UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

May 22, 1989

Mr. E. A. Wueste
Division Administrator
Federal Highway Administration
Department of Transportation
234 North Central Avenue
Phoenix, Arizona 85004

2-21-88-F-029

Dear Mr. Wueste:

This responds to your request of April 11, 1989 for formal consultation pursuant to Section 7 of the Endangered Species Act of 1973 (Act) as amended on the realignment of approximately 2.3 miles of the Springerville to Alpine highway, US180/666 through the community of Nutrioso in Apache County, Arizona. The species of concern is the Little Colorado spinedace (Lepidomeda vittata). The 90-day consultation period began on April 18, 1989, the date your request was received by the Fish and Wildlife Service (Service).

This biological opinion is based on information provided in the assessment of impacts, data in our files and other sources of information.

Biological Opinion

It is my biological opinion that the realignment of US180/666 through Nutrioso is not likely to jeopardize the continued existence of the Little Colorado spinedace.

Background Information

The Little Colorado spinedace was listed as a threatened species on October 16, 1987 and critical habitat was designated in portions of East Clear Creek, Chevelon Creek and Nutrioso Creek.

Historic range of the spinedace included the Little Colorado River and its northward flowing tributaries off the Mogollon Rim. Small to moderate sized cold water streams with clear flowing pools were identified as typical habitats for the species (Miller 1963, Minckley and Carufel 1967). Spinedace populations fluctuate dramatically from season to season and from year to year and appear and disappear from specific locations as a result. Thus, assessment of total population and occupied habitat is difficult (USFWS 1987).

In June 1988, a survey of the proposed project area located an established, reproducing population of spinedace in Nutrioso Creek from at least Auger Creek to above Milk Creek (Figure 1). Spinedace were also taken downstream of the project area but not upstream.

The proposed action would realign 2.3 miles of US180/666 around the community of Nutrioso with a new bridge over Nutrioso Creek. This bridge is currently planned as a box culvert structure although consideration is still being given to a pre-cast span over the creek itself. The existing alignment and the proposed realignment (Alternative 6) are also shown in Figure 1.

Impacts of the Action

The new crossing would directly impact a 100-linear foot section of Nutrioso Creek during the two month construction period when the crossing and the culvert are put in place. Habitat in the construction area would be lost temporarily with less than .25 acre permanent loss due to the culvert. Increases in turbidity and sedimentation from construction and post-construction settling and water flow changes could occur. Emplacement of the culvert could impede upstream movements through increased water velocity or vertical barriers. Construction is also scheduled to occur during the spawning season of the spinedace.

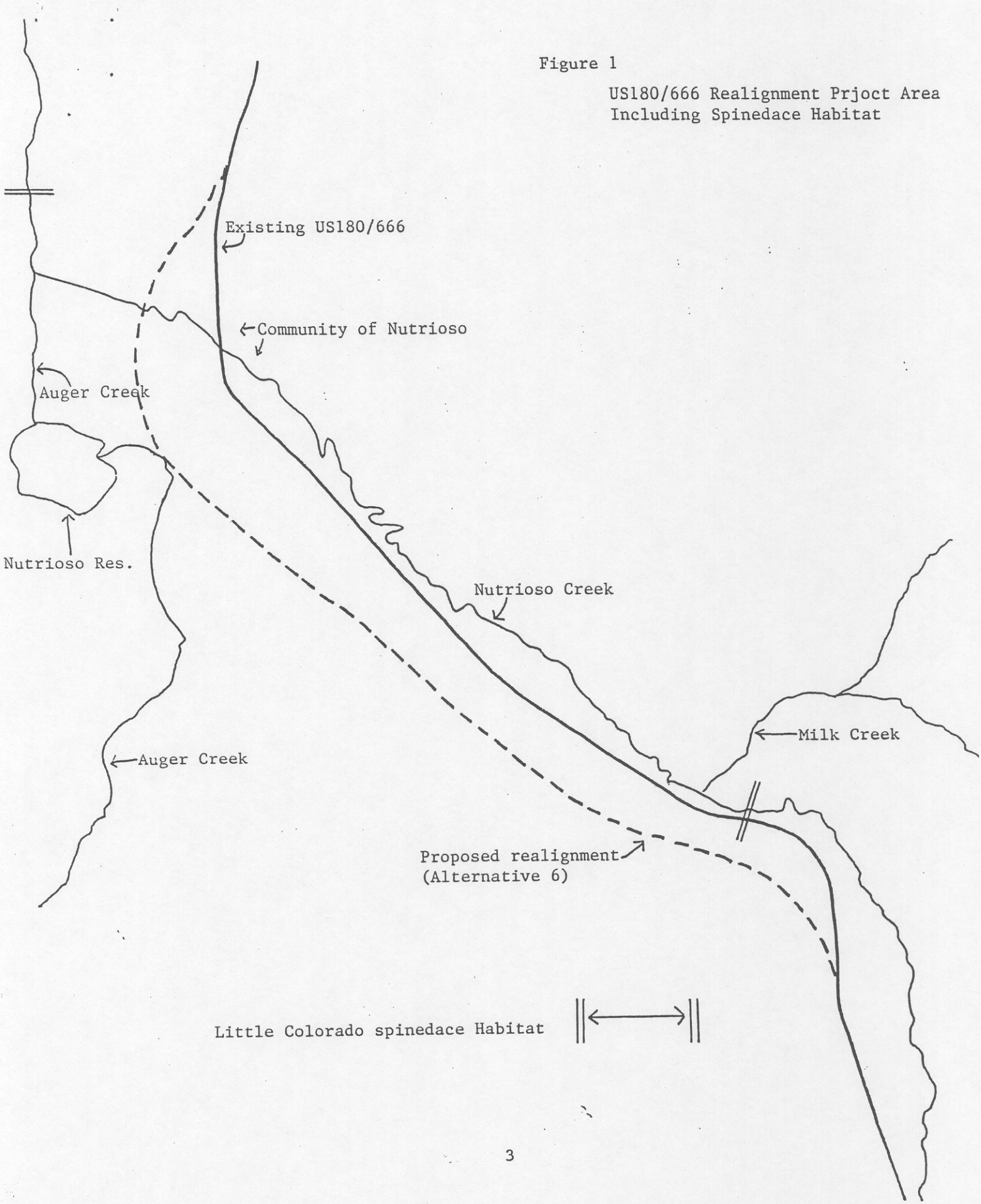
Several design and planning features of the project have been included that would reduce or eliminate the effects of the proposed crossing.

