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U.S. Fish and Wildlife Service
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In Reply Refer To:
AESO/SE
02-21-04-F-0403

June 17, 2005

Ms. Cindy Lester
Chief, Arizona Section, Regulatory Branch
U.S. Army Corps of Engineers
Arizona-Nevada Field Office
3636 North Central Avenue, Suite 900
Phoenix, Arizona 85012-1936

RE: 2004-01454-SDM

Dear Ms. Lester:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. *et seq.*, ESA). Your request was dated June 15, 2004, and received by us on June 17, 2004. At issue are impacts that may result to the endangered Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*) (PPC) from the proposed issuance of a Section 404 permit under the Clean Water Act (CWA) to construct a residential subdivision, Santa Rita Foothills Estates, in unnamed washes (Section 26, T17S, R15E) located in Corona de Tucson, Pima County, Arizona. You have determined that the project may adversely affect PPC.

You have also requested concurrence on your determination that the project may affect, but is not likely to adversely affect, the endangered cactus ferruginous pygmy-owl (CFPO) (*Glaucidium brasilianum cactorum*). Our concurrence is provided in Appendix A.

This biological opinion (BO) is based on information provided in the January 19, 2004, biological assessment (BA), (prepared by WestLand Resources, Inc.), a May 5, 2005, supplemental report to the BA, meetings, and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern, the effects from residential development, the project area, or other subjects considered in this opinion. A complete administrative record of this consultation is on file at the Arizona Ecological Services Field Office.

Consultation History

June 17, 2004: We received your request for consultation.

September 1, 2004: Initial meeting with the biological consultant to discuss the project.

October 29, 2004: We sent a letter to you requesting an additional 60 days to complete the draft biological opinion. Your staff agreed to the time extension.

January 14, 2005. We sent the draft biological opinion.

May 10, 2005: We received a supplemental report to the January 2004 BA, with a revised proposed action incorporating conservation measures.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The applicant proposes to construct a residential development, known as Santa Rita Foothills Estates, on 225 acres of vacant land zoned for intensive development located in Pima County, Arizona. The subject property is located at the southwest corner of Houghton Road and Camino Aurelia in unincorporated Pima County. It is approximately 9 miles south of Interstate 10. The area lies within T17S, R15E, in the north half of Section 26. The project is designed for 308 lots with an overall density of 1.37 residences per acre. The development is within the Santa Rita Ranch Specific Plan. At least 30% of the site will remain as “natural open space” within a designated common area. The majority of the natural open space is within the wash areas, not the upland portions of the site. Multiple builders will construct homes within this development. Grading will be limited to that area for the home, driveway, yard improvements, and bank protection for adjacent washes, if necessary. The development blocks will not be mass-graded.

A total of 32 live PPC were detected on the 225-acre site during surveys completed in 2001. As of February 2005, 29 PPC remained on the site; 13 PPC had been moved and 16 PPC remain in their original locations. No additional information was provided in the BA, the supplement, or from the applicant on the status of the transplanted PPC. Additional information, maps, and other details are provided in the January 2004 BA and the May 2005 BA supplement, and are incorporated herein by reference.

Proposed Conservation Measures

The applicant and Corps of Engineers (COE) propose the following conservation measures to minimize the effects to PPC and its habitat.

- The applicant will purchase the applicable number of conservation bank credits for \$150,000.00 in a FWS-approved conservation bank for PPC. The purchase of the credits shall occur prior to the initiation of lot-grading activities. The purchase of these credits will protect additional acres of occupied PPC habitat in the conservation bank area. The COE has agreed to make this a condition of the 404 permit.

- Transplanted PPC will be monitored for a period of three years. The monitoring will take place nine times during the first year, four times during the second year, and twice in the final year of monitoring. Reports will be sent to the COE and FWS during the first quarter of each year following the monitoring year.
- A restrictive covenant will be recorded on the Natural Open Space acres to be protected within the project area.

STATUS OF THE SPECIES

PPC

Life History

The final rule listing PPC as endangered was published on September 23, 1993 (58 FR 49875). The rule became effective on October 25, 1993; no critical habitat has been designated. PPC occurs south of Tucson, in Pima and Santa Cruz counties, Arizona and adjacent northern Sonora, Mexico. It is distributed at very low densities throughout both the Altar and Santa Cruz valleys, and in low-lying areas connecting the two valleys. Factors that contributed to the listing include habitat loss and degradation, habitat modification and fragmentation, limited geographic distribution and species rareness, illegal collection, and difficulties in protecting areas large enough to maintain functioning populations. The biological information below is summarized from the proposed and final rules and other sources.

