United States Department of the Interior
U.S. Fish and Wildlife Service
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In Reply Refer To:

AESO/SE
22410-2009- F-0229

April 16, 2010

Mr. Gene Blankenbaker, Forest Supervisor
Tonto National Forest
2324 East McDowell Road
Phoenix, Arizona 85006

Dear Mr. Blankenbaker:

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 August 11, 2009, and received by us on August 12, 2009. At issue are impacts that may result from your approval of the proposed Resolution Copper Mining, LLC (RCM) Pre-feasibility Activities Plan of Operations located in Pinal and Gila counties, Arizona. The proposed activities "may affect" the endangered Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) (AHC).

You also determined that the project would have "no effect" on any of the following species or critical habitats within Pinal and Gila counties: acuna cactus (*Echinomastus erectocentrus* var. *acunensis*), Apache trout (*Oncorhynchus gilae apache*), Arizona bugbane (*Cimicifuga arizonica*), bald eagle (*Haliaeetus leucocephalus*), Chiricahua leopard frog (*Lithobates chiricahuensis*), Colorado pikeminnow (*Ptychocheilus lucius*), desert pupfish (*Cyprinodon macularius*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), loach minnow (*Tiaroga cobitis*), Mexican spotted owl (*Strix occidentalis lucida*), Nichol turk's head cactus (*Echinocactus horizonthalonius* var. *nicholii*), razorback sucker (*Xyrauchen texanus*), southwestern willow flycatcher (*Empidonax traillii extimus*), spikedace (*Meda fulgida*), and Yuma clapper rail (*Rallus longirostris yumanensis*). Species with "no effect" determinations do not require review from the FWS and are not addressed further. Consultation is not required on the candidate species: headwater chub (*Gila nigra*) and yellow-billed cuckoo (*Coccyzus americanus*). The California brown pelican (*Pelecanus occidentalis californicus*) has been delisted.

This biological opinion is based on information provided in the February 19, 2009 biological assessment and evaluation (BAE) (WestLand Resources, Inc. 2009a), the April 2009 environmental assessment (EA) (USFS 2009a), additional information received on April 17, 2009 (WestLand Resources, Inc. 2009b), May 14, 2009 (WestLand Resources, Inc. 2009c), the revised August 10, 2009 BAE (WestLand Resources, Inc. 2009d), and the August 2009 Arizona Hedgehog Cactus Compiled Survey Report (WestLand Resources, Inc. 2009e), Attachment 1: *Clarification information on road impact calculations* (USFS 2009b) and Attachment 2: *Supplemental information on interrelated/interdependent actions* (USFS 2009c), meetings among our staffs, telephone conversations, electronic correspondence, 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 or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office. References to the BAE refer to the August 10, 2009 BAE unless otherwise noted.

Consultation History

February 27, 2009:	We received your request to initiate informal consultation and the February 19, 2009 BAE.
March 23, 2009:	We requested an additional 30 days to review the BAE.
April 1, 2009:	We received your 30-day letter seeking public comments on the April 2009 EA.
April 8, 2009:	We met with the Forest and conducted an initial site visit.
April 17, 2009:	We received a copy of the April 2009 EA and a memorandum from WestLand Resources, Inc. clarifying the extent and location of the Pre-feasibility Action Area, the AHC survey methodology, and the availability of additional AHC photographs and figures.
April 21, 2009:	We met with the Forest and conducted a second site visit.
April 24, 2009:	We provided a non-concurrence letter and requested clarification on nine items.
May 14, 2009:	We received a draft supplement to the BAE by WestLand Resources, Inc. in response to our April 24, 2009 letter.
May 19, 2009:	We met with the Forest to discuss the nine items listed in our April 24, 2009 letter.
June 16, 2009:	We received a copy of your letter addressed to RCM stating your intent to initiate formal consultation and requesting if RCM would like applicant status.

July 2, 2009: We received a copy of your letter approving RCM of applicant status.

August 12, 2009: We received your request to initiate formal consultation and a copy of the revised August 10, 2009 BAE and the August 2009 Arizona Hedgehog Cactus Compiled Survey Report.

September 9, 2009: We responded to your request for formal consultation and stated that additional clarification may be needed on the effects of road widening to AHC, and interrelated/interdependent actions may need to be considered as part of the proposed action.

September 16, 2009: We met with the Forest to discuss road improvement activities, indirect effects to the species, inclusion of non-Federal lands as interrelated/interdependent actions, the proposed conservation measures, and clarify differences between similar information presented in both the August 10, 2009 BAE and EA.

November 19, 2009: We met with the Forest to discuss potential on-the-ground conservation for the species, clarify the implementation of the proposed conservation measures, the estimated amount of project disturbance, and the locations of AHC relative to the proposed road improvements. The Forest provided to us a November 16, 2009 Memorandum from WestLand Resources, Inc. regarding the "use of Tonto National Forest Service road GIS data for Arizona hedgehog cactus impact assessment".

November 24, 2009: We transmitted the draft biological opinion to the Forest.

December 14, 2009: We received a copy of draft comments from RCM that were submitted to the Forest.

February 3, 2010: We received draft comments from the Forest along with Attachment 1: Clarification information on road impact calculations, Attachment 2: Supplemental information on interrelated/interdependent actions, Figure 6, State and Private Land Calculation File, and Enclosure B, Forest Land Calculation File.

March 11, 2010: We provided a letter to the Forest acknowledging outstanding consultation issues related to the amount of estimated project disturbance identified during the consultation period, and to provide background on the amount of disturbance acres that we analyzed in the draft which would be incorporated into the final BO.

April 2, 2010: We met with representatives from the Forest, RCM, and WestLand Resouces, Inc. to discuss and resolve outstanding consultation issues.

April 6, 2010: We received a request from the Forest to extend the consultation period until April 16, 2010 to facilitate additional input on the draft BO.

April 12, 2010: We met with representatives from the Forest and RCM via teleconference to discuss and review the April 2, 2010 meeting minutes.

April 13, 2010: We received an email from Forest staff clarifying disturbance amounts for four road segments and a summary of construction activity calculations. The Forest noted that 3.02 acres of previously authorized activities plus 1.15 acres of private lands are not AHC habitat or potential habitat. Therefore, in response to the Forest's assessment, these areas are not AHC habitat.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The following narrative has been adapted from the February 19 and August 10, 2009 BAEs, the April 2009 EA, and the August 2009 Arizona Hedgehog Cactus Compiled Survey Report to ensure an accurate description of the proposed action, including the conservation measures. This consultation covers a period of fifteen years.

