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September 25, 1995

In Reply Refer To:
AESO\SE
2-21-94-I-505

Mr. Stanley T. Albright
Regional Director
National Park Service, Western Region
600 Harrison Street, Suite 600
San Francisco, California 94107-1372

Dear Mr. Albright:

This responds to your request of July 29, 1994 for consultation with the Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, on the repair of the Tuzigoot bridge located in Clarkdale, Arizona (Yavapai County). The species affected by this action are the endangered razorback sucker (*Xyrauchen texanus*) and its critical habitat, and the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and its proposed critical habitat.

This biological opinion was prepared using information contained in the Draft Environmental Assessment: Northeast Abutment Slope Repair at Verde River Bridge (NPS 1994), other letters and documents exchanged between the National Park Service and the Service, discussions and field meetings with interested agencies, data in our files or in the published or grey literature, and other sources of information.

It is the Service's opinion that the proposed action will not jeopardize the continued existence of the southwestern willow flycatcher or the razorback sucker, or result in the destruction or adverse modification of critical habitat. An incidental take statement containing reasonable and prudent measures is included.

CONSULTATION HISTORY

The Service received a request to initiate section 7 conferencing for the southwestern willow flycatcher on August 3, 1994, and acknowledged that request in a letter dated August 12, 1994. During an August 31, 1994 telephone conversation, Rob Marshall of my staff spoke with Dave Kruse and clarified the time frame in which the Service is obligated to complete the conference process. The Service has 90 days from receipt of a request in which to gather and exchange information relating to the proposed action and an additional 45 days in which to issue the biological opinion/conference report. The 90-day period ends November 1, 1994 and the 135-day period ends December 7, 1994. On September 22, 1994, Rob Marshall apprised Dave Kruse of potential effects to the razorback sucker if heavy machinery was to be used in the wetted or ponded areas of the river channel. Dave Kruse confirmed that heavy machinery would be used in those portions of the river and requested that the razorback sucker be included in the biological opinion/conference report.

The Service issued a draft biological opinion for NPS review on November 3, 1994. NPS responded to the draft opinion in a letter dated February 27, 1995, received by the Service on March 3, 1995. NPS did not concur with the Service's determination of effects for the southwestern willow flycatcher on the grounds that effects to the flycatcher were indirect, and, therefore, not linked to the proposed project. Service and NPS biologists discussed this issue during several telephone conversations during subsequent months. In a letter to NPS dated August 2, 1995, the Service clarified its determination of effects in the context of section 7 regulations, which require the Service to evaluate direct and indirect effects as well as all interrelated and interdependent actions for a proposed project (50 CFR 402.02 and 402.14). A meeting to resolve remaining issues surrounding the proposed project was held on September 19, 1995, and attended by the Service, NPS, staff from the Town of Clarkdale, Phelps Dodge Corporation, and SWCA Inc.

The Service listed the southwestern willow flycatcher as endangered on March 29, 1995. Therefore, this conference report has been converted to a biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Project

The action that is the subject of this biological opinion is the repair and replacement of materials and structures used to stabilize the river bank and protect the northeast abutment of the bridge that crosses the Verde River to Tuzigoot National Monument. Re-stabilization of the bridge abutment is necessary to maintain the Tuzigoot Bridge, which will in turn maintain and accommodate vehicular access to Tuzigoot National Monument and rural areas northeast of the Verde River. The existing riprap protection will be replaced

with a trench type footing at the base of the slope and augmented with riprap and a geotextile lining. Additional soil, riprap, and geotextile lining will be used to repair sections of the bank where original riprap has been eroded. The action will require excavation of a trench approximately 1.5 meters (5 feet) into the existing river bed. It will also require breaching an earthen dam located approximately 400 m (1300 ft) downstream to eliminate standing water at the repair site. The dam, which is composed of river sands, gravels, and cobbles approximately 1.8 to 2.4 m high (6 - 8 ft), raises the river level to provide water to an irrigation canal. The entire work area would be surrounded with a silt fence, and following completion of the repair the dam would be reconstructed. Following completion of repairs, areas disturbed by the project would be seeded with grasses, mulched with straw, and cottonwood and willow cuttings would be planted along the river edge immediately upstream and downstream of the riprap.

