



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
3616 West Thomas Road, Suite 6
Phoenix, Arizona 85019



2-21-93-F-430

Telephone: (602) 379-4720 FAX: (602) 379-6629

February 7, 1994

MEMORANDUM

TO: Area Manager, Bureau of Land Management, Tucson, Arizona
FROM: State Supervisor
SUBJECT: Biological Opinion on Cienega Creek Headcut Repair

This biological opinion responds to your request of December 29, 1993, for formal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, on the proposed headcut repair on Cienega Creek, Pima County, Arizona. The species of concern is the Gila topminnow (Poeciliopsis occidentalis). The 90-day consultation period began on January 3, 1994, the date your request was received in our office.

This proposed action was originally submitted for formal section 7 consultation on July 15, 1993, as part of a larger action including construction of riparian pasture fencing. That formal consultation was withdrawn on December 29, 1993, by the Bureau of Land Management (BLM) by mutual agreement with the Fish and Wildlife Service (Service). Formal consultation was initiated on the same date for the headcut repair alone. Riparian pasture fencing will be resubmitted for formal consultation at a later date in a package which will include a more comprehensive livestock grazing and road maintenance action.

The following biological opinion is based on information provided in the July 15, 1993 biological evaluation, the December 29, 1993 biological evaluation, a site visit by BLM, Service, and Arizona Game and Fish Department (AGFD) staff on May 13, 1993, data in our files, and other sources of information.

BIOLOGICAL OPINION

It is my biological opinion that implementation of the proposed headcut repair on Cienega Creek is not likely to jeopardize the continued existence of the Gila topminnow. No critical habitat has been designated for this species.

BACKGROUND INFORMATION

Species Description

The Gila topminnow was listed as an endangered species on March 11, 1967, without critical habitat. The Gila topminnow is a small, livebearing fish found in the Gila, Sonora, and de la Concepcion River drainages in Arizona, New Mexico, and Sonora, Mexico (Minckley 1973, Vrijenhoek et al. 1985), but is listed only in the United States portion of its range. It was once among the commonest fishes of 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; plus competition with and/or predation by nonnative fish species, most notably mosquitofish (Gambusia affinis), have resulted in extirpation of the Gila topminnow throughout most of its range (USFWS 1984, Meffe et al. 1983).

Cienega Creek is one of nine remaining natural Gila topminnow populations, and is one of only two natural populations found on public lands. Cienega Creek is very unusual because it has no nonnative fish present in the middle and upper reaches (Simms 1991, Brown and Abarca 1992). Because of the large size of the topminnow habitat and the unaltered composition of the fish community, Cienega Creek is one of the most important of the Gila topminnow remnant natural populations (Simms and Simms 1991). Protection of Cienega Creek from nonnative incursion and protection and restoration of Gila topminnow habitat in the creek is considered vital to the survival and recovery of the species.

Project Description

The proposed action is stabilization of a 4.5 feet high headcut located on Cienega Creek in the NE1/4 of the SE1/4 Sec. 3, T.19S., R.17E (Figure 1). Above the headcut are 2.5 miles of cienega habitat where stream flow is on the land surface. No natural controls to the headcut, such as bedrock, are present to stop the upstream migration of the headcut, which would lower the stream channel below the land surface thus destroying the cienega nature of the stream. The lowered stream would likely have a more confined channel, faster velocity, and less habitat complexity, and would therefore, be less suitable habitat for Gila topminnow.

The headcut would be stabilized by shaping a more gradual slope on the headcut using a small front-end loader/tractor and hand tools. Erosion control matting and large rock material would be placed on the sloped areas. Sand bags and/or logs would be placed upstream of the headcut and anchored with rebar to spread the water across a larger portion of the channel width to lower erosive force.

To assist with stabilization, native riparian vegetation, including willow seedlings (Salix gooddingii) and deergrass (Muhlenbergia repens), would be planted above and around the headcut. To protect the integrity of the headcut stabilization project and allow vegetation to establish, the headcut area would be enclosed with a temporary electric fence to exclude livestock grazing. The fencing would enclose the headcut and stream channel for 50 yards in both directions from the headcut.