The proposed action is the Forest's approval of the Pre-feasibility Activities Plan of Operations, located east of Apache Leap, from the basin of Oak Flat to the steeper terrain between Devils and Rawhide Canyons. The northern and easternmost limit of the project area will be located near the town of Top of the World, a high alluvial basin bisected by U.S. Highway (US) 60 and surrounded by the rugged peaks of the Pinal Mountains. An isolated western section of the project area is located adjacent to the town of Superior, where Cross Canyon intersects State Route (SR) 177. The southernmost portion of the project area is located approximately 4 miles south of the town of Superior (Figure 1). Pre-feasibility Activities would occur in these non-contiguous areas on previously authorized drill sites, proposed new drill sites, existing roads that provide access to existing or proposed drill sites, and proposed new roads (Figure 2). These activities would be conducted in the following Townships, Ranges and Sections of the Gila and Salt River Baseline and Meridian:

- Township 1 South, Range 13 East in portions of Sections 11, 13, 21 through 24, 26 through 29; and 32 through 35;
- Township 1 South, Range 14 East in portions of Sections 5, 7, and 8;
- Township 2 South, Range 12 East in portions of Sections 1, 2, 3, and 25; and
- Township 2 South, Range 13 East in portions of Sections 6, 7, 19, 20, and 30.

Pre-feasibility Activities considered in the BAE are the proposed, new construction activities that are estimated to impact approximately 47.47[1] acres of undisturbed land. Continuing Pre-

1 Pre-feasibility Activities are anticipated to impact a total of 50.49 acres. This amount includes 47.47 acres of new disturbance on undisturbed land plus 3.02 acres of disturbance from previously authorized activities.

feasibility Activities (e.g., previously authorized activities) have already impacted 3.02 acres of Forest Service land. The proposed action also includes two alternative actions referred to as: Alternative 3-North OF-2 Exploration drill site and Alternatives 4 and 5-West Access Alternative Routes 4a and 4b and drill site locations 4e and 4w. Pre-feasibility Activities are not expected to be constructed at one time and there is no specific schedule proposed by RCM for the construction and implementation of these activities.

Pre-feasibility Activities are described below:

1) Construct five exploration drill sites and conduct directional drilling on these sites for the purpose of mineral exploration. The drill sites are: OF-1, OF-2, OF-3, MB-03, and QC-04. Drilling operations at the exploration drill sites will end by December 31, 2014. Groundwater testing and monitoring activities at some of these drill sites will continue through December 31, 2025. After completion of drilling and testing activities, the sites not selected for monitoring will be graded and reclaimed.

    - Drilling depth will be approximately 3,000 feet using a rotary drilling technique. Drilling will then continue to approximately 7,000 feet below surface level using diamond drilling. No directional drilling will be conducted under the Oak Flat Campground area.

    - Each of the exploration drill sites will have a minimum work area footprint of approximately 0.18 acre and a maximum work area footprint of 0.30 acre for the placement of drill pads and associated equipment, mud pits, temporary storage structures, and portable toilets.

    - Long-term groundwater monitoring wells may be established at drill sites OF-1, OF-2 and OF-3.

2) Construct eight drill sites to accommodate a total of three deep and six shallow groundwater testing and monitoring wells: H-L, H-K, H-N, H-C, H-E, H-F, H-G, and H-I. The purpose of these groundwater testing and monitoring wells is to obtain geologic and groundwater data.

    - Deep groundwater testing and monitoring wells will have a total drilling depth of approximately 7,000 feet below surface level. Construction is expected to take 6 to 8 weeks. Drilling operations would end by December 31, 2014.

    - Shallow groundwater testing and monitoring wells will have a total drilling depth of approximately 1,500 feet below surface level. Construction is expected to take 6 to 9 weeks. Drilling operations would end by December 31, 2014.

    - Each of the groundwater testing and monitoring drill sites will have a minimum work area footprint of approximately 0.18 acre and a maximum work area footprint of 0.30 acre for the placement of drill pads and associated equipment, mud pits, temporary storage structures, and portable toilets.

3) Construct nine drill sites to accommodate a total of nine tunnel characterization geotechnical boreholes: PVT-3, PVT-4, PVT-5, PVT-6, PVT-7, PVT-8, PVT-9, APV-6, and APV-8. These boreholes are proposed to determine subsurface rock conditions along two possible tunnel alignments. Upon completion of borehole drilling, each of the boreholes could be used for groundwater testing and monitoring, if appropriate. Drilling operations would be completed prior to December 31, 2016. Groundwater monitoring of selected boreholes will continue through December 31, 2025.

   - Tunnel characterization boreholes will be 3 to 6 inches in diameter and will be drilled to depths ranging from approximately 990 to 1,670 feet.

   - Each of the tunnel characterization drill sites will have a minimum work area footprint of approximately 0.14 acre and a maximum work area of 0.30 acre.

4) Continue exploratory and monitoring activities at previously authorized drill sites: 1, 2, 3, A, B, C, D, F, M, and DOE Well Site.

5) If selected, construct North OF-2 exploration drill site. This site was identified as an alternative to the proposed OF-2 site.

6) Complete necessary roadway improvements and maintenance on existing roads. Most of the previously approved and proposed drill sites will be accessed from US 60, Forest Service roads, and user-created roads (i.e., roads that are not created nor maintained under the Forest Service Road management plan). Some user-created roads will be closed as discussed in Conservation Measure 9.

   - Approximately 16.67 miles of existing access roads would require necessary improvements to enable access to the proposed drill sites. These roads include fourteen Forest Service roads and seven user-created roads. All existing roads, access roads that would be improved and new roads will require periodic road maintenance during the life of the project. Maintenance activities will not result in additional surface disturbance to undisturbed lands. Road maintenance activities will be conducted to retain a Level 2 High Clearance Vehicle Forest Service standard. Approximately 5.26 miles of existing roads would be improved on State trust and privately owned lands to access drill and well sites on Forest Service lands.

   - Magma Mine Road is an existing two-lane, paved road that would continue to be used to access a number of drill sites on Forest Service lands and the Superior East Plant Site. To maintain visibility for the transport of heavy equipment, the vegetation immediately adjacent to the paved roadway section would be cleared or trimmed regularly. Within the Oak Flat Campground Area, RCM would continue to maintain the existing roads to access drill site M and an existing drill site on State trust lands. In the future, the road would be maintained with coarse fill provided from the Superior East Plant Site using Apache Leap Tuff. Existing roadway alignments within the Oak Flat Campground area would not be altered.

Road improvements will consist of maintenance (i.e., filling in potholes that may develop), minor dressing, edge treatment, surface grading to extensive reconstruction and modification, and widening (i.e., cut and fill). The cut and fill activities will consist of removing material from the embankment on the up-hill slope or filling in the downhill side of the road to achieve the desired road width for two-way traffic, to accommodate the necessary drilling equipment, and for vehicle safety. Material generated during the construction of proposed road improvements will be used for the necessary road-base improvements or fill.

- Three levels of roadway improvements were assumed in determining the maximum area of proposed roadway improvement impacts. They are referred to as level A, B, and C road improvements.

  A. ***Level A road improvements:*** requires surface grading, minor road dressing, edge treatment, and widening. Level A road improvements assume an average total width of impact of 6 feet beyond the existing road and may occur on one or both sides of any given road segment.

  B. ***Level B road improvements*****:** are more intensive than level A because of the topography of the existing road, state of repair, or geologic substrate. Level B road improvements include surface grading, road dressing, and widening resulting in an average total width of impact of 10 feet beyond the existing road. The disturbance width may occur on one or both sides of any given road segment.

