Ms. Cheryl Martin
Environmental Engineer
U.S. Department of Transportation
Federal Highway Administration
Minnesota Division, Galtier Plaza
380 Jackson Street, Suite 500
St. Paul, Minnesota 55101-2904

Dear Ms. Martin:

This document transmits the Fish and Wildlife Service's (Service) final biological opinion based on our review of the project plans for bridge and culvert replacement associated with improvement of County State Aid Highway (CSAH) 35 between County Road 71 and Interstate 90 and its effects on the endangered Topeka shiner (*Notropis topeka*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C., 1531 et. seq.). The letter dated April 15, 2004, requesting formal consultation on your "may affect" determination was received in our office on April 19, 2004. A complete administrative record of this consultation is on file in this office.

Nobles County engineering staff contacted our office about a possible modification of restriction dates (ice-out to August 15) placed on in-stream construction activities to avoid impacts to spawning Topeka shiners. We informed the Nobles County staff that there was insufficient information available on stream conditions at the site and that a site visit would be necessary to move the discussion forward. After a field visit was held on March 29, 2004, the Federal Highway Administration wrote a letter to our office requesting formal consultation. We have been in continuous contact with both the project sponsor (Nobles County Highway Department) and the contractor during preparation of the Biological Opinion (BO). The recommendations and guidelines in this BO have been agreed to by these parties and will be incorporated during construction; therefore, we believe the project will not likely jeopardize the continued existence of the Topeka shiner. Consequently, we agree that the timing restriction may be modified so that bridge and culvert replacement may begin on the date this BO is received by your office.

If you have any questions or comments on this biological opinion, please contact Ms. Laurie Fairchild, Fish and Wildlife Biologist, at 612-725-3548, extension 214.

Sincerely,

Dan P. Stinnett
Field Supervisor

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is scheduled for construction in 2004 and consists of a bridge replacement over Kanaranzi Creek, located near Adrian, Minnesota, and box culvert replacement within an adjacent, off-channel pool (Figure 1). The old bridge will be removed in sections by machinery located on the existing bridge deck. As the bridge deck is removed, the two existing bridge piers will be removed with a hydraulic excavator, also located on the bridge. After these piers are removed, the end abutments will be removed from both sides of the creek. No in-water work, such as machinery staged within the creek bed or crossing the channel, will be performed. Bridge replacement will consist of driving two rows of pilings into the creek, (i.e. the forms will be driven into the ground and concrete will be poured into the forms to stabilize them). The end abutments for the new bridge will then be constructed and during this phase it will be necessary to shape the west bank of the channel upstream of the structure to align it with the new, wider dimensions of the bridge. Best management practices required by the Minnesota Pollution Control Agency will be employed to ensure that installation does not present a significant source of sediment to the stream (Mark Lathen, 2004, pers.comm).

The second portion of the road project that may affect the Topeka shiner is replacement of two existing 10ft x 6ft box culverts connecting a tile drainage system and the off-channel habitat adjacent to Kanaranzi Creek. This activity would require drawdown of the pool by approximately 2-3 feet using a hose with an intake of three inch mesh or smaller. The hose would be placed within a tile pipe to minimize the potential for fish to adhere to the mesh intake. An earthern berm would be placed on the north side of the culvert to eliminate surface flow through the structure. A rock barrier would be place on the south end of the culvert, in the newly dewatered area between the pool and the structure, to catch any sediment generated during construction. Culvert replacement would be completed in approximately two days. When completed, the structures would be removed and the pool would be allowed to refill naturally (Brad Ommodt, 2004, pers. comm).

STATUS OF THE SPECIES

Species Description

The U.S. Fish and Wildlife Service (Service) listed the Topeka shiner (*Notropis topeka*) as an endangered species in 1998 under the authority of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.). The Topeka shiner is a small fish presently known from small tributary streams in parts of Kansas, Missouri, Iowa, South Dakota, Nebraska, and Minnesota. The Topeka shiner is threatened by habitat destruction, degradation, modification, and fragmentation resulting from siltation, reduced water quality, tributary impoundment, stream channelization, and stream dewatering. The species also is impacted by introduced predaceous fishes.

