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AESO/SE
02-21-00-F-053

November 21, 2002

Mr. Terry Oda
Manager, CWA Standards and Permit Office
United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Dear Mr. Oda:

This responds to your (EPA) May 8, 2002, request for formal consultation pursuant to section 7 of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) on the effects of the proposed construction of the Arivaca WWTF gravity sewer project on the endangered cactus ferruginous pygmy-owl (CFPO or owl) (*Glaucidium brasilianum cactorum*) without critical habitat. The proposed work, by Pima County Wastewater Management Department, will take place in unincorporated Pima County near Arivaca Junction, Arizona. The project will require a National Pollutant Discharge Elimination System (NPDES) permit issued by you under the Clean Water Act (CWA).

You have also requested concurrence that the proposed action is not likely to adversely affect the Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), and southwestern willow flycatcher (*Empidonax traillii extimus*). We concur with your determinations for these species. The rationale for our concurrence is provided in Appendix A of this document.

This biological opinion is based on information provided in the April 2002, Biological Evaluation (BA), meetings with the applicant, their consultants (EEC, Inc) and our staff, and our files. Literature cited in this biological opinion is not a complete bibliography of all literature available on the affected species; nor is it a complete review of the effects of linear development on this species and its habitat. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

- 1999: Informal consultation started.
- February 2000: Draft BA submitted for comment.
- 2001: We met with applicants and their consultants several times to discuss on-going concerns with the project.
- April 8, 2002: Pima County sent letter outlining additional protective measures for the CFPO.
- May 2002: Project redesigned (changed from a pressure relief sewer pipeline to gravity sewer pipeline); new BA, along with request for formal consultation, submitted to us.
- September 24, 2002: We requested a 60-day extension to complete the formal consultation.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Pima County proposes to install a gravity sewer pipeline near Arivaca Junction, Arizona. Construction will take place in a narrow corridor that extends from Elephant Head Road to approximately one mile past the Canoa Interchange and is located east of the frontage road that extends parallel to the east lanes of Interstate 19 (I-19) between exits 48 and 56. The project area is located south of Green Valley, north of Arivaca Junction, east of I-19, and west of the Santa Cruz River in unsurveyed portions of (extrapolated) Sections 4, 9, 16, 17, 20, and 29, Township 19 South, Range 13 East, Pima County, Arizona.

Construction activities would occur within both temporary and permanent easements. The gravity sewer pipeline would be located within a permanent easement. The easement will vary in width from 20 to 40 feet. Easement width will be wider at the wash crossings to allow for a deeper trench. During construction, vegetation within this easement would be removed, and maintenance following construction would maintain a 15-foot corridor within the permanent easement that would remain free of vegetation. Two and one-half foot borders along each side of this corridor will be re-seeded, but trees will be excluded in order to maintain easy access for future maintenance.

A single temporary easement would be used for equipment access during construction. This would consist of a 50-foot wide easement located west of the permanent easement. Access to and from the project corridor would be from existing roads. Within the temporary easement, damage to significant trees, shrubs, and cacti will be largely avoided, but removal of some plants will be unavoidable. Construction activities within the most heavily vegetated areas (mesquite

bosques) will occur outside the CFPO breeding season. Herbicides will not be used to remove vegetation. Installation of the pipeline throughout the majority of the project area will be accomplished through trenching and shoring. When construction is complete, the temporary easements would be revegetated, using a native seed mix and/or plants and cacti salvaged from the site. Much of the new pipeline alignment overlaps or is immediately adjacent to the old pressure sewer alignment. This location allows easy project access and is an area currently degraded that is undesirable for use by wildlife due to the proximity of I-19. The remainder of the proposed project was chosen to accommodate a residential development planned for an area west of I-19 by Fairfield Homes. The gravity sewer line will allow Fairfield Homes to tie their planned sewer system into the Pima County sewer conveyance system. Maps and specific details of the proposed action are provided in the April 2002, BA (EEC, Inc), and other materials provided to the Service, and are included here by reference.

A total of approximately 38.8 acres will be disturbed. Of this amount, approximately 5.98 acres would be permanently disturbed and 8.11 acres would be re-seeded with herbaceous species. It is estimated that 22.8 acres of potential CFPO habitat will be modified or destroyed by pipeline construction.

Proposed Conservation Measures

You and Pima County Wastewater Department propose the following measures to minimize potential adverse effects to the CFPO and its habitat. These measures are taken from the April 2002, BA and supplementary materials from the County.

1. Surveys for CFPO, following recommended Fish and Wildlife Service (FWS) protocol, were conducted in 1998, 1999, 2000, 2001, and 2002. No CFPOs were detected. If an owl is detected during construction within 1,860 feet (600 m) of the project, all reasonable effort shall be made by Pima County to determine the breeding status, location, and extent of its territory. Depending on the CFPO's location, construction may be suspended until the project proponents coordinate with FWS and we determine whether the taking of CFPO is not likely to result. If we are unable to make such a determination, EPA will reinitiate consultation on this action. The FWS shall work expeditiously with you and the County to resolve any issue that may arise from the detection and shall not unreasonably withhold authorization to proceed with the proposed development. If pipeline construction is not completed by December 31, 2002, additional CFPO surveys will be conducted.
2. Temporary construction easements will be narrowed to the greatest extent possible. Where the removal of trees cannot be avoided in the temporary easement, the trees will be cut at ground level allowing for them to resprout and grow back naturally, except in the tree exclusion zone.
3. Herbicides will not be used to remove any vegetation.
4. Contract plans will specify the extent of clearing and grubbing and will exclude at a