To avoid and minimize the potential for mortality of the southwestern willow flycatcher from collisions with vehicles using the bridge, NPS has entered into an agreement with the Town of Clarkdale whereby the Town will post and enforce a 25 mile/hour speed limit on the road. The Town of Clarkdale will install rumble strips on the road as an additional measure to affect speed reduction should posting of the 25 mph limit fail to reduce speed to the posted limit. The posting of speed limits and installation of rumble strips, if necessary, shall be conducted during the non-breeding season (October through April) when the southwestern willow flycatcher is not present in the Verde Valley.

To minimize disturbance to the southwestern willow flycatcher from traffic noise and recreational use, from habitat modification by recreational use, and from indirect effects such as brood parasitism by the brown-headed cowbird (*Molothrus ater*) and the attraction of predators resulting from uses of the area enabled by the bridge, NPS will cooperate in the development and implementation of a riparian habitat/southwestern willow flycatcher research, management, and education program with the proponents of the proposed Verde Valley Ranch development or any other similar development enabled by the Tuzigoot bridge.

Description of the Project Area

The project area is located within the bed and floodplain of the Verde River, a perennial stream supported by surface runoff, springs, and seeps. This reach of the river is characterized by a low gradient with pools up to 2.4 m (8 ft) deep that are maintained during low-water periods by an earthen dam located downstream. Average flows during low-water periods are .28 - .56 cubic meters/second (10 - 20 cubic feet/second). Peak flows during winter storms have approached 2800 cms (100,000 cfs). Both native and non-native fish are known to inhabit this area, including razorback sucker (*Xyrauchen texanus*), spikedace (*Meda fulgida*), bullhead (*Ameiurus* sp.), and carp (*Cyprinus carpio*). Many neotropical migrant and resident bird species use the riparian area for breeding and migration, including one to four pairs of nesting southwestern willow flycatchers.

The northeast bank of the Verde River in the project area is characterized by a relatively steep slope. The adjacent terrace varies in elevation above the active river channel from 2 m (6.5 ft) or more upstream of the bridge to the water level downstream of the bridge where the floodplain widens considerably on the east bank. Vegetation on the east bank is sparse, but includes cottonwood (*Populus* sp.), willow (*Salix* sp.), and box elder (*Acer* sp.) saplings, mesquite (*Prosopis* sp.), tamarisk (*Tamarix* sp.), various forb and grass species. The southwest bank is characterized by a floodplain 25 - 50 m (82 - 164 ft) wide extending both upstream and downstream from the bridge. The floodplain abuts a steep, vegetated bank with the adjacent terrace lying more than 6 m (20 ft) above the active river channel. A spring/seep is located within 100 m (328 ft) upstream of the bridge. A diverse riparian vegetation community exists and is dominated by a gallery forest of cottonwood, willow, box elder, and ash (*Fraxinus* sp.). These species also occur in the understory along with tamarisk, *Baccharis*, and buttonbush (*Cephalanthus* sp.), among others. Dense associations of emergent species, such as cattail (*Typha* sp.) are also present. Southwestern willow flycatchers nest in this habitat, both upstream and downstream of the bridge (Muiznieks *et al.* 1994).

STATUS OF THE SPECIES

Species Descriptions

Razorback sucker

The razorback sucker is an endemic fish of the Colorado River Basin. Historically, large populations were found in the major tributaries of the Gila River subbasin (Bestgen 1990). In the Verde River, it was historically found as far upstream as Perkinsville (Minckley 1973), with the last recorded individual in the drainage taken from Peck's Lake in 1954. Reintroduction efforts in the Verde River since 1981 have not been successful in reestablishing a self-sustaining population. The razorback suckers in the Verde River were fully protected as endangered in the 1991 final rule that listed the species as endangered. Razorback suckers utilize both quiet backwater areas and river channel habitats. Spawning takes place over a variety of substrates, but shallow gravel and rocky areas are often used and the spawning period usually lasts from January or February to April or May, depending upon water temperatures (reviewed by Minckley *et al.* 1991).

Critical habitat for the razorback sucker in the project area includes the Verde River and its 100-year floodplain. Areas within the floodplain that have previously been developed (for example, roads, farmland and urbanized lands) are not likely to provide the constituent elements that define critical habitat even when flooded.