PPC is a low-growing hemispherical cactus with adults varying in stem diameter from 2.0 inches to 8.3 inches and in height from 1.8 inches to 18.0 inches. Individuals are considered adults when they reproduce sexually. Plants can be either single- or multi-stemmed with yellow flowers blooming with the summer rains. Clusters of PPC stems are formed primarily from vegetative clones produced at the plant base (Benson 1982, Roller 1996). The diagnostic field character of this taxon is the presence of one stout, straw-colored, hooked central spine. Radial spines extend laterally around the central spine and average 10 to 15 spines on large cacti and 6 on small cacti (Benson 1982).

Habitat fragmentation and isolation may be an important factor limiting future seed set of this cactus. Recent data show that the species cannot successfully self pollinate in situ and is reliant on invertebrate pollinators. One hypothesis is that the spatial distribution pattern of individual Pima pineapple cacti within a given area may regulate pollinator visitations, thus resulting in more successful cross-pollination and subsequent seed set over the population (Roller 1996). If the pollinators are small insects with limited ability to fly over large distances, habitat fragmentation may contribute to a decrease in pollinator effectiveness with a subsequent decrease in seed set and recruitment.

Population Stability

Extrapolations from 1992-1997 surveys of known PPC locations suggest that the cactus may be more numerous than previously thought. Projections based only on known individuals may

underestimate the total number of individuals. This in no way indicates that the cactus is not rare or endangered. PPC is widely dispersed in very small clusters across land areas well-suited for residential, commercial, or mining development. Field observations suggest that a great deal of land area within the range boundaries would not support PPC today due to historical human impacts. Thus, populations are already considerably isolated from each other in many portions of the range, and population size and apparent recruitment varies significantly across the range. On a more local scale, population variability may relate to habitat development, modification, and/or other environmental factors such as slope, vegetation, pollinators, and dispersal mechanisms.

The transition zone between the two regions of vegetation described by Brown (1982) as semidesert grassland and Sonoran Desert scrub contains denser populations, better recruitment, and individuals exhibiting greater plant vigor. Vegetation within this transition zone is dominated by mid-sized mesquite trees, half shrubs (snakeweed, burroweed, and desert zinnia), and patches of native grass and scattered succulents. Because populations are healthier in this transition zone, conservation within these areas is very important (Roller and Halvorson 1997). However, this important habitat type is not uniformly distributed throughout the plant's range. Populations of Pima pineapple cacti are patchy, widely dispersed, and highly variable in density. The higher population densities have only been documented at three sites. Compared to other surveys, two of these sites are very small in scale and range from 1-3 plants per acre. Other densities across the majority of the plant's range vary between one plant per 4.6 acres and one plant per 21 acres (Mills 1991, Ecosphere 1992, Roller 1996).

Land areas surrounding developed parts of Green Valley and Sahuarita, Arizona (including adjacent areas of the San Xavier District of the Tohono O'odham Nation), may be important for the conservation of this species within its range. As stated above, analysis of surveys conducted from 1992 to 1995 with a multivariate statistical analysis documented a pattern of greater population densities, higher ranks of cactus vigor, and better reproduction occurring within the transition vegetation type found in this area of the northern Santa Cruz Valley (Roller and Halvorson 1997). This area could be defined as an ecotone boundary between semidesert grassland and Sonoran desert scrub.

Seedling and sub-adult size classes are uncommon in documented populations across the plant's range. However, this may be a function of the difficulty of finding such small, well-camouflaged plants in a large-scale survey, or because the establishment phase of the seedling may be limited in some unknown way. Research on PPC reproduction has suggested that the establishment phase of PPC life history may limit recruitment within populations (Roller 1996). Evidence presented to support this conclusion was the abundance of flowers, fruits, and viable seed, and the rarity of seedling presence at different sites spread throughout the plant's range (Roller 1996). Other research has confirmed that the establishment phase of other Sonoran cacti species may be critical for survival to reproductive maturity (Steenbergh and Lowe 1977).

