjoining properties. Drainage would be directed toward existing discharge points offsite.

Sole-Source Aquifer

The project area is outside any areas supported by a sole-source aquifer; therefore, the project would not impact a sole-source aquifer.

Floodplain and Stormwater

The design of the proposed project would alleviate existing flood patterns in the project area, as illustrated in the FEMA FIRM (No. 04019C0990K, with an effective date of February 8, 1999). Proposed storm water-retention basins and associated infrastructure would upgrade the condition of existing storm-water conveyance features to minimize long-term flooding impacts. Except for minor facility buildings and parking lots, the project area would remain pervious to surface water. The proposed park is not expected

to increase flood impacts offsite because of the on-site storm water features and generally pervious surface area of the proposed project.

Cumulative Effects

The proposed project would have a negligible effect on storm water and flood flow patterns. Future development of lands surrounding the project area will likely increase the amount of impervious surface area and alter storm water flow patterns.

3.5 BIOLOGICAL RESOURCES

Affected Environment

Vegetation

The vegetation in the project area is characterized as the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community, although some elements of the Arizona Upland subdivision are present (Brown 1994). The approximate elevation of the area is 2,040 feet above mean sea level. Three vegetation associations were identified in the project area: upland desertscrub, xeroriparian mixed scrub, and fallow agricultural land (SWCA 2007a). Dominant plant species in the northern portion of the upland desertscrub association include velvet mesquite (*Prosopis velutina*), triangle-leaf bursage (*Ambrosia deltoidea*), and barrel cactus (*Ferocactus wislizeni*). Less-common species include foothill paloverde (*Parkinsonia microphylla*), saguaro (*Carnegiea gigantea*), cholla (*Opuntia* spp.), white bursage (*Ambrosia dumosa*), and creosotebush (*Larrea tridentata*). The remainder of this association is dominated by creosotebush.

Several parcels of fallow agricultural land are located in the project area. These areas are vegetated by carelessweed (*Amaranthus palmeri*) and a variety of non-native species, including Bermudagrass (*Cynodon dactylon*), prickly Russian thistle (*Salsola tragus*), Lehmann lovegrass (*Eragrostis lehmanniana*), and isolated individual saltcedar trees (*Tamarix* sp.).

Xeroriparian mixed scrub vegetation is associated with the irrigation ditches and two earthen stock tanks (66- and 115-feet wide, respectively) in the project area. This vegetation type is associated with an ephemeral or intermittent water supply and typically contains plant species that also occur in neighboring upland habitats, although riparian plants are typically larger and often occur at higher densities than those in adjacent uplands. Dominant plant species in these areas include velvet mesquite, whitethorn acacia (*Acacia constricta*), desertbroom (*Baccharis sarothroides*), and burroweed (*Isocoma tenuisecta*).

Wildlife

No systematic wildlife surveys are known from the project area. Brown (1994) lists a number of birds, mammals, amphibians, and reptiles that are characteristic of the Sonoran Desertscrub biome. Because of agricultural development, the regional airport, roads, and the CAP canal, which surround the project area, the habitat is only of marginal quality for large ungulates, such as mule deer and javelina, and we would not expect large carnivores, such as mountain lion and black bear, to be present.

Threatened and Endangered Species

In January 2007, an SWCA Environmental Consultants (SWCA) biologist conducted a field reconnaissance of the project area and reviewed the current U.S. Fish and Wildlife Service (USFWS)

Pima County list of 21 endangered, threatened, proposed, and candidate species (Table 1) to determine which species have the potential to occur in the project area (SWCA 2007a). SWCA also reviewed the Arizona Game and Fish Department (AGFD) Heritage Data Management System (HDMS) species of concern list to determine whether any of these species have been recorded in the project vicinity (HDMS 2006). SWCA prepared a biological evaluation (BE) on the potential effects of the proposed project on these species (Appendix C).

Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona*

Common Name (Species Name)	Status†	Range or Habitat Requirements	Potential for Occurrence in Project Area
Acuña cactus (*Echinomastus erectocentrus* var. *acunensis*)	USFWS C	Found on the tops or upper half of the side slopes of broad, dissected hills of granite or andesite at elevations between 1,200 and 2,600 feet in the Arizona Upland subdivision of the Sonoran Desert. In Arizona, known from: the Puerto Blanco Mountains; Little Ajo and Sauceda mountains; and hills between Florence and Kearney, north and south of the Gila River.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.
California brown pelican (*Pelacanus occidentalis californicus)*	USFWS E	Found in coastal areas, with nesting occurring on islands. Most Arizona records are of transients along the Colorado River north to Davis Dam, Lake Mead, and the Gila River valley, but stragglers reach most of the state (Tolani lakes, Navajo Indian Reservation, Salt River, and other areas).	Unlikely to occur. There are no aquatic sites in the project area.
Chiricahua leopard frog (*Rana chiricahuensis*)	USFWS T	Restricted to springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,281 and 8,890 feet in central, east-central, and southeast Arizona. Populations in central and east-central Arizona are disjunct from those in southeastern Arizona and may be a distinct species.	Unlikely to occur. There are no aquatic areas in the project area.
Desert pupfish (*Cyprinodon macularius*)	USFWS E	Found in shallow waters of desert springs, small streams, and marshes at elevations below 5,000 feet. One natural population still occurs in Quitobaquito Spring and Quitobaquito Pond in Pima County, and reintroductions have been made in Pima, Pinal, Maricopa, Graham, Cochise, La Paz, and Yavapai Counties, Arizona. New introductions continue.	Unlikely to occur. There is no aquatic habitat in the project area.
Gila chub (*Gila intermedia*)	USFWS E	Normally found in smaller headwater streams, cienegas and springs, or marshes of the Gila River Basin at elevations between 2,720 and 5,420 feet.	Unlikely to occur. There is no aquatic habitat in the project area.
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	USFWS E	Occurs in small streams, springs, and cienegas at elevations below 4,500 feet, primarily in shallow areas with aquatic vegetation and debris for cover. In Arizona, most of the remaining native populations are in the Santa Cruz River system.	Unlikely to occur. There is no aquatic habitat in the project area.
Goodding's onion (*Alium gooddingii*)	USFWS CA	Found in spruce-fir and mixed-conifer forests in moist, shady canyon bottoms and north-facing slopes at elevations between 7,500 and 11,250 feet. In Arizona, known from the White, Santa Catalina, and Chuska Mountains.	Unlikely to occur. There are no spruce-fir or mixed-conifer forests in the project area.
Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*)	USFWS E	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of cienegas or marshy wetlands at elevations between 4,000 and 6,500 feet. Known from the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River to Black Draw, and the San Pedro River.	Unlikely to occur. There is no aquatic habitat in the project area.

Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona* (Continued)

Common Name (Species Name)	Status†	Range or Habitat Requirements	Potential for Occurrence in Project Area
Jaguar (*Panthera onca*)	USFWS E	In Arizona, individuals have been found in Sonoran Desertscrub through subalpine conifer forests. In 1996, photographs documented two individuals from the Baboquivari Mountains, Pima County, and the Peloncillo Mountains, Cochise County. Another individual was documented west of Nogales in 2001 and 2003. Jaguars were probably closely associated with rivers and cienegas (marshes), once prominent in southern Arizona.	Unlikely to occur. This species is very rare, and there are no rivers or cienegas in the project area.
Kearney's bluestar (*Amsonia kearneyana*)	USFWS E	Found on dry, open slopes (20 to 30 degrees) at elevations between 4,000 and 6,000 feet in the transition zone between Madrean evergreen woodland and interior chaparral. Also occurs at elevations between 3,600 and 3,800 feet on stable, partially shaded, coarse alluvium along dry washes under deciduous riparian trees and shrubs in Sonoran Desertscrub or desertscrub/grassland ecotone. Known only from a west-facing drainage in the Baboquivari Mountains.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	USFWS E	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua mountains at elevations between 1,600 and 11,500 feet. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius of *Leptonycteris* bats may be 30 to 60 miles or more.	Unlikely to occur. While it is possible that this bat may forage in the project area, foraging bouts are likely to be infrequent at best, given the absence of agave and relatively small number of saguaros in the project area.
Masked bobwhite (*Colinus virginianus ridgewayi*)	USFWS E	Found at elevations between 1,000 and 4,000 feet in desert grasslands with diverse, moderately dense native grasses and forbs and adequate brush cover. This subspecies has been found to be closely associated with *Acacia angustissima*. Known only from reintroduced populations on Buenos Aires National Wildlife Refuge.	Unlikely to occur. There is no *Acacia angustissima* within the project area, and the project area is approximately 40-miles northeast of the Buenos Aires National Wildlife Refuge.
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Found in mature montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed-conifer and pine-oak vegetation types. Generally nests in older forests of mixed conifers or ponderosa pine/Gambel oak. Nests in live trees on natural platforms (e.g., dwarf mistletoe brooms), snags, and on canyon walls at elevations between 4,100 and 9,000 feet.	Unlikely to occur. There are no montane forests or wooded canyons in the project area.
Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*)	USFWS E	Found in Sonoran Desertscrub with limestone-derived alluvium at elevations between 2,000 and 3,600 feet. In Arizona, the known range is limited to the Waterman and Vekol mountains.	Unlikely to occur. The project area does not contain limestone-derived alluvium.
Ocelot (*Leopardus* [=*Felis*] *pardalis*)	USFWS E	In Arizona, occurs in subtropical thorn forest, thorn scrub, and dense, brushy thickets at elevations below 8,000 feet. Often found in riparian bottomlands. The Critical Habitat component is probably dense cover near the ground and complete avoidance of open country. There are no confirmed sightings in Arizona, and there are only unconfirmed sightings in the Chiricahua and Peloncillo mountains.	Unlikely to occur. The species is very rare and vegetation in the project area is not similar to that found in areas known to be preferred by this species.

Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona* (Continued)

Common Name (Species Name)	Status†	Range or Habitat Requirements	Potential for Occurrence in Project Area
Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*)	USFWS E	Found on alluvial bajadas in sand/rocky loam soils and on slopes less than 10% grade within desert grassland and Sonoran Desertscrub at elevations between 2,800 and 3,500 feet. In Arizona, found in the Santa Cruz and Altar valleys and Patagonia Mountains.	Unlikely to occur. The project area is north of the known distribution of this species.
San Xavier talussnail (*Sonorella eremita*)	USFWS CA	Found only in Pima County in a deep, northwest-facing limestone rockslide on San Xavier Hill (White Hill) at elevations between 3,850 and 3,920 feet.	Unlikely to occur. There are no limestone rockslides in the project area.
Sonoran pronghorn (*Antilocapra americana sonoriensis*)	USFWS E	Found in Sonoran Desertscrub at elevations between 2,000 and 4,000 feet. The only extant U.S. population is in southwestern Arizona, west of Ajo and State Route 85.	Unlikely to occur. The project area is approximately 100-miles east of the current range of this species.
Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*)	USFWS C	In Arizona, found only in pond and stream habitat at Quitobaquito Springs in Organ Pipe Cactus National Monument.	Unlikely to occur. There is no aquatic habitat in the project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush, and arrowweed are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Unlikely to occur. There is no riparian habitat in the project area.
Yellow-billed cuckoo (*Coccyzus americanus*)	USFWS C	Typically found in riparian woodland vegetation (cottonwood, willow, or tamarisk) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde river drainages and Cienega and Sonoita creeks.	Unlikely to occur. Although yellow-billed cuckoo is known to occur along the Santa Cruz River north of the project area, there are no suitable riparian woodlands in the project area itself.

***** Range or habitat information is from the following sources: HDMS (2006); USFWS Arizona Ecological Services Field Office (USFWS 2007); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

† **USFWS Status Definitions:**

E = **Endangered.** The Endangered Species Act (ESA) specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = **Threatened.** The ESA specifically prohibits the take of a species listed as threatened. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

C = Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because they are precluded by other listing activity that is a higher priority. This listing category has no legal protection.

CA = Conservation Agreement. An agreement between the USFWS and other Federal, state, or local agencies or private landowners to take certain steps to ensure the protection of the species.

Species of Concern

Marana is one of the fastest-growing communities in Arizona. In response to this rapid urban expansion, Marana has acknowledged the importance of balancing economic and environmental interests through a community-wide planning effort. To meet this end, Marana is developing a Habitat Conservation Plan (HCP), in cooperation with the USFWS, to provide long-term protection of sensitive species and key natural communities during the course of capital improvement projects, maintenance of Marana operations, and issuance of land use-related permits for economic development. A second draft HCP is scheduled to be completed in 2008 and the final draft in 2009. The 13 species addressed in the second draft plan are listed in Table 2.