Southwestern willow flycatcher

The southwestern willow flycatcher (flycatcher) is one of five recognized subspecies of the willow flycatcher (Unitt 1987, Browning 1993). It is a small passerine bird (Order Passeriformes; Family Tyrannidae) approximately 5.75 inches long with a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. Two whitish or buff wingbars are visible, the eye ring is faint or absent. The upper mandible is dark, the lower is light grading to dark at the tip. Southwestern willow flycatchers are riparian obligates, nesting in riparian thickets associated with rivers, streams, and other wetlands where dense growth of willow (*Salix* sp.), *Baccharis*, buttonbush (*Cephalanthus* sp.), boxelder (*Acer negundo*), tamarisk (*Tamarix* sp.) or other plants are present, often with a scattered overstory of cottonwood (*Populus* sp.). Southwestern willow flycatchers typically nest near surface water or saturated soil. At some nest sites surface water may be present early in the breeding season with only damp soil present by late June or early July (Muiznieks *et al.* 1994, Sferra *et al.* 1995). The water table must be close enough to the surface to support riparian vegetation. The southwestern willow flycatcher is a neotropical migrant breeding in the southwestern U.S. and migrating to Mexico, Central America, and possibly northern South America during the non-breeding season. The historical range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja; Unitt 1987).

The Service included the southwestern willow flycatcher on its Animal Notice of Review as a category 2 candidate species on January 6, 1989 (USFWS 1989). The willow flycatcher was proposed for listing as endangered, with critical habitat, on July 23, 1993 (USFWS 1993). A final rule listing the southwestern willow flycatcher as endangered was published on February 27, 1995 (USFWS 1995). The listing became effective on March 29, 1995. The states of Arizona, California, and New Mexico also list the willow flycatcher as endangered (Arizona Game and Fish Department 1988, California Department of Fish and Game 1992, New Mexico Department of Game and Fish 1988). Following the review of comments received during the public comment period, the Service deferred the designation of critical habitat, invoking an extension on this decision until July 23, 1995. A moratorium on listing actions under the Act passed by Congress in April 1995 required the Service to cease work on the designation of critical habitat until the moratorium is lifted.

Recent surveys have documented breeding populations of southwestern willow flycatchers in three states (CA, AZ, NM) of the original seven-state range. Statewide surveys in Arizona during 1994 documented willow flycatchers at 21 of 322 sites surveyed (Sferra *et al.* 1995). Sferra *et al.* (1995) estimated a total of 119 territorial males at the 21 extant locations.

Life History

The southwestern willow flycatcher is an insectivore, foraging within and above dense riparian vegetation, taking insects on the wing or gleaning them from foliage (Wheelock 1912, Bent 1960). No information is available on specific prey species.

Southwestern willow flycatchers begin arriving on breeding grounds in late April and May (Sogge and Tibbitts 1992, Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994, Maynard 1995, Sferra *et al.* 1995). Migration routes are not completely known. However, willow flycatchers, including subspecies *E.t. brewsteri* and *E.t. adastus*, have been documented migrating through drainages in Arizona that do not currently support breeding populations, including upper San Pedro River (BLM, unpubl. data), Colorado River through Grand Canyon National Park (Sogge and Tibbitts 1992, Sogge *et al.* 1993, Sogge and Tibbitts 1994), lower Colorado River (Muiznieks *et al.* 1994, Sferra *et al.* in prep.), and Verde River tributaries (Muiznieks *et al.* 1994).

Flycatchers of the genus *Empidonax* rarely sing during fall migration, so that a means of distinguishing subspecies without a specimen is not available (Blake 1953, Peterson and Chalif 1973). Willow flycatchers winter in Mexico, Central America, and perhaps northern South America (Phillips 1948, Peterson 1990, Ridgely and Tudor 1994), and have been reported to sing and defend winter territories in Mexico and Central America (Gorski 1969, McCabe 1991).

Willow flycatchers begin nesting in late May and early June, and fledge young from late June through mid-August (Willard 1912, Ligon 1961, Brown 1988, Whitfield 1990, Sogge and Tibbitts 1992, Sogge *et al.* 1993, Muiznieks *et al.* 1994, Maynard 1995). Willow flycatchers typically lay 3 to 4 eggs in a clutch (range = 2-5). The breeding cycle, from laying of the first egg to fledging, is approximately 28 days. Eggs are laid at one day intervals (Bent 1963, Walkinshaw 1966, McCabe 1991); they are incubated by the female for approximately 12 days; and young fledge approximately 12 to 13 days after hatching (King 1955, Harrison 1979). Willow flycatchers typically raise one brood per year but have been documented raising two broods during one season (Whitfield 1990). Willow flycatchers have been documented renesting after nest failure (Whitfield 1990, Sogge and Tibbitts 1992, Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994).