Proposed Critical Habitat

In Minnesota, critical habitat for the Topeka shiner has been proposed for parts of its range in Lincoln, Murray, Nobles, Pipestone, and Rock counties. The planned bridge and culvert replacement project would affect proposed critical habitat for Topeka shiner. Because the proposed critical habitat has not been finalized, potential effects of the project are assessed in the attached Conference Report.

Life History

The Topeka shiner was first described by C.H. Gilbert in 1884, using specimens captured from Shunganunga Creek, Shawnee County, Kansas (Gilbert 1884). The Topeka shiner is a small, stout minnow, not exceeding 75 millimeters in total length. The head is short with a small, moderately oblique (slanted or sloping) mouth. The eye diameter is equal to or slightly longer than the snout. The dorsal fin is large, with the height more than one half the predorsal length of the fish, originating over the leading edge of the pectoral fins. Dorsal and pelvic fins each contain 8 rays. The anal and pectoral fins contain 7 and 13 rays respectively, and there are 32 to 37 lateral line scales. Dorsally the body is olivaceous (olive-green), with a distinct dark stripe preceding the dorsal fin. A dusky stripe is exhibited along the entire longitudinal length of the lateral line. The scales above this line are darkly outlined with pigment, appearing cross-hatched. Below the lateral line the body lacks pigment, appearing silvery-white. A distinct chevron-like spot exists at the base of the caudal (tail) fin (Cross 1967; Pflieger 1975).

The Topeka shiner is characteristic of small, headwater, prairie streams with good water quality and cool temperatures, although they also may tolerate relatively harsh conditions that may develop in winter and summer low-water periods (Dahle, 2001). Many streams in which Topeka shiners occur generally exhibit perennial flow, however, some approach intermittency (periodic flow) during summer. At times when surface flow ceases, pool levels and cool water temperatures are maintained by percolation through the streambed, spring flow and/or groundwater seepage. The predominant substrate types within some streams inhabited by Topeka shiners are clean gravel, cobble and sand. However, bedrock and clay hardpan overlain by a thin layer of silt are not uncommon (Minckley and Cross 1959). Topeka shiners most often occur in pool and run areas of streams, seldom being found in riffles. They are pelagic in nature, occurring in mid-water and surface areas, and are primarily considered a schooling fish. Occasionally, individuals of this species have been found in larger streams, downstream of known populations, presumably as waifs (strays) (Cross 1967; Pflieger 1975; Tabor in litt. 1992a).

In Minnesota, Iowa, and South Dakota, Topeka shiners depend heavily on off-channel habitats, such as oxbows, that may be connected to nearby streams only periodically. Densities in these off-channel habitats are typically several times greater than in adjacent instream habitats (Dahle 2001). Dahle (2001) found that juveniles were sometimes abundant during autumn in off-channel habitats. The value of these off-channel habitats may depend on inflows of groundwater. Such inflows may also be important in maintaining sufficient dissolved oxygen and water temperatures to allow the species to persist in its headwater habitats during periods when dissolved oxygen or temperature levels would otherwise result in significant mortality.

Pflieger (Missouri Department of Conservation, in litt. 1992) reports the species as a nektonic (swimming independently of currents) insectivore. In a graduate research report, Kerns (University of Kansas, in litt. 1983) states that the species is primarily a diurnal feeder on insects, with chironomids (midges), other dipterans (true flies), and ephemeropterans (mayflies), making up the bulk of the diet. However, the microcrustaceans cladocera and copapoda (zooplanktons) also contribute significantly to the species' diet. Identification of 25 food categories in a gut analysis of Topeka shiners led Hatch and Besaw (2001) to conclude that the species is an opportunistic and omnivorous feeder.

The Topeka shiner is reported to spawn in pool habitats, over green sunfish (*Lepomis cyanellus*) and orangespotted sunfish (*Lepomis humilis*) nests, from late May through July in Missouri and Kansas (Pflieger 1975; Kerns in litt. 1983). Males of the species are reported to establish small territories near these nests. Hatch (pers. comm. 2003) found females with mature ovaries in Minnesota as late as August 6, but concluded that most spawning in Minnesota takes place during a six-week period "between mid-May and early July". In South Dakota the Topeka shiner generally spawns from mid-May through mid-August (USFWS 2004).