Table 2. Species Covered under the Town of Marana HCP*

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Project Area
Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)	Found in Sonoran Desertscrub habitats characterized by braided-wash systems and dense vegetation, including ironwood (*Olneya tesota)*, palo verde, and mesquite, and semi-desert grasslands containing drainages with mesquite, hackberry (*Celtis* spp.), and ash (*Fraxinus velutina*). Historically, cactus ferruginous pygmy-owl nests were documented in cavities of cottonwoods, willows, or mesquites, although more recent nest sites have been primarily located in saguaro cavities.	May occur. There is an occurrence record from AZHGIS (AZHGIS 2007) within 3 miles of the project area, and there are large saguaros with cavities present in the northern portion of the project area. Surveys for cactus ferruginous pygmy-owls were conducted in the project area in 2007 with negative results (SWCA 2007).
Western burrowing owl (*Athene cunicularia hypugaea*)	Grasslands, pastures, coastal dunes, desertscrub, edges of agricultural fields, and other human areas where there is sufficient friable soil for a nesting burrow. Usually associated with the burrows of other animals, especially mammals such as fox (*Vulpes* and *Urocyon* spp.), ground squirrels (*Spermophilus* spp.), and prairie dogs (*Cynomys* spp.).	May occur. The project area contains abandoned agricultural fields, open areas, and irrigation ditches that could provide potential habitat for this species; however, no individuals were observed during field visits conducted by SWCA and Reclamation (SWCA 2007).
Ground snake (valley form) (*Sonora semiannulata*)	Found in arid and semi-arid lands where the soil may be rocky, gravelly, or sandy. It will frequent river bottoms, desert flats, and rocky hillsides where there are pockets of loose soil. Vegetation is usually sparse in places such as sagebrush and creosotebush flats. A population of ground snakes known to exist in the Brawley Wash floodplain has been identified as unique and abundant enough to be of special interest (Recon 2001).	Unlikely to occur. The Brawley Wash floodplain, which supports the only known population in the area, is located approximately 4 miles west of the project area. Rosen (2004) concluded that it was unlikely that a population of the ground snake from the Brawley Wash floodplain would extend into the Marana HCP area.
Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)	Occurs in flat, sandy arid areas of the high desert in southeastern Arizona. No systematic studies of habitat use have been conducted and only limited observational data are available. Rosen (2007) has determined that the study results confirm the previous indications that the Tucson shovel-nosed snake has declined precipitously in Avra Valley.	Unlikely to occur. The project area occurs in the historic range of this species; however, the only recent records (2004 and 2006) of the snake from southeastern Arizona are from around Picacho in Pinal County, which is approximately 25 miles to the northwest (Rosen 2007). These results prompted Rosen (2007) to determine that it seems increasingly probable that the Tucson shovel-nosed snake does not occur in eastern Pima County.
Pale Townsend's big-eared bat (*Plecotus townsendii pallescens)*	Roosts in caves, lava tubes, and abandoned mines. Although it is widespread in Arizona, it is not considered common anywhere. Summer day roosts are found in caves and mines from desertscrub up to oak woodlands, and oak/pine, piñon/juniper, and coniferous forests. The Baboquivari Mountains have one of the largest summer colonies of pale Townsend's big-eared bats in Arizona. The bat is also known from Colossal cave, Tucson Mountain Park, Organ Pipe National Monument, and Saguaro National Park.	May occur. This bat may forage over the irrigation ditches and stock tanks in the project area, as it typically prefers to feed at the interface between upland and riparian vegetation communities. However, there are no roost sites present, and this species typically forages within 15 miles of its roost site; all known roost sites are at least 15 miles away from the project area.
Merriam's mouse (*Peromyscus merriami)*	Merriam's mouse typically inhabits heavy, forest-like stands of mesquite (Hoffmeister 1986), oftentimes referred to as Mesquite bosques. According to SWCA (2006), *P. merriami* can be found in a variety of mesquite-dominated riparian environments in the Tucson area. However, mesquite mice were not found in isolated patches of mesquite surrounded by urban development; narrow, rocky washes with few mesquites; or mesquite-invaded grassland or upland vegetation.	May occur. Moderately dense stands of mesquite occur in the portions of the project area where water temporarily ponds.
Lesser long-nosed bat *(Leptonycteris curasoae yerbabuenae)*	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua Mountains at elevations between 1,600 and 11,500 feet. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius of *Leptonycteris* bats may be 30 to 60 miles or more.	Unlikely to occur. While it is possible that this bat may forage in the project area, foraging activity is likely to be infrequent given the relatively small number of saguaros in the project area.

Table 2. Species Covered under the Town of Marana HCP* (Continued)

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Project Area
Sonoran Desert tortoise (*Gopherus agassizii*)	The Sonoran Desert tortoise occurs primarily on rocky slopes and bajadas of Mojave and Sonoran desertscrub (AIDTT 2000). Caliche caves in incised, cut banks of washes (arroyos) are often used for shelter sites, especially in Lower Colorado River Valley subdivision vegetation associations. Sonoran Desert tortoise populations occur at elevations ranging from about 510 feet in Mojave Desertscrub to about 5,300 feet in semidesert grassland and interior chaparral.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.
Talus snails (*Sonorella* spp.)	Found only in Pima County in a deep, northwest-facing limestone rockslide on San Xavier Hill (White Hill) at elevations between 3,850 and 3,920 feet.	Unlikely to occur. There are no limestone rockslides in the project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush, and arrowweed are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Unlikely to occur. There is no riparian habitat in the project area.
Yellow-billed cuckoo (*Coccyzus americanus*)	Typically found in riparian woodland vegetation (cottonwood, willow, or tamarisk) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde River drainages and Cienega and Sonoita Creeks.	Unlikely to occur. Although the yellow-billed cuckoo is known to occur along the Santa Cruz River north of the project area, there are no suitable riparian woodlands in the project area itself.
Lowland leopard frog (*Rana yavapaiensis*)	Restricted to springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,281 and 8,890 feet in central, east-central, and southeast Arizona. Populations in central and east-central Arizona are disjunct from those in southeastern Arizona and may be a distinct species.	Unlikely to occur. There are no aquatic areas in the project area.
Mexican garter snake (*Thamnophis eques megalops)*	Most abundant in densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat (Rosen and Schwalbe 1988).	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.

* Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2007); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Environmental Consequences

No Action

Under the No Action alternative, native vegetation would not be removed, and existing invasive plants would continue to occupy fallow agricultural land and disturbed desert in the project area. Invasion by buffelgrass (*Pennisetum ciliare*) is also possible because this species is now extant near the project area. The No Action alternative would have no effect on the 21 species listed for Pima County by the USFWS.

Proposed Action

The Proposed Action would remove native and non-native vegetation and decrease available wildlife habitat. However, Marana would attempt to avoid the loss of areas with dense mesquite and incorporate these areas into the master plan for the park. In addition, the Marana HCP will contribute mitigation measures that will compensate for losses on a regional scale.

Vegetation

The majority of existing native and non-native vegetation will be removed during the construction process. Landscaping associated with the proposed project will include drought-tolerant plant species and non-invasive grasses for the soccer, baseball, and other playing fields.

Wildlife

Construction of the project area will result in the minor direct loss of small mammals, reptiles, and amphibians. Because of the degraded existing condition of the parcel and the low biological diversity of the extant native flora and fauna, losses are expected to be relatively small. Incorporation of the denser stands of mesquite into the project design would retain higher-value habitat onsite and reduce potential long-term impacts.

Threatened and Endangered Species

The project area lacks suitable habitat for any of the 21 species listed for Pima County by the USFWS (see Table 1). Implementation of the proposed project would not affect these species.

Species of Concern

The project area includes suitable habitat for the cactus ferruginous pygmy-owl, burrowing owl, pale Townsend's big-eared bat, and Merriam's mouse (see Table 2). Implementation of the proposed project would result in a minor direct loss of available habitat for these species.

Cumulative Impacts

Ongoing economic development and urbanization on lands encompassing the project area will reduce the amount of undisturbed desert land available to native plants and wildlife. In order to mitigate potential cumulative effects to species of concern listed in Table 2, the Marana HCP would provide long-term protection for these species through maintaining or improving habitat conditions and ecosystem functions in key natural communities in the greater area covered by the plan. The Proposed Action would contribute to a cumulative loss of desertscrub, but this effect would be minor when considered within the context of mitigation that would be implemented on a regional scale under the HCP.

3.6 CULTURAL RESOURCES

Affected Environment

Cultural History

The following cultural history is based on archaeological investigations associated with the CAP (Czaplicki and Ravesloot 1989; Downum 1986; Downum et al. 1986; Ravesloot 1987), two large archaeological survey projects conducted in the area (Dart 1987; Dart and Gibson 1988), and investigations in the northern Avra Valley (Hesse 2002, 2004). Most of the knowledge about prehistoric inhabitants in the valley is derived from archaeological research conducted in the Tucson Basin (see Doelle and Wallace 1991; Fish et al. 1985; Huckell 1984, 1988; Roth 1988).

The culture history of the Avra and Santa Cruz Valleys is divided into five major time periods based on temporal summaries by Huckell (1984), Doelle and Wallace (1991), and the summary in the recent archaeological survey for the proposed park area (Barr 2007). These periods include the Paleoindian

(10,000–7500 B.C.), Archaic (7500 B.C.–A.D. 300), Ceramic (A.D. 300–1450), Protohistoric (A.D. 1450–1700), and Historic (A.D. 1700–1955) periods.

Paleoindian Period (10,000–7500 B.C.)

During the Paleoindian period, small groups of people traversed wide territories hunting large, now-extinct mammals such as mammoths. The most commonly recognized artifacts from this period are large projectile points, such as those of the Clovis and Folsom traditions. While a number of Clovis sites have been investigated in the San Pedro Valley, evidence for Paleoindian occupation of the Avra Valley and Tucson Basin is scarce and consists mostly of a few isolated projectile points.

At least five Clovis points have been recovered from isolated surface finds in the Avra Valley, the Tucson Mountains, and the northern Tucson Basin (Huckell 1982, 1984). Folsom points and other points distinctive of the later Paleoindian groups are rare in the general area. One Plainview-like point, however, was recovered from a site in the nearby Tortolita Mountains (Hewitt and Stephen 1981). The recovery of these identifiable Paleoindian artifacts from both the Tucson Basin and Avra Valley indicate that these early populations were present but their occupation may have been transitory.

Archaic Period (7500 B.C.–A.D. 300)

During the Archaic period, people became less mobile, increased their use of wild plant resources, and adapted to hunting smaller game. Little is known about the Early Archaic in the Santa Cruz and Avra Valley areas (Dart 1987). Huckell (1984) notes that the Early Archaic is poorly known because artifacts and sites are often deeply buried and visible only in arroyo cuts. Early Archaic sites in southeastern Arizona have yielded ground stone and chipped stone artifacts, including milling stones, one-hand manos, choppers, scrapers, projectile points, and other cutting instruments (Haury 1975; Sayles 1983). Archaeologists identified three Early Archaic-period, tapering stemmed projectile points on a large site on the upper Silver Bell Mountain bajada; they also identified multiple Middle- and Late Archaic-period projectile points as well as a light Hohokam artifact scatter (Hesse 2004).

Middle Archaic period sites have been identified on the bajada slopes of the mountain ranges near the Avra and Santa Cruz Valleys, including the Tortolita (Fish et al. 1985), Roskruge, Santa Catalina, Sierrita (Dart 1987), Silver Bell (Hesse 2002, 2004), and Santa Rita Mountains (Huckell 1984). Middle Archaic sites vary in size from large camps to small activity areas. Artifact scatters, isolated hearths, roasting pits, small rock clusters, and other types of limited-activity sites, found in context with diagnostic projectile points styles such as Pinto and Gypsum, have been identified in Avra Valley (Dart 1987; Downum et al. 1986; Hesse 2004). Dart (1987) recorded a large Middle Archaic site (AZ AA:16:39[ASM]) in the Avra Valley that is "suggestive of either longer-term occupation, use by larger groups of people, or some combination of larger groups and longer-term use" (Dart 1987:47). Sites of this period have also been identified near the Santa Cruz River. Deeply buried Middle Archaic occupations in the Santa Cruz Valley such as Los Pozos (AZ AA:12:91(ASM)) and Las Capas (AZ AA:12:111) included hearths and living surfaces that suggest episodic occupations and the exploitation of wild plant and animal resources (Gregory 1999; Lascaux and Hesse 2005).

Late Archaic/Early Agricultural sites have yielded evidence of increasing sedentism and less mobile subsistence strategies that include cultivated plants as well as wild resources (Huckell 1988; Roth 1988). Several sites along the Santa Cruz floodplain have been investigated, including Los Pozos (Gregory 2001), Las Capas (Lascaux and Hesse 2005), and the Dairy Site (AZ AA:12:285(ASM); Fish et al. 1992) to name only a few. The presence of numerous pit houses with internal storage pits associated with agricultural products and a wide range of cultural material suggests that farming communities were increasingly common in the valley. San Pedro phase (1200-800 B.C.) irrigation canals were found at Las

Capas (Mabry 2007) and the Costello King site (Ezzo and Deaver 1998). Limited activity sites on the bajadas reflect the continued exploitation of non-riverine zones for wild plant and animal resources.

Ceramic Period (A.D. 300–1450)

Compared with the Paleoindian and Archaic periods, the Ceramic period was brief but generated most of the prehistoric cultural material found in the Avra and Santa Cruz Valleys. The Early Ceramic period is probably best known from sites in the Santa Cruz Valley such as the Lonetree Site (AZ AA:12:120(ASM); Bernard-Shaw 1990), Square Hearth (AZ AA:12:745(ASM); Mabry et al. 1997), and the Dairy Site (Fish et al. 1992). Many of the characteristics first seen in the Late Archaic/Early Agricultural period such as pit houses, storage pits, and canal agriculture continued in use and were joined by ceramic technology and an increase in shell ornament manufacture. Some idea of social groupings is indicated by the development of discrete courtyard groups, large open (plaza) areas, and large communal houses.