Materials and equipment would be moved to the site by driving down Spring Water Canyon wash. The wash would be raked after the project to remove vehicle tracks. The tractor would need to be driven across the sacaton (*Sporobolus wrightii*) community to the project site. The headcut stabilization may need to be repaired or repeated if unusually heavy floods occur before the natural healing process is complete.

EFFECTS OF THE ACTION

Environmental Baseline

The status of the Gila topminnow is poor. Eight of the nine natural populations of the species are small and isolated and only three of those are free of mosquitofish. Reintroduction efforts have had low success with only about 9 percent survival in over 300 sites stocked since the 1930's. Cienega Creek is the largest Gila topminnow population with a large proportion of the habitat in fair to good condition. The most stable portion of the population in Cienega Creek appears to be above the confluence with Gardner Canyon, based upon sampling in spring and summer of 1993 following winter flooding (Simms, J.R., BLM, pers. com. 1993). The confluence with Gardner Canyon is located about 0.75 miles upstream from the headcut.

Direct and Indirect Effects of the Proposed Action

The proposed headcut repair would have mixed adverse and beneficial effects to Gila topminnow. The long-term effects would be highly beneficial. Benefits would accrue from preventing upstream movement of the downcutting thereby preserving high quality Gila topminnow habitat upstream from the headcut.

Short-term adverse impacts would result from work in the stream channel at the headcut. Gila topminnow may be adversely affected by short-term increases in downstream sediment and direct mortality of Gila topminnow during work in the stream by heavy machinery and hand labor. Accidental introduction of petroleum products or other pollutants during construction activities may also occur with adverse effects on Gila topminnow.

Any action in a stream channel carries a finite level of risk for further destabilization of the channel with resulting increased erosion. Instream habitat improvement or protection measures must be carefully planned to avoid achieving results that are diametrically opposite to the project goal (Reeves *et al.* 1991, Frissell and Nawa 1992). The proposed project has been carefully planned and the likelihood of successful stabilization is considered to be much higher than the likelihood of increased destabilization. The potential for adverse effects to Gila topminnow from project failure and further channel destabilization are considered to be quite small.

Cumulative Effects of the Proposed Action

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. No cumulative effects are anticipated from the proposed action.

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(c)(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 agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.

The Service anticipates that the proposed headcut repair on Cienega Creek would result in incidental take of Gila topminnow through mortality of fish during work in the stream with heavy machinery and hand labor. Because reliable estimates of Gila topminnow populations are not obtainable due to sampling limitations and to the rapid population changes inherent in a short-lived species with high fecundity, this take cannot be quantified as individual Gila topminnow. Therefore, greater than anticipated incidental take will be considered to have occurred if more than 15 dead fish of any species are observed within or downstream from the project area during project implementation.

If, during the course of the action, the amount or extent of the incidental take limit is exceeded, the BLM must reinitiate consultation with the Service 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. The BLM should provide an explanation of the causes of the taking.

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 which will minimize take of Gila topminnow.
2. Maintain complete and accurate records of actions which may result in take of Gila topminnow and their habitat.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of section 9 of the Act, the BLM is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. The BLM shall make all reasonable efforts to minimize disturbance of, and activities within, the wetted stream channel of Cienega Creek.
2. The BLM shall make all reasonable efforts to ensure that no pollutants enter surface waters during action implementation.
3. The BLM shall prepare a written report on the construction of the pipeline and drinker. The report shall include documentation of the actions taken, and before and after photographs of the project area. A copy of this report shall be furnished, in writing, to the Service within two months following completion of the action.
4. If project repair or replacement becomes necessary, the BLM shall notify the Service prior to beginning work and shall provide follow-up documentation, as provided in term and condition 3. If repair or replacement would cause adverse effects to the Gila topminnow or other listed species not considered in this biological opinion, additional section 7 consultation would be required.

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. The term conservation recommendations has 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 recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibility for these species.