  C. ***Level C road improvements*****:** are those areas identified in the proposed Pre-feasibility Plan of Operations where RCM provided specific disturbance boundaries. Level C road improvement polygons were delineated for specific road segments where the condition of the existing road or road geometry required construction of road improvements that could not be reasonably estimated by the assumptions used to determine level A and level B road improvement impacts. Level C road improvements include areas that would widen specific turns, widen narrow stretches of existing road, reduce road grade, and construction of safety turn-outs and turn around areas. Some of the level C polygons include the existing road footprint (e.g., travel way and cut and fill slopes). These previously disturbed areas were included in the calculation of impacts for level C road improvements.

  - Where level C road improvements are located on a road designated for level A improvements, 6 feet of additional disturbance has been assumed for impact calculation in the level C area.

  - Where level C road improvements are located on a road designated for level B improvements, 10 feet of additional disturbance has been assumed in the level C area.

- Approximately 11.50 miles of existing access road would require level C with level A road improvements and approximately 5.47 miles of roadways would require level C with level B road improvements.

7) Construct four new access roads to provide access to specified drill sites where existing roads are not present.

8) Construct one of two proposed alternative routes, West Access Routes 4a or 4b and new drill sites 4W and 4E.

- West Access Route 4a and 4b have been identified as alternatives to the existing roads within the Oak Flat Campground Area and would be used to gain access to drill sites OF-1, OF-3, M, and RES-13. The total length of West Access Route 4a and 4b would be approximately 4,513 linear feet and 5,500 linear feet respectively.

- RCM would construct two additional exploration drill sites, 4W and 4E. These drill sites would be placed on south side of the 4a alignment or the north side of the 4b alignment.

9) Road reclamation and drill site closure/abandonment procedures will be coordinated with the Forest and in accordance with Arizona Administrative Code (AAC) R12-15 and Arizona Revised Statutes (ARS) Title 45, Chapter 2, Article 10, as administered by the Arizona Department of Water Resources.

10) Water required for dust suppression and drilling processes will be supplied by the Superior East Plant Site No. 9 Shaft, the Superior West Plant Site, Well A-06 located on State lands, and by the Arizona Water Company. Water for previously authorized drill sites will be supplied by the No. 9 Shaft and Superior West Plant site. Water for the new drill sites will be supplied by daily water trucks. Water for deep groundwater testing and monitoring wells, the geotechnical boreholes, and the exploration drill holes would be provided by water "made" during the drilling process and supplemented with outside water sources. On average, one 5,000-gallon water-truck trip per day would be required to support an active reverse circulation drill rig. Drilling mud would be collected in large storage tanks (with 9,500 to 22,000 gallon capacities) and/or in settling pits constructed within the footprint of each drill site.

11) Environmental protection measures have been proposed by RCM to address air quality, water quality, solid wastes, scenic values, and hazardous substances/petroleum products/drilling materials. These are described in detail in the BAE.

Additional environmental mitigation and monitoring measures were developed by the Forest in response to public comments on the EA and evaluation of the project impacts. These measures are referenced in the August 10, 2009 BAE, Section 2.5 and April 2009 EA, Section 2.3. At the request of the Forest, the mitigation and monitoring measures described in the BAE for the "Biological Monitoring and Down-gradient Rock Guards" were removed from consideration. These elements will be evaluated as they are presented in the proposed Conservation Measures.

Proposed Conservation Measures

The Forest and the applicant propose the following conservation measures for the AHC.

Conservation Measure 1 - Transplant. Two AHC, numbers 1X and 16, occur in close proximity to existing roads proposed for improvements as part of the Pre-feasibility Activities. The Forest has determined that these plants will need to be moved as a precautionary measure. A biological monitor, Boyce Thompson Arboretum, or other Forest approved entity shall transplant these AHC and any other AHC identified during the resurvey required by Conservation Measure 2 that cannot be avoided during construction of the Pre-feasibility Activities. The transplanted plants will be relocated to Boyce Thompson Arboretum. RCM shall be responsible for preparing an initial transplant report that documents the origin and new location of each transplanted AHC. Location information provided by RCM to the Forest shall include U.S. Geological Survey (USGS) map(s) that depict the origin and transplant location of each transplanted AHC, UTM coordinates of the origin and transplant locations in NAD83, and a sketch of the transplant location with a photograph of the plant. If an AHC is relocated to Boyce Thompson Arboretum, the origin location data will be provided in the transplant report but detailed transplant location information, other than indicating its relocation to the Arboretum, will not be required. With the exception of the initial transplant data, RCM shall not be responsible for the annual transplant monitoring or submittal of annual monitoring data for any AHC relocated to Boyce Thompson Arboretum. If more than 20 AHC are impacted as a result of the proposed action (i.e., harmed, transplanted or relocated to Boyce Thompson Arboretum), the Forest will reinitiate consultation with the FWS.

Conservation Measure 2 - Resurvey Prior to Construction, Road Repair, and Reclamation Activities. The survey and monitoring protocols included in the EA shall be expanded to include all areas of the proposed Pre-feasibility Activities that contain AHC habitat or potential habitat for AHC. If the area of proposed construction has been surveyed within the past year as part of the required monitoring efforts (Conservation Measure 5) resurvey is not required prior to construction. Resurvey will be completed no later than one month prior to the planned implementation of road improvement activities authorized by the final Pre-feasibility Plan of Operations. In the event that the planned activities would result in potential unanticipated impacts to known AHC or may impact any newly identified AHC, the biological monitor in conjunction with the Forest and RCM will evaluate site specific conditions and modify the proposed improvement activity to avoid impact. If avoidance is not possible, the AHC in question would be transplanted in accordance with Conservation Measure 1 prior to the initiation of Pre-feasibility Activities in the vicinity of that AHC. As a footnote, road repair refers to unplanned maintenance activities beyond routine maintenance and could include activities required to address natural erosion or other degradation that extends outside of the road footprint.

Conservation Measure 3 - Measures to Protect Plants During Construction. All AHC detected during resurvey will be clearly delineated with T-post and wire fencing to establish the limits of surface disturbance and protect the microhabitat associated with each plant. Fencing will be placed as generally depicted in the Pre-feasibility Plan of Operations. In circumstances where additional screening is determined necessary by the biological monitor or the Forest,

additional screening or protection measures will be implemented. When appropriate, and as determined by the biological monitor and/or Forest, concrete jersey barriers or a suitable equivalent will be used where plants are close to proposed road construction activities and additional protection from vehicle traffic is warranted. A jersey barrier shall be placed in a manner that protects the microhabitat of the AHC to the extent practical without causing significant impact to safe vehicle passage.

Conservation Measure 4 - Coordination with Construction Crews. Prior to the start of each phase of construction activities, the biological monitor shall inform construction crews of the presence and location of all known AHC proximate to the new, proposed construction activities and the procedures required to avoid adverse impact. The biological monitor shall have the authority to stop work in the event that the monitor believes that an AHC would be affected by the action. Work shall not proceed until one or more of the mitigation measures outlined in Conservation Measures 1 and 3 have been implemented to minimize adverse impacts to AHC to the maximum extent practical.