- minimum areas identified as protected vegetation within the BA. Significant trees and shrubs that are to be protected will be delineated by construction fencing prior to the onset of construction.
5. Temporary fencing will be used to delineate the outer edges of construction to avoid damage to natural resources outside of the construction zone.
 6. Pima County will prepare a detailed erosion plan to minimize sediment transport. A spill prevention plan will be prepared and absorbent pads will be available on the site.
 7. All construction equipment will be washed before arrival at the construction site to discourage the introduction of non-natives to the site.
 8. Construction activities during the CFPO breeding season will occur in those areas without suitable habitat, such as the fallow fields. Construction activities in CFPO potential habitat will occur outside of the CFPO breeding season (February 1 - July 31). The contractor's construction schedule will be forwarded to us prior to site disturbance.
 9. After construction, disturbed soils within each of the temporary easements and along the edges of the permanent easement will be recontoured to resemble pre-construction conditions. Disturbed soils will be stabilized by application of a certified weed-free mix of native species that will be hydroseeded. Salvaged cacti will also be replanted on the sites. No seeding or planting of non-native plant material will occur on this project.
 10. The County proposes to compensate for the loss of potential CFPO habitat (22.8 acres) by establishing a conservation easement on 23 acres of suitable habitat within Blocks 37 through 45 as shown on the final plat of Canoa Ranch as recorded in the office of the Pima County Recorder at Maps and Plats Book 54 at Page 74 thereof. This easement will be in place within three years of the completion of construction. This time-frame will allow Pima County enough time to complete a development and management plan for the Canoa Ranch property and position the 23-acre property where there would be minimal conflict with other plans for the area. The County will coordinate with us on the selection of the site. A conservation easement would then be recorded designating Pima County Flood Control District as the holder of the conservation easement.
 11. If any Pima pineapple cactus are documented within or immediately adjacent to the project, construction will cease, a concrete barrier will be placed around the plant, and we will be notified. No additional clearance will take place until the EPA, the County and FWS discuss additional protection measures.

A detailed description of the life history and ecology of the CFPO may be found in the Birds of North America (Proudfoot and Johnson 2000), Ecology and Conservation of the Cactus Ferruginous Pygmy-owl in Arizona (Cartron and Finch 2000), and at the Arizona Ecological Services Field Office website (www.arizonaes.fws.gov).

Species/critical habitat

We listed the Arizona population of the CFPO as a distinct population segment (DPS) on March 10, 1997, (U.S. Fish and Wildlife Service 1997 [62 FR 10730]). The past and present destruction, modification, or curtailment of habitat is the primary reason for the decrease in population levels of the CFPO. We subsequently designated critical habitat for the species, but that designation was remanded by the U.S. District Court for the District of Arizona. There is no critical habitat currently designated for the species, but a new designation is expected to be published in the Federal Register in the very near future.

Life history

CFPOs are small birds, averaging 6.75 inches in length. CFPOs are reddish-brown overall, with a cream-colored belly streaked with reddish-brown. The CFPO is crepuscular/diurnal, with a peak activity period for foraging and other activities at dawn and dusk. During the breeding season, they can often be heard calling throughout the day, but most activity is reported between one hour before sunrise to two hours after sunrise, and late afternoon/early evening from two hours before sunset to one hour after sunset (Collins and Corman 1995).

A variety of vegetation communities are used by CFPOs, such as: riparian woodlands, mesquite (*Prosopis* spp.) “bosques” (Spanish for woodlands), Sonoran Desertscrub, and semidesert grassland communities, as well as nonnative vegetation within these communities. While plant species composition differs among these communities, there are certain unifying characteristics such as the presence of vegetation in a fairly dense thicket or woodland, the presence of trees or saguaros large enough to support cavity nesting, and elevations below 4,000 feet. Historically, CFPOs were associated with riparian woodlands in central and southern Arizona. Plants present in these riparian communities include cottonwood, willow (*Salix* spp.) and hackberry (*Celtis* spp.). Cottonwood trees are suitable for cavity nesting, while the density of mid- and lower-story vegetation provides necessary protection from predators and an abundance of prey items for the CFPO. Mesquite bosque communities are dominated by mesquite trees, and are described as mesquite forests due to the density and size of the trees.

Over the past several decades, CFPOs have been primarily found in the Arizona Upland Subdivision of the Sonoran Desert, particularly Sonoran Desertscrub (Brown 1994). This community in southern Arizona consists of paloverde, ironwood, mesquite, acacia, bursage (*Ambrosia* spp.), and columnar cacti (Phillips et al. 1964, Monson and Phillips 1981, Davis and Russell 1984, Johnson and Haight 1985, Johnsgard 1988). However, over the past several years, CFPOs have also been found in riparian and xeroriparian habitats and semidesert grasslands as classified by Brown (1994). Desertscrub communities are characterized by an abundance of

saguaros or large trees, and a diversity of plant species and vegetation strata. Xeroriparian habitats contain a rich diversity of plants that support a wide array of prey species and provide cover. Semidesert grasslands have experienced the invasion of velvet mesquites (*Prosopis velutina*) in uplands and linear woodlands of various tree species along bottoms and washes.

Species status and distribution range wide

The CFPO is one of four subspecies of ferruginous pygmy-owl. CFPOs are known to occur from lowland central Arizona south through western Mexico to the States of Colima and Michoacan, and from southern Texas south through the Mexican States of Tamaulipas and Nuevo Leon. It is unclear at this time if the ranges of the eastern and western populations of the ferruginous pygmy-owl merge in southern Mexico. Recent genetic studies suggest that ferruginous pygmy-owl populations in southern Arizona and southern Texas are distinct subspecies, and that there is no genetic isolation between populations in the United States and those immediately south of the border in northwestern or northeastern Mexico (Proudfoot and Slack 2001). Results also indicate a comparatively low haplotypic diversity in the northwestern Tucson population, suggesting that it may be recently separated from those in the Altar Valley, Arizona, and in Sonora and Sinaloa, Mexico.

The Service is currently funding habitat studies and surveys in Sonora, Mexico to determine the distribution and relative abundance of the CFPO there. Preliminary results indicate that CFPOs are present in northern and central Sonora (U.S. Fish and Wildlife Service unpubl. data). Further studies are needed to determine their distribution in Mexico.

The range of the Arizona DPS of the CFPO extends from the International Border with Mexico north to central Arizona. The northernmost historic record for the CFPO is from New River, Arizona, about 35 miles north of Phoenix, where Fisher (1893) reported the CFPO to be "quite common" in thickets of intermixed mesquite and saguaro cactus. According to early surveys referenced in the literature, the CFPO, prior to the mid-1900s, was "not uncommon," "of common occurrence," and a "fairly numerous" resident of lowland central and southern Arizona in cottonwood forests, mesquite-cottonwood woodlands, and mesquite bosques along the Gila, Salt, Verde, San Pedro, and Santa Cruz rivers and various tributaries (Breninger 1898, Gilman 1909, Swarth 1914). Additionally, CFPOs were detected at Dudleyville on the San Pedro River as recently as 1985 and 1986 (Arizona Game and Fish Department unpubl. data, Hunter 1988).