The Service recommends that monitoring of the headcut repair be conducted at regular intervals in the first one to two years following implementation of the repair. Photographs would be particularly helpful to document the progress of the stabilization. The Service would appreciate receiving copies of monitoring data, reports, and photos.

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 December 29, 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 agency 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.

We appreciate the efforts of the BLM in protecting and recovering the Gila topminnow in Cienega Creek. If we can be of further assistance, please contact Sally Stefferud or Tom Gatz.



Sam F. Spiller

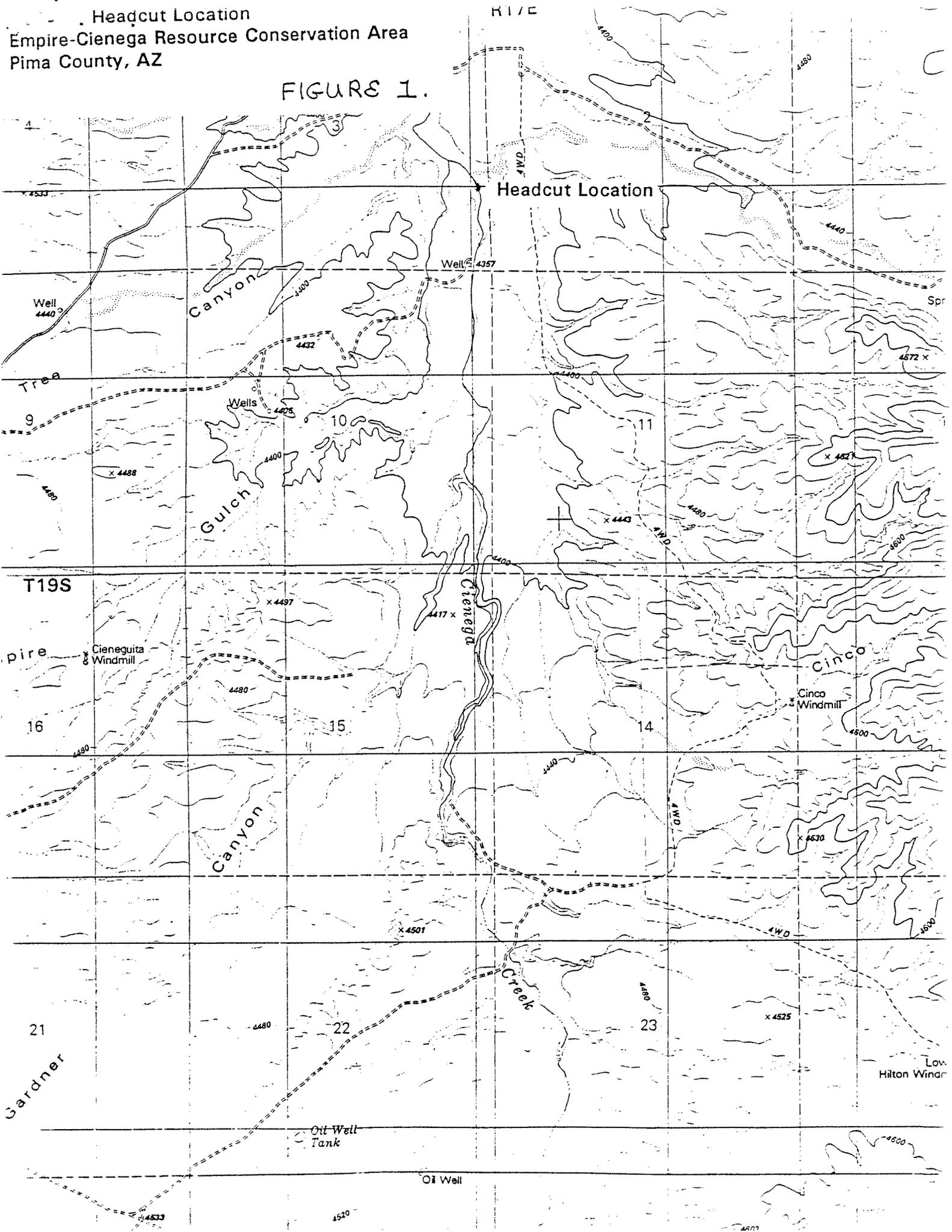
cc: Director, Arizona Game and Fish Department, Phoenix, AZ
Regional Director, Fish and Wildlife Service, Albuquerque, NM
(AES)
Director, Fish and Wildlife Service, Washington, D.C. (DES)

