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In Reply Refer To:
AESO/SE
22410-2007-F-0148

May 20, 2008

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

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 dated December 19, 2007, was received in our office on December 21, 2007. At issue are impacts that may result from the proposed US 60 Highway Improvements (Mileposts 236.13 to 240.13) near Pinto Valley Road in Pinal and Gila counties, Arizona on the Arizona hedgehog cactus (*Echinocereus triglochidiatus var. arizonicus*).

This biological opinion is based on information provided in the December 19, 2007, biological assessment, telephone conversations, field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office. Your tracking system identifies this project as HOP-AZ, STP-060-D(200)A, ADOT TRACS No 60 GI 236 H6140 01C.

Consultation History

- December 19, 2006 – Meeting at FWS
- January 2007 – Site visit to confirm AHHC
- May 17, 2007 – Meeting at FWS
- June 22, 2007 – Meeting at ADOT
- December 21, 2007 – Biological Assessment received by FWS and consultation initiated
- April 22, 2008 – Draft Biological Opinion sent to FHWA
- May 4, 2008 – 135-day consultation period ends
- May 15, 2008 – Comments on draft biological opinion received

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed project is located on US 60, within the Tonto National Forest, approximately seven miles west of the Town of Globe, in Gila and Pinal counties, Arizona. The project area begins at milepost (MP) 236.13 and extends east to MP 240.04 at the US 60 and Pinto Valley Road intersection (approximately four miles).

The action area consists of the entire four-mile length of the road and the approximate 150 foot easement on either side of the roadway and the Castle Dome Borrow Site on the Tonto National Forest. The footprint of the project where significant changes to the landscape and greatest ground disturbance will occur is a smaller subset of the action area. The most significant landscape changes within the action area will be at four rockfall containment areas (MP 237.20 to MP 237.31, MP 237.51 to MP 237.84, MP 237.95 to MP 238.04, and MP 238.44 to MP 238.57).

The proposed project consists of pavement rehabilitation for the entire length of the project, addition of an eastbound passing lane, and rock fall containment at four locations. The purpose of this project is to maintain pavement structural integrity, improve the ride and traffic operations of the roadway and reduce the potential hazards of rocks falling onto the roadway.

The pavement rehabilitation portion of this project will remove (mill) the top 3.5 inches of existing asphaltic concrete (AC) and replace it with 3 inches of AC and 0.5 inches of asphalt rubber asphaltic concrete friction course (AR-ACFC) on the full width of the roadway for the entire four-mile length. The milled asphalt will be used along US 60 within the project limits for shoulder buildup.

The addition of an eastbound passing lane will begin east of the Pinto Creek Bridge and will end east of Pinto Valley Road (MP 238.73 to MP 240.03). The widening will occur north of the existing roadway and lanes and will include a new 12-foot travel lane with shoulders varying from 4 feet to 10 foot wide. The roadway widening will require clearing and grubbing operations and the placing fill material. In addition, a segment of the old US 60, located south of the existing roadway at MP 238.9, resides on an unstable slope that is immediately adjacent to and above the existing roadway. This segment (approximately 400 feet) will be removed to prevent the slope from deteriorating and falling onto the current roadway.

The rock fall containment activities will consist of excavating the rock embankments and increasing the ditch and/or shoulder width. The removal of material will be done by a combination of heavy equipment such as loaders, haulers and, in some areas, excavators and hoe rams and directional explosive charges that will lay the slope back. The blasting will last approximately six months, with one to two blasts per day. Some material will be used to construct the new roadway and some material will be disposed of at three waste sites within the action area (MP 237.70, MP 238.88 and MP 238.05 and at the Castle Dome Borrow Site located on the Tonto National Forest approximately 2.5 miles north of the US 60 and Pinto Valley Road intersection).

Cut and fill limits associated with roadway widening will impact waters of the U.S. and will require an application under Clean Water Act Section 404 Nationwide Permit 14 to the U.S. Army Corps of Engineers.