The Hohokam tradition dominated south-central Arizona during the Ceramic period and incorporated many of the characteristics developed in the Late Archaic and Early Ceramic periods. The Hohokam practiced agriculture dependent on large-scale irrigation, lived in villages, and developed a regional ideology and ceremonialism. Ballcourts, platform mounds, craft style, and imported artifacts indicate Hohokam interaction with societies as far south as Mesoamerica. Most of the ceramic period material reported from the Avra Valley is very similar to that of the Tucson Basin Hohokam, indicating ongoing interaction between the prehistoric populations of the two areas. In addition to influences from the Tucson Basin, Hohokam artifacts from the middle Gila Valley area have been recovered at several sites in the Avra Valley and the Marana area.

The Hohokam tradition is traditionally divided into four periods: Pioneer, Colonial, Sedentary, and Classic (see Dean 1991; Doelle and Wallace 1991). Phase sequences within this framework have been developed for different areas within the Hohokam region. In the Tucson Basin, the Pioneer period (ca. A.D. 600–750) includes the Tortolita and Snaketown phases; the Colonial period (ca. A.D. 750–1050) includes the Cañada del Oro and Rillito phases; the Sedentary period (ca. A.D. 1050–1125) includes the Rincon phase; and the Classic period (ca. A.D. 1125–1450) includes the Tucson and Tanque Verde phases. Hohokam chronologies are being refined constantly, and specific range dates often vary among publications; nevertheless, the general pattern and sequence are consistent.

Evidence of Pioneer phase occupations is often covered by later sites and is found at the Dairy Site (Fish et al. 1992) and Redtail Site (AS AA:12:149(ASM); Bernard-Shaw 1989) in the Santa Cruz Valley and at Water World (AZ AA:12:94(ASM); Czaplicki and Ravesloot 1989) in the Avra Valley. Settlements of this phase were dispersed, while ceramic technology continued to advance, and painted ceramics became more common.

The Colonial period witnessed an increase in Hohokam population size along with increased cultivation of maize, beans, squash, cotton, and agave. Villages with ballcourts, large integrative public features, served as the center of a larger community that included farmsteads and fieldhouses as well as resource procurement sites for obtaining wild plants and animals. Colonial period site in the Avra Valley include the Hog Farm Ballcourt site (AZ AA:11:12[ASM]; Downum 1993) and Fastimes site (AZ AA:12:384(ASM); Czaplicki and Ravesloot 1988). Los Morteros (AZ AA:12:57[ASM]); Wallace 1995) and other village sites in the Santa Cruz Valley include notable Colonial components.

The majority of Hohokam sites identified in the Santa Cruz and Avra Valleys date to the Sedentary and Classic periods. The Sedentary period is marked by the stable, long-term occupation of sites and movement of populations into secondary drainages. These village sites, such as Water World (Czaplicki and Ravesloot 1989), include features such as ballcourts, trash mounds, and pit house courtyard groups.

Population growth and aggregation, adobe architecture, including compounds and platform mounds, and a more diversified land-use subsistence strategy mark the Classic period. The Marana Mound Community developed a diversified aggregate of agricultural settlements and field systems centered on the Marana Mound Community along the Santa Cruz River (Fish et al. 1992) while the Los Morteros community continued. Hog Farm and Los Robles were large Sedentary and Classic period settlements in the northern Avra Valley area and were likely social as well as population centers. Cerro Prieto dominates the landscape in the northern Avra Valley region and probably functioned as a ceremonial and political center for the Los Robles community (Downum 1993). This is a large, complex hillside *trincheras* village with more than 250 masonry rooms and numerous stone compounds, terraces, walls, and other features. Overall, the features at Cerro Prieto suggest a large, thriving Early Classic-period hillside settlement. Pottery from the Papaguería region, west and south of Avra Valley, has been found at a number of Classic period sites, suggesting increased interaction between the populations living in the two areas (Dart and Gibson 1988).

Protohistoric Period (A.D. 1450–1700)

Hohokam society collapsed in the mid-1400s, and the large, aggregated communities of the Late Classic period dispersed about A.D. 1450. The Protohistoric period populations of southern Arizona adapted to post-Classic period conditions by returning to a subsistence strategy involving more dispersed and smaller settlements, wild food gathering combined with small-scale farming, and greater mobility. Excavations near the San Xavier Mission along the Santa Cruz River south of Tucson have yielded a variety of data related to the material culture and burial practices of the Protohistoric O'odham (Ravesloot 1987) who were living in several villages along the Santa Cruz River at the end of the 17th century when significant numbers of Spanish first arrived.

Historic Period (A.D. 1700–1955)

The Historic period in south-central Arizona is marked by the arrival of Europeans in the late 1600s. European colonization of the region meant radical change for the indigenous population. Early historical documents are scarce but provide valuable insights into the lifestyles of native groups (e.g., Nentvig 1980; Pfefferkorn 1989). It is not known how intensively the O'odham occupied the Avra Valley during the Historic period; their distinctive pottery, Whetstone Plain, has been recovered from some sites in the valley (Dart 1987; Downum et al. 1986). As noted above, several O'odham villages were noted by early visitors along the Santa Cruz, particularly in areas near the Tucson Mountains; these were gradually abandoned as Apache incursions into the area increased in the 1700s.

Although Tucson was founded near an O'odham village in 1776, European settlement of Avra Valley and the Santa Cruz Valley north of Tucson largely followed military containment of Apache groups in the mid-1800s (Spicer 1962) and the acquisition of the region by the United States with the 1853 Gadsden Purchase. During the late 1800s, cattle and mining industries were established. In the twentieth century, technological innovations, such as pumps, and improvements in irrigation methods led to intensified agricultural development and population growth in the Avra Valley, and in Marana. Cotton and alfalfa were the most frequently planted crops, and they required large numbers of seasonal laborers, including Mexican, Yaqui, African-American, and Euro-American migrants, beginning around 1918 and continuing today. Within the past 10 years, large tracts of agricultural land have been converted to housing developments to meet the needs of the recent influx of population to southern Arizona.

Previous investigations during the CAP Tucson Aqueduct Project, Phase B (TAPB) project by the Arizona State Museum (ASM) in the project area identified three sites (Downum et al. 1986)—all of them artifact scatters with rock surface features. Two of them (AZ AA:12:457[ASM] and AZ AA:12:458[ASM]) were tested, while the third (AZ AA:12:481[ASM]) was more thoroughly investigated

as part of the CAP TAPB archaeological mitigation (Czaplicki and Ravesloot 1989b). All three were listed as being eligible for the National Register of Historic Places (NRHP).

On January 5, 2007, SWCA conducted a Class I archaeological resources evaluation (records search) for the 500-acre project area (SWCA 2007b). The purpose of the Class I records search was to identify known archaeological resources in the parcel and within 1 mile of the parcel and to assess the need for additional survey information. This research indicated that 26 previous archaeological projects and 21 archaeological sites have been documented within 1 mile of the project parcel. Of the 26 projects, 4 overlapped the parcel. The search confirmed that three sites had been recorded in the project area.

On February 14, 2007, SWCA conducted an archaeological survey of the project area (SWCA 2007c). This archaeological survey identified the three previously recorded NRHP-eligible sites discussed above, as well as three newly recorded archaeological sites and 48 isolated occurrences (IOs). The three newly recorded sites were recommended eligible for the NRHP, and the State Historic Preservation Office (SHPO_ concurred with that recommendation. All six sites are manifestations of prehistoric populations and probably date to the Late Archaic/Early Agricultural period or the Pioneer phase of the Hohokam sequence. The 48 IOs are primarily surficial prehistoric artifact scatters with several historical manifestations related to household trash or farming activities; there are also two road-side shrines that commemorate road fatalities.

The information gained from the archaeological survey will be used to compile an archaeological treatment plan following additional consultation with concerned tribes and the SHPO. This will serve as the basis for mitigating the effects of the park construction on the archaeological resources.

Environmental Consequences

No Action

Under the No Action alternative, no archaeological sites would be disturbed because no construction activity or intensive land use would occur in the project area. Environmental factors, including surface and channel erosion, would continue to affect any resources in the area. It is assumed that current land use and management practices would continue, as would Federal protections to cultural properties now in place. Minimal impact to cultural resources would be anticipated as a result of not implementing the plan for the proposed Marana Regional Sports Complex.

Proposed Action

At present, the plans for the Sports Complex are in the conceptual stage; therefore, no definitive plans have been made regarding the placement and design of park features, roads, infrastructure, or other park components. Any ground-disturbing activities undertaken for park construction in the areas of the archaeological sites would have an adverse effect on the cultural resources present. Avoidance of archaeological sites is the preferred option when possible; although, in this case, some effort should also be made to protect avoided sites from disturbance and possible collecting activities by park visitors. Several options exist for achieving this; including, but not limited to, preventing access to the sites by fencing them or protecting the sites by capping them with a sterile layer of soil. In the event that site avoidance and protection are not possible, a Reclamation-approved data recovery plan would be developed and implemented. The plan would take into consideration information from work previously undertaken at the archaeological sites as well as information gained during the past consultation process with concerned tribes and the SHPO. Additional consultation regarding the proposed treatment plan will also take place.

Cumulative Effects

The Marana area is currently undergoing a phase of development that includes the construction of housing developments and associated infrastructure. The construction of parks and other developments has a cumulative effect on the cultural resources of the Marana area because of losses that may result from surface disturbance. While the park itself would be beneficial for the growing community, the construction of the park has the potential to impact several of the archaeological sites present on the property. These Hohokam sites are commonly encountered in the Santa Cruz and Avra Valleys and relate to land use and resource procurement. The sites have the potential to yield additional information regarding prehistory and are recommended eligible for the NRHP. Therefore, development of an appropriate treatment plan, whether to preserve and protect or to mitigate the sites through data recovery, should address any loss brought about through park construction.

3.7 SOCIOECONOMICS

Affected Environment

Demographics

Provided in Table 3 are population statistics for Marana, Pima County, and the State of Arizona. According to the U.S. Census Bureau (2005), the population of Marana in 2005 was 26,098, and the population of Pima County was 924,786. Between 2000 and 2005, the population of Marana grew by about 93 percent, while the population of Arizona grew by 16 percent (U.S. Census Bureau 2000).

Employment and Income Patterns

In Marana, the civilian labor force (16 years of age and over) in 2000 was 6,326, with 6,035 employed and 291 unemployed, giving an unemployment rate of 2.9 percent. The median household income in Marana in 2000 was $52,870 (U.S. Census Bureau 2000). The Marana median household income is higher than county and state averages, while the unemployment rate is lower (Table 4).

In Pima County, the division of the workforce by occupation is very similar to that of the State of Arizona. Management, professional, and related occupations account for the greatest share of the workforce in Pima County—approximately 129,709 individuals (35.0 percent). The service sector, followed by sales and office occupations, is the next most important occupation in Pima County (Table 5). The largest employers in Pima County are Raytheon Missile Systems, the University of Arizona, Davis-Monthan Air Force Base, Pima County, and the City of Tucson.

Table 3. Population Growth in Marana, Pima County, and Arizona from 1970–2005

Population	1970	1980	1990	2000	2005*
Marana	1,154	1,647	2,187	13,556	26,098
Pima County	351,667	531,443	666,880	843,746	924,786
Arizona	1,775,399	2,716,546	3,665,228	5,130,632	5,939,292

Source: U.S. Census Bureau (2005).
* 2005 figures represent estimates.

Table 4. Median Household Income and Unemployment Rate for Marana, Pima County, and Arizona

Characteristic	Marana	Pima County	Arizona
Median household (1999 dollars)	$52,870	$36,758	$40,762
Unemployment rate (2003)	2.9%	7.2%	7.8%

Table 5. Additional Employment Characteristics for Marana, Pima County, and Arizona

Characteristic	Marana	Pima County	Arizona
Employed civilians aged 16 and over	6,035	391,673	2,400,217
Occupation			
Management, professional, and related	43.1%	35.0%	33.7%
Service	17.3%	17.6%	17.8%
Sales and office occupations	23.0%	27.1%	27.0%
Farming, fishing, and forestry	0.9%	0.2%	0.7%
Construction, extraction, and maintenance	8.6%	10.7%	11.0%
Production, transportation, and material moving	7.2%	9.4%	9.7%

Source: U.S. Census Bureau (2000).

Environmental Consequences

No Action

Demographics and employment and income patterns are unlikely to be affected under this alternative. Marana anticipates that the project area will experience considerable residential and commercial development, regardless of the construction of the proposed park.

Proposed Action

Demographics

No impact to demographics would result from the Proposed Action. Marana anticipates that the project area will experience considerable residential and commercial development, regardless of the construction of the proposed park. The proposed project anticipates a need for recreational amenities resulting from projected growth in Marana.

Employment and Income Patterns

A negligible to minor beneficial impact on employment and income patterns would result from the Proposed Action. The project would provide temporary construction work and permanent recreation-oriented work (for example, sports referees and facilities management workers) for Marana-area residents and businesses. Income patterns would not be affected.

