



United States Department of the Interior

Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951

In Reply Refer to:
AESO/SE
22410-2008-F-0281

Jul 2, 2008 (Date Stamped)

Mr. Robert Hollis
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
400 East Van Buren Street, Suite 410
Phoenix, Arizona 85004-0674

RE: HOP-AZ, STP-086-A(APA), TRACS No. 086 PM 156 H6806 01C, SR 86; Sandario Road to Kinney Road

Dear Mr. Hollis:

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 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated November 13, 2007 and received by us on November 15, 2007. Further information was received on February 25, 2008. At issue are impacts that may result from the proposed improvements to State Route (SR) 86 between Sandario Road (milepost 156.9) and Kinney Road (milepost 166.5) southwest of Tucson in Pima County, Arizona. The proposed action may affect the Pima pineapple cactus (PPC) (*Coryphantha scheeri* var. *robustispina*).

This biological opinion (BO) is based on information provided in the October 17, 2007 (Arizona Department of Transportation 2007) biological evaluation (BE), the February 6, 2008 letter from you to our office, telephone conversations, 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 road improvement projects, 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 Office.

CONSULTATION HISTORY

November 15, 2007: We received your request for consultation and accompanying BE.

February 25, 2008: We received supplemental information to the BE regarding your proposed conservation measures and initiated consultation.

June 16, 2008: We provided a draft biological opinion to the Federal Highway Administration and requested an extension until July 29, 2008.

July 1, 2008: We received your comments on the draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The applicant (Arizona Department of Transportation [ADOT]) proposes to improve State Route (SR) 86 between Sandario Road (milepost [MP] 156.9) and Kinney Road (MP 166.5) southwest of Tucson in Pima County, Arizona. Currently, SR 86 is an undivided two-lane roadway west of Kinney Road. Due to increased traffic volumes and growth in the area, the existing roadway cannot carry enough vehicles to provide a desirable traffic flow. The proposed project will provide a 4-lane divided roadway, and it will use the existing 2-lane roadway for one direction of travel throughout the majority of the length of the project. Crossroad intersections will be improved, and signals and turn lanes will be constructed at major intersections. Where required, local roads will be realigned at their intersections with SR 86.

SR 86 will transition from two 12-ft lanes with 8-ft shoulders to a 4-lane divided Fringe-Urban Highway with a 50-ft median at MP 157.3. Existing SR 86 will be used as the westbound roadway and a new eastbound roadway will be constructed from MP 157.3 to approximately MP 160.1. From MP 160.1 to MP 160.4, the horizontal alignment transitions to the north. Through the transition, the existing roadway will be removed and new eastbound and westbound roadways will be constructed.

From MP 160.4 to MP 163.2, the existing 2-lane roadway will be converted to the eastbound roadway and a new westbound roadway will be constructed. Between MP 163.2 and MP 163.6, the horizontal alignment will again transition to the south with the existing roadway being removed and new eastbound and westbound roadways being constructed. From MP 163.6 to MP 164.2, the existing 2-lane roadway will be converted to the westbound roadway and a new eastbound roadway will be constructed.

At MP 164.2, the horizontal alignment will again transition to the north, and the 4-lane divided roadway will be constructed approximately symmetrically to the north and south of the centerline of the existing roadway. The existing roadway will be removed and new eastbound and westbound roadways will be constructed to approximately MP 165.8, where it will tie into the taper, MP 165.8 to MP 166.1, located at the westerly end of the design-build project for the improvement of the Kinney Road intersection that is planned by Pima County under a Joint Project Agreement.

A third eastbound lane will be added to SR 86 at the Sunset Boulevard intersection. A third westbound lane will be added at the Sheridan Avenue intersection, and three through lanes in each direction will be continued easterly through the Kinney Road Intersection to provide needed capacity through the intersection of SR 86 and Kinney Road. Both the eastbound and westbound roadways will transition back to two lanes just east of Kinney Road.

The new eastbound or westbound 2-lane roadway will be 38-ft wide and will have a 10-ft outside shoulder, two 12-ft lanes and a 4-ft inside shoulder. Where the existing roadway is being used for one direction of travel, the 40-ft roadway will be reconfigured to provide a 10-ft outside shoulder, two 12-ft lanes and a 6-ft inside shoulder. In areas where the existing roadway is being removed and new eastbound and westbound roadways will be constructed, the inside shoulder of both roadways will be 4 ft wide. Auxiliary lanes will be constructed at intersections.

Existing drainage culverts that are adequately sized will be extended as required. Reinforced concrete box culverts and pipe culverts will be extended through the median and across the new roadway to provide the required recovery zone adjacent to the new roadway.

Where guard rail is currently used on the existing roadway because of an inadequate recovery zone, and the existing roadway is being used for one direction of travel, the existing culverts will be extended to provide the required recovery zone adjacent to the existing roadway and the existing guard rail will be removed.