Conservation Measure 5 - Long-term Monitoring of AHC. AHC within the action area will be monitored every 2 years beginning in 2010 through the period authorized for the Pre-feasibility Activities. Biennial monitoring surveys shall occur in April and May to coincide with the flowering period of AHC. Biennial monitoring will occur along all roads proposed for improvement or used for the Pre-feasibility Activities that occur within AHC habitat or potential habitat. Biennial monitoring efforts will include resurveys of road corridors and drill site buffers within the action area following the procedures and protocols used for the original survey effort (WestLand Resources, Inc. 2009e). During surveys, special attention will be made to the condition of the road and maintenance activities that are more than minimal that may require work outside of the existing disturbance footprint such as erosion rills or larger erosional features that are forming. These areas shall be identified and the Forest and RCM shall develop specific actions to correct these conditions. The location of each AHC detected during biennial monitoring surveys will be recorded on a USGS map or aerial photograph, UTM coordinates of each AHC or cluster of AHC will be recorded in NAD 83, and each AHC will be photographed and tagged in the field appropriately to facilitate long-term monitoring efforts. Data collected for each of the detected AHC during biennial monitoring surveys will include photographs, measurements of growth activity (tubercles and secondary stem production), measurement of plant size, assessment of plant health, evidence of reproduction, and an assessment of site integrity. One final monitoring survey will be required at the end of the authorization period for the proposed Pre-feasibility Activities or at the cessation of Pre-feasibility Activities by RCM, whichever occurs first. The biennial monitoring report will be submitted to the Forest by RCM on or before December 1 of each monitoring year.

Conservation Measure 6 - Protection of Down Gradient Plants. Known AHC that occur downhill from the Pre-feasibility Activities will be protected by rock guards when deemed necessary by the biological monitor and the Forest. Rock guards will be painted white to minimize potential heat loading effects. The guards shall be properly pinned to maximize their effectiveness. In the event a guard cannot be pinned properly and the AHC is transplantable, the biological monitor would recommend transplant if, in the biological monitor's opinion, the potential risk to the plant from rock fall is greater than the risk of transplant. All transplant

activities, data recording, and monitoring of transplants will be done in accordance with Conservation Measure 1. As a footnote, plants may not be transplantable because of poor health, rock or other physical constraint, or the size of the plant.

Conservation Measure 7 - Use of Native Plants in Reclamation. RCM would include native vegetation common to AHC habitat in reclamation and closure plans for the Pre-feasibility Activities. The Forest will develop this seed mix.

Conservation Measure 8 - Reintroduction of AHC individuals via Seed/Seedling. Seeds and/or seedlings would be obtained from previously transplanted AHC housed at Boyce Thompson Arboretum, and/or the Carlota Copper Project AHC test plot. A propagation and monitoring technique plan could be cooperatively developed between the Tonto National Forest, FWS, Boyce Thompson Arboretum, RCM, and any other agency and/or individual determined to be appropriate by the Tonto National Forest and the FWS. Reintroduction areas could include, but may not be limited to "safe areas" as identified in the Tonto National Forest Conservation Assessment and Plan for AHC. Introductions of seeds and/or seedlings would occur within two years after project initiation. Frequency and duration of propagation and monitoring, reintroduction areas, and task responsibilities would be delineated in the propagation and monitoring technique plan developed. Propagations occurring outside of the action area may require additional section 7 consultation.

Conservation Measure 9 - Closure of User-Created Roads. User-created roads are defined as those roads on National Forest System Lands which were not created and are not maintained by the Tonto National Forest. User-created roads which are within potential AHC habitat or AHC habitat would be proposed for closure. These user-created roads would then be surveyed by RCM to establish presence/absence of AHC. Closure would be the responsibility of RCM and accomplished through the construction of a gate, berm, or other adequate means as determined by the Forest. Road closures would serve to limit/reduce adverse impacts from various activities.

STATUS OF THE SPECIES

The AHC *(Echinocereus triglochidiatus* var. *arizonicus*) was listed as endangered without critical habitat on November 26, 1979 (USFWS 1979). The Arizona Native Plant Law (A.R.S. Chapter 7, Article 1) (ANPL 2009) protects the AHC as a Highly Safeguarded Native Plant. The cactus is also protected from international trade by the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES). No recovery plan has been established for this cactus. A technical review of the AHC recovery plan was drafted in 1984 by the Forest, Region 3, but never finalized. Its purpose was to propose reasonable actions which the Forest deemed necessary for the recovery of the species. The status of the proposed implementation steps for species recovery is unknown.

The AHC is a succulent, perennial plant. Individuals have a dark green cylindroid stem occurring singly or most often in clusters of 4 to 20 stems, occasionally exceeding 50. Stems can average 11.6 inches in length and 3.2 inches in diameter with an average of nine ribs on mature individuals. There are usually three central spines and nine radial spines that are less than 0.5 inches in length (Baker 2006). Flowers are bright red and are produced along the side of the

stem, appearing in late April to mid-May. Fruiting occurs from May to June (AGFD 2003) with germination occurring in midsummer (Arizona Rare Plant Committee 2001). Mature cacti can produce many fruits per year with each fruit producing up to 100 seeds (AGFD 2003). It is an obligate outcrosser, pollinated by hummingbirds, carpenter bees, solitary bees, and honeybees (USFS 2004). Recent morphological work by Baker (2006) recommends that this taxon be placed within *Echinocereus arizonicus (E. arizonicus* ssp. *arizonicus)*, instead of within section *Triglochidiatus*.

The AHC occupies a narrow geographic range that is located within central Arizona in Pinal and Gila counties, and includes the Pinal, Dripping Springs, Superstition, and Mescal Mountains. AHC can also be found in the highlands between the cities of Globe and Superior. The Arizona Rare Plant Committee (2001) reports its range as the Superstition Mountains and Top of the World on the Tonto National Forest. Two small subpopulations occur outside of this area, the Apache Peak subpopulation north of the city of Globe and the El Capitan subpopulation south of Globe. These populations (main and two subpopulations) are "classical var. *arizonicus*" and are the only populations of the AHC subject to the protection and restrictions of the Act. The Tonto National Forest, Globe Ranger District manages 90 percent of the known occupied habitat of AHC. This cactus also occurs on Arizona State Land Department trust lands, lands administered by the Bureau of Land Management, and privately-owned lands.

The range and distribution of AHC occurs within the ecotone between Madrean Evergreen Woodland and Interior Chaparral at elevations ranging from 3,300 to 5,700 feet. Preferred AHC habitat is exposed and stable bedrock or boulders exhibiting sufficient fracturing or rock interstices for establishment. Parent rock materials of preferred habitat are Schultze granite and Apache Leap tuff (dacite), both igneous in origin (AGFD 2003; USFS 1996). Pinal schist and the Pioneer formation in proximity to the dacite and Schultze granite also provide habitat for the AHC, but only where these formations express themselves as exposed bedrock (USFS 1996). The majority of AHC are found scattered on open, rocky slopes of 20 to 90 degrees, and steep, fissured cliffs (Philips et al. 1979; USFWS 1985). Its roots invade cracks, fissures, or interstices within exposed rock or narrow pockets between boulders where the microclimate provides the necessary periodic moisture, moist soils, and shelter from high temperatures (USFS 1996). The cactus may be found on flatter ground and more open slopes as well as, in the understory of shrubs, but moderate to high shrub densities and associated deeper soils tend to preclude the cactus (USFS 1996).