The proposed project also consists of the following:

- Pave the Pinto Valley Road (MP 239.51) turn off up to the right-of-way fence and/or cattle guard;
- On the north side of the roadway Construct two spillways (approximately 11 feet in length) at MP 237.41 and 237.46 and embankment curb (MP 237.37 to 237.41);
- Extend existing drainage pipes at 238.90, 239.02, 239.22, 239.37, 239.45, 239.56, and 239.64;
- Replace existing 24 inch drainage pipe with two 36 inch at MP 239.10; place a 36 inch drainage pipe at MP 239.77; place a 24 inch drainage pipe on Pinto Valley Road near MP 239.77;
- Extend existing CBC at MP 239.95;
- Replace guardrail end terminals;
- Replace bridge seals on Pinto Creek Bridge;
- Remove and replace existing signs;
- Install new pavement markers, object markers at existing headwall locations, and steel post delineators; and
- Seed all disturbed areas

Conservation Measures

- Prior to off-roadway work, all accessible Arizona Hedgehog cacti plant material affected by construction activities will be removed/transplanted by a qualified biologist to an accredited arboretum, (Boyce Thompson, Desert Botanical Garden, etc.).
- Plant removal will include extraction of entire plants, including roots, or removal of arms if root systems are inaccessible. Care will be taken to keep entire plants as intact as possible.
- Depending on the date of plant removal, plants will be immediately placed into an earthen site at an accredited arboretum, or will be transplanted into a holding area, prior to placement into an earthen site.
- Watering of plants is expected to occur. Watering rates are dependent on facility-specific protocols.
- To provide the best chance of survivability, special care will be taken during handling, watering and monitoring.

STATUS OF THE SPECIES

The Arizona hedgehog cactus was listed as endangered on October 25, 1979, without critical habitat designation (U.S. Fish and Wildlife Service 1979). No recovery plan has been established for the cactus. The Arizona Native Plant Law protects Arizona hedgehog cactus and the species is also protected from international trade by the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The Arizona hedgehog cactus is a succulent, perennial plant, occurring in a limited area of central Arizona. Distinguishing characteristics of the cactus include its thick stems, diploid, perfect flowers, and smooth spines. The Arizona hedgehog cactus has a dark green cylindroid stem with an average length of 29.6 centimeters (cm) (11.6 inches (in.)), average stem diameter of 8.1 cm (3.2 in.), and mostly nine ribs on mature individuals. There are usually three central spines, and nine radial spines, less than 1.3 cm (0.5 in.) in length (Baker 2006). Flowers are bright red and are produced along the side of the stem, appearing in late April to mid-May. Plants are found on dacite or granite bedrock, open slopes, narrow cracks, between boulders, and in the understory of shrubs in the ecotone between Madrean Evergreen Woodland and Interior Chaparral. Recent morphological work by Baker (2006) recommends that this taxon be placed within *Echinocereus arizonicus* (*E. arizonicus* ssp. *arizonicus*), rather than the *Triglochidiatus* section.

The Arizona hedgehog cactus occurs in central Arizona, in Pinal and Gila counties that includes the Pinal, Dripping Springs, Superstition, and Mescal Mountains. This species also can be found in the highlands between the cities of Globe and Superior. Falk et al. (2001), reports its range as the Superstition Mountains and Top of the World on the Tonto NF.

The main population of Arizona hedgehog cactus occupies 18,900 acres (7,650 ha) in northeast Pinal and southwest Gila counties in Arizona, between Miami and Superior (U.S. Forest Service 1996). Two small subpopulations occur outside this area: Apache Peak subpopulation north of Globe, Arizona and the El Capitan subpopulation south of Globe, Arizona. These populations (main and two subpopulations) are “classical var. *arizonicus*” and are the only populations of the Arizona hedgehog cactus subject to the protection and restrictions of the Act. Surveys for Arizona hedgehog cactus on Schultze granite and dacite formations showed densities of 64.05 and 5.72 plants per acre (25.9 and 2.3 plants per hectare) (U.S. Forest Service 2004). The estimated main population is about 257,500 cacti.