Records from the eastern portion of the CFPO's range include a 1876 record from Camp Goodwin (nearby current day Geronimo) on the Gila River, and a 1978 record from Gillard Hot Springs, also on the Gila River. CFPOs have been found as far west as the Cabeza Prieta Tanks, Yuma County in 1955 (Monson 1998).

Hunter (1988) found fewer than 20 verified records of CFPOs in Arizona for the period of 1971 to 1988. Formal surveys for the CFPO on OPCNM began in 1990, with one located that year. Beginning in 1992, survey efforts conducted in cooperation with the AGFD, located three single

CFPOs on OPCNM (U.S. Fish and Wildlife Service unpubl. data and Organ Pipe Cactus National Monument unpubl. data). In 1993, surveys were conducted at locations where CFPOs had been sighted since 1970. Only one CFPO was detected during these survey periods, and it was located in northwestern Tucson (Felley and Corman 1993). In 1994, a pair and single owl of unknown breeding status were located in northwestern Tucson during informal survey work by AGFD (Abbate et al. 1996). In 1995, AGFD confirmed 5 adult CFPO and one juvenile, one of which was the first nest in many years. In 1996, AGFD focused their survey efforts in the Tucson Basin. A total of 12 CFPOs were detected, including one known nesting pair and their 2 fledglings which successfully fledged. Three additional CFPOs and three other unconfirmed reports were also recorded at OPCNM in 1996.

While the majority of Arizona CFPO detections in the last seven years have been from the northwestern Tucson area in Pima County, CFPOs have also been detected in southern Pinal County, at OPCNM, Cabeza Prieta National Wildlife Refuge (CPNWR), Buenos Aires National Wildlife Refuge (BANWR), and on the Coronado National Forest. The following is a brief summary of recent owl numbers and distribution¹:

In 1997, survey efforts of AGFD located a total of five CFPOs in the Tucson Basin study area (the area bounded to the north by the Picacho Mountains, the east by the Santa Catalina and Rincon mountains, the south by the Santa Rita and Sierrita Mountains, and the Tucson Mountains to the west). Of these owls, one pair successfully fledged (young that left their nest cavity) two young which were banded. Two adult males were also located at OPCNM, with one reported from a previously unoccupied area (T. Tibbitts, Organ Pipe Cactus National Monument pers. comm. 1997).

In 1998, survey efforts in Arizona increased substantially and, as a result, more CFPOs were documented, which may at least in part account for a larger number of known owls. In 1998, a total of 35 CFPOs were confirmed (S. Richardson, U. S. Fish and Wildlife Service unpubl. data, U.S. Fish and Wildlife Service unpubl. data, T. Tibbitts, Organ Pipe Cactus National Monument unpubl. data, D. Bieber, Coronado National Forest unpubl. data).

In 1999, a total of 41 adult CFPOs were found in Arizona at 28 sites. Of these sites, 11 had nesting confirmed by AGFD and the Service. CFPOs were found in three distinct regions of the state: Tucson Basin, Altar Valley, and OPCNM. Almost half of the known owl sites were in the Altar Valley. Overall, mortality was documented for a number of fledglings due to natural (e.g., predation) or unknown causes. Of the 33 young found, only 16 were documented as surviving until dispersal (juveniles known to have successfully dispersed from their natal area). It is unclear what the survival rate for CFPOs is; however, as with other owls and raptors, a high mortality (50% or more) of young is typical during the first year of life.

¹ To a large degree, survey effort plays an important factor in where owls have been documented. Survey effort has not been consistent over the past several years in all areas of the state, affecting the known distribution and numbers of owls in any particular area.

Surveys conducted in 2000 resulted in 24 confirmed CFPO sites (i.e. nests and resident CFPO sites) and several other unconfirmed sites (S. Richardson, U. S. Fish and Wildlife Service unpubl. data, T. Tibbitts, Organ Pipe Cactus National Monument unpubl. data, U.S. Fish and Wildlife Service unpubl. data). A total of 34 adult CFPOs were confirmed. Nesting was documented at 7 sites and 23 fledglings were confirmed. A total of 9 juveniles were known to have successfully dispersed from their natal areas in 2000. Successful dispersal was not confirmed at two nests with four fledglings. The status of the remaining fledglings was unknown; however, they were presumed dead.

Surveys conducted during the 2001 season resulted in a total of 47 adult CFPOs confirmed at 29 sites² in Arizona (S. Richardson, U. S. Fish and Wildlife Service unpubl. data, T. Tibbitts, Organ Pipe Cactus National Monument unpubl. data, U.S. Fish and Wildlife Service unpubl. data). There were also several other unconfirmed sites that are not included in these totals. Nesting was documented at 17 sites and 24 young were confirmed to have successfully fledged. In addition, there were 2 nests with young that potentially could have fledged young; however, this was not confirmed. Similar to the previous three years, there was over a 50% fledgling mortality documented in 2001 (S. Richardson, U. S. Fish and Wildlife Service unpubl. data). The following regions of the state are currently known to have CFPOs:

- Tucson Basin (northwestern Tucson and southern Pinal County) - A total of 8 adults (3 pairs and 2 single resident males) were confirmed at 5 sites, all of which were in Pima County. One single unpaired male CFPO was documented in southern Pinal County. Three nests in northwestern Tucson were confirmed, all with young.
- Altar Valley - A total of 18 adult CFPOs were documented at 12 sites³. As a result of increased access to portions of the valley, the number of known owls increased to 7 pairs and 4 resident single owls. A total of 7 nests were confirmed.
- OPCNM and CPNWR - Twelve adults, consisting of 2 pairs and 4 single CFPOs were confirmed at 8 sites. Three nests were active. Two new sites were documented on the CPNWR and 1 north of OPCNM near Ajo, Arizona.
- Other Areas - A total of 9 adults, consisting of 4 pairs and 1 single CFPO at 5 sites documented elsewhere in southern Arizona. Nesting was confirmed at 4 of these sites. It is unknown how many of these young successfully dispersed. There were several other possible CFPO detections reported elsewhere in the state, but they were not confirmed.

