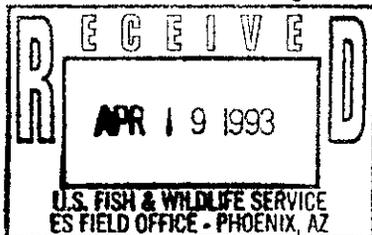




UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

April 15, 1993



Cons. #2-22-93-F-233

Memorandum

To: Field Supervisor, Arizona Ecological Services Field Office

From: Field Supervisor, New Mexico Ecological Services Field Office

Subject: Intra-Service Biological Opinion, Cottonwood Spring Cooperative Agreement, Santa Cruz County, Arizona

This biological opinion responds to your request of March 26, 1993, for formal consultation pursuant to Section 7 of the Endangered Species Act (Act) of 1973, as amended, on placing a water filter in Cottonwood Spring, pumping a maximum of 6 gallons per minute from the spring, and burying a pipeline in a trench across a cienega along Sonoita Creek. The species of concern is Gila topminnow (Poeciliopsis o. occidentalis). The 90-day consultation period began on March 30, 1993, the date your request was received in our office.

The following biological opinion is based on information provided in the March 26, 1993, Intra-Service biological evaluation, data in the Arizona Ecological Services Office, and other sources of information.

BIOLOGICAL OPINION

It is our biological opinion that placing a water filter in Cottonwood Spring, pumping a maximum of 6 gallons per minute from Cottonwood Spring, and burying a pipeline in a small trench across a cienega along Sonoita Creek is not likely to jeopardize the continued existence of Gila topminnow.

BACKGROUND INFORMATION

Species Description

Gila topminnow was listed as an endangered species on March 11, 1967. No critical habitat has been designated for this species. Gila topminnow is a small (25 to 50 mm long), livebearing fish (Minckley 1973) of the family Poeciliidae. It occurs in the Gila, Sonora, and de la Concepcion River drainages in Arizona, New Mexico, and Sonora, Mexico (Minckley 1973, Vrijenhoek et al. 1985). The species was once one of the most common

fishes in the Gila River and its tributaries (Hubbs and Miller 1941). Destruction of its habitat through water diversion, stream downcutting, backwater draining, vegetation clearing, channelization, water impoundment, and other human uses of natural resources; and competition with and/or predation by non-native fish species, most notably mosquitofish (Gambusia affinis), have resulted in extirpation of Gila topminnow throughout most of its range (Meffe et al. 1983, Service 1984). At present, Gila topminnow is known from only 9 naturally occurring populations in the United States and about 20 reintroduced populations.

Cottonwood Spring supports one of these nine naturally occurring populations. It is one of only three of those natural sites presently free of mosquitofish (Brooks 1986, Simons 1987, Bagley et al. 1991, Brown and Abarca 1992). Gila topminnow are found throughout the Cottonwood Spring area, including the springhead, the canal, the cienega area, and the downstream channel. Longfin dace, a native species, is the only other fish species present. As a large, mosquitofish-free, natural population, the Cottonwood Spring Gila topminnow are considered to be very important to the long-term survival of the species.