The Arizona hedgehog cactus occurs in the Upper Sonoran Life Zone in the Interior Chaparral community at elevations of 3,300-5,700 ft (1,000-1,700 m). The preferred habitat is composed of parent materials of Schultze granite and Apache Leap Tuff (dacite, both of igneous origin) (U.S. Forest Service 2004). Pinal Schist and the Pioneer Formations can serve as additional habitat if they are exposed as bedrock near dacite and granite formations (U.S. Forest Service 1996).

The Arizona hedgehog cactus produces flowers in late April to mid-May and fruits from May to June (Arizona Game and Fish Department 1992). It is an obligate out crosser that is pollinated by hummingbirds, carpenter bees, solitary bees, and honeybees (U.S. Forest Service 2004). About 100 seeds are produced per fruit (Arizona Game and Fish Department 1992) and mature cacti can produce many fruits per year.

Reasons for listing the Arizona hedgehog cactus include the limited distribution of the plant, its vulnerability to mining operations, off-road vehicle use, illegal collecting, and road and utility construction. Threats identified for the Arizona hedgehog cactus are mining, livestock damage, highway and utility corridor construction, collection, recreation activities, insect and disease damage, and wildfire.

In 1996, a Conservation Assessment and Plan was developed for the Arizona hedgehog cactus on the Tonto NF. The main recommendations of this plan are the identification of “safe areas” with selection of a protection option for each area, application of the conservation plan during projects and planning, conducting surveys for additional plants and monitoring existing cacti (U.S. Forest Service 1996).

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 to assess the effects of the action now under consultation.

The action area for this project largely consists of the US 60 roadway and bordering land on either side of the roadway. US 60 is a two-lane roadway, approximately 35-feet wide, with intermittent eastbound and westbound passing lanes which serves as a transportation corridor between the Phoenix metropolitan area and Globe. Existing easements varies from approximately 125 feet to 150 feet within the project limits.

The action area is categorized as Interior Chaparral (Brown 1994). The elevation of the action area varies between 4,200 feet and 4,600 feet in elevation and is surrounded by mountains and consists of dry, rocky foothills, mesas, and lower mountain slopes. The vegetation is typical of upper central Arizona, which includes interior chaparral, mixed oak, and juniper communities. The majority of the area is dominated by manzanita (*Arctostaphylos pungens*), catclaw acacia (*Acacia greggii*), desert broom (*Baccharis centennial*), and shrub oak (*Quercus turbinella*).

Land adjacent to the action area includes land managed by the Tonto NF, which is used for mineral extraction, outdoor recreation, and some cattle grazing. The BHP Mine owned by Broken Hill Proprietary and the Carlotta Mine owned by Quandra Mining are active copper mines located north of Pinto Valley Road. There are also patches of private land that are located adjacent to the Tonto NF.

Other than the existing roadway and activity associated with its maintenance and/or improvement, the landscape within this narrow four mile action area is largely safe from extensive degradation. The ADOT easement on either side of the road maintains the integrity of the landscape and due to its proximity to the highway, absence of extensive access areas, steep terrain, and rocky landscape, is not typically sought out for other purposes other than periodic recreational exploration. However, use of vehicles along the roadway can exacerbate the risk of

wildfire in the action through ignition sources such as discarding lit cigarettes, and road maintenance and disturbance can generate invasion by noxious weeds that can also carry fire.

Status of the species within the action area

Pedestrian surveys of the project area were conducted in June and December 2005 that determined the presence of approximately 221 Arizona hedgehog cacti within the project limits. The June 2005 survey was performed as part of a larger ADOT effort related to noxious weed treatment along roads within the Tonto NF.

The December 2005 survey was performed specifically within the rock fall containment areas of this project, which had not been examined during the previous noxious weed survey. Approximately 65 Arizona hedgehog cacti were found within the rock fall containment areas.