² CFPO sites are nests and resident male CFPO sites that have been confirmed by AGFD or the Service.

³ There was one additional female found in Altar Valley dead in a saguaro cavity, suspected to have been killed by a screech owl (S. Richardson, U. S. Fish and Wildlife Service unpubl. data).

One factor affecting the known distribution of CFPOs in Arizona is where early naturalists spent most of their time and where recent surveys have taken place. For example, a majority of surveys in the recent past (since 1993) have taken place in OPCNM and in the Tucson Basin, and these areas are where most owl locations have been recorded. However, over the past three years, large, previously unsurveyed areas have been inventoried for owls, resulting in a much wider distribution than previously thought. As a result, our knowledge is changing as to CFPO distribution and habitat needs as new information is collected. For example, before 1998, very few surveys had been completed in the Altar Valley in southern Pima County. Prior to 1999, the highest known concentration of CFPOs in the state was in northwestern Tucson. However, in 1999, after extensive surveys in Altar Valley, more owls were found there (18 adults) than in northwestern Tucson (11 adults), although until 2001, there have been fewer nest sites in Altar Valley than in the Tucson Basin (S. Richardson, U. S. Fish and Wildlife Service unpubl. data). As a result, our knowledge is changing as to their distribution and habitat needs as new information is collected.

Range wide trend

One of most urgent threats to CFPOs in Arizona is thought to be the loss and fragmentation of habitat (U.S. Fish and Wildlife Service 1997, Abbate et al. 1999). The complete removal of vegetation and natural features required for many large-scale and high-density developments directly and indirectly impacts CFPO survival and recovery (Abbate et al. 1999).

Habitat loss, degradation, and fragmentation are widely accepted causes contributing to raptor population declines worldwide (Snyder and Snyder 1975, Newton 1979, LeFranc and Millsap 1984). Habitat fragmentation is the process by which a large and continuous block of natural habitat is transformed into much smaller and isolated patches by human activity (Noss and Csuti 1994). Fragmentation has two components (1) reduction of the total amount of habitat type and (2) apportionment of remaining habitat into smaller, more isolated patches (Harris 1984, Wilcove et al. 1986, Saunders et al. 1991). Casualties caused by pest control, pollution, collisions with cars, radio towers, glass windows, power lines, and cat predation are often underestimated, although likely increasing in occurrence due to human population growth (Banks 1979, Klem 1979, Churcher and Lawton 1987). Even where human-related deaths are uncommon, they may still substantially affect populations of rare birds (Cartron et al. 2000a). Because of the proximity of CFPO sites to residential areas in northwestern Tucson, these interactions may be a significant cause of owl mortality there (Cartron et al. 2000a).

Nesting in small natural patches may have additional risks. For example, Haug (1985) found burrowing owl home range size increases with the percentage of vegetation disturbance. In fragmented landscapes, burrowing owls (*Athene cunicularia*) may forage greater distances and spend more time away from the nest, making them more vulnerable to predators, and therefore, less efficient at reproduction (Warnock and James 1997). As fragmentation increases, competition for fewer productive CFPO territories may occur (Abbate et al. 1999). Unlike other larger birds that can fly long distances over unsuitable or dangerous areas to establish new territories, CFPOs, because of their small size, and their short style of flight are exposed to greater risks from predation and other threats (Abbate et al. 1999).

Site tenacity in birds is one of many factors that may create time lags in response to fragmentation and other disturbances. Individuals may remain in sites where they bred successfully in the past, long after the habitat has been altered (Wiens 1985). Because of lack of data, it is unclear whether site tenacity for CFPOs, in increasingly fragmented landscapes, such as exists in the action area, is a factor. For example, researchers have been closely monitoring an established CFPO site (documented each year since 1996) in which the male died in 1999, apparently from a collision with a fence (S. Richardson, U. S. Fish and Wildlife Service unpubl. data.). This site has not been known to be active since 1999. It has one of the highest amount of development (33%) within its estimated home range of any other known nest site (S. Richardson, U. S. Fish and Wildlife Service unpubl. data.). The site will continued to be monitored to determine if new owls reestablish a nest site.

In northwestern Tucson, all currently known CFPO locations, particularly nest sites, are in low-density housing areas where abundant native vegetation separates structures. Additionally, they are adjacent to or near large tracts of undeveloped land. CFPOs appear to use non-native vegetation to a certain extent, and have been observed perching in non-native trees in close proximity to individual residences. However, the persistence of CFPOs in areas with an abundance of native vegetation indicates that a complete modification of natural conditions likely results in unsuitable habitat conditions for CFPOs. While development activities are occurring in close proximity to owl sites, particularly nest sites, overall noise levels are low. Housing density is low, and as a result, human presence is also generally low. Roads in the areas are typically dirt or two-lane paved roads with low speed limits that minimizes traffic noise. Low density housing areas generally have lower levels of traffic noise because of the limited number of vehicles traveling through the area.

Other factors contributing to the decline of CFPO habitat include the destruction of riparian bottomland forests and bosques. It is estimated that 85 to 90% of low-elevation riparian habitats in the southwestern U.S. have been modified or lost; these alterations and losses are attributed to woodcutting, non-native plant invasions, urban and agricultural encroachment, water diversion and impoundment, channelization, groundwater pumping, livestock overgrazing, and hydrologic changes resulting from various land-use practices (e.g., Phillips et al. 1964, Carothers 1977, Kusler 1985, Jahrsdoerfer and Leslie 1988, U.S. Fish and Wildlife Service 1988, U.S. General Accounting Office 1988, Szaro 1989, Dahl 1990, State of Arizona 1990, Bahre 1991). Cutting of trees for domestic and industrial fuel wood was so extensive throughout southern Arizona that, by the late 19th century, riparian forests within tens of miles of towns and mines had been decimated (Bahre 1991). Mesquite was a favored species because of its excellent fuel qualities. In the project area, the famous vast forests of "giant mesquites" along the Santa Cruz River in the Tucson area described by Swarth (1905) and Willard (1912) fell to this threat, as did the "heavy mesquite thickets" where Bendire (1888) collected CFPO specimens along Rillito Creek, a Santa Cruz River tributary, in present-day Tucson. Only remnant fragments of these bosques remain.