Status and Distribution

Generally, the PPC grows on gentle slopes of less than 10 percent and along the tops (upland areas) of alluvial bajadas nearest to the basins coming down from steep rocky slopes. The plant

is found at elevations between 2,360 ft. and 4,700 ft. (Phillips *et al.* 1981, Benson 1982, Ecosphere 1992), in vegetation characterized as either or as combination of the Arizona upland of the Sonoran Desert scrub and semidesert grasslands (Brown 1982).

The acquisition of baseline information began with surveys documenting the presence of PPC as early as 1935. More intensive surveys were initiated in 1991, and other research established in 1993 further investigated the reproductive biology, distribution, fire effects, and mortality associated with various threats. Therefore, the best available baseline information is relatively recent and may not represent actual changes in distribution since the decline in the status of the species began.

Widely scattered surveys have been conducted across sites that varied considerably in cacti density. Densities range between 0.05-3 plants per acre. PPC occurs in 50 townships within its U.S. range. However, a considerable amount of land area within the range boundaries does not provide habitat for the species due to elevation, topography, hydrology, plant community type, and human degradation. To date, an estimated 56,730 acres, or 10 to 20 percent of the U.S. range, have been surveyed. Not all of this area has been intensively surveyed; some has only been partially surveyed using small land blocks to estimate densities rather than 100 percent ground surveys. A conservative estimate of total cacti located to date would be approximately 4,000 individuals. The majority of those were located after 1991.

It is important to clarify that the above number represents the total number of locations ever found and not the current population size. It would be impossible to estimate densities over the remaining unsurveyed area because of the clumped and widely dispersed pattern of distribution of this species. Of the approximately 4,000 individuals recorded to date, 2,212 (55 percent) of them have been removed. This includes observed and authorized mortalities and individuals transplanted since the species was listed in 1993. A small portion of these mortalities was caused by natural factors (i.e., drought). Moreover, this figure does not take into account those cacti that are removed from private land or lost to other projects that have not undergone section 7 reviews.

Transplanted individuals are not considered as functioning within the context of a self-sustaining population. Efforts to transplant individual cacti to other locations have had only limited success and the mortality rate has been high, especially after the first year. Furthermore, once individuals are transplanted from a site, it is considered to be extirpated as those individuals functioning in that habitat are irretrievably lost. We view transplanting cacti as a measure of last resort for conserving the species. Transplanting will be recommended only when on-site and off-site habitat conservation is not possible and the death of cacti is unavoidable.

The area of habitat reviewed under section 7 of the ESA between 1987 and 2000 (i.e., habitat developed or significantly modified beyond the point where restoration would be a likely alternative) is approximately 24,429 acres, which represents 43 percent of the total area surveyed to date. In 1998, more than 1,100 acres of PPC habitat were lost including 752 acres from the ASARCO, Inc. Mission complex project. In 2000, 586 acres of habitat were lost with the expansion of a state prison in Tucson. In 2001, 177 acres of habitat were lost through development, but 888 acres of occupied and suitable habitat were conserved through

conservation easements. In 2002-2003, 76.5 acres of occupied habitat were destroyed, but 36 acre-credits were purchased in the PPC conservation bank, thus protecting 36 acres of PPC habitat; and an additional 58.5 acres of PPC habitat were conserved in a conservation easement. We are aware of housing developments along Valencia Road, Pima County, Arizona, in the vicinity of T15S, R12E, Section 15 and surrounding areas, which support PPC. These developments affect several hundred acres of habitat and have not been evaluated through the section 7 process. The number of acres lost through private actions, not subject to Federal jurisdiction, is not known but, given the rate of urban development in Pima County, we believe it is significant.

Most of the documented habitat loss has occurred south of Tucson through the Santa Cruz Valley to the town of Amado. This area is critical for the future recovery of the species. The expansion of urban centers, human population, and mining activities will continue to eliminate habitat and individuals, and result in habitat fragmentation.

The protection of habitat and individuals is complicated by the varying land ownership within the range of this species. An estimated 10 percent of the potential habitat for PPC is held in Federal ownership. The remaining 90 percent is on Tribal, State, and private lands. Most of the federally owned land is either at the edge of the plant's range or in scattered parcels. The largest contiguous piece of federally-owned land is the Buenos Aires National Wildlife Refuge, located at the southwestern edge of the plant's range at higher elevations and with lower plant densities.