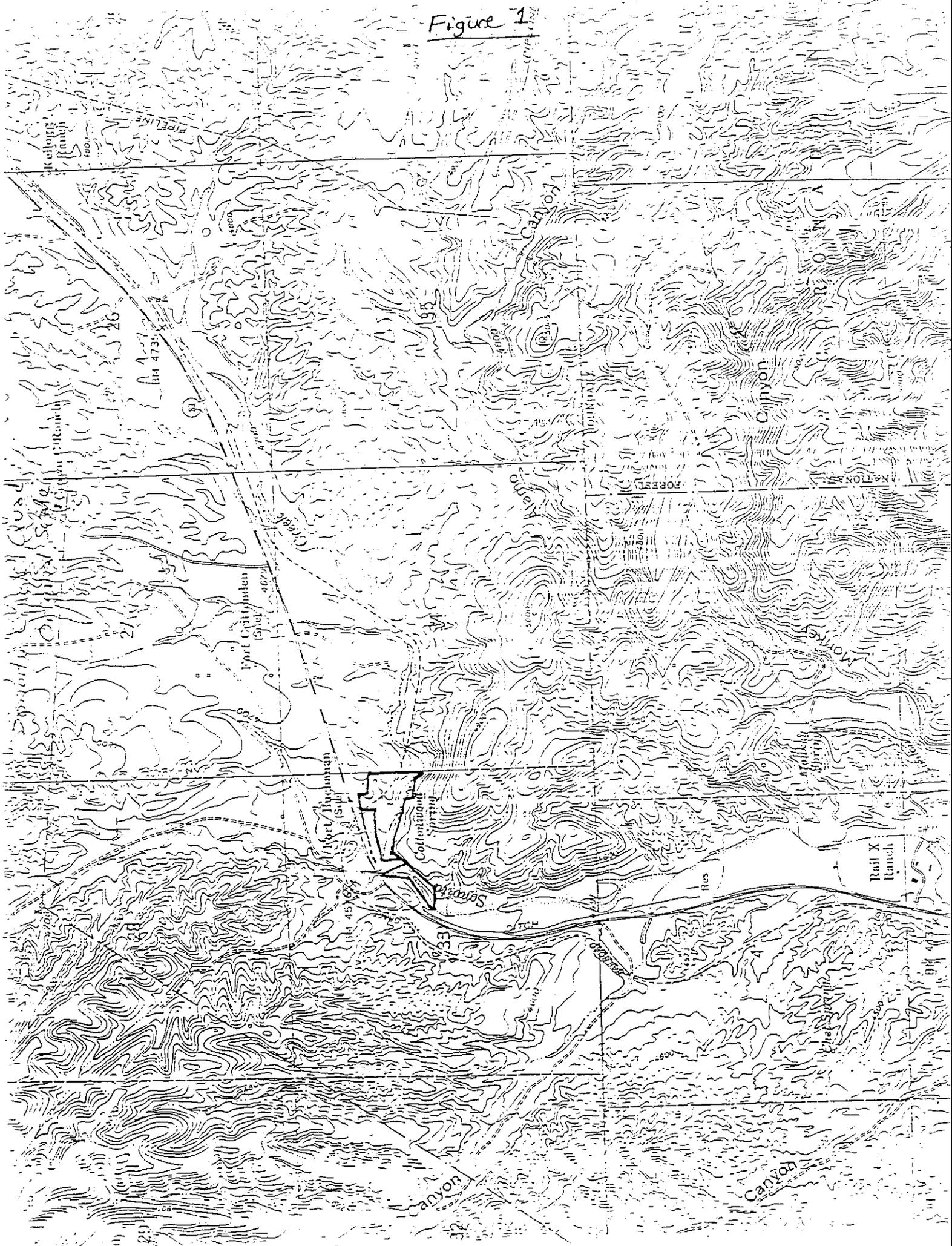
Project Description

Cottonwood Spring is a perennial spring that drains into Sonoita Creek, Santa Cruz County, Arizona (Figure 1). It enters Sonoita Creek, an intermittent creek, approximately eight miles north of the Town of Patagonia. The 1/2 mile target section of Sonoita Creek is narrow, with an active channel approximately 150 feet wide. In the vicinity of Cottonwood Spring, Sonoita Creek flows through a cienega. Vegetation includes cottonwood (Populus fremontii), Goodding willow (Salix gooddingii) velvet mesquite (Prosopis velutina) and Huachuca water umbel (Lilaeopsis schaffneriana recurva) (Federal candidate, category 1).

Cottonwood Spring is a 20-acre portion of a large parcel owned by Davis Merwin, a private landowner. This property is currently used for grazing. Cattle are moved into the Cottonwood Spring portion of the property between November and April and for approximately 6 weeks during the fall. Cattle are permitted into the cienega and surrounding mesquite bosque during these periods.

On July 1, 1992, Davis Merwin and The Nature Conservancy (TNC) entered into a Partners for Wildlife Cooperative Agreement (Agreement) with the U.S. Fish and Wildlife Service (Service) to protect and restore cottonwood/willow and cienega wetland habitat to protect species of Federal concern such as the endangered Gila topminnow, Huachuca water umbel, Huachuca watersnail (Category 1 candidate), and neotropical migratory birds and their habitat. The terms of this Agreement are for 20 years.