Regardless of past distribution in riparian areas, it is clear that the CFPO has declined throughout Arizona to the degree that it is now extremely limited in distribution in the state (Johnson et al. 1979, Monson and Phillips 1981, Davis and Russell 1984, Johnson-Duncan et al. 1988, Millsap

and Johnson 1988, Monson 1998). A very low number of CFPOs in riparian areas in recent years may reflect the loss of habitat connectivity rather than the lack of suitability (Cartron et al. 2000b).

In recent decades, the CFPO's riparian habitat has continued to be modified and destroyed by agricultural development, woodcutting, urban expansion, and general watershed degradation (Phillips et al. 1964, Brown et al. 1977, State of Arizona 1990, Bahre 1991, Stromberg et al. 1992, Stromberg 1993a and 1993b). Sonoran Desertscrub has been affected to varying degrees by urban and agricultural development, woodcutting, and livestock grazing (Bahre 1991). Pumping of groundwater and the diversion and channelization of natural watercourses are also likely to have reduced CFPO habitat. Diversion and pumping result in diminished surface flows, and consequent reductions in riparian vegetation are likely (Brown et al. 1977, Stromberg et al. 1992, Stromberg 1993a and 1993b). Channelization often alters stream banks and fluvial dynamics necessary to maintain native riparian vegetation. The series of dams along most major southwestern rivers (e.g., Colorado, Gila, Salt, and Verde rivers) have altered riparian habitat downstream of dams through hydrological and vegetational changes, and have inundated former habitat upstream.

In the United States, CFPOs are rare and highly sought by bird watchers, who concentrate at a few of the remaining known locations. Limited, conservative bird watching is probably not harmful; however, excessive attention and playing of tape-recorded calls may at times constitute harassment and affect the occurrence and behavior of the CFPO (Oberholser 1974, Tewes 1993). For example, in 1996, a resident in Tucson reported a CFPO sighting which subsequently was added to a local birding hotline and the location was added to their website on the internet. Several car loads of birders were later observed in the area of the reported location (S. Richardson, Arizona Game and Fish Department pers. comm. 1999).

One of the few areas in Texas known to support CFPOs continues to be widely publicized as having organized field trips and birding festivals (American Birding Association 1993, Tropical Birds of the Border 1999). Resident CFPOs are found at this highly visited area only early in the breeding season, while later in the season they could not be detected. O'Neil (1990) also indicated that five birds initially detected in southern Texas failed to respond after repeated visits by birding tours. It is unknown if the birds habituate to the playing of taped calls and stopped responding, or if they abandoned the area. Oberholser (1974) and Hunter (1988) additionally indicated that in southern Texas, recreational birdwatching may disturb owls at highly visited areas.

Human activities near nests at critical periods of the nesting cycle may cause CFPOs to abandon their nest sites. In Texas, 3 of 102 CFPO nests monitored from 1994-1999 were abandoned during the early stage of egg laying. Although unknown factors may have contributed to this abandonment, researchers in Texas associated nest abandonment with nest monitoring (G. Proudfoot pers. comm.). Some outdoor recreational activities (e.g., off road vehicle [ORV] and motor bike use/racing, firearm target practicing, jeep tours, etc.) may disturb CFPOs during their

breeding season (particularly from February through July (G. Proudfoot pers. comm. 1999 and S. Richardson, Arizona Game and Fish Department pers. comm. 1999). Noise disturbance during the breeding season may affect productivity; disturbance outside of this period may affect the energy balance and, therefore survival. Wildlife may respond to noise disturbances during the breeding season by abandoning their nests or young (Knight and Cole 1995). It has also become apparent that disturbance outside of a species' breeding season may have equally severe effects (Skagen et al. 1991).

Currently, all known nesting CFPOs within northwestern Tucson are located in areas containing no development or low-density housing developments that are adjacent to undeveloped tracts of land with varying amounts of noise disturbance. Individual CFPOs may react differently to noise disturbances, some individuals exhibiting less tolerance than others. Noise can affect animals by disturbing them to the point that detectable change in behavior may occur. Such behavioral changes can affect their activity and energy consumption (Bowles 1995). Dangerous or unfamiliar noises are more likely to arouse wildlife than harmless and familiar noises. Habituation is the crucial determinant of success in the presence of noisy disturbances. The habituation process can occur slowly, so it may not be detected in the short-term. In the long-term, some nesting birds become more tenacious and less responsive in the presence of human disturbance if they are not deliberately harassed (Burger and Gochfeld 1981). It is unknown if noise habituation occurs in some CFPOs as it does with other bird species. Robert and Ralph (1975), Schreiber et. al (1979), Cooke (1980), Parsons and Burger (1982), Ainley et al. (1983), and McNicholl (1983) found that adult birds, and chicks to some extent, habituated to the presence of humans, and their responses to people seemed to be less than those of undisturbed birds.

Because of the lack of data specific to this subspecies in Arizona, we must also rely in part on our knowledge of effects this type of action may have on CFPOs elsewhere and other species, particularly raptors. Raptors in frequent contact with human activities tend to be less sensitive to additional noise disturbances than raptors nesting in remote areas. However, exposure to direct human harassment may make raptors more sensitive to noise disturbances (Newton 1979). Where prey is abundant, raptors may even occupy areas of high human activity, such as cities and airports (Newton 1979, Ratcliffe 1980, White et al. 1988). The timing, frequency, and predictability of the noise disturbance may also be factors. Raptors become less sensitive to human disturbance as their nesting cycle progresses (Newton 1979). Studies have suggested that human activities within breeding and nesting territories could affect raptors by changing home range movements (Anderson et al. 1990) and causing nest abandonment (Postovit and Postovit 1987, Porter et al. 1973).