Based on surveys and habitat analysis, areas south of Tucson through the Santa Cruz Valley to the town of Amado and surrounding developed parts of Green Valley and Sahuarita, and parts of the San Xavier District of the Tohono O'odham Nation, appear to support abundant populations, some recruitment, and units of extensive habitat still remain. However, the primary threat to the status of this species throughout its range is the accelerated rate (i.e., since 1993) at which much of the prime habitat is being developed, fragmented, or modified.

The Arizona Native Plant Law may delay vegetation clearing on private property for the salvage of specific plant species within a 30-day period. Although the Arizona Native Plant Law prohibits the illegal taking of this species on State and private lands without a permit for educational or research purposes, it does not provide for protection of plants in situ through restrictions on development activities.

Based on current knowledge, urbanization, farm and crop development, and exotic species invasion alter the landscape in a manner that would be nearly irreversible in terms of supporting PPC populations. Prescribed fire can have a negative effect if not planned properly.

Other specific threats that have been previously documented (U.S. Fish and Wildlife Service 1993), such as overgrazing and mining, have not yet been analyzed to determine the extent of effects to this species. However, partial information exists. Mining has resulted in the loss of hundreds, if not thousands, of acres of potential habitat throughout the range of the plant. Much of the mining activity has been occurring in the Green Valley area, which is the center of the plant's distribution and the area known to support the highest densities of individuals. Overgrazing by livestock, illegal plant collection, and fire-related interactions involving exotic

Lehmann lovegrass (*Eragrostis lehmanniana*) may also negatively affect PPC populations (U.S. Fish and Wildlife Service 1993).

Even with complete data on historical change related to PPC distribution and abundance, we cannot reliably predict population status due to compounding factors such as climate change, urbanization, and legal and political complexities (McPherson 1995). We do not know if the majority of populations of PPC can be sustainable under current reduced and fragmented conditions. Thus, there is a need to gather information on limits to the plant's distribution under current habitat conditions.

In summary, monitoring has shown that the range-wide status of the PPC appears to have been recently affected by threats that have completely altered or considerably modified more than a third of the species' surveyed habitat, and have caused the elimination of nearly 60 percent of documented locations. Dispersed, patchy clusters of individuals are becoming increasingly isolated as urban development, mining, and other commercial activities continue to detrimentally impact the habitat. The remaining habitat also is subject to degradation or modification from current land-management practices, increased recreational use when adjacent to urban expansion (i.e., off-road vehicle use and illegal collection), and the continuing aggressive spread of nonnative grasses into habitat. Habitat fragmentation and degradation will likely continue into the foreseeable future based on historical data and growth projections produced by the Pima County Association of Governments (1996). There is very little Federal oversight on conservation measures that would protect or recover the majority of the potential habitat. Even some areas where section 7 consultations have been completed have been modified and may not be able to support viable populations of the PPC over the long-term.

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 the footprint of the entire development (225 acres) and a 0.25-mile area surrounding the project boundaries, the latter of which encompasses the area most likely to incur indirect effects from the housing development. PPC are also suspected to occur on undeveloped lands surrounding the project because we know of PPC locations within 0.25 mile of the action area. Continued development in this area will affect the overall population dynamics of PPC in the general area. This development will remove most of the suitable habitat on-site and fragment what habitat remains. The new roads will fragment habitat on site. The action area is surrounded by planned residential development to the north and east, existing residential development to the west, and as-yet-undeveloped State land to the south. Corona de Tucson is a rapidly developing area, and several large housing subdivisions are being built to the north and east of the action area. PPC are known from these areas, but several projects did not

undergo section 7 consultation. There will undoubtedly be continued new residential development in those areas.

A total of 32 live PPC were detected within the 225-acre parcel. Development of the lots has not started, but at least 13 PPC were transplanted, prior to the initiation of section 7 consultation. Evidently, all of the PPC are in areas to be developed. The remaining PPC will also be transplanted into the natural open space. Those areas correspond to the washes and some associated upland. None of those areas are considered suitable habitat for PPC. The applicant delineated 157.16 acres of suitable PPC habitat on the site. Without this calculation, density for the site is determined by the number of PPC present on the entire site, treating all the acres within the development as suitable habitat. The absolute density for this site is 0.14 PPC/acre. With the suitable habitat calculation, the ecological density is 0.20 PPC/acre. Both densities fall within our calculated average density (0.10-.0.3 PPC/acre). Our density calculations were determined using all the projects that have undergone section 7 consultations, along with more recent surveys.