Threats to the AHC have been identified as habitat destruction by mining, mineral exploration, road construction, power-line construction and utility corridors, off-highway vehicle use and other recreational activities, rangeland improvements including water developments and trampling by livestock. Additional threats to the cactus include illegal collecting, wildfire, herbicide and pesticide application, and insect infestation (Philips et al. 1979; AGFD 2003; USFS 1996).

The Arizona Heritage Management Database has 28 records documenting the location and/or number of AHC observed throughout its range (S. Schwartz, AGFD, pers. comm. 2009). Of these records, approximately 1,302 AHC have been observed between 1922 to the present. Some of these records are anecdotal and for older records, the genetics of the individual should

be verified for the variety *arizonicus*. Direct access to a large portion of the species range is very limited due to the rugged topography and remoteness of its habitat. As a consequence, reliable estimates on abundance counts are limited. Abundance count information and population trend status for the species is primarily reported by those projects requiring section 7 consultation. Cedar Creek Associates observed over 1,000 individuals during a survey for the Carlota Copper Mine Project located north of the action area in Gila County (USFS 1996). Using all available distribution and ecological data at the time, Cedar Creek Associates estimated that AHC occupied approximately 18,900 acres of habitat within the main population. Surveys of AHC conducted by WestLand Resources, Inc. in 2004, found nine AHC in the Oak Flat Campground area and surrounding land east of the town of Superior (WestLand Resources, Inc. 2009e). Surveys for AHC were also conducted for drill sites A, B, C, D, F, and M (previously authorized activities) and for drill sites located south of FR 315 on State trust lands and along Rancho Rio Creek in 2001. No AHC were found during either of these surveys, but potential exists for the species to occur in areas adjacent to or very near these surveyed areas (WestLand Resources, Inc. 2009e) suggesting that these lands may be potentially suitable for the species. Densities of AHC during the survey were reported to be one plant per 336 acres. It was noted that the density in this area was far less than the densities found for Carlota of two to twenty AHC per acre, highlighting the variability between the data and the need for additional research to improve our understanding of the species.

Eight formal section 7 consultations have been conducted for the species. Previous projects have resulted in the direct impact or loss of an estimated 3,247 individuals and approximately 561.41 acres of occupied, suitable, and potential habitat. In 1996, a Conservation Assessment and Plan was finalized for the AHC on the Tonto National Forest. The main recommendation of the plan were the identification of “safe areas”, logical ecological units within the distributional limits of the taxon where the Federal government has options to maintain relatively strict control over land uses with management emphasis toward the perpetuation of the species (USFS 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.

Description of the Action Area

The “action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur (50 CFR 402.02).

For this project, we define the action area as the project footprint which includes previously authorized drill sites where additional work will occur, new proposed drill sites, roadways

proposed for improvements that provide access to existing or proposed drill sites, including the roads in the Oak Flat Campground area; proposed new roads, and the road leading to the Superior East Plant that is the source for some of the fill material and water. The action area also includes any staging areas, a 100-foot buffer on either side of the proposed access roads, and a 500-foot diameter area around each of the proposed drill pad locations. The action area is approximately 761.0 acres.

The action area occurs within the Globe Ranger District of the Tonto National Forest and includes portions of Arizona State trust lands, and privately-owned lands. The action area is within the Central Highlands Physiographic Province, a geological transitional zone between the Colorado Plateau and the Basin and Range Provinces. The topography ranges from sheer rock escarpments and deep canyons to gently sloping basins. Elevations vary from approximately 2,900 feet above mean sea level to 4,800 feet. The majority of the action area is located on Apache Leap tuff and is considered biologically diverse (Brown and Lowe 1980). The majority of the vegetation community is classified as interior chaparral, with a small portion in the northeastern corner within Madrean evergreen woodlands. Portions of the action area to the west and south of the Apache Leap escarpment are predominately characterized by the Arizona Upland subdivision of Sonoran desertscrub (WestLand Resources, Inc. 2009d).

The action area is located within the Gila River watershed. Surface water flows are restricted to a network of small to medium ephemeral drainages, most of which discharge indirectly into Queen Creek and Devils Canyon. These drainages are: Rancho Rio, Oak Creek, and Hackberry Creek. There are no wetlands within the action area. A naturally occurring perennial segment of Devils Canyon is located approximately 5.6 miles upstream of the confluence with Mineral Creek. Several drill sites are located in close proximity to Devils Canyon. Approximately 0.4 mile separate FR 2466 and the intermittent reach of Devils Canyon. Drill sites OF-1 is approximately 0.7 mile from the nearest intermittent reach of Devils Canyon near the boundary of Forest Service lands and State trust lands.

Status of the species within the action area

The majority of the proposed project is located within the known distribution and range for the species (AGFD 2003). Surveys for AHC were conducted during July and September 2007 and in January, February, March, and September 2008 by WestLand Resources, Inc. The surveyed areas included a 100-foot wide area centered on the roadway centerline, along proposed access roads, and a 50-foot area around each proposed drill site. The total surveyed area covered approximately 383.25 acres of public, State trust, and privately-owned lands. Previous surveys were conducted in 2001 and 2004 covering 3,184.25 acres (WestLand 2009e). The surveyed areas included lands within the Oak Flat Campground and those immediately surrounding it as well as, lands surrounding drill sites A, B, C, D, F, and M (previously authorized activities). Information from all of these surveys identified 140 AHC on Forest Service and privately-owned lands. Of this amount, approximately 63 AHC are located adjacent to the existing Forest Service roads and user-created roads. One AHC is located adjacent to a proposed drill site. No AHC were located on State trust land. Additionally, no individuals were located along FR 315 from SR 177 north to the boundary of State trust lands, along FR 2440 and drill site MB-03 and QC-04, along FR 2261, and around drill site H-C. This portion of the action area is estimated to be

12.28 acres and considered by the Forest not to be AHC habitat or potential habitat (WestLand Resources, Inc 2009d). The Forest also considers 1.15 acres on private land and 3.02 acres of disturbance from previously authorized activities not AHC habitat or potential habitat.

Land use within the action area is associated with mineral exploration and mining, low density cattle grazing, and dispersed public recreation. RCM has been conducting exploration and groundwater monitoring activities since 2001 within portions of the action area (Forest Service Plan of Operations No. 01-02-12-002). Past mining or exploration activities include the construction of drill sites A, B, C, D, F, and M that were originally proposed in 2001, surveys to support proposed drilling at six additional sites located three miles east of Superior and south of the Oak Flat Campground, and the completion of drilling, monitoring, and road improvement activities on State trust land for three well sites and three access roads. Three grazing allotments, or portions of the allotments, occur in the action area. These are the Bellevue, Devils Canyon, and Superior Allotments. The Bellevue and Devils Canyon Allotments underwent section 7 consultation (22410-1999-F-300) on February 28, 2002 for the effects of ongoing and long-term grazing management on AHC. We determined that the project would not likely jeopardize the continued existence of the species. The Superior Allotment is currently in formal consultation.