Application of pesticides and herbicides in Arizona occurs year-round, and these chemicals pose a potential threat to the CFPO. The presence of CFPOs in proximity to residences, golf courses, agricultural fields, and nurseries may cause direct exposure to pesticides and herbicides. Furthermore, ingestion of affected prey items may cause death or reproductive failure (Abbate et al. 1999). Illegal dumping of waste also occurs in areas occupied by CFPOs and may be a threat to CFPOs and their prey; in one case, drums of toxic solvents were found within one mile of a

CFPO detection (Abbate et al. 1999).

Little is known about the rate or causes of mortality in CFPOs; however, they are susceptible to predation from a wide variety of species. In Texas, eggs and nestlings were depredated by raccoons (*Procyon lotor*) and bullsnakes (*Pituophis melanoleucus*). Both adult and juvenile CFPO are likely killed by great horned owls (*Bubo virginianus*), Harris' hawks (*Parabuteo unicinctus*), Cooper's hawks, and eastern screech-owls (*Otus asio*) (Proudfoot and Johnson 2000, G. Proudfoot unpubl. data). CFPOs are particularly vulnerable to predation and other threats during and shortly after fledging (Abbate et al. 1999). Therefore, cover near nest sites may be important for young to fledge successfully (Wilcox et al. 1999, Wilcox et al. 2000). Although nest depredation has not been recorded in Arizona, only a few nests have been monitored (n = 37 from 1995-2001). Additional research is needed to determine the effects of predation, including nest depredation, on CFPOs in Arizona and elsewhere.

Another factor that may affect CFPOs is interspecific competition/predation. In Texas, depredation of two adult female CFPOs nesting close to screech-owls was recorded. These incidences were recorded as "depredation by screech-owl" after examination of the CFPO corpses and assessment of circumstances (i.e., one CFPO attempted to nest in a box that was previously used as screech-owl roost site, the other established a nest in a box within 5 meters (16 feet) of screech-owl nest site). In 2001, an unpaired female CFPO was found dead in a tree cavity, apparently killed by a screech-owl (S. Richardson, U. S. Fish and Wildlife Service unpubl. data). Conversely, CFPOs and screech-owls have also been recorded successfully nesting within 2 meters (7 feet) of each other in the same tree without interspecific conflict (G. Proudfoot unpubl. data). The relationship between CFPO and other similar small owl species needs further study.

Direct and indirect human-caused mortalities (e.g., collisions with cars, glass windows, fences, power lines, domestic cats [*Felis domesticus*], etc.), while likely uncommon, are often underestimated, and probably increase as human interactions with owls increase (Banks 1979, Klem 1979, Churcher and Lawton 1987). This may be particularly important in the Tucson area where many CFPOs are located. CFPOs flying into windows and fences, resulting in serious injuries or death to the birds, have been documented twice. A CFPO collided into a closed window of a parked vehicle; it eventually flew off, but had a dilated pupil in one eye indicating serious neurological injury as the result of this encounter (Abbate et al. 1999). In another incident, an adult owl was found dead on a fence wire; apparently it flew into a fence and died (S. Richardson, U. S. Fish and Wildlife Service unpubl. data). AGFD also has documented an incident of individuals shooting BB guns at birds perched on a saguaro which contained an active CFPO nest. In Texas, two adult CFPOs and one fledging were killed by a domestic cat. These owls used a nest box about 75 meters (246 feet) from a human residence. In 2001, predation by domestic cats is also suspected by researchers in two instances in northwestern Tucson (S. Richardson, U. S. Fish and Wildlife Service unpubl. data). Two female juvenile owls, located 2 ½ miles apart, were found dead from apparent wounds sustained from a cats. Free roaming cats can also affect the number of lizards, birds, and other prey species available to CFPOs; however, very little research has been done in the southwest on this potential problem.

CFPOs have been observed moving around the perimeter of golf courses, avoiding non-vegetated areas. Roads and other openings may act as barriers to their movements (Abbate et al. 1999, S. Richardson, U. S. Fish and Wildlife Service unpubl. data). On one occasion, a radio-tagged dispersing juvenile stopped within 0.7 mile of Interstate 10 where there were large openings and few trees or shrubs, and reversed its direction (Abbate et al. 1999). However, radio-tagged, juvenile CFPOs have crossed two-lane roads with low to moderate vehicular traffic, where trees and large shrubs were present on either side (Abbate et al. 1999). Most recently, CFPOs monitored during the summer 2001 dispersal period were observed near two lane roads on several occasions (U. S. Fish and Wildlife Service unpubl. data). Although owls were not directly observed crossing roads, radio telemetry data were collected on either side of roadways. Movement across roads appeared to occur during the night, although transmittered owls were not continuously monitored. Because of a lack of funds and personnel, AGFD researchers are at best only able to collect relocations during 2 random times during a 24-hour period, therefore, the time and location of this crossing is unknown.

CFPOs are capable of flying short distances up to 100 feet or more over undisturbed vegetation (e.g., Sonoran Desertscrub, semidesert grasslands, or riparian areas) with little or no human activities or structures such as roads, fences, buildings, etc. (G. Proudfoot, unpubl. data, S. Richardson, Arizona Game and Fish Department unpubl. data). However, as opening size (i.e., gaps between trees or large shrubs) increases, coupled with increased threats (e.g., moderate to high traffic volumes and other human disturbances) relatively wide roads (greater than 40 feet), may act as barriers or significantly restrict owl movement. Wide roadways and associated clear zones cause large gaps between tree canopies on either side of roadways, resulting in lower flight patterns over roads. This low flight level can cause owls to fly directly in the pathway of oncoming cars and trucks, significantly increasing the threat of owls being struck. Measures can be implemented in roadway design to minimize these threats and allow successful movement across roadways. Among other measures, decreasing the canopy openings between trees on either side of roads and increasing the density of trees along roadways to provide greater shelter and cover from predators and human activities can be utilized to minimize adverse effects to owls attempting to cross roads. Specific research is needed to determine at what distance do road and clear zone widths significantly affect successful owl movement, types of vegetation needed, roadway and landscaping designs, speed limits, etc.