Data on survival rates and longevity of *E.t. extimus* adults are not yet available. Walkinshaw (1966), who studied *E.t. traillii* in Michigan, estimated that 40.9% of the males at his study site returned to breed for two years, 22.7% returned for three years, 13.6% returned for four years, and 4.5% returned during their fifth year. Females return rates were substantially lower. Only 22.6% returned to breed for one year. These data are consistent with survival rates for other passerines (Gill 1990, chap. 21) and suggest that the lifespan of most *E.t. extimus* probably is two to three years. Whitfield (pers. comm.) has documented a 30% return rate for southwestern willow flycatcher juveniles reared on the South Fork of the Kern River in California. Additionally, Whitfield (1994) found that southwestern willow

flycatchers fledged earlier in the season had higher survivorship than those fledged later in the breeding season. Whitfield (1994) also found that nests parasitized by cowbirds, on average, fledged young 12 days later than unparisitized nests, demonstrating that besides lowering nest success and reducing the numbers of young produced, cowbird parasitism has the more subtle impact of lowering juvenile survivorship.

Population Dynamics

Population size: Current estimates for total numbers of remaining southwestern willow flycatchers are 500 or fewer nesting pairs rangewide (Unitt 1987, USFWS 1995). Approximately 100 territorial males are estimated to occur in southern California, with most nesting groups occurring in three drainages (Whitfield 1993, Griffith and Griffith 1994). Approximately 119 territorial males were located during statewide surveys in Arizona in 1994 (Sferra *et al.* 1995). Approximately 120 territorial males were located in New Mexico during statewide surveys in 1994 (Parker and Hull 1994, Maynard 1995). A small number of territorial males ($\leq$ 5) has been documented in both southern Utah and southwestern Colorado during 1993 and 1994 surveys, however, breeding has not been confirmed in those states (Sogge 1995a). Rangewide, most nesting groups are comprised of five or fewer pairs.

Population stability: Southwestern willow flycatcher breeding populations are small and unstable. The Service believes that at current population levels, and with continuing threats, extinction of this species is foreseeable. The flycatcher is absent from many of areas previously occupied, or are present in reduced numbers (Hubbard 1987, Unitt 1987, Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994, Sferra *et al.* 1995). Former populations in Arizona on the lower Salt River, Santa Cruz River, and lower Colorado River near Yuma have been extirpated. Small groups of one to seven willow flycatcher territories have been detected on the Santa Maria River, lower San Pedro River, Verde River, upper Tonto Creek, upper Salt River, upper Gila River, Little Colorado River, and the Colorado River in Marble Canyon (Sogge *et al.* 1993, Sogge and Tibbitts 1994, Muiznieks *et al.* 1994, Sferra *et al.* 1995).

Nesting groups monitored on the Colorado River in the Grand Canyon have declined since monitoring began in 1984 (Sogge 1995b). In 1992, when comprehensive nest monitoring was initiated, two pairs were present, with only one establishing a nest. That nest successfully fledged three flycatchers (Sogge and Tibbitts 1992). In 1993, one breeding pair, one male with two females, and six unpaired males were detected. Three nests were found, all of which were parasitized by the brown-headed cowbird (*Molothrus ater*). None were successful in rearing flycatchers (Sogge *et al.* 1993). Four pairs and one unpaired male occupied the Grand Canyon in 1994. Nine nests were attempted, at least four of which were parasitized by cowbirds. All nesting attempts failed (Sogge and Tibbitts 1994). In summary, since 1992, nine pairs of southwestern willow flycatchers in the Grand Canyon made 13 nesting attempts, one of which was successful in fledging three flycatchers.

A similar trend has been observed in the Verde Valley at Clarkdale where four southwestern willow flycatcher territories were first documented in 1992. In 1993, two pairs were present, one nest was documented and contained a single cowbird nestling (Muiznieks *et al.* 1994). In 1994, two pairs and one unpaired male were present. Two nests were detected, one of which successfully fledged two willow flycatchers, the other fledged a single cowbird (Sferra *et al.* 1995). Data from 1995 indicates that two unpaired males occupied the Clarkdale site (Sogge 1995c).