Maximum known longevity for the Topeka shiner is three years though only a very small percentage of each year class attains the third summer. Young-of-the-year attain total lengths of 20 mm to 40 mm (0.8 to 1.6 in), age one fish 35 mm to 55 mm (1.4 to 2.2 in), and age two fish 47 mm to 65 mm (1.8 to 2.5 in) (Cross and Collins 1975; Pflieger 1975).

<u>Status and Distribution -- Rangewide</u>

Historically, the Topeka shiner was widespread and abundant throughout low order tributary streams of the central prairie regions of the United States. The Topeka shiner's historic range includes portions of Iowa, Kansas, Minnesota, Missouri, Nebraska, and South Dakota. Stream basins within the range historically occupied by Topeka shiners include the Des Moines, Raccoon, Boone, Missouri, Big Sioux, Cedar, Shell Rock, Rock, and Iowa basins in Iowa; the Arkansas, Kansas, Big Blue, Saline, Solomon, Republican, Smoky Hill, Wakarusa, Cottonwood, and Blue basins in Kansas; the Des Moines, Cedar, and Rock basins in Minnesota; the Missouri, Grand, Lamine, Chariton, Des Moines, Loutre, Middle, Hundred and Two, and Blue basins in Missouri; the Big Blue, Elkhorn, Missouri, and lower Loup basins in Nebraska; and the Big Sioux, Vermillion, and James basins in South Dakota. The number of known occurrences of Topeka shiner populations has been reduced by approximately 80 percent, with approximately 50 percent of this decline occurring within the last 25 years. The species now primarily exists as isolated and fragmented populations.

The Topeka shiner began to decline throughout the central and western portions of the Kansas River basin in the early 1900's. Cross and Moss (1987) report the species present at sites in the Smoky Hill and Solomon River watersheds in 1887, but by the next documented fish surveys in 1935, the Topeka shiner was absent. The species disappeared from the Big Blue River watershed (Kansas River basin) in Nebraska after 1940 (Clausen, Nebraska Game and Parks Commission, in litt. 1992). The last record of the Topeka shiner from the Arkansas River basin, excluding the Cottonwood River watershed, was in 1891 near Wichita, Kansas (Cross and Moss 1987). In Iowa, the species was extirpated from all Missouri River tributaries except the Rock River watershed prior to 1945. It also was eliminated from the Cedar and Shell Rock River watersheds prior to 1945. Since 1945, the Topeka shiner has subsequently been extirpated from the Boone, Iowa, and Des Moines drainages, with the exception of the North Raccoon River watershed (Harlan and Speaker 1951; Harlan and Speaker 1987; Menzel, Iowa State University, in litt. 1980). In Missouri, the species has been apparently extirpated since 1940 from many of the tributaries to the Missouri River where it formerly occurred, including Perche Creek, Petite Saline Creek, Tavern Creek, Auxvasse Creek, Middle River, Moreau River, Splice Creek, Slate Creek, Crooked River, Fishing River, Shoal Creek, Hundred and Two River, and Blue River watersheds.

Recent fish surveys were conducted across the Topeka shiner's range. In Missouri, 42 of the 72 sites historically supporting Topeka shiners were resurveyed in 1992. The species was collected at 8 of the 42 surveyed locales (Pflieger, in litt. 1992). In 1995, the remaining 30 historical sites not surveyed in 1992 and an additional 64 locales thought to have potential to support the species were sampled. Topeka shiners were found at 6 of the 30 remaining historical locations and at 6 of the 64 additional sites sampled. In total, recent sampling in Missouri identified Topeka shiners at 14 of 72 (19 percent) historic localities, and at 20 of 136 (15 percent) total sites sampled (Gelwicks and Bruenderman 1996). Gelwicks and Bruenderman (1996) also note that the species has apparently experienced substantial declines in abundance in the remaining extant (existing) populations in Missouri, with the exception of Moniteau Creek.