Where existing culverts are undersized, new culverts will be constructed under the new roadway. After traffic is moved to the new roadway, the existing culverts will be upsized as required and will be constructed to provide the required recovery zone. Existing guard rail will be removed.

A new 260-ft long bridge will be constructed on the new westbound roadway at Black Hills Wash (MP 162.1) and a new 200-ft long bridge will be constructed at Snyder Hills Wash (MP 162.3).

The existing bridges will be improved as follows to carry the design volumes of water:

- Black Hills Wash (MP 162.1): The existing bridge will remain and a new 130-ft long bridge will be constructed immediately to the east of the existing bridge. The channel will be widened under the new bridge.
- Snyder Hills Wash (MP 162.3): The existing bridge will remain. The wash bottom will be cleared out and excavated to the stable slope invert, which is at the approximate existing elevation of 2,436 ft. Further analysis is required during final design to determine a design stable slope invert.

Jurisdictional waters of the U.S. will be impacted by the proposed project activities. It is anticipated that this work will be authorized under the terms and conditions of the U.S. Army Corps of Engineers Nationwide Permit No. 14 and the Section 401 Conditional Water Quality certification. More than one acre of soil will be disturbed; therefore, an Arizona Pollutant Discharge Elimination System (AZPDES) permit is required and a Storm Water Pollution Prevention Plan (SWPPP) will be prepared.

Proposed Conservation Measures

The Federal Highway Administration (FHA) and the applicant propose the following conservation measures to minimize the effects to PPC and its habitat:

- ADOT will purchase 60-acre credits in a Service-approved conservation bank for PPC, corresponding to the area of permanent disturbance to PPC habitat. Any change in the scope of the project that may occur during final design will require a re-evaluation of impacts to PPC habitat.
- Areas of temporary disturbance to PPC habitat due to construction will be rehabilitated using the following methodologies:
 - 1) Minimize colonization of disturbed areas by invasive species.
 - Invasive species control will be conducted both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential PPC habitat. Due to the sensitivity of the project site, invasive species control will begin two years prior to the commencement of work on the roadway project. This will help minimize the number of invasive species present on the project site at the time of construction-related ground disturbance. In addition, during final design, ADOT will develop a project-specific *Plan for Control of Noxious and Invasive Plant Species*, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages in plant development.
 - 2) Preserve and use existing topsoil to preserve micronutrients and the natural seed bank.
 - Topsoil salvage will be conducted in natural areas where construction disturbance will occur and invasive species are not present. In these areas, four to eight inches of surface soil will be salvaged and stockpiled to be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. A preconstruction survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.
 - 3) Maximize opportunities for growth of native vegetation.
 - Disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity. Seeding will be aided by the application of compost and fertilizers to maximize propagation.

4) Salvage protected native plants.

- A native plant salvage plan will be developed for the project during final design. Plant species protected under the Arizona Native Plant law (cactus and native trees) will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and adhered to by all contractors and subcontractors throughout construction. The SWPPP will stipulate Best Management Practices for on-site operations designed to reduce the potential for erosion and off-site sedimentation due to construction activities.

STATUS OF THE SPECIES

Our February 3, 2006, BO for the Ocotillo Preserve Residential Subdivision (02-21-02-F-0210 and 02-21-04-F-0160) included a detailed Status of the Species for the PPC. This BO is available on our website at <http://www.fws.gov/southwest/es/arizona/>, under Document Library; Section 7 Biological Opinions. Herein we incorporate that status discussion by reference.

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.

For this project, we define the action area as the area within the right-of-way from MP 156.9 to MP 166.5 between Sandario Road and Kinney Road along SR 86, as well as an additional 0.25 mile on either side of the right-of-way. The 0.25-mile distance includes the area that might be indirectly affected by the proposed action (e.g. the area that may be affected by the spread of invasive plants or changes in drainage patterns). The amount of PPC habitat within this buffer is unknown.

PPC information was gathered primarily from the Arizona Game and Fish Department's Heritage Database Management System (HDMS) through a search for PPC records, and from a single-pass survey of the action area (excluding the 0.25-mile buffer) conducted by Archaeological Consulting Services, Ltd. (ACS) biologists in December 2006 and April 2007. This area was not surveyed according to full PPC protocol specifications, which recommend multiple passes. ACS biologists observed seven PPC within the action area.

A total of approximately 172 acres within the action area (excluding the 0.25-mile buffer) will be directly disturbed by project construction activities. Approximately 142 of the 172 acres comprise PPC habitat. Of these 142 acres, approximately 60.77 acres will be permanently disturbed, while the remaining areas will be temporarily disturbed. At least one to two PPC fall within the construction footprint and will be directly impacted by the new pavement limits; the exact number is uncertain because of the PPC's proximity to the edge of the permanent disturbance footprint.