Figure 1



The cienega along Sonoita Creek is to be protected from livestock grazing by constructing a fence to exclude cattle from this sensitive habitat and the adjacent mesquite bosque and by providing two livestock drinkers in the upland area (Figure 2). Some of the existing fenceline will also be repaired. Additional facilities to be installed include a water filter in Cottonwood Spring, solar powered water pump, solar cells, and two pipelines extending from the pump supplying the drinkers. The solar pump and cells will be placed on the slope above the spring.

Any fence installation or repair of existing fencing will follow the Arizona Game and Fish Department (AGFD) specifications for wildlife fences (i.e., the top and bottom wire will be barbless). The existing fenceline that crosses the cienega will be removed (Figure 2). Additional fencing will be installed up the hill to the south drinker to prevent cattle access to the slopes immediately above the cienega. This will help reduce the potential for increased turbidity in Sonoita Creek from grazing activities.

The galvanized steel pipeline extending to the north drinker will be buried within the cienega to reduce potential breakage from flooding or debris. This 1.25-inch diameter pipeline will be buried at a minimum of 12 inches below the surface. This is equal to twice the maximum depth of the deepest portion of the low flow channel through the cienega. The pipeline will be placed upstream of where the spring drains into Sonoita Creek in an area that is seasonally wet. The pipeline trench will be made using a hand-held trencher and disturbance to the cienega will be kept to a minimum. It is anticipated the trench width will be approximately 4 to 6 inches. Construction of the trench will occur in late spring after winter runoff has occurred but before summer monsoons. Material that is removed during trenching will be stockpiled on the outer edge of the cienega away from the low flow channel. The trench will be backfilled with topsoil and resodded with sod removed when the trench is dug.

The average rate of flow from Cottonwood Spring is 75 gallons per minute (gpm). The extent of seasonal flow variation is unknown. The pump and drinker system will be designed to allow a maximum of 6 gpm flow to be diverted out of the spring. Flow will be diverted for 6 weeks during the fall for the north drinker and between November and April for the south drinker (Figure 2). The drinkers will be equipped with float valves so only enough water to fill the drinkers will be diverted. The float valves will be covered to prevent breakage by cattle. The pump system will be designed so that when the drinkers are full, water in the pipeline will flow back into Cottonwood Spring. To prevent mosquito propagation, the drinkers will be drained when they are not in use.

EFFECTS OF THE ACTION

The proposed construction of a fence and repair of existing fenceline around Cottonwood Spring and the adjacent mesquite bosque, installation of two livestock drinkers in the upland habitat, and installation of a solar powered water pump system is expected to result in an overall improvement in the status of the Gila topminnow at this site.

The Gila topminnow population will benefit from this project in the long-term because livestock removal from the cienega will result in improved habitat conditions. Riparian vegetation and cienega vegetation is expected to increase in density after trampling and removal of vegetation by cattle grazing are reduced. The maximum flow that will be pumped from Cottonwood Spring at any one time is less than 10 percent of the average volume of flow from the spring. In addition, it is estimated that a maximum of 1500 gallons per day will be pumped out of the spring during peak use of the area by cattle. This is an insignificant amount of water being diverted based upon an average rate of discharge from the spring of 75 gpm; therefore, it is anticipated that this small drop in water volume in Sonoita Creek will not have a significant adverse effect on the Gila topminnow population.

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative in the proposed action.

Other non-Federal actions in the Sonoita Creek watershed include monitoring of the Gila topminnow by the AGFD under Service funding furnished in accordance with Section 6 of the Endangered Species Act. This action is cumulative to the monitoring of Gila topminnow and the aquatic and riparian habitats as part of the proposed action. We believe that monitoring of listed species is an important component of a successful conservation program. However, it is important that all monitoring efforts be coordinated to avoid unnecessary harassment of the species and damage to its habitat. Cumulative impacts of several uncoordinated monitoring programs, particularly when combined with the adverse effects of other resource uses, may result in adverse impacts to Gila topminnow and its habitat.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered a prohibited taking provided that such taking is in compliance with the incidental take statement. The measures described below are nondiscretionary, and must be undertaken by the Service.