Cumulative Effects

The proposed project, in association with other development activities in Marana, will likely contribute to an increase in population size. Employment and income opportunities will likely increase as more residents seek goods and services in the area.

3.8 HEALTH, SAFETY, AND NOISE

Affected Environment

Health

The proposed regional park provides opportunities for recreation in an area that currently lacks such facilities. The project would provide areas for local residents to engage in various forms of individual and team sports and exercise. Future residential areas would likely connect to the park with a network of pedestrian and bike trails, which would further encourage exercise- and health-related benefits.

Toxic or Hazardous Substances

No toxic, hazardous, or radioactive materials (as defined in Federal Standard No. 313 and 29 CFR 1910.1200) were observed in the study area, nor have any been described as being present by Marana staff. No other recognized environmental conditions were documented in the proposed project area. Use, storage, and disposal of hazardous materials and solid waste associated with construction have the potential to adversely affect the environment if these materials are improperly managed. In general, most potential impacts are associated with the release of these materials to the environment. Direct impacts of such releases would include contaminating soil, water, and vegetation, which could result in indirect impacts to wildlife, aquatic life, and humans.

Airport Safety Zones

One commercial airport is located near the project area: the project area is less than 1 mile from the Marana Regional Airport. According to Pima County Mapguide (2007), the entire project area falls within the Marana Airport Influence Zone. The Influence Zone encompasses the Airport Commercial Zone, the Approach Restriction Area, and the Runway Safety Zone. The project area borders the Commercial Zone and includes a small area of the Approach Restriction Area on the west side near the CAP canal. The Runway Safety Zone covers most of the southern portion of the project area. Local zoning allows for the proposed project within the applicable portion of the Influence Zone.

Public Safety—Police

The project area is under the jurisdiction of the Marana Police Department. The Marana Police Department provides police services in Marana and coordinates with other municipal police services.

Public Safety—Fire

The Northwest Fire Rescue District provides services to residents, commercial occupants, and visitors in a 140-square-mile area northwest of Tucson. The district has over 100 full-time certified firefighters at eight fire stations throughout the service area.

Water Safety

The CAP canal borders the project area to the west and north. The canal is fenced off from neighboring lands for safety reasons.

Noise

Existing noise levels in the project area are low in the northern portion and moderate in the southern portion of the project area; the primary source of noise is from the Marana Regional Airport, located 1-mile west of the project area. There also is vehicular noise from Avra Valley Road, which provides access to the project area, Avra Valley, the airport, and I-10. There are no military airfields near the proposed project area.

Environmental Consequences

No Action

Under this alternative, opportunities for park-related exercise and resulting benefits to health would not occur because the project location would remain closed to the public. The vacant land would also preclude effects related to airport safety zones, public and water safety, and noise impacts.

Proposed Action

Health

The Proposed Action would provide beneficial effects for Marana-area residents because of the multiple exercise options (for example, walking, team sports, and equestrian use) that the regional park would provide.

Toxic or Hazardous Substances

Construction would require the short-term use of fuels, lubricants, and other fluids that create a potential contamination hazard. These and other hazardous substances would be stored and handled in accordance with Federal and state regulations. Any spills or leaks of hazardous material would require immediate corrective action and cleanup to minimize the impact on sensitive resources.

Hazardous materials and other hazardous substances used in construction would be disposed of in accordance with applicable laws and regulations. Excess or unused quantities of hazardous materials would be removed upon project completion. Although generation of hazardous waste (as defined by 40 CFR 261) is not anticipated, any such waste produced during construction would be properly contained, labeled, and transported to an approved hazardous waste disposal facility. All non-hazardous waste materials, including construction refuse, garbage, sanitary waste, and concrete, would be disposed of by removal from the work area to an approved disposal facility.

After construction, no effects would occur from toxic, hazardous, or radioactive materials because they would be absent from the project area.

Airport Safety Zones

The project area is within the Marana Airport Influence Zone. Local zoning allows for the proposed project within this zone. Aircraft accidents associated with small municipal airports, such as the Marana Airport, are exceptionally rare. Lighting associated with the proposed facilities will follow the Marana lighting ordinance and any applicable requirements cited by Marana Airport staff. All lighting will be oriented downward to minimize light pollution and any disturbance to aircraft, although a negligible amount of light may reflect upward. Light poles will also be positioned outside the runway approach area when possible. A natural buffer area will be integrated into the site design to further limit structure

heights in that area. The proposed facility structures, including buildings and poles, will be below the required height maximums. No effect on airport operations or safety is expected.

Public and Water Safety

The Proposed Action would not result in any changes to public or water safety. The area would be serviced by the local police and fire departments.

Noise

Construction noise during project implementation would affect areas that are currently uninhabited. If residential development occurs near the project boundary before the Sports Complex is finished, appropriate noise mitigation measures would be employed. Visitors to the proposed park would experience long-term occasional noise associated with Avra Valley Road and the Marana Regional Airport.

Cumulative Effects

Continued development would increase the likelihood of toxic or hazardous substances from utilities, transportation, residential, and commercial sources in the area. Airport safety would be impacted from continued development as airport use increases in association with the expanding built environment surrounding the airport. No cumulative impacts are expected from public and water safety or noise.

3.9 ENVIRONMENTAL JUSTICE

Affected Environment

"Title VI, of the Civil Rights Act of 1964" and related statutes were created to ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," states, in part:

> each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Guidance provided by the CEQ in 1997 recommends that Federal agencies investigate the demographic composition of the affected area; consider relevant public health and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards; consider the interrelated cultural, social, occupational, historical, or economic factors that could amplify the natural and physical environmental effects of the project; develop effective public participation strategies that lead to meaningful community representation in the decision-making process; and, finally, seek Tribal representation in the process in a manner that is consistent with the government-to-government relationship between the U.S. and Tribal governments, the Federal government's trust responsibility to federally recognized tribes, and any treaty rights.

The Tohono O'odham Nation and the Pascua Yaqui Reservation are located approximately 20 and 30 miles south of the project area, respectively. The Tohono O'odham Nation totals approximately 4,453 square miles, with a Tribal enrollment estimated at more than 24,000 people. The Pascua Yaqui

Reservation, which totals approximately 1.87 square miles, has a Tribal enrollment estimated at more than 6,000 people.

Environmental Consequences

No Action

Low-income or minority populations would have less access to park facilities under the No Action alternative.

Proposed Action

The project, which is located in an area of low- to moderate-income households, would have no disproportionate adverse effects on low-income or minority populations and is in compliance with EO 12898. The proposed Sports Complex will provide Marana-area residents of all income and ethnic backgrounds with multiple opportunities for recreation.

Cumulative Impacts

No cumulative impacts are expected to occur to low-income or minority populations.

3.10 ELEMENTS CONSIDERED BUT NOT AFFECTED

The following elements have been analyzed and have been determined not to be affected: Native American Religious Concerns, Drinking and Ground Water Quality, Wetlands, Wild and Scenic Rivers, Wilderness, Invasive and Non-native Species, and Coastal Zones.

Chapter 4

MITIGATION MEASURES

The following mitigation measures have been identified in the EA. These measures would be undertaken as an integral part of the Proposed Action. The Marana HCP and USFWS will guide the development of species-specific measures.

1. Marana will receive a dust-control permit before any construction activity begins.
2. Fugitive dust will be controlled by the consistent application of water to construction areas.
3. Marana will prepare a Storm Water Pollution Prevention Plan (SWPPP) that outlines the specific BMPs that will be used onsite to reduce or prevent pollutants in storm-water discharges from construction activities. The SWPPP will be prepared in accordance with the AZPDES construction general permit.
4. A SWPPP will be provided to the contractor, and a general note should be placed on the construction plans.
5. Marana will employ BMPs to address erosion and sediment structural controls. The specific BMPs will be determined based on site conditions at the time of construction and may include hydroseeding, soil binders, silt fences, straw wattles, check dams, and rip-rap.
6. A general note should be placed on the construction plans relating to requirements of Pima County dust-control ordinances.
7. All applicable native plants will be preserved according to the Marana Native Plant Preservation Ordinance.
8. Revegetation measures will include seeding with native plant species.
9. Efforts will be made to remove invasive non-native grasses, shrubs, and trees.
10. Landscaping associated with the proposed project will include drought-tolerant plant species and non-invasive grasses for the soccer, baseball, and other playing fields.
11. Park design and construction will limit the loss of dense mesquite by incorporating these vegetation areas into the master plan for the Sports Complex.
12. The proposed project would avoid or preserve the six identified archaeological sites by fencing the sites to prevent access or by capping each with a sterile layer of soil to prevent surface collection of artifacts. In the event that site preservation is not possible, a Reclamation-approved testing and/or data recovery plan would be developed and implemented at each of these sites.

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Chapter 5

RELATED ENVIRONMENTAL LAWS AND DIRECTIVES

The following is a summary of selected Federal laws, regulations, and EOs that provide information relevant to this EA.

NEPA of 1969, as amended (PL 91-190)—This law requires Federal agencies to evaluate the potential environmental consequences of major Federal actions. NEPA also requires full public disclosure about the Proposed Action, accompanying alternatives, impacts, and mitigation.

This EA was prepared in accordance with the requirements of NEPA. Reclamation's public scoping period began on April 17, 2007, and officially ended on May 18, 2007, although public comments continued being accepted after this date. Reclamation received two comments letters during the scoping period. A copy of these comments is provided in Appendix A, and the comments are briefly discussed in the Public Involvement/Scoping Process section of this EA.

CWA (PL 92-500)—This law establishes the basic structure for regulating discharges of pollutants into the nation's rivers, lakes, estuaries, and coastal waters. Section 404 of the Act regulates the discharge of dredged and fill material into, and out of, jurisdictional waters. No jurisdictional waters will be impacted by the Proposed Action. Authorization under Section 402, the AZPDES general permit for construction activities, would be obtained by Marana prior to construction.

CAA (PL 84-159), as amended (PL 91-604, 95-95, 101-549)—This law directs the EPA to reduce ambient concentrations of air pollutants that cause smog, haze, and acid rain; reduce emissions of toxic air pollutants that are known to cause, or are suspected of causing, cancer or other serious health effects; and phasing out production and use of chemicals that destroy stratospheric ozone. Dust abatement and other measures would mitigate the impacts of the Proposed Action on air quality.

ESA of 1973 (PL 93-205)—The ESA provides protection for plants and animals that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). Section 7 of this law requires Federal agencies to ensure that all federally associated activities do not have adverse impacts on the continued existence of threatened or endangered species or designated areas (Critical Habitat) that are important in conserving those species.

Reclamation complied with Section 7 of the ESA by hiring SWCA to complete a BE (see Appendix C) to determine the effects of the proposed project on threatened and endangered species in Pima County. SWCA determined that no listed species would be affected. Reclamation concurred with this finding.

National Historic Preservation Act (NHPA) (PL 89-665)—This law establishes as Federal policy the protection of historical sites and values in cooperation with states, Tribes, and local governments. Cultural resource investigations of the project area were completed by SWCA. Reclamation has consulted with the Arizona SHPO, pursuant to Section 106 of the NHPA, and other appropriate entities to develop suitable mitigation strategies.

Farmland Protection Policy Act (PL 97-98)—This law is intended to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural purposes. Prime farmland is land that has not been committed to urban development that has the best combination of physical and chemical characteristics for producing food, feed, forage, and oilseed crops and is also available for these uses. In general, prime farmland has acceptable soil conditions with few

rocks, a favorable temperature and growing season, and an adequate and dependable water supply from precipitation or irrigation. Unique farmland is land other than prime farmland that is used for production of specific high-value foods and fiber crops. The Proposed Action would not impact any lands classified as prime and unique farmlands.

EO 11988 (Floodplain Management)—This Presidential directive encourages Federal agencies to avoid, where practicable alternatives exist, the short- and long-term adverse impacts associated with floodplain development. Federal agencies are required to reduce the risk of flood loss; minimize the impacts of floods on human activity, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility. The Proposed Action would not increase the risk of flood effects in the project area or downstream.

EO 12898 (Environmental Justice)—EO 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of Federal actions on minority populations and low-income populations. Low-income populations include communities or individuals living in close geographic proximity to one another, identified by U.S. Census Bureau statistical thresholds for poverty. Minority populations are identified where the percentage of minorities in the affected area exceeds 50 percent, or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage of a much broader area. Neither of these conditions exists within Pima County or the local area. No disproportionately high and adverse human health or environmental effects on minority populations and low-income populations would result from the proposed project.

Secretarial Order 3175 (incorporated into Departmental Manual at 512 DM 2)—This Order requires that if any Department of the Interior agency actions might impact Indian Trust Assets, the agency must explicitly address those impacts in planning and decision documents, and the agency must consult with the Tribal government whose trust resources are potentially affected by the Federal action. The proposed action would affect Federal land administered by Reclamation. No Indian Trust Assets would be affected.