EFFECTS OF THE 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 or interdependent with that action, which 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 development of 225 acres of land, the loss of the majority of suitable PPC habitat (157.16 acres), and, almost certainly, the loss of the 32 PPC on the site. The applicant has already moved some of the PPC to different areas on the site. According to information provided in the BA, the PPC were associated with specific surficial geological surfaces (M1 and M2). These areas correspond to mid-to late Pleistocene alluvial fans. The other geological units mapped within the development are surfaces corresponding to active and recent channels and other different-aged surface types. No PPC were found within these units, however, these are the units to which the applicant relocated the PPC. Thus, the PPC were moved from suitable habitat to areas that are not considered suitable. Moving the PPC to habitat that is unsuitable is not considered a conservation measure. The applicant provided no information in the BA or supplement regarding the new locations for the PPC.

Transplanted PPC have low levels of survival, and past efforts to transplant individual PPC to other locations have had only limited success. On a project in Green Valley, where transplanted PPC were monitored for survival for two years following their transplant, there was a 24% mortality rate (SWCA, Inc. 2001). On another project in Green Valley, PPC transplanted in 2001 showed 66% mortality after two years (WestLand Resources, Inc. 2004). On another property in Green Valley, there was at least 15% mortality of transplanted PPC after 4 months (Pima County Development Services 2003). Moreover, these transplant efforts took place in habitat deemed suitable for PPC, whereas the applicant in this action has moved PPC into

unsuitable habitat, thus increasing their probable mortality. As a result, the transplanted PPC are not likely to contribute significantly to the overall population. This transplantation is not likely to contribute to conservation of the PPC, but rather is likely to result in the loss of these individuals. There is also the unquantifiable loss of the existing PPC seed bank associated with the loss of suitable habitat.

PPC that will not be directly affected by the development, but that may occur within the action area, will almost certainly be affected by the residential development. Open areas surrounding this high-density development will be used by the residents for a variety of recreational pursuits (e.g. walking and creating trails, bike riding, and horseback riding) which can degrade PPC habitat. New residential developments often introduce non-native plants into an area, creating more opportunity for degradation of the remaining natural habitat. These indirect effects will contribute to the overall deterioration of the remaining PPC population in this area.

The BA contains a population estimate for PPC, but does not relate this information to the project at hand. Population estimates for this species are premature without an assessment of the minimum viable population, using population viability analyses, for this species. We do not know how many PPC were present prior to listing in 1993. Therefore, it is impossible to determine if a significant decline occurred pre-listing. Our baseline has been established since that time and, based on known locations, there has been a 55% loss of PPC since 1993. There has been a loss of approximately 25,000 acres of PPC habitat. While there may be more PPC extant than have been recorded, we also know that there are on-going threats that we cannot quantify. Many development projects proceed without the need for section 7 consultation. Given the many data gaps that exist, any number determined in a population estimate would be highly speculative. For instance, a decline of 10,000 plants would have radically different significance against a baseline of 20,000 plants compared to 200,000 plants. The true meaning of the perceived declines can be realistically evaluated only against the minimum viable population. Work by Shafer (1987) indicates that minimum viable populations may be on the order of 1,000 to 1,000,000 individuals. These are numbers generated to buffer populations against environmental stochasticity and natural catastrophes. Other factors, such as the effects of development, would have to be taken into consideration, and would increase the minimum sustainable number.

The biological assessment provides natural history information on PPC that is unrelated to the discussion of the effects from this project. Information referred to in the BA includes observations that adult PPC life spans are significantly different in higher elevations than lower elevations, that jackrabbits are the primary dispersal agent of PPC seeds, that PPC spatial distribution is the same as jackrabbit dung, and that jackrabbits apparently spend more time on ridgelines than in slopes and washes. Much of the information presented seems to be based on personal observation and not on statistically designed research. As such, we do not consider it relevant to our analysis.