Telemetry data collected by AGFD in 2001 indicate that owl movement is affected by roads and traffic (S. Richardson, Arizona Game and Fish Department, unpubl. data). On two separate occasions within the action area, juvenile owls fitted with radio transmitters were tracked moving along washes and upland areas with native vegetation until they came upon busy roads with relatively wide clear zones on either side of the roadways. These owls stopped and were repeatedly observed reacting to passing vehicular traffic by retreating from the road edge vegetation to nearby trees as cars and trucks passed by. They appeared to be affected by road width, the density of vegetation on either side of the roadway, and traffic volume. In both cases, they eventually crossed these roads during lower traffic periods at areas with narrower gaps in vegetation where trees were present on either side of the road. More research is needed to fully

understand how these and other factors affect owl movement.

Researchers in Arizona have found that CFPOs require habitat linkages, within and between territories for movement and dispersal of young. Continuous cover or patches of trees and large shrubs spaced at close, regular intervals, to provide concealment and protection from predators and mobbing, as well as shade and cool temperatures is necessary (S. Richardson, Arizona Game and Fish Department unpubl data, Abbate et al. 1999). CFPOs, particularly juveniles because of their inexperience, are susceptible to predation, weather extremes, human-related injury/mortality factors (e.g., cars, buildings, fences, domestic cats, etc.) and other mortality factors (mortality of juveniles is typically 50% or more for owls and other raptors). Therefore, it is essential to maintain habitat conditions that reduce their exposure to these threats and provide protection as they disperse from their natal areas. A high degree of cover throughout the landscape increases the likelihood of survivorship to the next breeding season. Limiting these mortality factors is critical, especially for small, depressed populations, such as CFPOs in Arizona.

Fires can affect CFPOs by altering their habitat (Abbate et al. 1999). A recent fire altered habitat near an active CFPO nest site (Flesch 1999) and although four mature saguaros in the area survived (at least in the short-term), post-fire mortality of saguaros has been recorded (Steenbergh and Lowe 1977 and 1983, McLaughlin and Bowers 1982). Flesch (1999) also noted that approximately 20 to 30% of the mesquite woodland within 50 meters (164 feet) of the nest was fire- or top-killed, and ground cover was also eliminated until the summer monsoons. Careful use of prescribed fires in areas potentially suitable for CFPOs is necessary so that habitat is not lost or degraded (Flesch 1999).

Low genetic variability can lead to a reduction in reproductive success and environmental adaptability. Caughley and Gunn (1996) further note that small populations can become extinct entirely by chance even when their members are healthy and the environment favorable. The pairing of siblings or parents with their offspring, particularly in raptors, is rare, and has been documented in only 18 cases, representing 7 species (Carlson et al. 1998). Four of these species were owls: barn owls, burrowing owls, screech-owls, and spotted owls (*Strix occidentalis*). In 1998 and 1999, two cases of sibling CFPOs pairing and breeding were documented (Abbate et al. 1999). In both cases, young were fledged from the nesting attempts. These unusual pairings may have resulted from extremely low numbers of available mates within their dispersal range, and/or from barriers (including fragmentation of habitat) that have influenced dispersal and limited the movement of young owls (Abbate et al. 1999). Further, because the CFPO is nonmigratory, there may be an additional limitation on the flow of genetic material between populations which may reduce the chance of demographic and genetic rescue from immigration from adjacent populations.

Recent genetic research suggests that CFPOs in the action area may be isolated from other populations in Arizona and Mexico (Proudfoot and Slack 2001). They have found that the low level of genetic variation and the absence of shared haplotypes between owls in northwestern Tucson and the remainder of the state and Mexico may be indicative of natural divergence of this

population from the rest of the CFPO population in Arizona. Specifically, this study found that CFPOs in northwestern Tucson are in a distinct clade and suggests a current separation between populations in northwestern Tucson and elsewhere in the state and Mexico. In addition, these owls have extremely low levels of average haplotype diversity. Researchers acknowledge this may also be a product of sampling (i.e., sampling from one maternal lineage) and or an extremely high level of inbreeding as a result of low population numbers and geographic isolation. Given the low number of CFPOs in the action area, their potential isolation from source populations, the fact that inbreeding has occurred to the second generation in two documented cases, and potential pressure from urban development, there is a high level of concern for the Tucson Basin population of CFPOs.

Environmental, demographic, and genetic stochasticity, and catastrophes have been identified as interacting factors that may contribute to a population's extinction (Hunter 1996). Environmental stochasticity refers to random variation in habitat quality parameters such as climate, nutrients, water, cover, pollutants, and relationships with other species such as prey, predators, competitors, or pathogens. Demographic stochasticity is uncertain due to random variation in reproductive success and survivorship of individuals. Genetic stochasticity is the random variation in gene frequencies of a population due to genetic drift, bottlenecks, inbreeding, and similar factors. Catastrophes are events such as droughts or hurricanes that occur randomly. When these factors interact with one another, there are likely to be a combination of effects, such that a random environmental change like habitat fragmentation can result in population and genetic changes by preventing dispersal. These factors are much more likely to cause extinction when a species' numbers are already extremely low. The small, fragmented population of CFPOs in Arizona may not have the ability to resist change or dramatic fluctuations over time caused by one or more of the factors mentioned above.

Soule (1986) notes that very small populations are in extreme jeopardy due to their susceptibility to a variety of factors, including demographic stochasticity, where chance variations in birth and death rates can result in extinction. A series of environmental changes, such as habitat reduction, reduce populations to a state in which demographic stochasticity takes hold. In small populations such as with the CFPO, each individual is important for its contributions to genetic variability of that population. As discussed above, low genetic variability can lead to a lowering in reproductive success and environmental adaptability, affecting recovery of this species.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform from which to assess the effects of the action now under consultation.

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The action area for this project is a 19 mile radius surrounding the pipeline, as that is the distance a juvenile CFPO has been documented dispersing from its natal site.

The project area lies within the San Ignacio de la Canoa Spanish land grant, which has been used for grazing and agricultural purposes since the 1700s. Currently, cattle still graze within the majority of the area; however, much of the area that was once in agricultural production is now dormant and supports early successional plant communities. The entire land grant is surrounded by private and State lands. There is some residential development near the north end of the project area. The project area has been surveyed from 1998-2002 for CFPOs and none have been detected.