Chapter 6

LIST OF PREPARERS AND AGENCIES CONSULTED

Preparers

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Agencies Consulted

Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona Game and Fish Department
Arizona State Historic Preservation Office
Center for Biological Diversity
Central Arizona Project
Natural Resources Conservation Service
Pima Association of Governments
Pima County Administrator
Pima County Department of Environmental Quality
Pima County Natural Resources, Parks and Recreation
Pima County Regional Flood Control District
Sierra Club
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

Ak-Chin Indian Community
Hopi Tribe
Pascua Yaqui Tribe
San Carlos Apache Tribe
Tohono O'odham Nation
White Mountain Apache Tribe

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Chapter 7

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Appendix A

SCOPING RESPONSES

Public Comment Letter #1

"Hare, Douglas"
<DHare@empirecos.com>
4/30/2007 2:44:38 PM

Dear Mr. McGlothlen,

I write this email in response to a letter I received asking for comments on the Marana Regional Sports Park. I represent the owners of Saguaro Springs, a residential project of approximately 2500 home sites that lies to the east of the proposed facility. We are supportive of the project and would appreciate any additional information on the proposed facility and its effect on neighboring communities.

Douglas "Dusty" Hare
Empire Companies
Saguaro Reserve LLC

Public Comment Letter #2

6237736486 09:43:14 a.m. 06-08-2007 2/2

OFFICIAL FILE COPY
PHOENIX AREA OFFICE
RECEIVED:
MAY 31 '07

DATE	SURNAME	CODE
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CHAIRMAN
Todd Honyaoma Sr.
VICE CHAIRMAN
CONTROL NO.
PROJECT

THE HOPI TRIBE

May 22, 2007

Bruce D. Ellis, Chief, Environmental Resource Management Division
Bureau of Reclamation, Phoenix Area Office
6150 West Thunderbird Road
Glendale, Arizona 85306-4001

Dear Mr. Ellis,

Thank you for your correspondence dated May 16, 2007, with an enclosed cultural resources survey report, regarding the proposed Town of Marana Regional Park.

The Hopi Cultural Preservation Office has reviewed the enclosed cultural resources survey report that identifies six National Register Hohokam sites, described as artifact scatters, in this 500 acre project area. Because we support the identification and avoidance of archaeological sites and Traditional Cultural Properties, we support the survey report recommendation that "the sites could be preserved by capping with a sterile layer to prevent surface collection of artifacts." If any of these six prehistoric sites will be adversely affected by project activities, please provide us with a copy of any draft treatment plan for review and comment.

The Hopi Tribe claims cultural affiliation to prehistoric cultural groups in Arizona, and therefore we appreciate your continuing solicitation of our input and your efforts to address our concerns. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,

Leigh Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: Arizona State Historic Preservation Office

Appendix B

AIR QUALITY CALCULATIONS

PM_{10} emissions are based on the following information:

Construction PM_{10} impacts

1. Park development is expected to require 10 years to complete; therefore, construction during any given year would affect approximately 50 acres of the 500-acre site.
2. Predicted PM_{10} fugitive dust emissions associated with construction were calculated based on a Maricopa County Air Quality Department emissions factor of 0.11 ton of PM_{10}/acre-month (Maricopa County 2005). A local emissions factor, such as from the PCDEQ or the Pima Association of Governments (PAG), was not available. The Maricopa emissions factor may slightly over-represent PM_{10} emissions because Maricopa County is generally hotter and drier than Pima County.
3. Assuming that construction occurs over 50 acres annually, PM_{10} emissions would be 66 tons of PM_{10} per year (50 acres × 12 months × 0.11 ton).
4. With 70% control efficiency, those 66 acres would be reduced to **19.8 tons** of controlled annual emissions (66 tons × 70% control efficiency).
5. Additional emissions will occur as construction vehicles drive to and from the site. Predicted average PM_{10} emissions from heavy-duty gas and diesel trucks are 0.19 gallon per mile (g/mile). If 20 construction vehicles drive 20 miles per weekday to the site over the course of a year, the annual vehicle miles would be 96,000 (20 vehicles × 20 miles × 240 days).
6. Total predicted annual PM_{10} emissions from construction vehicle visitation would be **0.02 ton** (96,000 miles × 0.192 g/mile).
7. Particulate matter would be controlled by the consistent application of water and other BMPs in accordance with Title 17, Pima County air quality control regulations, and the Pima County dust-control permit. Total annual PM_{10} emissions of 19.8 tons during construction are well below the 100 tons per year *de minimis* level. Additional PM_{10} emissions associated with construction vehicle exhaust emissions is anticipated to be less than fugitive dust amounts and therefore would also be below *de minimis* levels.

Visitation PM_{10} impacts

1. After construction is complete, air quality impacts would largely be associated with vehicle exhaust emissions and fugitive dust associated with visitation—the park operation itself would have negligible effects on air quality. Marana residents are expected to regularly drive to the proposed park for sports events and other activities.
2. Visitor use is based on a high-end estimate that no more than an average of 500 vehicles will visit the park daily during the course of a year. If trips to and from the park total a distance of approximately 10 miles, the annual vehicle miles would be 1,825,000 (500 vehicles × 10 miles × 365 days).
3. Predicted average PM_{10} emissions from light-duty gasoline vehicles are 0.025 g/mile, and emissions from trucks are 0.027 g/mile (PAG 2007). Total PM_{10} includes total exhaust, brake-wear, and tire-wear emissions. Emission factors represent the average value from high- and low-altitude scenarios.

4. Vehicle use is based on 50% visitation from light-duty vehicles and 50% visitation from trucks. Average predicted PM_{10} emissions would be 0.026 g/mile.
5. Total predicted annual PM_{10} emissions would be **0.5 ton** (1,825,000 miles × 0.026 g/mile).
6. An estimate of air pollution associated with vehicle visitation indicates that it is highly unlikely increased traffic resulting from the proposed project would result in PM_{10} emissions that exceed the *de minimis* level of 100 tons per year.

Appendix C

BIOLOGICAL EVALUATION

Biological Evaluation of the Bureau of Reclamation Park Site for the Town of Marana, Pima County, Arizona

Prepared for

Town of Marana

Prepared by

SWCA Environmental Consultants

December 2007

BIOLOGICAL EVALUATION OF THE BUREAU OF RECLAMATION PARK SITE FOR THE TOWN OF MARANA, PIMA COUNTY, ARIZONA

Prepared for

Town of Marana
Environmental Projects Coordinator
11555 West Civic Center Drive
Marana, Arizona 85653

Prepared by

SWCA Environmental Consultants
343 West Franklin Street
Tucson, Arizona 85701
(520) 325-9194
www.swca.com

SWCA Project No. 12313

December 17, 2007

1.0 INTRODUCTION

SWCA Environmental Consultants (SWCA) was contracted by the Town of Marana (Town or Marana) to complete a biological evaluation (BE) in support of an Environmental Assessment (EA) written to satisfy NEPA requirements for the proposed Bureau of Reclamation (BOR) Park Site in Pima County, Arizona. The project area, which totals approximately 500 acres, is located between Twin Peaks Road and the Santa Cruz River and is approximately ¼ mile east of the Marana Northwest Regional Airport in Township 12 South, Range 11 East, Sections 2, 3, 10, 11, 14, and 15, Gila and Salt River Baseline and Meridian (Figure 1). The project area is proposed for an interconnected trail system and accompanying recreational facilities.

The scope of work for this BE included:

- review of the U.S. Fish and Wildlife Service (USFWS) species list for Pima County;
- review of the Arizona Game and Fish Department (AGFD) website for records of special-status species occurring near the project area;
- review of the species covered by the Town of Marana Habitat Conservation Plan (HCP);
- field reconnaissance of the property;
- evaluation of the potential for the species listed in this report to occur on the property.

2.0 METHODS

An SWCA biologist conducted a field reconnaissance of the project area on January 18, 2007. A U.S. Geological Survey 7.5-minute topographic map (Marana, Arizona) was used for general orientation and to locate the project boundaries. The field reconnaissance consisted of a pedestrian survey of the project area to evaluate vegetation and landscape features considered important to the potential occurrence of special-status plant and animal species. Vegetation was classified to the community level according to the map "Biotic Communities of the Southwest" (Brown 1994).

2.1 Species Identification

The special-status species evaluated in this BE were based on the list of endangered, threatened, candidate, and conservation agreement species for Pima County, Arizona, available at the USFWS website (USFWS 2007). The USFWS species list is provided in Appendix A. To determine whether any proposed or designated Critical Habitat or special-status species have been documented near the project area, SWCA accessed the Arizona Heritage Geographic Information System (AZHGIS 2006). The search results are included in Appendix B. The species covered by the Town of Marana HCP that were evaluated in this BE were based on the list from Marana (2007)

The potential for occurrence on the property of the species addressed in this BE was based on: 1) documented records; 2) existing information on distribution; and 3) qualitative comparisons between the habitat requirements of each species and vegetation communities or landscape features on the property.[1] Possible impacts to these species were evaluated based on reasonably foreseeable project-related activities.

[1] We agree with Hall et al. (1997) that habitat is organism specific and thus not synonymous with vegetation community. However, we have refined their definition of habitat to read as follows: an area where some members of a species regularly occur continuously or seasonally. In the field, habitat is operationally defined by the presence or absence of a species. Areas that appear suitable for a species but that have not been surveyed are considered possible habitat. We avoid using the term 'potential' with respect to habitat because potential is defined as 'capable of becoming but not yet in existence'; 'possible,' on the other hand, is defined as 'of uncertain likelihood'. We also avoid using the terms 'unoccupied habitat' or 'suitable, but unoccupied habitat,' both of which represent a contradiction in terms.

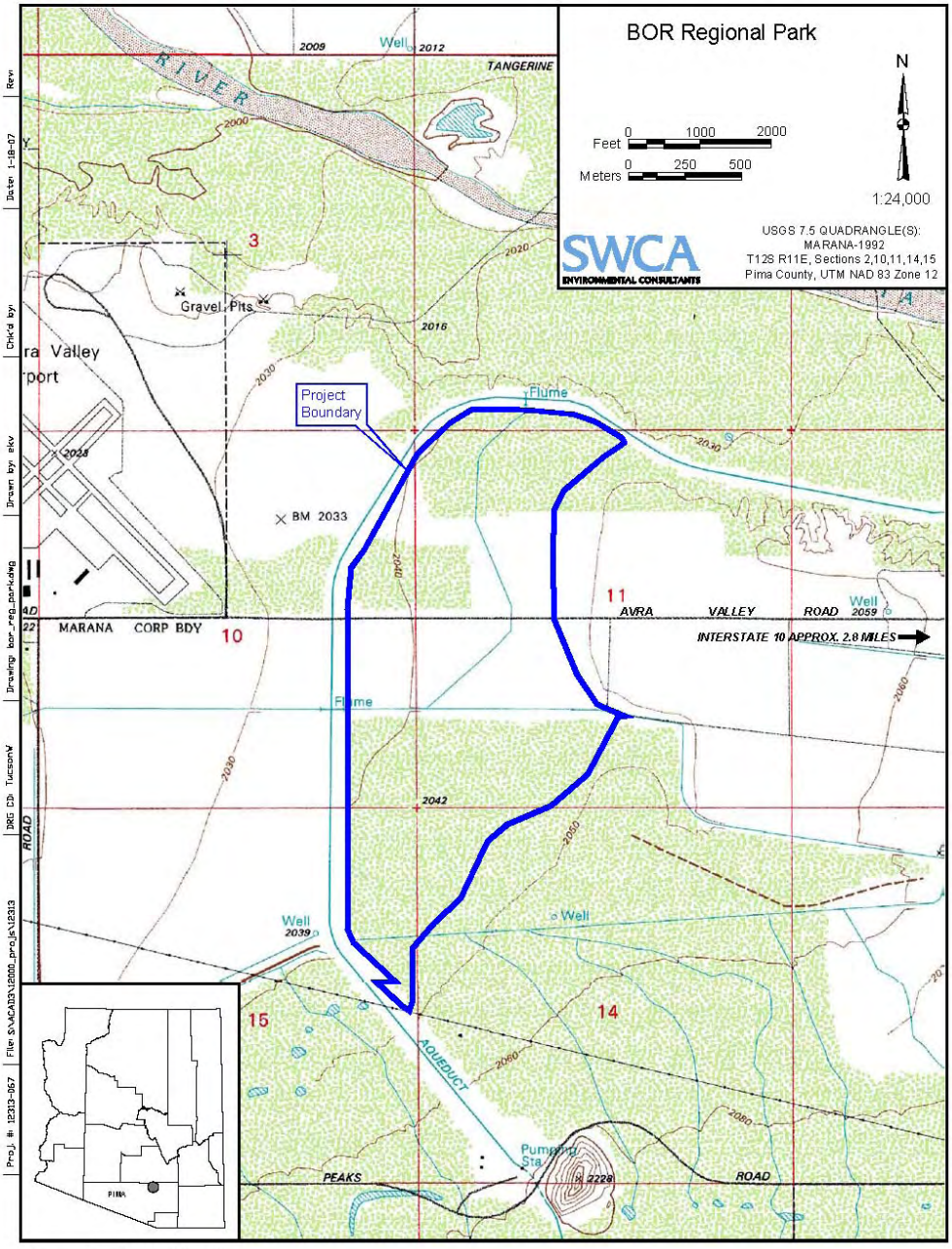

Figure 1. Project location.