In Iowa, 24 locales within 4 drainages were sampled in 1994 at or near sites from which the species was reported extant during surveys conducted between 1975 and 1985. The Topeka shiner was captured at 3 of 24 sites, with all captures occurring in the North Raccoon River basin (Tabor, U.S. Fish and Wildlife Service, in litt. 1994). In 1997, surveys in Iowa found the species at one site in the North Raccoon basin, and at a new locality in the Little Rock drainage in Oscelola County. Less than five individual Topeka shiners were identified in 1997.

In Kansas, 128 sites at or near historic collection localities for the Topeka shiner were sampled in 1991 and 1992. The species was collected at 22 of 128 (17 percent) sites sampled (Tabor, in litt. 1992a; Tabor, in litt. 1992b).

In South Dakota in the early 1990s, the species was captured from one stream in the James River basin and four streams in the Vermillion River basin. (Braaten, South Dakota State University, in litt. 1991; Schumacher, South Dakota State University, in litt. 1991). In 1997, stream surveys were conducted in the Big Sioux and James River watersheds. No Topeka shiners were captured from the Big Sioux basin during these surveys. However, collections made in the Big Sioux basin by South Dakota State University students in 1997 identified several specimens from two streams in Brookings County, South Dakota. In the James River basin, three new localities for the species were identified, and the species was reconfirmed from a historic locality. Two of the new locations were in Beadle County, where 29 and 4 individual Topeka shiners were captured. The other new location was in Hutchinson County, where one Topeka shiner was captured. The reconfirmed historic locale was in Davison County, where one Topeka shiner was captured.

In Nebraska, the species was assumed extirpated (absent) from all historic locales. However, in 1989 the species was discovered in the upper Loup River drainage, where two specimens were collected (Michl and Peters 1993). In 1996, a single specimen was collected from a stream in the Elkhorn River basin (Nebraska Game and Parks Commission, in litt. 1997). In Nebraska, these were the first collections of Topeka shiners since 1940. It is presently considered extant (in existence) at these two localities.

Status of the Species in Minnesota

In Minnesota, the Topeka shiner is distributed extensively throughout the Big Sioux and Rock River watersheds in five counties in southwestern Minnesota. Fourteen streams in the range of the Topeka shiner were surveyed between 1985 and 1995. The species was collected from 5 of 9 (56 percent) streams with historic occurrences, and was not found in the 5 streams with no historic occurrences. These locales were in the Rock River drainage (Baker, in litt. 1996). In 1997, additional surveys were completed with the species being captured at 15 sites in 8 streams, including a stream in the Big Sioux River basin. Surveys conducted since their listing as a federally endangered species have documented a wider distribution of Topeka shiners within the two watersheds (Dahle and Hatch 1999).

In Minnesota, the species appears to not have suffered declines as precipitous as elsewhere in the species' range (Dahle 2001). In fact, although no longer found in about 20 percent of the streams in which it occurred historically in Minnesota, its distribution appears to have declined very little in the last 50 years in the state. In 2004, the Minnesota Department of Natural Resources (MDNR) began a program to conduct baseline monitoring of the species. This monitoring, if continued, should allow MDNR to be aware of any significant changes in the status of the species in the state.

ENVIRONMENTAL BASELINE

Status of the Species Within the Action Area

Topeka shiners have been captured during surveys conducted within Kanaranzi Creek, upstream of the action area. Preliminary visits to the site show that suitable spawning habitat may exist both within the channel segment and in the adjacent off-channel pool. An attempt was made to survey the creek surrounding and downstream of the bridge and the off-channel habitat in June, 2004. However, recent rainfall had pushed water depths too high to yield conclusive results (Pat Ceas, 2004, pers. comm.) regarding current Topeka shiner presence/absence within the action area. The off-channel pool is currently separated from Kanaranzi Creek by what is apparently a natural barrier. Although it is unknown how many times the natural barrier may have been breached in the past, shiners have had ample opportunity to access the pool and are assumed to be present there.