LITERATURE CITED

- Brown, M. and F.J. Abarca. 1992. An update status report of the Sonoran topminnow (Poeciliopsis occidentalis) and desert pupfish (Cyprinodon macularius) in Arizona. Arizona Game and Fish Department, Phoenix, AZ. 39 pp.
- Frissell, C.A. and R.K. Nawa. 1992. Incidence and causes of physical failure of artificial habitat structures in streams of western Oregon and Washington. North American Journal of Fisheries Management. 12:182-197.
- Hubbs, C.L., and R.R. Miller. 1941. Studies of the fishes of the order Cyprinodontes. IVII -- Genera and species of the Colorado River system. Occasional Papers of the Museum of Zoology, University of Michigan. 433:1-9.
- Meffe, G.K., D.A. Hendrickson, W.L. Minckley, and J.N. Rinne. 1983. Factors resulting in the decline of the endangered Sonoran topminnow (Atheriniformes:Poeciliidae) in the United States. Biological Conservation. 25(2):135-159.
- Minckley, W.L. 1973. Fishes of Arizona. Arizona Game and Fish Department. Phoenix, Arizona. 293 pp.
- Reeves, G.H., J.D. Hall, T.D. Roelofs, T.L. Hickman, and C.O. Baker. 1991. Rehabilitating and modifying stream habitats. pp. 519-557. In: W.R. Meehan, ed. Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society Special Publication 19. Bethesda, MD.
- Simms, J.R. and K.M. Simms. 1991. What constitutes high quality habitat for Gila topminnow (Poeciliopsis o. occidentalis)? An overview of habitat parameters supporting a robust population at Cienega Creek, Pima County, Arizona. Proceedings of the Desert Fishes Council. 23:82.
- Simms, K.M. 1991. Cienega Creek watershed water sources inventory. Report to the Arizona Game and Fish Department. Bureau of Land Management, Tucson, AZ. 12 pp.
- U.S. Fish and Wildlife Service. 1984. Gila and Yaqui topminnow recovery plan. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 56 pp.
- Vrijenhoek, R.C., M.E. Douglas, and G.K. Meffe. 1985. Conservation genetics of endangered fish populations in Arizona. Science. 229:400-402.

Headcut Location
Empire-Cienega Resource Conservation Area
Pima County, AZ

FIGURE 1.



SUMMARY
BIOLOGICAL OPINION ON THE EFFECTS TO GILA TOPMINNOW
FROM PROPOSED HEADCUT REPAIR ON CIENEGA CREEK

Date of the opinion: February 7, 1994

Action agency: USDI Bureau of Land Management, Tucson Resource Area

Project: Headcut repair on Cienega Creek

Listed species affected: Gila topminnow (Poeciliopsis occidentalis)

Biological opinion: Non-jeopardy

Incidental take Statement:

Level of take anticipated: Anticipated take will have been exceeded if more than 15 dead fish of any species are observed within or downstream from the project area during project implementation.

Reasonable and prudent measures: Two objectives for minimizing incidental take are given. Implementation of these measures, through the Terms and Conditions, is mandatory.

Terms and conditions: Terms and conditions implement the reasonable and prudent measures and are mandatory requirements. Terms and conditions include requirements for minimizing disturbance within the stream channel during work, avoiding introduction of pollutants into stream channels, preparation and submission of a written report on project implementation, and notification of the Fish and Wildlife Service of project repair or replacement.

Conservation recommendations: Implementation of conservation recommendations is discretionary. It is recommended that the headcut repair be monitored for one to two years to document success or failure.