In California along the Kern River, Whitfield (1993) documented a precipitous decline in the total flycatcher population (44 to 27 pairs) from 1989 to 1993. During that same period cowbird parasitism rates between 50 and 80% were also documented (Whitfield 1993). A cowbird trapping program initiated in 1992 has reduced cowbird parasitism rates to $\leq$ 10% and appears to have stabilized population numbers at Kern River.

Status and Distribution

Reasons for listing: The southwestern willow flycatcher was listed as endangered in response to documented declines in both population size and amount of historic range occupied and in response to documented loss, modification, and fragmentation of riparian habitat within the flycatcher's range (USFWS 1993, USFWS 1995). Critical habitat was proposed to provide additional protection for areas (occupied and unoccupied) necessary for the survival and recovery of this species.

Rangewide trend: Willow flycatcher populations are small and unstable. Rangewide monitoring continues to document declines in some locations. Some populations have stabilized as a result of cowbird trapping programs.

New threats: Additional habitat losses will likely include both small- and large-scale losses and be of the same types as known to date (i.e. habitat loss, fragmentation, and modification). The Service expects incidences of cowbird parasitism will vary spatially and temporally as a function of local cowbird population dynamics and local changes in the extent of riparian habitats.

Proposed critical habitat for the southwestern willow flycatcher in the project area includes the Verde River, Peck's Lake, Tavasci Marsh, all associated side channels, backwaters, pools and marshes, and all areas within 100 meters of such surface water, including all areas with potential nesting habitat or where potential habitat may become established.

ENVIRONMENTAL BASELINE

The environmental baseline defines the current status of the proposed species and its habitat to provide a basis for assessing the effects of the action now under consultation. While it is clearly focused on conditions in the project area, it is important to include in this

definition the status of the listed species throughout its range as well as in the action area. Any evaluation of the effects of the action must be made in the context of the overall species' status.

The environmental baseline is developed using past and present impacts of all Federal, State, or private actions and other human activities 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 or private actions which are contemporaneous with the consultation process. A summary of status information for the species from outside the action area also forms a part of the environmental baseline.

Sullivan and Richardson (1993) provide a detailed account of the available aquatic and riparian habitats of the Verde River. Information from that report is incorporated herein by reference. Within the proposed project area, suitable and potential southwestern willow flycatcher nesting habitat exists. This habitat is provided in areas containing thickets of riparian shrubs and trees, chiefly willow, cottonwood, boxelder, and ash, with some tamarisk. These areas are distributed discontinuously along the Verde River, sometimes adjacent to the main river channel and sometimes more than 100 m away (328 ft).

The Verde River is subject to the effects of Federal, state and private actions. There are both new and long-term ongoing actions in the action area. Impacts of these human activities on the Verde River watershed have had profound effects on the river and associated riparian areas. Water diversions and return flows, flood control projects, livestock grazing, timber harvest, and changes in annual flows due to off-stream uses of water have impaired the ability of the aquatic and riparian habitats to support native fish and wildlife.

Development in the bottomlands or floodplains also eliminates portions of the natural riparian areas. Changes to the watershed that affect how runoff is delivered to the river affect patterns of erosion and aggradation of sediments and influence how the river moves across its floodplain. Erosion that forms tall, steep banks may prevent the flooding of adjacent floodplains and cause changes to the height of the water table. Riparian vegetation may be lost if the water table moves below the level their roots can reach.

The above activities have also reduced the quantity of suitable habitat for the southwestern willow flycatcher through reduction of riparian vegetation and surface water, and other factors. Loss and modification of nesting habitat is one of the primary threats to this species (Phillips *et al.* 1964, Unitt 1987, USFWS 1993). The extent of this loss is reflected by the extirpation of the species from large portions of its former range, and the small sizes of remaining populations. Human activities, such as livestock grazing and expansion of agriculture, have also facilitated the expansion of the brown-headed cowbird's range westward. Parasitism rates up to 100% (proportion of nests parasitized) have been documented for willow flycatchers in Arizona (Sogge *et al.* 1993), further contributing to the decline of this species. To ensure the survival and recovery of the southwestern willow

flycatcher, efforts to preserve and restore habitats and reduce the level of brood parasitism will be required.