This project will result in the loss of all suitable PPC habitat (157.16 acres), and, most likely, the subsequent loss of the 32 PPC on the site. The applicant has proposed to partially offset the effects to PPC and its habitat by purchasing \$150,000.00 worth of conservation bank credits (approximately 27 acre-credits) in a FWS-approved conservation bank for PPC. The applicant is

compensating for approximately 17 percent of the total acres (approximately 157) of PPC habitat that will be altered by construction of the project. The applicant has also agreed to monitor the translocated PPC for a period of three years.

This project contributes to the recovery of PPC and its habitat because it provides for off-site protection of approximately 27 acres of occupied PPC habitat within the conservation bank, which will be managed in perpetuity. PPC will not be able to survive in the long-term in small, fragmented areas surrounded by urban development. Large, contiguous blocks of habitat must be protected and managed for their natural values. The proposed conservation action included in the project description is critical to offset impacts (although it is only a small portion of the total amount of habitat to be lost) to PPC and its habitat.

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 Act.

The area immediately to the south is undeveloped State trust lands. Those lands are not protected and can be sold for development. Areas to the north and east are planned for residential and commercial development. Lands to the west are already developed. There are likely PPC within the action area that would be affected by development of State and private lands. State trust lands also provide for recreation and open space for the residents of developments in the area. The use of State trust lands for recreation, off-road vehicle use, and illegal dumping of trash can ultimately lead to habitat degradation and possible loss of PPC. If State lands are developed, further fragmentation of the larger PPC population in the general area will result.

Development in this geographic region can be expected to increase. State and private lands not presently developed in the area are quickly becoming urbanized. We know of at least four other residential developments that are being built in the immediate area. Much of this development has no Federal nexus. Without any protection under the Act, the only protection available is through the Arizona Native Plant Law, which provides only for salvage for scientific and educational purposes. The habitat of PPC will continue to be lost, regardless of salvaged cacti transplant success.

Much of the habitat and the individuals of the species are at significant risk of destruction or continued degradation. There is little regulatory authority to use in reducing those risks.

CONCLUSION

After reviewing the current status of PPC, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of PPC. No critical habitat

has been designated; therefore, none will be affected. In making our determination we considered the following:

- The status of PPC continues to degrade. We estimate that almost one-half of the known population has been destroyed as a result of urban and mining development. New populations of PPC, detected during project surveys, are often transplanted, leaving their contribution to PPC conservation in doubt. Habitat continues to be developed, and habitat loss and fragmentation remain significant threats for this species.
- Cumulative effects considered in our analysis include recreational use, residential developments, single-family residences, and commercial projects where zoning and development plans make them reasonably certain to occur, but no Federal nexus is anticipated. Areas where these cumulative effects are anticipated to occur include areas where PPC have been documented and in suitable habitat. Cumulative effects are likely to contribute to habitat degradation and fragmentation.
- The proposed project will contribute to the overall recovery and conservation of the species. The applicant will purchase approximately 27 acre-credits in the PPC conservation bank, thereby protecting that many acres of occupied habitat in perpetuity. Perhaps some of the transplanted PPC will survive in their new locations and contribute some seeds in the area; however, no firm evidence exists to support this possibility. The loss of these PPC, coupled with other losses of PPC in this area, contributes to the continued decline of PPC and habitat, but does not immediately jeopardize the continued existence of PPC. The loss of the 32 PPC reduces the known population by less than two percent; this loss does not constitute a significant reduction in the conservation status of the species.

INCIDENTAL TAKE STATEMENT

Sections 7(b)(4) and 7(o)(2) of the ESA do not apply to listed plant species. However, protection of listed plants is provided to the extent that the ESA requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law. Neither incidental take nor recovery permits are needed from us for implementation of the proposed action.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- We have no further measures to add at this time.