A 500-foot long diversion channel around the construction area would be constructed to carry the normal flow of Nutrioso Creek. The channel would have a four-foot bottom width with side slopes from 1:1 to 1.5:1 and would have a gravel and cobble bottom to reduce siltation and erosion. The flow of Nutrioso Creek would be gradually diverted to the channel to reduce stranding of fish in pools in the main channel and siltation from the new channel. Any spinedace or other native species found in the pools remaining in the 500 foot dewatered zone would be captured and released downstream of the zone.

The box culvert would be designed and placed so it does not become a vertical barrier to movement. Rip-rap on the downstream face and burying the culvert bottom below grade have been identified as techniques to prevent the development of gradient barriers. Use of hazardous materials (including oil and gasoline) at the construction site would be controlled to prevent spills into the creek bed.

Figure 1

US180/666 Realignment Prjoct Area
Including Spinedace Habitat



Once construction is completed, the flow would be returned to Nutrioso Creek and fish stranded in the diversion channel would be relocated back to the creek. The project also proposes to remove an existing collapsed concrete structure upstream of the new crossing but still in the dewatered area. This currently acts as a barrier to upstream fish movements and its removal would permit more free passage for fish in this section of the creek.

Although the design for the culvert has incorporated substantial protective features for the spinedace and its habitat, there remains a risk of spinedace mortality due to the diversion and subsequent stranding of individual fish and reproductive materials in pools. Relocation of stranded fish would reduce, but may not eliminate, adult mortality since some individuals may be missed or die from stress or handling injuries.

As identified in the assessment, the prime construction period would be from May to July and the reproductive period for the spinedace is from May to October. Very little could be done to minimize the loss of fertilized eggs from the dewatered zone or the diversion channel, but it is unlikely that these losses would significantly effect overall reproductive success in the drainage.

In your assessment you also propose to have qualified fisheries workers on site to monitor construction and determine the effectiveness of methods to reduce impacts during and after construction is completed.

Incidental Take

Section 9 of the Endangered Species Act of 1973 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 without a special exemption. Harm is further defined to include significant habitat modification and 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 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered taking within the bounds of the Act provided such taking is in compliance with the incidental take statement contained in the biological opinion.

The Service anticipates that up to 500 linear feet of spinedace habitat will be temporarily taken which may result in a kill of approximately 8% of the local spinedace population. Most of the habitat taken should in time regain its capacity to support the spinedace.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the take.

1. Prior to the construction period, a fishery survey of the area will be accomplished to estimate local spinedace population levels.

2. All spinedace salvage activities in the creek and diversion channel will be accomplished by trained fisheries workers having necessary State and Federal permits for such work.

3. All pools that could hold stranded fish will be checked for spinedace before the habitat deteriorates (increasing temperature, de-oxygenation).

4. The diversion channel should have pool areas where fish would concentrate once flow is returned to the creek. The pools should be salvaged before environmental stress or predators can injure stranded animals.

Specimens of spinedace found dead will be kept and preserved to maintain a record of mortalities. Upon completion of construction, a report on the project, including information on documented mortalities shall be submitted to the Service. Specimens may be donated to scientific or educational institutions or disposed of under Service authority.

If during the course of the action the amount or extent of incidental take is exceeded, you must reinitiate consultation with the Service immediately to avoid violation of Section 9. An explanation of the causes of the taking must be provided to the Service.

This concludes formal consultation on this action. Reinitiation of formal consultation is required if the amount or extent of incidental take is exceeded, if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, and/or if a new species is listed or critical habitat designated that may be affected by the action.

Thank you for your efforts to reduce and eliminate the adverse effects of this project to the spinedace. If we may be of further assistance, please contact Ms. Lesley Fitzpatrick or me (Telephone: 602/261-4720).

Sincerely,

Sam F. Spiller

Sam F. Spiller
Field Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, Arizona
Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico (Fish and Wildlife Enhancement)
Chief, Division of Endangered Species and Habitat Conservation, Fish and Wildlife Service, Washington, D.C.

Literature Cited

Miller, R.R. 1963. Distribution, Variation, and Ecology of Lepidomeda vittata, a Rare Cyprinid Fish Endemic to Eastern Arizona. Copeia 1963(1):1-5.

Minckley, W.L. and L.H. Carufel. 1967. The Little Colorado River Spinedace, Lepidomeda vittata, in Arizona. The Southwestern Naturalist 12(3):291-302.

U.S. Fish and Wildlife Service. 1987. Endangered and Threatened Wildlife and Plants; Final Rule to Determine Lepidomeda vittata (Little Colorado spinedace) to be a Threatened Species with Critical Habitat. Federal Register 52(179):35,034-35,041.