Roads through the Oak Flat Campground area lead to 16 primitive campsites which provide for public recreation. The Oak Flat Campground area is also an area of concern by some Native American Tribes. Four-wheel recreationists have been observed occasionally traveling on FRs 2466, 2467, 2463, and 2461 which eventually connects to SR 177. The majority of the existing access roads are classified under the Forest Service Travel Management Maintenance Standards as Level 2 High Clearance roads. Level 2 roads are defined as roads open for use by high-clearance vehicles and the road has low traffic volume and speed. These roads typically are local and connect collector roadways, have at-grade drainage treatment, are not subject to the requirements of the Highway Safety Act, do not provide surface smoothness, and are not suitable for passenger cars. Road conditions on Arizona State trust lands are unknown.

We believe that due to the current conditions of the roads within the action area, with infrequent use and low vehicular travel due to their rugged conditions, limited human activity has occurred. This has benefitted the AHC by enabling the cactus and its habitat to remain primarily undisturbed from threats in the action area.

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 that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The Forest has determined that certain activities proposed on State trust and privately-owned lands are interrelated and interdependent to the proposed actions on Forest Service lands and

should be considered together with the analysis of the proposed activity (USFS 2009c). The drill site RES-12, well sites H-B, H-H, and Cross Canyon Well, and five roads (FR 315, FR 898, FR 2440, FR 2466, and FR 2469) requiring improvements to access the aforementioned drill/well sites are considered in this consultation. Approximately 5.26 miles of road improvements will occur on State trust land and private lands. Details describing the size of the drill pad footprint and estimated authorization period on these non-Federal lands were not described in the BAE or additional supplemental information but we assume that they follow the same prescriptions as those on Forest Service land.

General effects of the proposed project

The proposed Pre-feasibility Activities are anticipated to disturb a minimum of 47.47 acres on undisturbed land. Specifically on Forest Service lands, impacts to 29.51 acres of undisturbed land will be attributed to existing access road improvements. Construction of new access roads will impact 0.59 acres, construction of five exploration drill sites will impact approximately 1.14 acres, construction of eight drill sites for groundwater testing and monitoring wells will impact approximately 1.78 acres, and construction of nine tunnel characterization drill sites will impact approximately 1.80 acres. An additional 3.08 acres would be impacted by the Alternative West Access Route and construction of drill sites 4E and 4W. On non-Federal lands, proposed drill and well sites will impact 1.27 acres (1.09 acres State trust land plus 0.18 acres private lands) and road improvements will impact approximately 8.21 acres (5.73 acres State trust land plus 2.48 acres private lands). Including 3.02 acres of disturbance from previously authorized activities, the Pre-feasibility Activities will impact 50.49 acres.

The Forest clarified the methodology used to calculate the acreage of new disturbance from proposed road improvements. For level A and B road improvements, disturbance acres were determined using the length of the road segment to be improved multiplied by the new disturbance width: 6 feet for level A and 10 feet for level B. These widths do not include the "existing road surface or existing cut or fill slopes" as these surfaces "represent previous disturbance and were not added to the estimates of new surface disturbance impacts anticipated from the implementation of the proposed action and alternatives". For level C improvements, disturbance acres were calculated using polygons of the disturbance footprint, in which, "some of the level C polygons include the existing road and cut and fill slopes and provides an over-estimate of impacts" where these improvements occur (USFS 2009b).

In our analysis of the proposed project, we believe road improvements will have a greater impact on the species and its habitat, more so than the construction of new drill sites because the majority of AHC are growing adjacent to existing access roads where road construction is planned. We reviewed the proposed activities to determine the total disturbance of the project (e.g., establish a baseline) before considering its effect on the species. The difference between our analysis and that conducted by the Forest and the applicant is that we considered all of the proposed Pre-feasibility Activities (see Section 7(a)(2) of the Act and 50 CFR 402.02 Definitions) described in the BAE and did not limit disturbance to include activities only on undisturbed lands. Proposed surface grading, road dressing, edge treatments, dust treatment, watering, periodic maintenance, and widening were considered. Therefore, in addition to the 50.49 acres of disturbance, the road surface adds an additional 24.24 acres (88,017.6 feet (16.67

miles) x 12 feet) of disturbance on Forest Service lands and 7.75 acres (27,772.8 feet (5.26 miles) x 12 feet) on State trust and private lands. Thus, we determined that the proposed project could potentially impact up to 82.48 acres. We expect the project to disturb an additional, small amount of acres associated with material (e.g., Schultze granite and Apache Leap tuff) that would be removed or impacted from cut and fill.

We note that "road widening" per se was not an activity included among the other activities listed for level A and B improvements on page 15 of the BAE. Since it is shown in Figure 2-3, Schematic Diagram of Level A, B, & C Road Improvements and included in the legend of various maps provided by the Forest (Enclosure B, Figure 3, and Figure 6), we assume widening is a part of these improvements in addition to, level C road improvements. Also not included in the April EA and subsequent versions of the BAE is the current width of the existing roads proposed for improvements. The Forest clarified that the existing widths were not provided because they vary but estimates them to generally be 8 to 9 feet wide. The February 19, 2009 BAE and Arizona Hedgehog Cactus Compiled Survey Report include road profile diagrams using a width of 12-feet for a "typical cross section" (Figure 12, WestLand Resources, Inc. 2009a, 2009e), which we used in our analysis.

Effects to AHC and its habitat

The BAE states that the proposed configuration of the Pre-feasibility Activities avoids direct impacts to known AHC; however, we believe that direct impacts to AHC will occur. Two plants growing in the roadside rubble will be transplanted so that activities occurring on the roadway will not result in their death. However, the loss of these individuals from the population is a direct effect of the proposed action. As previously mentioned, approximately 63 AHC are located adjacent to the existing access roads with as many as 44 AHC in close proximity (i.e., noted as "high" for side of the road, see Figure 3, Arizona Hedgehog Cactus Location Map). Information such as location coordinates for AHC in the project footprint was provided along with maps highlighting sections of road requiring improvements. The BAE estimates that the average width of disturbance on level A roads will be 6 feet wide and the average width of disturbance on level B roads will be 10 feet wide; however, the width of road disturbance will be variable and is dependent on topography. Thus, we are uncertain about what effects road widening could potentially have on the species in cases where a cactus is located in areas where the road is too narrow and the adjacent slopes must either be cut or filled to achieve the necessary width. In addition, up to 18 AHC located downhill of the proposed activities may be susceptible to impacts from "rock fall" and/or rolling or "sliding debris" and could also be directly impacted. The Forest has proposed specific mitigation and monitoring measures such as the use of a biological monitor and T-posts, wire fencing, or jersey barriers to protect areas near the cacti that should help minimize adverse affects to AHC.