In order that we are kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the 225-acre Santa Rita Foothills Estates development. 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 retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded (not applicable to this consultation); (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

We appreciate your efforts to identify and minimize effects from this project. Please contact Mima Falk (520) 670-6150 (x225) or Sherry Barrett (520) 670-6150 (x223) if you have further questions. Please refer to consultation number 02-21-04-F-0403 in future correspondence regarding this project.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ
U.S. Army Corps of Engineers, Tucson, AZ (Attn: Marjorie Blaine)

Acting Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Director, Arizona Game and Fish Department, Tucson, AZ
Arizona Department of Agriculture, Phoenix, AZ (Attn: Jim McGinnis)
WestLand Resources, Inc. Tucson, AZ (Attn: Jim Tress)

LITERATURE CITED

- Bahre, C.J. 1985. Wildfire in southeastern Arizona between 1859-1890. *Desert Plants* 7:190-194.
- Benson, L. 1982. *The Cacti of the United States and Canada*. Page 820. Stanford University Press Stanford, California.
- Brown, D.E. 1982. Biotic communities of the American Southwest--United States and Mexico. *Desert Plants* 4:123, 181.
- Ecosphere Environmental Services Inc. 1992. Final Report: A survey for threatened and endangered plant species at three proposed reservoir sites and associated pipelines. Bureau of Reclamation contract 0-CS-32-1950. Farmington, New Mexico. 69 pp.
- McPherson, G.R. 1995. The role of fire in desert grasslands. Pages 130-151 in M.P. McClaran and T.R. Van Devender (editors), *The Desert Grassland*. University of Arizona Press, Tucson, Arizona.
- Mills, G.S. 1991. Miscellaneous notes on (*Coryphantha scheeri* var. *robustispina*). Unpublished report. U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, Arizona.
- Phillips, A.M. III, B.G. Phillips, N. Brian. 1981. Status report for *Coryphantha scheeri* var. *robustispina*. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, NM. Unpublished Report.
- Pima County Association Of Governments, 1996. Population handbook 1995.
- Roller, P.S. 1996. Distribution, growth and reproduction of PPC (*Coryphantha scheeri* Kuntz var. *robustispina* Schott). M. S. Thesis, University of Arizona.
- Roller, P.S. and W.L. Halvorson. 1997. Fire and PPC (*Coryphantha scheeri* var. *robustispina*) in southern Arizona in *Proceedings of the Effects of Fire on Threatened and Endangered Species Symposium*. Coeur d' Alene, Idaho. November 1995.
- Shaffer, M. L. 1987. Minimum viable populations: Coping with uncertainty. In *Viable Populations for Conservation*, ed. M. E. Soule, pp. 69-86. Cambridge University Press, Cambridge.
- Steenbergh, W.F. and C.J. Lowe. 1977. Ecology of the saguaro: II. Reproduction, germination, establishment, growth, and survival of the young plant. National Park Service Monograph Series Number 8. U.S. Government Printing Office, Washington, DC.
- SWCA, Inc. 2001. September 12, 2001 Technical Memorandum regarding the PPC mitigation program at Las Campanas.

U.S. Fish and Wildlife Service, 1993. Determination of endangered status for the plant PPC (*Coryphantha scheeri* var. *robustispina*). Federal Register 58 (158): 49875-49880.

WestLand Resources, Inc. 2004. Biological Assessment for Santa Rita Foothills Estates.

WestLand Resources, Inc., 2004. January 26, 2004, Technical Memorandum regarding the transplanted PPC at the Madera Highland Reserve.

Wright, H.A. and A.W. Bailey. 1982. Fire ecology United States and Canada. Pages 138-148. John Wiley & Sons, Inc., New York, New York.

Appendix A

CONCURRENCE

In your June 15, 2004, request for formal consultation, you concluded that the proposed construction of the residential subdivision, known as Santa Rita Foothills Estates, located in Pima County, Arizona, was not likely to adversely affect the cactus ferruginous pygmy-owl. We concur with your determination for the following reasons:

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

- The area does not support suitable breeding habitat for pygmy-owls.
- The wash system does support potential pygmy-owl dispersal habitat, but there are no known pygmy-owl nest sites near this project, reducing the likelihood that this dispersal habitat will be used by pygmy-owls.
- The wash systems will be protected because they are within areas designated as natural open space and will be left undisturbed.
- It is highly unlikely that noise disturbance from construction will affect nesting or dispersing pygmy-owls since there are no known sites within 21 miles of this location (the maximum observed dispersal distance for a pygmy-owl).
- In summary, the effects to pygmy-owls will be insignificant regarding effects to habitat (lack of suitable breeding habitat and protection of wash systems) and discountable regarding effects from disturbance (negative survey results, no known pygmy-owl sites, and lack of potential habitat).