Factors Affecting the Species Environment Within the Action Area

The current bridge over Kanaranzi Creek (Bridge #5033) was constructed in 1931 (Minnesota Department of Transportation, 2004). The road crossing is immediately upstream of a previously existing railroad bridge and the road system parallels the railroad bed for some distance. Both structures have contributed to changes in the creek's morphology over time by presenting stable and constricting features which do not naturally occur in meandering streams like Kanaranzi Creek. Consequently, excess sediment has accumulated on the inside bend of the channel upstream and adjacent to the road bridge and has scoured a pool on the outside bend. The scour area has been exacerbated by livestock use of the adjoining pasture, the main land use upstream of the structures. Further downstream, a thin outcropping of land which appears to have been initiated by manmade disturbance to the shoreline extends into the middle of the channel. Currently, the only likely in-channel spawning habitat within the action area is located downstream from the bridges (Pat Ceas, pers. comm., 2004).

The creek and adjacent habitat is influenced by natural expressions of spring water as well as an old tile and open ditch drainage system which feeds into the action area from the northeast side of the bridge. This system was historically linked to Kanaranzi Creek via a culvert installed underneath the road. Beaver and natural sedimentation processes have since created a barrier at the drainage outlet, resulting in creation of an off-channel pool. Water levels in this pool are sustained during low precipitation periods by groundwater inputs. This type of off-channel, spring-fed pool provides excellent potential habitat for Topeka shiners. The barrier has reportedly been broken and re-established by beaver several times in recent years (Brad Ormmodt, pers. comm., 2004).

Obvious risk factors generated by federally funded or permitted projects are absent within the action area. There are no known plans or even identified need for reconstruction or removal of the railroad bridge. Likewise, the road improvement project is not part of a larger, multi-phase project nor does it facilitate increased residential or industrial development in the area.

EFFECTS OF THE ACTION

The action will affect two different habitats, the creek and the off-channel pool. Bridge replacement will affect the creek while the exchange of box culverts will affect the off-channel pool. Consequently, the effects will be outlined as a factor of construction activities for each habitat type.

The primary impacts to Topeka shiners from bridge replacement result from sediment transfer to the creek channel via 1) structural debris dropped into the waterway during bridge deconstruction; 2) pier replacement; 3) bank recontouring; and 4) constructing bridge abutments. No in-water work is scheduled to occur with this project. Increased turbidity may affect Topeka shiner spawning habitat and the ability to find prey or avoid predators. In this case, the anticipated amount of sediment transfer into the waterway is small due to use of Best Management Practices and avoidance of any in-water work. Bridge replacement should not cause significant disturbance to Topeka shiners within the creek channel to the extent that they would be harmed. As stated above, we do not think that the project will have adverse effects on any pools in Kanaranzi Creek in which Topeka shiners are likely to spawn.

Box culvert replacement has the potential to result in take of Topeka shiners in several ways:

1. Fish killed by pumping activities - As water is drawn down in the pool, it is possible that some Topeka shiners would be unable to avoid the suction of the pump and become permanently trapped on the mesh or within the tile pipe itself.

2. Disturbance of spawning fish - Increased turbidity in the pool caused by pumping or sediment introduction during construction could cause spawning fish to abandon beds or interrupt spawning.

3. Fish killed via predation – A reduction in water level will concentrate the fish population within the pool. Topeka shiners will find it much harder to avoid or evade predator fish in this scenario. An increase in turbidity may exacerbate this problem.

4. Young/larval fish killed via stranded spawning beds – If Topeka shiners spawn in the area that will be dewatered, all eggs already produced will be lost to desiccation. Approximately 2-3 feet of water will need to be pumped from the pool but the area that this represents in spawning habitat or in the pool overall is unknown

Although the turbidity issues within the pool would likely be quickly resolved after project completion, it is unknown how quickly the pool would regain its original water level. Review of current water availability (both surface and ground water) and water depth the pool would retain after drawdown (5-6 feet average), indicate that impacts to the pool and the Topeka shiner would be relatively short-term. However, it is possible that pool depths would not return to normal levels until next season, which could limit both spawning and survival rates in 2004.