2.2 Species Evaluation

The potential for occurrence of each species was summarized according to the categories listed below. Because not all species are accommodated precisely by a given category (i.e., category definitions may be too restrictive), an expanded rationale for each category assignment is provided. Potential for occurrence categories are as follows:

- *Known to occur*—the species has been documented in the project area by a reliable observer.
- *May occur*—the project area is within the species' currently known range, and vegetation communities, soils, etc., resemble those known to be used by the species.
- *Unlikely to occur*—the project area is within the species' currently known range, but vegetation communities, soils, etc., do not resemble those known to be used by the species, or the project area is clearly outside the species' currently known range.

Those species listed by the USFWS were assigned to one of three categories of possible effect, following USFWS recommendations. These categories are:

- *May affect, is likely to adversely affect*—the project is likely to adversely affect a species if: 1) the species is known to occur in the project area; and 2) project activities would disturb areas or habitat elements known to be used by the species, or would directly affect an individual.
- *May affect, is not likely to adversely affect*—the project is not likely to adversely affect a species if: 1) the species may occur but its presence has not been documented; and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- *No effect*—the project will have no effect on a species if: 1) the species is considered unlikely to occur (range, vegetation, etc., are inappropriate); and 2) the species or its sign was not observed during surveys of the project area.

3.0 RESULTS

3.1 Ecological Overview

The project area is located in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community at elevations ranging between 2,030 and 2,050 feet above mean sea level. The Santa Cruz River and the Tucson Mountains are approximately 0.5 mile north and 3.5 miles south of the project area, respectively. Active agricultural fields border the project area on the west and east sides, and several irrigation ditches traverse the project area. The northern portion of the project area is intersected by Avra Valley Road, and the project area is bordered on the north and west sides by the Central Arizona Project (CAP) aqueduct and by areas of undisturbed desert vegetation. No natural permanent aquatic habitats, broadleaf deciduous riparian vegetation communities (i.e., communities containing willow, cottonwood, ash, etc.), or potential bat roost sites (e.g., natural caves or mine adits or shafts) occur within the project area. There are stock tanks and irrigation ditches present; however, these stock tanks and irrigation ditches are not expected to contain water except immediately after precipitation events. Similarly, there are other areas (e.g. borrow pits, natural depressions, etc.) where water may pool after moderate precipitation events.

3.2 Vegetation

Three vegetation associations were identified in the project area: upland desertscrub, xeroriparian mixed scrub, and fallow agricultural land. Dominant plant species in the northern portion of the upland desertscrub association include velvet mesquite (*Prosopis velutina*), triangle-leaf bursage (*Ambrosia*

deltoidea), and barrel cactus (*Ferocactus wislizeni*). Less-common species include foothill paloverde (*Parkinsonia microphylla*), saguaro (*Carnegiea gigantea*), cholla (*Opuntia* spp.), white bursage (*Ambrosia dumosa*), and creosotebush (*Larrea tridentata*). The remainder of this association is dominated by creosotebush.

Several parcels of fallow agricultural land are located in the project area. These areas are vegetated by carelessweed (*Amaranthus palmeri*) and a variety of non-native species, including Bermudagrass (*Cynodon dactylon*), prickly Russian thistle (*Salsola tragus*), Lehmann lovegrass (*Eragrostis lehmanniana*), and saltcedar (*Tamarix* sp.).

Xeroriparian mixed scrub vegetation is associated with the irrigation ditches and abandoned former stock tanks located in the project area. This vegetation type is associated with an ephemeral or intermittent water supply and typically contains plant species that also occur within neighboring upland habitats, although riparian plants are typically larger and often occur at higher densities than those in adjacent uplands. Dominant plant species in these areas include velvet mesquite, whitethorn acacia (*Acacia constricta*), desertbroom (*Baccharis sarothroides*), and burroweed (*Isocoma tenuisecta*).

3.3 Special-Status Species Evaluation

3.3.1 USFWS Species

None of the 21 species listed for Pima County by the USFWS have the potential to occur in the project area. The project area is either clearly beyond the known geographic or elevational range of these species or it does not contain vegetation or landscape features known to support these species, or both. Habitat requirements, potential for occurrence, and possible effects on these 21 species are summarized in Table 1. The project area does not occur in or near any proposed or designated Critical Habitat. However, according to the AZHGIS online environmental review tool (see Appendix B), there is one occurrence record for western yellow-billed cuckoo *(Coccyzus americanus occidentalis)* within 3 miles of the project area (AZHGIS 2006). This record is likely from the broadleaf riparian habitat along the Santa Cruz River, which is located approximately 0.5 mile north of the project area.

3.3.2 Other Special-Status Species

According to the AZHGIS online environmental review tool (see Appendix B), there are occurrence records for three other special-status species noted within 3 miles of the project area: cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), Thornber fishhook cactus (*Mammillaria thornberi*), and yellow-nosed cotton rat (*Sigmodon ochrognathus*). The cactus ferruginous pygmy-owl, listed as a species of concern by the USFWS, wildlife of special concern by the AGFD, and a covered species by the Town HCP, is evaluated in Table 2 below. The Thornber fishhook cactus is listed as Salvage Restricted by the Arizona Department of Agriculture (ADA), and the yellow-nosed cotton rat is listed as species of concern by the USFWS. Thus, none of these three species currently receive any statutory protection under the Endangered Species Act (ESA).

State-protected native plants such as the Thornber fishhook cactus cannot be removed from any lands without permission of the owner and a permit from the ADA. Landowners have the right to destroy or remove plants growing on their land, but landowners are required to notify the ADA 20 to 60 days prior to the destruction of any protected native plants. Protected native plants may not be legally possessed, taken, or transported from the growing site without a permit from the ADA. Salvage Restricted plants include those species of native plants that are not included in the Highly Safeguarded category (those species of native plants and parts of plants, including the seeds and fruit, whose prospects for survival in Arizona

are in jeopardy or that are in danger of extinction) but that are subject to damage by theft or vandalism (ADA 2007).

The yellow-nosed cotton rat is listed as species of concern by the USFWS, so it does not currently receive any statutory protection under the ESA. Because this species typically occurs in Madrean evergreen and oak woodlands above 3,000 feet in elevation and these vegetation communities do not exist in the project area, it is expected that the yellow-nosed cotton rat is unlikely to occur in the project area.

3.3.3 Town of Marana HCP Species

According to Marana (2007), there are 13 species to be covered by the Town HCP. Ten of these species are not covered under the ESA. Habitat requirements, potential for occurrence, and possible effects on these 13 species are summarized in Table 2. Besides the pygmy-owl, three other species covered by the Town HCP may occur in the project area: western burrowing owl, pale Townsend's big-eared bat, and Merriam's mouse. However, this project is not expected to result in population-level impacts or contribute to the future listing of any of these species as threatened or endangered under the ESA.

Marana (2007) developed habitat models for most of the species to be covered by the HCP. The project area falls within or adjacent to modeled habitat for several of the HCP species. According to Marana (2007): 1) the entire northern half of the project area (272.4 acres) lies within modeled foraging habitat (225.3 acres) or modeled foraging and nesting habitat (47.1 acres) for western burrowing owl, and a potential Town of Marana Burrowing Owl Management Area (BOMA) occurs along the northern boundary of the project area; 2) low suitability habitat modeled for ground snake occurs approximately 750 feet north of the northern edge of the project area; and 3) 196.9 acres of modeled habitat for Tucson shovel-nosed snake falls within the southern half of the project area. The Town's cactus ferruginous pygmy-owl habitat model that was revised from the existing Sonoran Desert Conservation Plan (SDCP) habitat model did not map any habitat for the species within the project area. The pale Townsend's big-eared bat habitat model developed for the SDCP and adapted to the Town HCP outlines a few small areas of potential foraging habitat existing in and adjacent to the project area. A habitat model has not yet been developed for Merriam's mouse within the Marana HCP area.

According to Marana (2007): 1) the western burrowing owl habitat model was developed through expert panel review, consultation with the AGFD and University of Arizona researchers, and field visits to areas potentially providing habitat in the Town; 2) the cactus ferruginous pygmy-owl habitat model was developed through a combination of formerly proposed critical habitat areas, draft recovery areas, and the SDCP habitat model; 3) the SDCP habitat model for the pale Townsend's big-eared bat was used by the Town; and 4) Dr. Phil Rosen developed separate habitat models for the ground snake and the Tucson shovel-nosed snake for SDCP use that were similarly used by the Town.

Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona

Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2006); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Acuña cactus (*Echinomastus erectocentrus* var. *acunensis*)	USFWS C	Found on the tops or upper half of the side slopes of broad, dissected hills of granite or andesite at elevations between 1,200 and 2,600 feet in the Arizona Upland subdivision of the Sonoran Desert. In Arizona, known from: the Puerto Blanco Mountains; Little Ajo and Sauceda mountains; and hills between Florence and Kearney, north and south of the Gila River.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.	No effect.
California brown pelican (*Pelecanus occidentalis californicus*)	USFWS E	Found in coastal areas, with nesting occurring on islands. Most Arizona records are of transients along the Colorado River north to Davis Dam, Lake Mead, and the Gila River valley, but stragglers reach most of the state (Tolani lakes, Navajo Indian Reservation, Salt River, and other areas).	Unlikely to occur. There are no aquatic sites in the project area.	No effect.
Chiricahua leopard frog (*Rana chiricahuensis*)	USFWS T	Restricted to springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,281 and 8,890 feet in central, east-central, and southeast Arizona. Populations in central and east-central Arizona are disjunct from those in southeastern Arizona and may be a distinct species.	Unlikely to occur. There are no aquatic areas in the project area.	No effect.
Desert pupfish (*Cyprinodon macularius*)	USFWS E	Found in shallow waters of desert springs, small streams, and marshes at elevations below 5,000 feet. One natural population still occurs in Quitobaquito Spring and Quitobaquito Pond in Pima County, and reintroductions have been made in Pima, Pinal, Maricopa, Graham, Cochise, La Paz, and Yavapai counties, Arizona. New introductions continue.	Unlikely to occur. There is no aquatic habitat in the project area.	No effect.
Gila chub (*Gila intermedia*)	USFWS E	Normally found in smaller headwater streams, cienegas and springs, or marshes of the Gila River Basin at elevations between 2,720 and 5,420 feet.	Unlikely to occur. There is no aquatic habitat in the project area.	No effect.
Gila topminnow (*Poeciliopsis occidentalis occidentalis*)	USFWS E	Occurs in small streams, springs, and cienegas at elevations below 4,500 feet, primarily in shallow areas with aquatic vegetation and debris for cover. In Arizona, most of the remaining native populations are in the Santa Cruz River system.	Unlikely to occur. There is no aquatic habitat in the project area.	No effect.
Goodding's onion (*Allium gooddingii*)	USFWS CA	Found in spruce-fir and mixed-conifer forests in moist, shady canyon bottoms and north-facing slopes at elevations between 7,500 and 11,250 feet. In Arizona, known from the White, Santa Catalina, and Chuska mountains.	Unlikely to occur. There are no spruce-fir or mixed-conifer forests in the project area.	No effect.
Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*)	USFWS E	Semi-aquatic to aquatic perennial found in shallow water or saturated soil of cienegas or marshy wetlands at elevations between 4,000 and 6,500 feet. Known from the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River to Black Draw, and the San Pedro River.	Unlikely to occur. There is no aquatic habitat in the project area.	No effect.

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Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona (Continued)

Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2006); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Jaguar (*Panthera onca*)	USFWS E	In Arizona, individuals have been found in Sonoran Desertscrub through subalpine conifer forests. In 1996, photographs documented two individuals from the Baboquivari Mountains, Pima County, and the Peloncillo Mountains, Cochise County. Another individual was documented west of Nogales in 2001 and 2003. Jaguars were probably closely associated with rivers and cienegas (marshes), once prominent in southern Arizona.	Unlikely to occur. This species is very rare and there are no rivers or cienegas in the project area.	No effect.
Kearney's bluestar (*Amsonia kearneyana*)	USFWS E	Found on dry, open slopes (20 to 30 degrees) at elevations between 4,000 and 6,000 feet in the transition zone between Madrean evergreen woodland and interior chaparral. Also occurs at elevations between 3,600 and 3,800 feet on stable, partially shaded, coarse alluvium along dry washes under deciduous riparian trees and shrubs in Sonoran Desertscrub or desertscrub/grassland ecotone. Known only from a west-facing drainage in the Baboquivari Mountains.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.	No effect.
Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)	USFWS E	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua mountains at elevations between 1,600 and 11,500 feet. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius of *Leptonycteris* bats may be 30 to 60 miles or more.	Unlikely to occur. While it is possible that this bat may forage in the project area, foraging activity is likely to be infrequent given the relatively small number of saguaros in the project area.	No effect.
Masked bobwhite (*Colinus virginianus ridgeway*i)	USFWS E	Found at elevations between 1,000 and 4,000 feet in desert grasslands with diverse, moderately dense native grasses and forbs and adequate brush cover. This subspecies has been found to be closely associated with *Acacia angustissima*. Known only from reintroduced populations on Buenos Aires National Wildlife Refuge.	Unlikely to occur. There are no *Acacia angustissima* within the project area and the project area is approximately 40 miles northeast of the Buenos Aires National Wildlife Refuge.	No effect.
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Found in mature montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed-conifer and pine-oak vegetation types. Generally nests in older forests of mixed conifers or ponderosa pine/Gambel oak. Nests in live trees on natural platforms (e.g., dwarf mistletoe brooms), snags, and on canyon walls at elevations between 4,100 and 9,000 feet.	Unlikely to occur. There are no montane forests or wooded canyons in the project area.	No effect.
Nichol Turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*)	USFWS E	Found in Sonoran Desertscrub with limestone-derived alluvium at elevations between 2,000 and 3,600 feet. In Arizona, the known range is limited to the Waterman and Vekol mountains.	Unlikely to occur. The project area does not contain limestone-derived alluvium.	No effect.