The project area is located approximately 25 miles south of Tucson and just east of I-19, in a broad valley bisected by the Santa Cruz River. Alluvial fan deposits from the Sierrita Mountains to the west characterize the land surface. Elevations within the project area range from 2,940 to 3,000 feet. The terrain is level to gently sloping, and the soils are predominantly well-drained loam to gravelly sandy loams. The Santa Cruz River is roughly one-quarter to three-quarters miles east of the project location. This portion of the Santa Cruz does not support perennial flow. Several ephemeral washes transect the project area; there is no permanent water associated with any of them.

The project area is located entirely in upland habitats. The plant communities present within the project area were defined as: fallow fields and disturbed upland, Sonoran desertscrub, xeroriparian corridors, mesquite thickets, and thicket row. Further descriptions and habitat maps are available in the April 2002, BA. The County estimates that 10.58 acres of Sonoran desertscrub, 2.16 acres of xeroriparian corridor, and 10.03 acres of mesquite thickets, including the thicket row, would be disturbed by construction. These were the habitat types that were thought to support CFPOs or provide foraging habitat. A total of 22.8 acres of potential CFPO habitat would be destroyed or modified from the proposed action. There have been no other Federal actions in this area resulting in section 7 consultation.

EFFECTS OF THE PROPOSED ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The proposed action will result in the disturbance of 22.8 acres which could provide habitat for CFPO for sheltering, feeding, and movement/dispersal. No saguaros are present within the

project area. The proposed action will cause short-term noise disturbance and human activity associated with construction, although the majority of the work is scheduled to occur outside of the breeding season. No CFPOs have been detected in the project area. The nearest CFPO is over 10 miles away, to the west of the project location.

The conservation measures proposed by you and Pima County will ensure that potential habitat that will be modified and/or destroyed will be compensated for on site with a dedicated conservation easement protecting 23 acres of CFPO habitat, construction noise that might affect a CFPO is eliminated in those areas most likely to support a CFPO, and if construction is not completed by the end of 2002, additional surveys for CFPO will be done. In addition, 8.11 acres will be reseeded with native species, thus reducing the total amount of permanent disturbance. The conservation measures proposed by you and the County will contribute to the conservation of this species and will not preclude the future use of this area by CFPOs.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

We are aware of several residential developments occurring within the action area. This area south of Green Valley is experiencing increased urbanization and that trend is expected to continue.

CONCLUSION

After reviewing the current status of the CFPO, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the CFPO. No critical habitat is currently designated, thus none will be affected. We base our conclusion on the following:

- Surveys have been completed for CFPO and there are currently no owls in the project area.
- Construction in habitat types that would likely support CFPO will take place outside of the CFPO breeding season.
- The loss of approximately 22.8 acres of potential CFPO habitat will be compensated for by the permanent protection of 23 acres of suitable habitat on site, through a conservation easement.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass harm pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Amount or Extent of Take Anticipated

We do not anticipate the proposed action will incidentally take any CFPOs as none have been detected in the project area.

Disposition of Dead or Injured Listed Animals

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to our Division of Law Enforcement, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona (602/261-6443) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to the nearest Fish and Wildlife Service or AGFD office, educational, or research institutions (e.g., University of Arizona in Tucson) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, we should be contacted regarding the final disposition of the animal.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the ESA direct Federal agencies to utilize their authorities to further

the purposes of the ESA by carrying out conservation programs for the benefit of listed species. Conservation recommendations are discretionary agency activities to minimize or avoid effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information on listed species. The recommendation provided here does not necessarily represent complete fulfillment of the agency's section 2(c) or 7(a)(1) responsibilities for the CFPO. In furtherance of the purposes of the ESA, we recommend implementing the following discretionary action:

You and Pima County should continue to work cooperatively with us in implementing the recovery plan, when it is finalized.

REINITIATION NOTICE

This concludes formal consultation for the Arivaca Junction gravity sewer pipeline in Pima County, Arizona. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) any incidental take not authorized herein occurs, (2) new information reveals effects of the agency action that may adversely affect listed species or critical habitat in a manner or to an extent not considered in this draft opinion, (3) the agency action is subsequently modified in a way that causes an effect to a listed species or critical habitat that was not considered in this draft opinion; or (4) a new species is listed or critical habitat designated that may be affected by this action. In instances where any incidental take not authorized herein occurs, any operations causing such take must cease pending reinitiation.

If we can be of further assistance, please contact Mima Falk (520) 670-4550 or Sherry Barrett (520) 670-4617.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Regional Director, Ecological Services, Albuquerque, NM (ARD-ES)
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

Director, Arizona Game and Fish Department, Phoenix, AZ
Arizona Department of Environmental Quality, Phoenix, AZ (Attn: Robert Wilson)
Pima County Wastewater Management Department, Tucson, AZ (Attn: Ray Morgan)
EEC, Inc. Tucson, AZ (Attn: Brian Wooldrige)

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APPENDIX A - CONCURRENCE

We concur with the applicant's determination that the proposed action may affect, but is not likely to adversely affect the lesser long-nosed bat, Pima pineapple cactus, and Southwestern willow flycatcher. The rationale for these concurrences follow:

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*):

- there are no known maternity or day roosts in the vicinity of the proposed action; and
- there are no food sources (agaves or saguaros) found in or near the action area.

Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*):

- there are four Pima pineapple cactus in the action area, but there are no Pima pineapple cactus within or near the construction easements for this project;
- a total of 10.58 acres of suitable habitat for Pima pineapple cactus will be disturbed by construction, but 6.61 acres will be reseeded, so only 37% of suitable habitat will be permanently destroyed, which is insignificant in terms of the total habitat available to the cactus.
- if a Pima pineapple cactus is located during construction, the cactus will be protected by a concrete barrier and we will be notified immediately; and
- to minimize the likelihood of introduction of non-native species into the area (especially buffleggrass), equipment will be washed prior to the initiation of construction; this will reduce the chances of increasing the fire danger to the Pima pineapple cactus that are known to be in the area.

Southwestern willow flycatcher (*Empidonax traillii extimus*):

- the site does not support habitat typically used by the flycatcher; and
- migrating individuals may temporarily use the area, but are not expected to nest in the project area.