The Service anticipates that the placement of the proposed solar powered water pump system, including burying the pipeline through the cienega, will result in incidental take of Gila topminnow as follows:

Potential loss of Gila topminnow will occur if individuals are pumped into the pipeline when water is diverted for the livestock drinkers and if the species is present in the drinkers that seasonally run dry when they are not in use. In addition, some may be killed when the trench is dug to bury the pipeline across the cienega. Direct incidental take cannot be quantified because reliable estimates of populations of Gila topminnow are not obtainable due to sampling difficulties and to the rapid population changes inherent in a short-lived species with high fecundity. Measurement of incidental take in terms of habitat damage is also difficult due to the coincident improvement in riparian and cienega conditions as a result of the cattle enclosure.

While the numbers of fish or amount of habitat that will be taken cannot be quantified, there are certain levels of effects that we believe will result in take that exceeds acceptable levels. Therefore, incidental take of Gila topminnow and their habitat as a result of the fence line construction, placement of the solar powered water system, or annual maintenance of these facilities would be assumed to have been exceeded if one or more of the following occurs:

1. More than 50 dead juvenile or adult Gila topminnow are observed during removal of the fence line across the cienega, construction of the trench, or installation of the water pump system.
2. More than 50 dead juvenile or adult Gila topminnow per drinker per year are observed annually after project construction is complete.
3. More than 50 dead juvenile or adult Gila topminnow are observed during maintenance and upkeep of equipment other than annual drinker draining.

If, during the course of project construction, the amount or extent of the incidental take limit is exceeded, consultation should be reinitiated immediately to avoid violation of Section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species. An explanation of the causes of the taking should be provided.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this biological opinion:

1. Conduct all proposed actions in a manner that will minimize direct mortalities of Gila topminnow.
2. Conduct all proposed actions in a manner that will minimize modification and degradation of Gila topminnow habitat.

3. Maintain complete and accurate records of actions that may result in take of Gila topminnow and their habitat.
4. Monitor Gila topminnow and their habitat to document levels of incidental take of fish or their habitat.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of Section 9 of the Act, this project must be in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement reasonable and prudent measure 1, the following term and condition will be conducted:

Screens will be placed at the mouth of the pipelines at the pump to prevent debris from clogging the pipeline. In addition, the water filter will be covered with a microfilter and wire screen to reduce the number of Gila topminnow that may be pulled into the pump and to reduce clogging of the filter.

2. To implement reasonable and prudent measure 2, the following term and condition will be conducted:

Impacts from trench construction through the cienega will be reduced by hand digging the trench to minimize the area of disturbance, backfilling the trench, and resodding. Trench construction will occur during the spring after the cienega has dried from winter runoff.

3. To implement reasonable and prudent measure 3, the following term and condition will be conducted:

A yearly annual report of all data compiled should be reviewed and placed with project files.

4. To implement reasonable and prudent measure 4, the following terms and conditions will be conducted:

- a. Monitor effects of the enclosure on the riparian and aquatic communities, the channel morphology, and the Gila topminnow. Long-term photo points, cross-channel transects, and yearly fish sampling are recommended.
- b. Monitor take of Gila topminnow by visual observation by a qualified biologist during construction.
- c. Monitor number of fish in tank by visual observation during annual draw down of drinker.
- d. Monitor by visual observation emergency maintenance and reconstruction of facilities requiring repair.
- e. Collect dead specimens and send to the Fish Collection at Arizona State University Vertebrate Museum.

CONSERVATION RECOMMENDATIONS

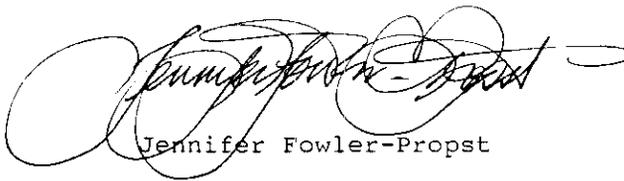
Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations have been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The Service recommends that the fenceline should be surveyed semi-annually for integrity. This recommendation relates only to the proposed action and does not necessarily represent complete fulfillment of the agency's Section 7(a)(1) responsibility for these species.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation on the actions outlined in the March 26, 1993, biological evaluation. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the Service action that may impact 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 that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If we can be of further assistance, please contact Gerald L. Burton at (505) 883-7877.



Jennifer Fowler-Propst

cc:

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Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico (AES)
Director, Fish and Wildlife Service, Washington, D.C. (ES/TE)