We confirmed, through photographs taken of cacti detected in these surveys, that the cacti are the federally listed Arizona hedgehog cactus. On January 3, 2006, the FWS, USFS, ADOT, and Marc Baker, an expert in cactus identification, conducted a site visit in which several Arizona hedgehog cacti were identified.

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 and 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.

Approximately 6.7 acres of occupied Arizona hedgehog cacti habitat, including approximately 50 individual cacti will be impacted by this roadway project. Creating the rock fall containment areas (MP 237.2 to MP 237.3, MP 237.5 to MP 237.8, MP 237.9 to MP 238.0, and MP 238.4 to MP 238.5) and pavement rehabilitation and shoulder build up components within the project limits would result in the physical removal Arizona hedgehog cactus and adjacent suitable habitat for the establishment of new cacti. Approximately 50 Arizona hedgehog cacti are anticipated to be removed due to excavation of material associated with the rock fall containment areas and other locations that require additional cut or fill of material.

The addition of the eastbound passing lane will not directly affect individual Arizona hedgehog cacti because field surveys determined that no cacti are located within the area of disturbance. However, the addition of the eastbound passing lane may remove some potential habitat for cacti expansion and development.

The Arizona hedgehog cacti that will be removed from the project area and transplanted off site are not all anticipated to survive. Preliminary results from the Carlotta Mine transplant effort suggest that healthy plants that were transplanted had an 80% survival rate after two years, but

damaged cacti and young individuals had a lower rate of surviving transplant. (Steve Viert, Cedar Creek Associates; Personal Communication, December 14, 2006).

Routine maintenance of the road is expected to occur. All maintenance activities will occur within ADOT rights-of-way and maintenance crews are proposed to be notified of the locations of suitable habitat and individual plants prior to maintenance activities; therefore it is anticipated that no Arizona hedgehog cacti will be impacted.

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.

As a result of the action area being associated with the U.S. Highway 60 and the adjacent right-of-way being primarily located within the boundary of the Tonto NF, it is anticipated that future activities within the action area impacting the cactus would likely be subject to section 7 of the Act.

CONCLUSION

After reviewing the current status of the Arizona hedgehog cactus, the environmental baseline for the action area, the effects of the proposed US 60 Highway Improvements (Mileposts 236.13 to 240.13) and the cumulative effects, it is the FWS's biological opinion that the US 60 Highway Improvements, as proposed, is not likely to jeopardize the continued existence of the Arizona hedgehog cactus. No critical habitat has been designated for this species therefore, none will be affected.

The project will not jeopardize the Arizona Hedgehog cactus because the landscape impacts and loss of cacti will be a small fraction of what is currently believed to exist. The approximate 7 acre loss of habitat and 50 plants represents less than 0.04 percent of the area occupied by the plants and less than 0.02 percent of the estimated population.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed 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.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act 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.

1. We recommend that FHWA work with adjacent land managers and owners to establish protected areas within the Arizona hedgehog cacti's range where existing plants will be protected to improve the plant's status and to provide locations where plants impacted from projects can be relocated and stay in the wild.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in your request. 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; (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. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The FWS appreciates FHWA and ADOT's efforts to identify and minimize effects to listed species from this project.

For further information please contact Greg Beatty (602-242-0210 x 247 or Debra Bills (602-242-0210 x 239). Please refer to the consultation number, 22410-2007-F-0148 in future correspondence concerning this project.

Sincerely,

/s/ Debra Bills for

Steven L. Spangle
Field Supervisor

cc: Darlene Dyer, Biologist, Arizona Department of Transportation, Phoenix, AZ
Lee Thornhill, District Ranger, Globe Ranger District, Tonto National Forest, Globe, AZ
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TABLES AND FIGURES

Figure 1. Action Area- US 60 Highway Improvements (Mileposts 236.13 to 240.13) near Pinto Valley Road in Pinal and Gila counties, Arizona