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. The only source of cumulative effects within the action area is from the local landowner, who uses the adjoining lands for pasture and agricultural purposes. The area is already heavily grazed and a tile drainage system has existed since road construction and perhaps earlier. While stream impacts are likely to continue over the long-term they are not expected to elevate degradation of the creek or off-channel habitat.

CONCLUSION

Although bridge replacement will not cause take of Topeka shiners, box culvert replacement has the potential to cause both direct mortality and harassment of Topeka shiners in the off-channel pool population. However, some adult shiners are expected to survive culvert construction activities such that the pool population should persist. In addition, some Topeka shiner spawning is likely to have already occurred in the pool and effects to habitat quality should not last beyond a single season. These conclusions have been formulated after reviewing the current status of Topeka shiner, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects.

It is the Service's biological opinion that the proposed bridge and box culvert replacement projects are not likely to jeopardize the continued existence of the Topeka shiner. Further, incorporating the culvert replacement methods outlined in the description of the proposed action will minimize the potential for incidental take of Topeka shiners.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Federal Highway Administration (FHWA) so that they become binding conditions of any grant or permit issued to the Nobles County Highway Department (NCHD), as appropriate, for the exemption in section 7(o)(2) to apply. The Federal Highway Administration has a continuing duty to regulate the activity covered by the incidental take statement. If the FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the NCHD to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective converge of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

A. Amount or Extent of Take Anticipated

Take of Topeka shiners is anticipated during replacement of the box culverts. No fish surveys have been conducted within the pool and therefore species abundance and diversity is unknown. Even if exact numbers were available, however, the extent of take caused by activities associated with culvert replacement could not be precisely or accurately quantified. Instead, the

Endangered Species Act allows for assumption of a "reasonable, worst-case scenario" to provide protection of the species under circumstances where not all information is known about the listed species' status within the action area.

Because the pool provides habitat conducive to Topeka shiner spawning and the species has had ample opportunities in the past to access the site, it is reasonable to assume a population resides within the pool. Under natural circumstances (i.e., no additional human disturbance) there is no reason that shiners would be precluded or disrupted from spawning. Given this scenario, we assume that take will occur through either direct mortality (predation, loss of spawning beds, pumping activities) or harassment (disturbance of spawning activities). Due to the short-term effects of construction and temporary effects of the pool drawdown itself, it is unlikely that the entire population of Topeka shiners within the pool would be exterminated even if all three sources of mortality were realized. It is reasonable to assume, however, that the entire population of adult Topeka shiners would experience some disturbance to spawning behavior.

B. Effect of the Take

A reduction in adult Topeka shiners will reduce the current potential breeding population. Harassment, caused by disruption of spawning activities, may be widespread within the pool and result in no young of the year being produced after construction begins. It is unlikely that the overall population will be affected long-term because habitat in the pool will be adversely affected only until the pool refills.

C. Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize take of Topeka shiners.

1. Coordinate with the Service during construction to ensure clear communication and implementation of actions necessary to minimize take of Topeka shiners.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The contractor must adhere to the specification of proposed work as outlined in the Description of the Proposed Action section of this document.

2. The contractor shall contact the Twin Cities Ecological Services Field Office biologist Laurie Fairchild (612-725-3548, ext 214) two days prior to initiation of construction activities so that she can be on-site when the work is conducted.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

E. Reporting Requirements

1. FHWA shall notify Service biologist Laurie Fairchild when box culvert installation is complete (612-725-3548 ext. 214).

2. FHWA shall provide a report to the Service that includes, but is not necessarily limited to, the following information:

- A description of any observations of fish (not just Topeka shiners) trapped, injured, or killed during pumping.

- Dates and duration of pumping that includes the times when pumping began and ended. For example, pumping began on July 10 at 8:00 AM and ended at 9:30 AM. Pumping resumed at 10:30 AM and ended at 11:30 AM. Times may be estimated to the half-hour.

- Water levels relative to a fixed benchmark before pumping, at the completion of pumping, and at project completion (i.e., at completion of the entire project, not just completion of box culvert installation) or at the end of the 2004 construction season, whichever comes first. Provide dates for each water level reading.