Table 1. Federally Listed Species Potentially Occurring in Pima County, Arizona (Continued)

Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2006); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Ocelot (*Leopardus* [=*Felis*] *pardalis*)	USFWS E	In Arizona, occurs in subtropical thorn forest, thorn scrub, and dense brushy thickets at elevations below 8,000 feet. Often found in riparian bottomlands. The critical habitat component is probably dense cover near the ground and complete avoidance of open country. There are no confirmed sightings in Arizona, and there are only unconfirmed sightings in the Chiricahua and Peloncillo mountains.	Unlikely to occur. The species is very rare and vegetation in the project area is not similar to that found in areas known to be preferred by this species.	No effect.
Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*)	USFWS E	Found on alluvial bajadas in sand/rocky loam soils and on slopes less than 10% grade within desert grassland and Sonoran Desertscrub at elevations between 2,800 and 3,500 feet. In Arizona, found in the Santa Cruz and Altar valleys and Patagonia Mountains.	Unlikely to occur. The project area is north of the known distribution of this species.	No effect.
San Xavier talussnail (*Sonorella eremita*)	USFWS CA	Found only in Pima County in a deep, northwest-facing limestone rockslide on San Xavier Hill (White Hill) at elevations between 3,850 and 3,920 feet.	Unlikely to occur. There are no limestone rockslides in the project area.	No effect.
Sonoran pronghorn (*Antilocapra americana sonoriensis*)	USFWS E	Found in Sonoran Desertscrub at elevations between 2,000 and 4,000 feet. The only extant U.S. population is in southwestern Arizona, west of Ajo and State Route 85.	Unlikely to occur. The project area is approximately 100 miles east of the current range of this species.	No effect.
Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*)	USFWS C	In Arizona, found only in pond and stream habitat at Quitobaquito Springs in Organ Pipe Cactus National Monument.	Unlikely to occur. There is no aquatic habitat in the project area.	No effect.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush, and arrowweed are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Unlikely to occur. There is no riparian habitat in the project area.	No effect.
Yellow-billed cuckoo (*Coccyzus americanus*)	USFWS C	Typically found in riparian woodland vegetation (cottonwood, willow, or tamarisk) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde river drainages and Cienega and Sonoita creeks.	Unlikely to occur. Although the yellow-billed cuckoo is known to occur along the Santa Cruz River north of the project area, there are no suitable riparian woodlands in the project area itself.	No effect.

***USFWS Status Definitions:**

E = Endangered. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = Threatened. The ESA specifically prohibits the take of a species listed as threatened. Take is defined by the ESA as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

C = Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because they are precluded by other listing activity that is a higher priority. This listing category has no legal protection.

CA = Conservation Agreement. An agreement between the USFWS and other federal, state, or local agencies or private landowners to take certain steps to ensure the protection of the species.

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Table 2. Species Covered by the Town of Marana HCP

Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2006); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Project Area
Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)	Found in Sonoran Desertscrub habitats characterized by braided-wash systems and dense vegetation including ironwood (*Olneya tesota*), palo verde, and mesquite; and semi-desert grasslands containing drainages with mesquite, hackberry (*Celtis* spp.), and ash (*Fraxinus velutina*). Historically, cactus ferruginous pygmy-owl nests were documented in cavities of cottonwoods, willows, or mesquites, although more recent nest sites have been primarily located in saguaros cavities.	May occur. There is an occurrence record from AZHGIS within 3 miles of the project area and there are large saguaros with cavities present in the northern portion of the project area. Surveys for cactus ferruginous pygmy-owls were conducted in the project area during 2007 with negative results.
Western burrowing owl (*Athene cunicularia hypugaea*)	Grasslands, pastures, coastal dunes, desertscrub, edges of agricultural fields, and other human areas where there is sufficient friable soil for a nesting burrow. Usually associated with the burrows of other animals, especially mammals such as fox (*Vulpes* and *Urocyon* spp.), ground squirrels (*Spermophilus* spp.), and prairie dogs (*Cynomys* spp	May occur. The project area contains abandoned agricultural fields, open areas, and irrigation ditches that could provide potential habitat for this species; however, no individuals were observed during the field visit.
Ground snake (valley form) (*Sonora semiannulata*)	Found in arid and semi-arid lands where the soil may be rocky, gravelly, or sandy. It will frequent river bottoms, desert flats and rocky hillsides where there are pockets of loose soil. Vegetation is usually sparse in places such as sagebrush and creosotebush flats. A population of ground snakes known to exist in the Brawley Wash floodplain has been identified as unique and abundant enough to be of special interest (RECON 2001).	Unlikely to occur. The Brawley Wash floodplain, which supports the only known population in the area, is located approximately 4 miles west of the project area. Rosen (2004) concluded that it was unlikely that a population of the ground snake from the Brawley Wash floodplain would extend into the Town of Marana HCP area.
Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*)	Occurs in flat, sandy arid areas of the high desert in southeastern Arizona. No systematic studies of habitat use have been conducted and only limited observational data is available. Rosen (2007) has determined that the results from his study confirm the previous indications that the Tucson shovel-nosed snake has declined precipitously in Avra Valley.	Unlikely to occur. The project area occurs in the historic range of this species; however, the only recent records (2004 and 2006) of the snake from southeastern Arizona are from around Picacho in Pinal County, which is approximately 25 miles to the northwest (Rosen 2007). These results prompted Rosen (2007) to determine that it seems increasingly probable that the Tucson shovel-nosed snake does not occur in eastern Pima County.
Pale Townsend's big-eared bat (*Plecotus townsendii pallescens*)	Roosts in caves, lava tubes, and abandoned mines. Although it is widespread in Arizona, it is not considered common anywhere. Summer day roosts are found in caves and mines from desertscrub up to oak woodlands, and oak/pine, pinyon/jumiper, and coniferous forests. The Baboquivari Mountains have one of the largest summer colonies of the pale Townsend's big-eared bats in Arizona. The bat is also known from Colossal cave, Tucson Mountain Park, Organ Pipe National Monument, and Saguaro National Park.	May occur. This bat may forage over the irrigation ditches and stock tanks located in the project area as it typically prefers to feed at the interface between upland and riparian vegetation communities. However, there are no roost sites present and this species typically forages within 15 miles of its roost site; all known roost sites are at least 15 miles away from the project area.
Merriam's mouse (*Peromyscus merriami*)	Merriam's mouse typically inhabits heavy, forest-like stands of mesquite (Hoffmeister 1986); oftentimes referred to as Mesquite bosques. According to SWCA (2006), *P. merriami* can be found in a variety of mesquite-dominated riparian environments in the Tucson area. However, mesquite mice were not found in isolated patches of mesquite surrounded by urban development; narrow, rocky washes with few mesquites; or mesquite-invaded grassland or upland vegetation.	May occur. Moderately dense stands of mesquite occur in the portions of the project area where water temporarily ponds.

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Table 2. Species Covered by the Town of Marana HCP (Continued)

Range or habitat information is from the following sources: Heritage Data Management System (HDMS 2006); USFWS Arizona Ecological Services Field Office (USFWS 2006); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Project Area
Lesser long-nosed bat *(Leptonycteris curasoae yerbabuenae)*	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua mountains at elevations between 1,600 and 11,500 feet. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius of *Leptonycteris* bats may be 30 to 60 miles or more.	Unlikely to occur. While it is possible that this bat may forage in the project area, foraging activity is likely to be infrequent given the relatively small number of saguaros in the project area.
Sonoran desert tortoise (*Gopherus agassizii*)	The Sonoran Desert tortoise occurs primarily on rocky slopes and bajadas of Mojave and Sonoran desertscrub (AIDTT 2000). Caliche caves in incised cut banks of washes (arroyos) are often used for shelter sites, especially in Lower Colorado River Valley subdivision vegetation associations. Sonoran Desert tortoise populations occur at elevations ranging from about 510 feet in Mojave Desertscrub to about 5,300 feet in semidesert grassland and interior chaparral.	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.
Talus snails (*Sonorella* spp)	Found only in Pima County in a deep, northwest-facing limestone rockslide on San Xavier Hill (White Hill) at elevations between 3,850 and 3,920 feet.	Unlikely to occur. There are no limestone rockslides in the project area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush, and arrowweed are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Unlikely to occur. There is no riparian habitat in the project area.
Yellow-billed cuckoo (*Coccyzus americanus*)	Typically found in riparian woodland vegetation (cottonwood, willow, or tamarisk) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde river drainages and Cienega and Sonoita creeks.	Unlikely to occur. Although the yellow-billed cuckoo is known to occur along the Santa Cruz River north of the project area, there are no suitable riparian woodlands in the project area itself.
Lowland leopard frog (*Rana yavapaiensis*)	Restricted to springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,281 and 8,890 feet in central, east-central, and southeast Arizona. Populations in central and east-central Arizona are disjunct from those in southeastern Arizona and may be a distinct species.	Unlikely to occur. There are no aquatic areas in the project area.
Mexican garter snake (*Thamnophis eques megalops*)	Most abundant in densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat (Rosen and Schwalbe 1988).	Unlikely to occur. Habitat in the project area is not similar to that found in areas known to be occupied by this species.

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4.0 CONCLUSION

This project will have no effect on any of the 21 species listed for Pima County by the USFWS. However, the AZHGIS search results (see Appendix B) indicate that cactus ferruginous pygmy-owl has been observed within 3 miles of the project area. The cactus ferruginous pygmy-owl does not currently receive any statutory protection under the ESA; however, it is listed as a species of concern by the USFWS and as a covered species by the Town HCP. Additionally, the Migratory Bird Treaty Act (MBTA) gives federal protection to all migratory birds, including nests and eggs; therefore, in order to relocate or alter any MBTA-protected nests, it is necessary to obtain a permit from the USFWS to maintain compliance with the MBTA. Section 1 of the USFWS Region 2 "Interim Empty Nest Policy" states that if the nest is completely inactive at the time of destruction or movement, a permit is not required in order to comply with the MBTA. If an active nest is observed during any activities related to the project, measures should be taken to protect the nest from destruction and to avoid a violation of the MBTA. SWCA did not observe signs of cactus ferruginous pygmy-owl presence in the project area during field reconnaissance.

State-protected native plants such as the Thornber fishhook cactus cannot be removed from any lands without permission of the owner and a permit from the ADA. Landowners have the right to destroy or remove plants growing on their land, but landowners are required to notify the ADA 20 to 60 days prior to the destruction of any protected native plants. Protected native plants may not be legally possessed, taken, or transported from the growing site without a permit from the ADA. Salvage Restricted plants include those species of native plants that are not included in the Highly Safeguarded category (those species of native plants and parts of plants, including the seeds and fruit, whose prospects for survival in Arizona are in jeopardy or that are in danger of extinction) but that are subject to damage by theft or vandalism (ADA 2007). SWCA did not observe the cactus in the project area during field reconnaissance.

Besides the pygmy-owl, three other species covered by the Town of Marana HCP may occur in the project area: western burrowing owl, pale Townsend's big-eared bat, and Merriam's mouse. However, this project is not expected to result in population-level impacts or contribute to the future listing of any of these species as threatened or endangered under the ESA.

5.0 LIMITATIONS AND WARRANTY

The evaluation of the potential occurrence of, or impacts to, threatened and endangered species can be subjective; professional biologists of equal qualifications may disagree on the assessment of habitat suitability or the likelihood of a species' occurrence. The final determination of a project's impacts to protected species is the responsibility of the resource agencies that regulate the proposed activities within the project area. Accordingly, this report should be reviewed by the appropriate regulatory agencies prior to any detailed site planning or construction activities.

Within the limitations of schedule, budget, and scope of work, SWCA warrants that this study was conducted in accordance with accepted environmental science practices, including the technical guidelines, evaluation criteria, and species' listing status in effect at the time this evaluation was performed, as outlined in Section 3.3 Special-Status Species Evaluation. The results and conclusions of this report represent the best professional judgment of SWCA scientists, and are based on information provided by the project proponent, in addition to that obtained from agencies and other sources during the course of the study. No other warranty, expressed or implied, is made.