The Forest has also committed to ensure that no AHC will be directly harmed by the proposed action. Protection measures have been planned specifically to avoid direct effects to all known AHC within and near the action area, and mitigation and monitoring activities will be implemented to avoid the direct loss of individuals during construction activities, as previously mentioned. Yet, we understand that for a project of this scale, this may be difficult to achieve. We agree with your statement on page 79 of the BAE that "undetected young plants within the

action area may be affected by the Pre-feasibility Activities and could be adversely affected, despite efforts to avoid direct and indirect impacts during implementation of the mitigation and monitoring measures outlined in the EA".

Indirect effects of road improvements, new road construction, and construction of drill sites will directly affect 34.04[2] acres of AHC habitat (WestLand Resources, Inc. 2009d; USFWS files). We modified our analysis at the request of the Forest and applicant to remove the existing road surface from being considered within habitat for the species. We agree that it is unlikely an AHC could persist on surfaces traversed by motorized vehicles but individuals do persist where suitable habitat conditions exist (e.g., cacti IX and 16 that are growing on the side of the road). More importantly, we understand that some of the proposed existing access roads are in primitive condition, such that, disturbance resulting from surface grading could extend beyond the footprint of the travel way onto occupied or suitable AHC habitat. This disturbance could be temporary or short-term and is difficult to know for certain but some level of impact is expected to occur. Drill site construction will eliminate occupied and suitable AHC habitat due to the requirements to remove vegetation and create a flat working area at each of the sites. Direct and indirect effects due to road watering, directional drilling, or reclamation activities are expected to be minimal.

The proposed Conservation Measures will help to reduce some anticipated impacts to individual plants but these will not offset effects to the species and its habitat from the proposed action. For example, there are no proposed conservation measures to mitigate for indirect effects to the species, such as habitat loss or degradation. Conservation measures **"**are actions to benefit or promote the recovery of listed species" and "serve to minimize or compensate for project effects on the species under review" (USFWS and NMFS 1998). The most promising action is the proposed effort to reintroduce and propagate new AHC individuals into the action area. If this effort is successful (Falk et al. 1996; Kennedy 2004), this would help increase the existing population density.

The Forest proposes to transplant AHC that cannot be avoided by project activities. It is not known how many AHC could be transplanted during the 15 year life of the project, but transplants will not exceed 20 plants. Transplanting has its pros and cons (Falk et al. 1996; Fahselt 2007; Sivinski and McDonald 2007). Generally, we view transplanting cacti as a measure of last resort for conserving the species with limited conservation value. While it may save an individual plant, transplanting AHC removes these individuals from the functioning population, reduces genetic variability within the population, and reduces the ability of the area to provide habitat for seedlings. Transplanted individuals may contribute to the education and/or future seed banks. However, it is unknown if all or what proportion of transplanted individuals will survive and of those that do, it is unknown if these individuals will persist so that they provide meaningful conservation to the species. As stated in the BAE, transplanting is stressful on plants. Transplant involves a significant reduction in the root-shoot ratio and decreases a plant's ability to collect water during precipitation events (WestLand Resources, Inc. 2009d). In

2 The Forest determined that 12.28 acres on Federal land, 1.15 acres on private land, and 3.02 acres of disturbance from previously authorized activities are not AHC habitat or potential habitat. These amounts sum to 16.45 acres. After subtracting this amount from 50.49 acres, 34.04 acres remain which are considered AHC habitat or potential habitat.

addition, the individuals that are not transplantable because of poor health, their size, or physical constraint but may be impacted by the proposed action will likely be lost.

With the implementation of Conservation Measure 6, additional information is needed on the use and effectiveness of the rock guards. We have no knowledge if the proposed rock guards have been tested on similar cacti under similar situations (i.e., exposure to falling rock, high summer temperatures, and if the rock guard can adequately protect a cactus with varying stems and stem heights). Only anecdotal information about them has been provided to us. The BAE acknowledges the uncertainty of using these rock guards to protect individual AHC (WestLand Resources, Inc. 2009d) and we agree with this concern. Additional, unrealized impacts to the habitat could occur in trying to place these cages over individuals and properly secure the cage in place. There is also speculation in the BAE regarding the effect of the rock guards to AHC during hotter times of the year, such that, there could be a change in the heat balance experienced from the protected individual. The BAE states that the potential increase in heat loading will be less stressful than transplant, but potential increases in heat loading caused by the rock guards could be minimized or eliminated by the effective use of shade cloth and/or painting the cage white. Thus, it is not known whether the rock cages would cause additional heat stress above what is commonly experienced by AHC growing in an exposed rock outcrop or cause other unanticipated effects. While these efforts to protect and safeguard AHC may in fact be beneficial; we are not aware of any scientific data supporting the use of these rock guards. Therefore, we cannot meaningfully evaluate the effectiveness of this proposed conservation measure to minimize direct impacts to individual plants.

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. Since the majority of the land within the action area is managed by the Tonto National Forest; most activities that could potentially affect the species are Federal activities and subject to additional section 7 consultations. No other future non-Federal activities have been identified in the action area.

CONCLUSION

After reviewing the current status of the AHC, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the FWS's biological opinion that the Pre-feasibility Activities Plan of Operations, as proposed, are not likely to jeopardize the continued existence of the species. No critical habitat has been designated for this species; therefore, none will be affected.

We present this conclusion on the AHC for the following reasons:

- The proposed project will result in the removal of two AHC, IX and 16, which will be transplanted to Boyce Thompson Arboretum. The project could result in the loss or damage to 18 plants located downhill from the proposed activities and potentially be

impacted by those activities. If more than 20 AHC are impacted as a result of the proposed action (i.e., harmed, transplanted or relocated to Boyce Thompson Arboretum), the Forest will reinitiate consultation with the FWS.

- The presence of a biological monitor at the beginning phase of construction should help reduce impacts to AHC. The biological monitor has the authority to stop work in the event of impacts to individual AHC.

- Drill site and road construction activities will occur on 82.48 acres. Of this amount, 35.01[3] acres of AHC habitat has been previously disturbed. Of new disturbance, the Pre-feasibility Activities would impact 34.04 acres within AHC habitat, as a result of these construction activities. Additionally, a relatively small amount of habitat will be degraded and/or fragmented from unanticipated levels of erosion and surface disturbance that may occur from the proposed project. The Forest and applicant propose to close user-created roads that would limit habitat fragmentation.

- The proposed Conservation Measures are not adequate to offset direct and indirect effects to the species in the action area but may reduce some impacts to individuals. Long-term monitoring in the action area will provide an assessment of the species status.

- The Forest has committed to other conservation measures including the reintroduction of AHC from seed and/or seedlings in the action area that would help to increase the population density of AHC.

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

3 Our analysis determined that the Pre-feasibility Activities would disturb 82.48 acres. The Forest determined that of this amount, a substantial portion in the action area has been previously disturbed and this amount should be distinguished from new disturbance on undisturbed land. Previous disturbance includes existing road surfaces on 24.24 acres on Federal land and 7.75 acres on State trust and private lands and 3.02 acres associated with previously authorized activities. These amounts sum to 35.01 acres (35.01 + 47.47 = 82.48).

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 your agency participate in the development of a recovery plan for this species.