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 direct loss of a minimum of one to two PPC situated within the construction footprint, while the other live five or six PPC found within the construction footprint are avoidable. Because protocol surveys were not conducted throughout the entire action area, it is possible some PPC plants remain undetected; these plants could be impacted by the project. Approximately 142 acres of PPC habitat occur within the construction footprint, 60.77 acres of which will be permanently disturbed through newly paved areas. The applicant proposes to off-set the direct effects to PPC and its habitat by purchasing 60 acre-credits in a Service-approved conservation bank for PPC.

Within the construction footprint, approximately 81.23 acres of PPC habitat will be temporarily disturbed by this project. New disturbance and equipment can disrupt soils and cryptobiotic crusts, which can lead to erosion and loss of soil nutrients. Soil erosion can also be promoted by the loss of perennial plants, and the spread of non-native species into a previously uninfected area can result from soil disturbance. Nearby areas already support stands of buffelgrass, and additional disturbance can facilitate its spread, as well as that of other exotic plants. This invasive grass species has the potential to alter the ecosystem of the plant community by forming monotypic stands that do not allow for the regeneration of native species and create a much heavier fuel load with higher fire intensities. This change in plant composition can lead to a permanent change in the plant community by allowing fires to burn hotter and more frequently than would occur in the natural vegetation. Certain species (like PPC) that are not fire-adapted can be lost as a result of such fires. In some cases, it has been found that desert vegetation, while fragile and easily destroyed, does have a long-term potential (probably measured in centuries) to recover from drastic disturbance (Vasek *et al.* 1975). Even so, it is unknown if PPC will be able to re-occupy areas after disturbance (due to invasive grasses, long-term drought, global climate change, etc.); therefore, the applicant is proposing to offset indirect effects to PPC and its habitat through the following conservation measures.

To minimize indirect effects to PPC habitat, the applicant will implement one or more rehabilitation techniques as outlined in the Conservation Measures. To minimize colonization of disturbed areas by invasive species, the applicant will begin invasive species control two years

prior to the commencement of work on the roadway project. This will help minimize the number of invasive species present on the project site at the time of construction-related ground disturbance. Additionally, during final design, the applicant will develop a project-specific *Plan for Control of Noxious and Invasive Plant Species*, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction. The plan will include such provisions as vehicle inspection to prevent movement of noxious and invasive species seeds to and from the work site; procedures for collection, removal, and disposal of noxious and invasive plants; and proposed methods of control, such as application of herbicides and mechanical or manual removal, to be used for each plant species at various stages in plant development.

The second rehabilitation technique the applicant will conduct is to preserve and use existing topsoil to preserve micronutrients and the natural seed bank. In natural areas where construction disturbance will occur and invasive species are not present, the applicant will salvage four to eight inches of topsoil and stockpile it for redistribution over the cut and fill slopes adjacent to the new roadway upon completion of construction. A preconstruction survey by a qualified biologist will be conducted to determine the presence of invasive species in the project area. In areas where topsoil is determined to contain invasive species seed banks, topsoil will not be reused.

The third rehabilitation technique the applicant will conduct is to maximize opportunities for growth of native vegetation by seeding using species native to the project vicinity in disturbed soils that will not be landscaped or otherwise permanently stabilized by construction. Seeding will be aided by the application of compost and fertilizers to maximize propagation.

Lastly, the fourth rehabilitation technique the applicant will conduct is to salvage protected native plants within the construction area. A native plant salvage plan will be developed for the project during final design. Plant species protected under the Arizona Native Plant law (cactus and native trees) will be avoided by construction to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction.

Most of these measures will help to prevent noxious weed infestations during the time of construction and will assist in the regeneration of native vegetation within the action area. PPC and native vegetation have been able to re-occupy disturbed areas in the past (i.e., land cleared over 50 years ago for a pipeline project – see our BO on the SFPP, L.P. El Paso to Phoenix Expansion Project), so we believe the effects of disturbing the action area, while possibly long-term, are temporary. However, there is no monitoring or treatment scheduled after construction is completed, which is when noxious weeds are most likely to invade the area. Areas outside of the construction footprint but within the 0.25-mile buffer of the action area will not be directly affected, as disturbance activities will be confined to the construction footprint; however, this buffer area may be indirectly affected by the invasion of non-native weeds after construction is completed. Any PPC in these buffer areas will be subjected to the same impacts (fire and changes in plant communities) described above for PPC in the project footprint.