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APPENDIX A

USFWS Species List

Pima County

COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
California Brown pelican	*Pelecanus occidentalis californicus*	Endangered	Large dark gray-brown water bird with a pouch underneath long bill and webbed feet. Adults have a white head and neck, brownish black breast, and silver gray upper parts	Apache, Cochise Coconino, Gila Graham, Greenlee, La Paz, Maricopa Mohave, Navajo, Pima, Pinal Santa Cruz, Yavapai, Yuma	Varies	Coastal land and islands; species found around many Arizona lakes and rivers	Subspecies is found on Pacific Coast and is endangered due to pesticides. It is an uncommon transient in Arizona on many Arizona lakes and rivers. Individuals wander up from Mexico in summer and fall. No breeding records in Arizona.
Chiricahua leopard frog	*Rana chiricahuensis*	Threatened	Cream colored tubercules (spots) on a dark background on the rear of the thigh, dorsolateral folds that are interrupted and deflected medially, and a call given out of water distinguish this spotted frog from other leopard frogs	Apache, Cochise Coconino, Gila Graham, Greenlee, Navajo, Pima, Santa Cruz, Yavapai	3300-8900 ft	Streams, rivers backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish and bullfrogs	Require permanent or nearly permanent water sources. Populations north of the Gila River may be a closely related, but distinct, undescribed species. A special rule allows take of frogs due to operation and maintenance of livestock tanks on State and private lands.
Desert pupfish	*Cyprinodon macularius*	Endangered	Small (2 inches) smoothly rounded body shape with narrow vertical bars on the sides. Breeding males blue on head and sides with yellow on tail. Females and juveniles tan to olive colored back and silvery sides.	Graham, La Paz, Maricopa, Pima, Pinal, Santa Cruz, Yavapai	< 5,000 ft	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California. Two subspeices are recognized: Desert Pupfish (C.m.macularius) and Quitobaquito Pupfish (C.m eremus).
Gila chub	*Gila intermedia*	Endangered	Deep compressed body, flat head. Dark olive-gray color above, silver sides. Endemic to Gila River Basin.	Cochise, Gila, Graham, Greenlee, Maricopa, Pima, Pinal, Santa Cruz, Yavapai	2,000 - 5,500 ft	Pools, springs, cienegas, and streams	Found on multiple private lands, including the Nature Conservancy, the Audubon Society, and others. Also occurs on Federal and state lands and in Sonora, Mexico. Critical habitat occurs in Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz and Yavapai counties.
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	Endangered	Small (2 inches), guppy-like, live bearing, lacks dark spots on its fins. Breeding males are jet black with yellow fins.	Gila, Graham, La Paz, Maricopa, Pima, Pinal, Santa Cruz, Yavapai	< 4,500 ft	Small streams, springs, and cienegas vegetated shallows	Species historically occurred in backwaters of large rivers but is currently isolated to small streams and springs

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COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Huachuca water umbel	*Lilaeopsis schaffneriana ssp recurva*	Endangered	Herbaceous, semi-aquatic perennial in the parsley family (Umbelliferae) with slender erect, hollow, leaves that grow from the nodes of creeping rhizomes. Flower: 3 to 10 flowered umbels arise from root nodes.	Cochise, Pima, Santa Cruz	3500-6500 ft	Cienegas, perennial low gradient streams, wetlands.	Species also occurs in adjacent Sonora, Mexico, west of the continental divide. Critical habitat in Cochise and Santa Cruz counties (64 FR 37441, July 12, 1999).
Jaguar	*Panthera onca*	Endangered	Largest species of cat native to Southwest. Muscular with relatively short, massive limbs, and a deep-chested body. Usually cinnamon-buff in color with many black spots. Weights ranges from 40-135 kg (90-300 lbs).	Cochise, Santa Cruz, Pima	1,600 – 9,000 ft	Found in Sonoran desertscrub up through subalpine conifer forest.	Also occurs in New Mexico. A jaguar conservation team is being formed that is being led by Arizona and New Mexico state entities along with private organizations.
Kearney blue star	*Amsonia kearneyana*	Endangered	A herbaceous perennial about 2 feet tall in the dogbane family (Apocynaceae). Thickened woody root and many pubescent (hairy) stems that rarely branch. Flowers: white terminal inflorescence in April and May.	Pima	3600-3800 ft	West-facing drainages in the Baboquivari Mountains.	Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains. Range is extremely limited. Protected by Arizona Native Plant Law.
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Endangered	Elongated muzzle, small leaf nose, and long tongue. Yellowish brown or gray above and cinnamon brown below. Tail minute and appears to be lacking. Easily disturbed.	Cochise, Gila, Graham, Greenlee, Pima, Pinal, Maricopa, Santa Cruz	< 6000 ft	Desert scrub habitat with agave and columnar cacti present as food plants.	Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.
Masked bobwhite	*Colinus virginianus ridgwayi*	Endangered	Males brick-red breast and black head and throat. Females are generally nondescript but resemble other races such as the Texas bobwhite.	Pima	1000-4000 ft	Desert grasslands with diversity of dense native grasses, forbs, and brush.	Species is closely associated with Acacia angustissima. Formerly occurred in Altar and Santa Cruz valleys as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires NWR.

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COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Mexican spotted owl	*Strix occidentalis lucida*	Threatened	Medium sized with dark eyes and no ear tufts. Brownish and heavily spotted with white or beige	Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai	4100-9000 ft	Nests in canyons and dense forests with multi-layered foliage structure	Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type, in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182). Critical habitat in Arizona occurs in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties
Nichol Turk's head cactus	*Echinocactus horizonthalonius var. nicholii*	Endangered	Blue green to yellowish green, columnar, 18 inches tall, 8 inches in diameter. Spine clusters have 5 radial and 3 central spines; one downward short; 2 spines upward and red or basally gray. Flower: pink fruit woolly white	Pima, Pinal	2400-4100 ft	Sonoran desertscrub	Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides
Ocelot	*Leopardus (=Felis) pardalis*	Endangered	Medium-sized spotted cat whose tail is about 1/2 the length of head and body. Yellowish with black streaks and stripes running from front to back. Tail is spotted and face is less heavily streaked than the back and sides.	Cochise, Pima, Santa Cruz	< 8000 ft	Humid tropical and sub-tropical forests, savannahs, and semi-arid thornscrub.	May persist in partly-cleared forests, second-growth woodland, and abandoned cultivated areas reverted to brush. Universal component is presence of dense cover. Unconfirmed reports of individuals in the southern part of the State continue to be received.
Pima pineapple cactus	*Coryphantha robustispina var. robustispina*	Endangered	Hemispherical stems 4-7 inches tall 3-4 inches diameter. Central spine 1 inch long, straw colored, hooked, surrounded by 6-15 radial spines. Flower: yellow, salmon, or rarely white narrow floral tube..	Pima, Santa Cruz	2300-5000 ft	Sonoran desertscrub or semi desert grassland communities.	Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils. This species can be confused with juvenile barrel cactus (Ferocactus). However, the spines of the later are flattened, in contrast with the round cross-section of the Coryphantha spines. 80-90% of individuals on state or private land.

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COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Sonoran pronghorn	*Antilocapra americana sonoriensis*	Endangered	Buff on back and white below, hoofed with slightly curved black horns having a single prong. Smallest and palest of the pronghorn subspecies	Maricopa, Pima, Yuma	500 - 2,000 ft	Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations	Typically, bajadas are used as fawning areas and sandy dune areas provide food seasonally. Historical range was probably larger than exists today. This subspecies also occurs in Mexico
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Small passerine (about 6 inches) grayish-green back and wings, whitish throat, light olive-gray breast and pale yellowish belly. Two wingbars visible. Eye-ring faint or absent.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	<8500 ft	Cottonwood/willow and tamarisk vegetation communities along rivers and streams	Migratory riparian-obligate species that occupies breeding habitat from late April to September. Distribution within its range is restricted to riparian corridors. Difficult to distinguish from other members of the Empidonax complex by sight alone. Training seminar required for those conducting flycatcher surveys. Critical habitat was finalized on October 19, 2005 (50 CFR 60886) and can be viewed at http://arizonaes.fws.gov. In Arizona there are critical habitat segments in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pima, Pinal, and Yavapai counties.
Acuna cactus	*Echinomastus erectocentrus var. acunensis*	Candidate	<12 inches high, spines in clusters borne on tubercles, each with a groove on the upper surface. 2-3 central spines and 12 radial spines. Flowers pink to purple.	Pima, Pinal	1300-2000 ft	Well drained knolls and gravel ridges in Sonoran desert scrub.	Immature plants distinctly different from mature plants. They are disc-shaped or spherical and have no central spines until they are about 1.5 inches. Radial spines are dirty white with maroon tips.
Sonoyta mud turtle	*Kinosternon sonoriense longifemorale*	Candidate	Primarily a pond turtle, prefers mud or sandy bottoms. Body 3 1/2 to 6 1/2 inches. Head and neck mottled with contrasting light and dark markings. Found in Quitobaquito Springs.	Pima	1,700 ft	Ponds and streams.	Species also found in Rio Sonoyta, Sonora, Mexico

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A-4

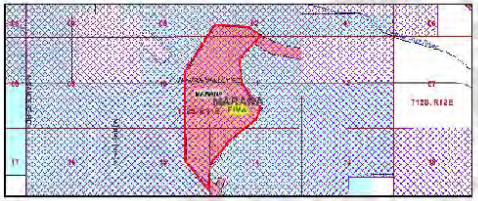
COMMON NAME	SCIENTIFIC NAME	STATUS	DESCRIPTION	COUNTY	ELEVATION	HABITAT	COMMENTS
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Medium sized bird with a slender, long-tailed profile, slightly down-curved bill, which is blue-black with yellow on the lower half of the bill. Plumage is grayish-brown above and white below, with rufous primary flight feathers.	Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, Yuma	< 6,500 ft	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Listing was found warranted, but precluded as a distinct vertebrate population segment in the western U.S. on July 25, 2001. This finding indicates that the Service has sufficient information to list the bird, but other higher priority listing actions prevent the Service from addressing the listing of the cuckoo at this time.
Gooddings onion	*Allium gooddingii*	Conservation Agreement	Herbaceous perennial plant, broad, flat, rather blunt leaves; flowering stalk 14-17 inches tall, flattened, and narrowly winged toward apex; fruit is broader than long; seeds are short and thick.	Apache, Greenlee, Pima	> 7,500 ft	Forested drainage bottoms and on moist north facing slopes of mixed conifer and spruce fir forests.	Conservation agreement between the Service and the Forest Service signed in February 1998. In New Mexico on the Lincoln and Gila National Forests.
San Xavier talussnail	*Sonorella eremita*	Conservation Agreement	Land snail, less than one inch in diameter (about .75 inches), 4.5 whorls, round shell, white to pinkish tint.	Pima	3,850-3,920 ft	Deep, limestone rockslide with outcrops of limestone and decomposed granite.	Conservation agreement signed by the Service, Arizona Game and Fish Department, El Paso Natural Gas Company, and Arizona Electric Power Cooperative, Inc. in September 1998

APPENDIX B

AZHGIS Online Environmental Review Tool

Arizona's On-line Environmental Review Tool
Search ID: 20061228001891
Project Name: BOR RegionalPark EA
Date: 12/28/2006 3:48:46 PM

Project Location



The Department appreciates the opportunity to provide in dep.' comments and project review whe 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
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	C	S		WSC
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl	SC			WSC
Mammillaria thornberi	Thornber Fishhook Cactus				SR
Sigmodon ochrognathus	Yellow-nosed Cotton Rat	SC			

Project Name: BOR RegionalPark EA
Submitted By: Jeremy Doschka
On behalf of: CITY
Project Search ID: 20061228001891
Date: 12/28/2006 3:48:37 PM
Project Category: Recreation Areas,Trails and trail heads (parking, day-use, picnic areas, etc.),Construction of new facilities
Project Coordinates (UTM Zone 12-NAD 83): 481344.555, 3584839.698 meter
Project Length: 7330.140 meter
County: PIMA
USGS 7.5 Minute Quadrangle ID: 1681
Quadrangle Name: MARANA
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.

 APPLICATION INITIALS: _____

Arizona's On-line Environmental Review Tool
Search ID: 20061228001891
Project Name: BOR RegionalParkEA
Date: 12/28/2006 3:48:45 PM

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

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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: Recreation Areas,Trails and trail heads (parking, day-use, picnic areas, etc.),Construction of new facilities

Project Type Recommendations:

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

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 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.

Minimize impacts to wildlife and wildlife habitat by staying on designated roads and trails, and by minimizing use during spring and summer breeding periods. Additional information concerning OHV use is located at:
http://www.azgfd.gov/outdoor_recreation/habitat_ohv_areas.shtml

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

Project Location and/or Species recommendations:

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Project Name: BOR RegionalParkEA
Date: 12/28/2006 3:48:46 PM

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 one or more native plants listed on the Arizona Native Plant Law and Antiquities Act have been documented within the vicinity of your project area (refer to page 1 of the receipt). Please contact:

Arizona Department of Agriculture

1688 W Adams
Phoenix, AZ 85007
Phone: 602-542-4373

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
2221 West Greenway Road
Phoenix, Arizona 85023-4312
Phone Number: (602) 789-3600
Fax Number: (602) 789-3928

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

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

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Project Name: BOR RegionalPark EA
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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.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

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: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

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Arizona's On-line Environmental Review Tool
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Project Name: BOR RegionalParkEA
Date: 12/28/2006 3:48:46 PM

City, State, Zip: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization: _____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

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