2) We recommend that your agency continue to implement recommendations set forth in the Conservation Assessment and Plan for the Arizona hedgehog cactus, such as developing "safe sites" for the species that will protect its habitat and contribute to recovery.

3) We recommend the development of an agreement with RCM to purchase land or establish a conservation easement or some type of "mitigation bank-like" process to conserve and protect the species from further losses.

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

REINITIATION NOTICE

This concludes formal consultation on the proposed Pre-feasibility Activities Plan of Operations in Pinal and Gila counties, Arizona. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect AHC in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to AHC that was not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action.

In keeping with our trust responsibility to American Indian Tribes, when we enter into section 7 consultation with agencies not in the Departments of Interior or Commerce on a proposed action that may affect Indian lands, Tribal trust resources, or Tribal rights, we encourage you to invite the affected Tribe and Bureau of Indian Affairs to participate in the consultation process and, by copy of this letter, are notifying the San Carlos Apache Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation, Tonto Apache Tribe, Hopi Tribe, Hualapai Tribe, and Mescalero Apache Tribe. We understand these Tribes have identified the lands subject to this section 7 consultation as sacred and holy places and furthermore have voiced opposition to mining on these lands.

We appreciate the efforts by the Forest to identify and minimize effects to listed species for this project. We encourage you to coordinate the review of this project with the Arizona Game and Fish Department. For further information please contact Kathy Robertson (x232) or Debra Bills (x239).

Mr. Gene Blankenbaker, Forest Supervisor

Please refer to the consultation number 22410- 2009-F-0229 in future correspondence concerning this project.

Sincerely,

/s/Debra Bills for Steven L. Spangle
Field Supervisor

cc (hardcopy):
Mark Taylor, Minerals Biologist, Mesa Ranger District, Tonto National Forest, Mesa, AZ
Karyn Harbour, Minerals Administrator / Forest Geologist, Tonto National Forest, Phoenix, AZ
Bureau of Indian Affairs, Phoenix, AZ
Josh Avey, Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Chairman, Hopi Tribe, Kykotsmovi, AZ
Chairperson, Hualapai Tribe, Peach Springs, AZ
Chairman, Mescalero Apache Tribe, Mescalero, NM
Chairman, San Carlos Apache Tribe, San Carlos, AZ
Chairperson, Tonto Apache Tribe, Payson, AZ
Chairman, White Mountain Apache Tribe, Whiteriver, AZ
Chairman, Yavapai Apache Nation, Camp Verde, AZ
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____. 2009c. Attachment 2: Supplemental information on interrelated/interdependent actions, biological assessment and evaluation, Resolution Copper Mining Proposed Pre-feasibility Activities Plan of Operations, August 10, 2009. 6 pp. plus Attachment.

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____. 2009e. August 2009, Arizona hedgehog cactus compiled survey report, Resolution Pre-feasibility Activities Plan of Operations. Project no. 807.25. 15 pp. plus Appendices.

APPENDIX I

Figure 1. Location of the Pre-feasibility Activities Plan of Operations in the Tonto National Forest, Pinal and Gila counties, Arizona.

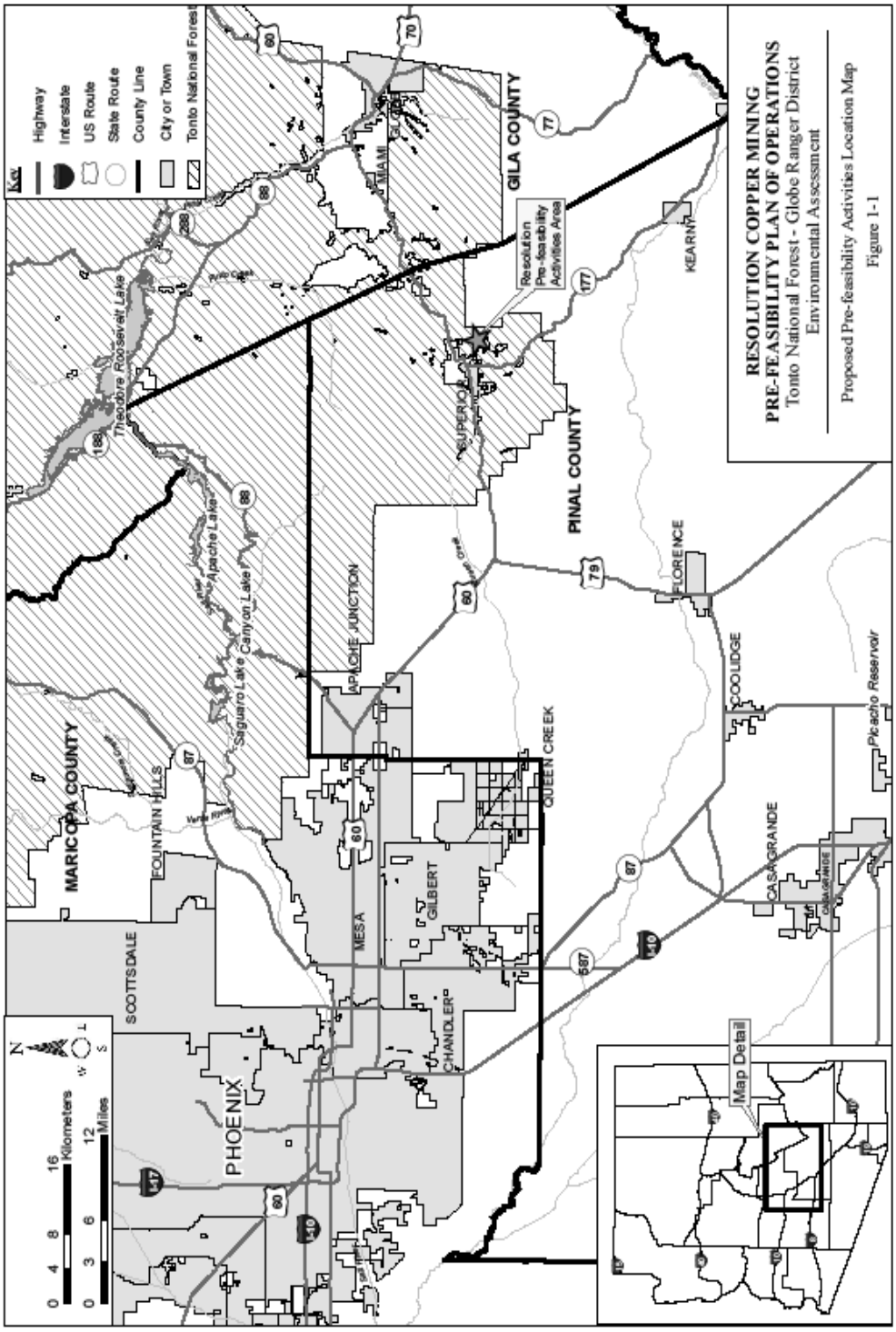

Figure 2. Map of the Pre-feasibility Activities Plan of Operations on Forest Service, State trust, and privately-owned lands in Pinal and Gila counties, Arizona. Road improvements designations are: level A (blue), level B (green), level C (red). Map courtesy of Resolution Copper Mine, LLC.