Conference Report

In addition to determining whether an action is likely to jeopardize listed species or destroy or adversely modify critical habitat, the Service also assists action agencies to make similar determinations for proposed species or proposed critical habitat. As mentioned above, the action area contains proposed critical habitat for Topeka shiner.

<u>Proposed Critical Habitat for Topeka Shiners</u>

On August 21, 2002, the Service proposed critical habitat for Topeka shiner on 186 stream segments totaling 2,340 stream miles in Iowa, Kansas, Minnesota, Nebraska, and South Dakota. Specifically, the Service proposed that the areas on or along the listed stream reaches that contain the following primary constituent elements (see below) become critical habitat. The proposal included the reach of Kanaranzi Creek in the action area.

Primary Constituent Elements:

1. Streams most often with permanent flow, but that can become intermittent during dry periods;

2. Side channel pools and oxbows either seasonally connected to a stream or maintained by groundwater inputs, at a surface elevation equal to or lower than the bank-full discharge stream elevation. The bankfull discharge is the flow at which water begins leaving the channel and flowing into the floodplain; this level is generally attained every 1 to 2 years. Bankfull discharge, while a function of the size of the stream, is a fairly constant feature related to the formation, maintenance, and dimensions of the stream channel;

3. Streams and side channel pools with water quality necessary for unimpaired behavior, growth, and viability of all life stages. The water quality components can vary seasonally and include—temperature (1 to 30°Centigrade), total suspended solids (0 to 2000 ppm), conductivity (100 to 800 mhos), dissolved oxygen (4 ppm or greater), pH (7.0 to 9.0), and other chemical characteristics;

4. Living and spawning areas for adult Topeka shiner with pools or runs with water velocities less than 0.5 meters/second (approx. 20 inches/second) and depths ranging from 0.1 to 2.0 meters (approximately 4 to 80 inches);

5. Living areas for juvenile Topeka shiner with water velocities less than 0.5 meters/second (approx. 20 inches/second) with depths less than 0.25 meters (approx. 10 inches) and moderate amounts of instream aquatic cover, such as woody debris, overhanging terrestrial vegetation, and aquatic plants;

6. Sand, gravel, cobble, and silt substrates with amounts of fine sediment and substrate embeddedness that allows for nest building and maintenance of nests and eggs by native *Lepomis* sunfishes (green sunfish, orangespotted sunfish, longear sunfish) and Topeka shiner as necessary for reproduction, unimpaired behavior, growth, and viability of all life stages;

7. An adequate terrestrial, semiaquatic, and aquatic invertebrate food base that allows for unimpaired growth, reproduction, and survival of all life stages;

8. A hydrologic regime capable of forming, maintaining, or restoring the flow periodicity, channel morphology, fish community composition, off channel habitats, and habitat components described in the other primary constituent elements; and,

9. Few or no nonnative predatory or competitive nonnative species present.

Status of the Proposed Critical Habitat within the Action Area

Both Kanaranzi Creek and the off-channel pool possess some or all of the primary constituent elements. The off-channel pool appears to be connected to groundwater due to the proximity of an uphill spring and may have been formed by a combination of groundwater and surface water inflow and beaver activity. Kanaranzi Creek is subject to intense grazing just upstream of the bridge. This grazing likely elevates stream temperatures (due to the removal of riparian vegetation), increases sedimentation (due to increased bank erosion), and reduces overhead and instream cover. Such intense grazing is common in southwest Minnesota and likely occurs in a significant portion of the creek's watershed upstream of the action area. Row-crop agriculture is also an important land use in Kanaranzi Creek's watershed and its effects are similar to those of intense grazing.

Effects of the Action on Proposed Critical Habitat

We describe the effects of the action on both Kanaranzi Creek and the associated off-channel habitat in this biological opinion. Here we will directly address effects to each primary constituent element (PCE) described in the August 21, 2002, proposed rule (see above).