In terms of salvaging PPC that will be directly impacted by construction and transplanting them to a new location, we view transplanting cacti as a measure of last resort for conserving the species, with limited conservation value. Transplanted PPC have low levels of survival (especially after the first year), and past efforts to transplant individual PPC to other locations have had only limited success. Furthermore, once individuals are transplanted from a site, it is considered to be extirpated, as those individuals functioning in that habitat are irretrievably lost. As a result, transplanted individuals are not considered as functioning within the context of a self-sustaining population.

In summary, this project will result in the loss of at least one to two PPC and 60.77 acres of habitat, and the alteration (possibly temporary) of 81.23 acres of PPC habitat. Additionally, an unknown amount of PPC habitat within the 0.25-mile area surrounding the construction footprint may be affected by invasive plant species. The applicant proposes to purchase a total of 60 acre-credits from an approved PPC conservation bank to offset the direct adverse effects, in addition to implementing rehabilitation techniques to offset indirect adverse effects 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 ESA.

The amount of development within the action area that may occur in the future is unknown. Pima County grew by 26.5 percent (from 666,880 to 843,746 residents) between 1990 and 2000, and is projected to reach more than 1.2 million residents by 2015 (see <http://www.pagnet.org/RegionalData/Population/PopulationEstimates/tabid/582/Default.aspx>). Areas within the action area and immediately adjacent to it, where suitable habitat for PPC is located, are a mix of private, State, and Federal lands. The private and State lands could become available for development in the future, with cumulative effects to PPC and continued loss and further fragmentation of PPC habitat.

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. While we remain concerned about the status of the PPC as described in this BO, we make this determination because:

- The applicant will purchase 60 acre-credits in a Service-approved conservation bank to compensate for the direct effects to PPC and its habitat, permanently protecting 60 acres of PPC habitat within the conservation bank.
- The applicant will control invasive species both prior to and during construction to minimize colonization of disturbed areas by non-native grasses that may degrade potential PPC habitat. This will include a project-specific *Plan for Control of Noxious*

and Invasive Plant Species, which will address appropriate control of occurrences of invasive plant species within the right-of-way during construction.

- The applicant will salvage four to eight inches of topsoil in natural areas where construction disturbance will occur and invasive species are not present, which will be redistributed over the cut and fill slopes adjacent to the new roadway upon completion of construction. This will preserve micronutrients and the natural seed bank within the area.
- The applicant will seed disturbed areas not permanently stabilized by construction using species native to the project vicinity. This will maximize opportunities for growth of native vegetation within the action area.
- The applicant will avoid plant species protected under the Arizona Native Plant law (cactus and native trees) to the extent practicable. If impacts to native plants cannot be avoided, the plants will be treated in accordance with State law. All PPC within the area of permanent disturbance will be salvaged and replanted at a location approved by a qualified biologist. Any PPC that are not within the area of permanent disturbance, but present within the right-of-way, will be flagged by a qualified biologist prior to the commencement of work in order to avoid accidental damage to the plants during construction. While many PPC do not survive long after transplanting, some transplanted individuals are likely to survive, and protecting plants outside the area of permanent disturbance will ensure that these individuals will not be damaged or destroyed.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and adhered to by all contractors and subcontractors throughout construction. This will reduce the potential for erosion and off-site sedimentation due to construction activities.
- The loss of at least one to two PPC and 60.77 acres of habitat, as well as the long-term temporary alteration of 81.23 acres of habitat, comprise less than one percent of the known population and extant suitable habitat.

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 use 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 recommend that the PPC conservation bank credits be secured through a Notarized Credit Agreement before construction begins.
- Where possible, we recommend minimizing soil disturbance by driving over plants rather than removing and replacing top soil. Removing top soil and then replacing it can promote invasive species and soil erosion, leading to the destruction of perennial plants within the area. Many of the crushed plants, such as creosote, will resprout from the base.

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 proposed improvements to SR 86 between Sandario Road and Kinney Road. 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 Marit Alanen at (520) 670-6150 (x234) or Jim Rorabaugh at (520) 670-6150 (x230) if you have further questions. Please refer to consultation number 22410-2008-F-0281 in future correspondence regarding this project.

Sincerely,

/s/ Jason Douglas for
Steven L. Spangle
Field Supervisor

cc: Federal Highway Administration, Environmental Program Manager, Phoenix, AZ
(Attn: Steve Thomas)
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

Arizona Department of Transportation, Biologist, Flagstaff, AZ (Attn: Justin White)

LITERATURE CITED

Arizona Department of Transportation. 2007. Biological Evaluation for SR 86: Sandario Road to Kinney Road. Project No. 086 PM 156 H6806 01C, Federal Aid No. STP-086-A. Phoenix, Arizona.

Vasek, F.C., H.B. Johnson, and D.H. Eslinger. 1975. Effects of pipeline construction on creosote bush scrub vegetation of the Mojave Desert. *Madroño* 23: 1-13.