PCE 1 – Streamflow

The action will result in only minor effects on flow of Kanaranzi Creek, but will not affect stream discharge levels or seasonality of flows. We expect only minor effects on flows in the immediate vicinity of the bridge and that these effects will not be adverse. Flows into and out of the off-channel pool will be affected only temporarily.

PCE 2 – Off-channel habitats

The action will affect the off-channel pool by partially drawing down the water level approximately 2 to 3 feet. This effect will be adverse because it will physically reduce the amount of available habitat for Topeka shiners. The effect will be short-lived, however, because the surface water source for this off-channel habitat will be reconnected after the box culvert is installed. Close proximity to an underground spring strongly suggests that this off-channel pool also receives groundwater inputs. The action will not affect groundwater flow into the pool. In summary, the action will cause adverse effects to the off-channel pool, but the effects will be temporary.

PCE 3 – Water Quality

In Kanaranzi Creek, total suspended solids may increase as a result of disturbance of streambeds and streambanks. We expect that erosion control measures affecting bank stabilization will minimize this potential sediment source. Both of these sources of increased suspended solids will be temporary and minor. The action will likely also result in temporary increases in suspended solids and water temperature in the off-channel pool. Although temperature may increase as a result of reduced volume in the pool, this effect will be temporary because surface flow into the pool will resume when the installation of the box culvert is completed.

PCEs 4, 5, & 8 – Water Velocity and Depth, Instream Cover for Juvenile Topeka Shiners, and Hydrologic Regime

This action will likely not result in any measurable effects on water velocity and depth in Kanaranzi Creek. As stated above, the depth of the off-channel pool will be reduced by pumping, but the reduction in depth will be temporary. Effects to instream and overhead cover for juvenile Topeka shiners will also be temporary or minimal. Revegetation of disturbed banks will likely result in no net change in overhead cover. Moreover, instream flow of Kanaranzi Creek will not be modified to the extent that there will be a measurable change in the quality or quantity of woody debris, aquatic vegetation, or other instream cover.

PCE 6 – Substrate/Sediment Quality

The action may result in minor changes in sediment transport in the immediate vicinity of the bridge and may result in minor increases in siltation. Increased siltation may also occur in the off-channel pool immediately after reconnection to surface flow. Effects to substrate quality in both Kanaranzi Creek and the off-channel habitat are likely to be minimal and will not adversely affect the ability of the habitat to support Topeka shiners or sunfishes.

PCE 7 – Food Base

We do not anticipate effects to the food base of Topeka shiners in Kanaranzi Creek. The pumping of water from the off-channel habitat is likely to remove some food (e.g., microcrustaceans, aquatic insects, etc.). We do not expect this to result in food limitation in the pool; if the removal of food were significant enough to affect Topeka shiners, this effect would be temporary. We would expect food sources to return to the densities present before pumping as a result of population growth of the affected organisms, reaccumulation of detritus, etc.

PCE 9 – Predator Fish Species

This action will have no effect on the composition of the fish community in Kanaranzi Creek or the off-channel habitat.

Conclusion

Although the action will cause some adverse effects to proposed critical habitat in the action area, these effects will be temporary and will not appreciably diminish the capability of the proposed critical habitat to satisfy essential habitat requirements of Topeka shiner. Therefore, the action would not result in the destruction or adverse modification of critical habitat as proposed by the Service on August 21, 2002 (Federal Register 67:54262-54306).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act requires federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. FHWA should coordinate an annual review process of proposed bridge and related projects that may receive at least partial federal funding and occur within the range of the Topeka shiner. Early planning will allow timely initiation of project construction and maximize the potential for benefits to Topeka shiners and their habitat. This process would also allow early identification of projects which may affect the species.

REINITIATION-CLOSING STATEMENT

This concludes consultation on the action outlined in your April 15, 2004, request for consultation for potential impacts to the Topeka shiner in conjunction with your bridge replacement project. 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 maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat 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. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions or comments on this biological opinion, please contact Laurie Fairchild at 612-725-3548, extension 214.

Sincerely,

Dan P. Stinnett
Field Supervisor

cc: Mark Lathen, Nobles County Highway Dept

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