Seventeen sites were surveyed for willow flycatchers in the Verde River system between 1993 and 1994 (Muiznieks *et al.* 1994, Sferra *et al.* 1995). These sites varied in size from small isolated habitat patches to the entire Verde River from Childs to Ister Flat. At those surveyed areas, singing willow flycatchers were detected at four locales. In 1993, one bird was observed just above Horseshoe Reservoir, one bird was found at Mescal Gulch just below the proposed project, and two territorial males were observed at the Tuzigoot bridge. In 1994, 2 to 3 territorial males were observed in Camp Verde and two territorial males were observed at the Tuzigoot bridge. In 1992, the Tuzigoot bridge area supported four singing males, assumed to represent four territories (R. Ohmart, ASU Center for Environmental Studies, pers. comm.). The Tuzigoot bridge site remains one of only two contemporary confirmed nesting sites in the Verde River watershed. The cause of the reduction in territorial males in successive years is unclear. The habitat patch was affected but not seriously impacted by the floods of early 1993. Noise from vehicle traffic passing over the bridge to the National Monument and surroundings may be sufficient to affect breeding behavior. Mortality from collisions with vehicles also may have contributed to declines, particularly during the territory establishment and fledging stages when individual flycatchers move widely within a habitat patch. Brown-headed cowbirds were frequently noted in the habitat patch in 1993 and 1994; the only nestling observed in 1993 was a cowbird, and in 1994 one pair fledged at least two flycatchers and a second pair fledged a single cowbird.

EFFECTS OF THE ACTION

Endangered razorback sucker and its critical habitat

Direct and indirect effects

Work in the river channel to breach the earthen dam and de-water the action area will have effects to physical features of the habitat and may result in mortality of razorback suckers. Increases in sediment load through disturbances to the substrate and movement of the active channel to allow dry land for construction affect the ability of this area to provide the constituent elements (physical habitat parameters) that define critical habitat. The effects to water quality, substrate and flows resulting from this action are likely to be temporary.

Effects to survival and recovery

The level of effects from the proposed action is not sufficient to warrant a finding of destruction or adverse modification of critical habitat. This may not be true of other such projects in the future. The Verde River is a very important part of the survival and recovery opportunities for this species. Continued alterations to the natural habitat by projects such

as this may result in reducing the value of this creek for the razorback sucker. Given the status of this species elsewhere in its range, reducing the effectiveness of the remaining habitat is not in the best interest of this species. In addition, the proposed action may result in direct mortality of the razorback sucker. An incidental take statement with reasonable and prudent measures has been included that establishes a threshold for take and specifies mandatory measures that will minimize the threat of take.

Endangered southwestern willow flycatcher and its proposed critical habitat

Direct effects

Repair work conducted as specified in NPS (1994) and under reasonable and prudent measures will not adversely modify the constituent elements of any proposed critical habitat on the Verde River. However, as the primary access route to the Tuzigoot National Monument, U.S. Forest Service lands, and rural lands on the east side of the Verde River near Clarkdale, the bridge bisects one of only two occupied habitat patches in the Verde Valley. Direct effects to the flycatcher from current use of the bridge include impacts to proposed critical habitat from recreational use, potential impacts of traffic noise on the breeding behavior of flycatchers, and potential flycatcher mortality from collisions with vehicles crossing the bridge.

Current recreational use at or near the bridge includes fishing, birdwatching, picnicking, photography, and canoeing/rafting/kayaking. Potential impacts of these activities on the flycatcher may result from: modification of habitat through trampling, clearing of trails for access, etc.; disruption of breeding activities through unintended disturbance of nesting birds; direct mortality from predators (e.g., small mammals, pets, and avian predators) attracted by the activities of recreationists, or by refuse left behind.

The Service anticipates that operation of the bridge will have the long-term effect of reducing overall habitat suitability for the southwestern willow flycatcher. The impact of noise created by the current level of traffic across the bridge on flycatcher breeding behavior is unknown. The southwestern willow flycatcher relies on vocalization (both hearing and being heard) for establishment and maintenance of territory boundaries, attracting mates, rearing offspring, and defending nests against predators and cowbirds. Ambient noise levels that interfere with the flycatcher's ability to communicate pose an additional threat to reproductive success and survival. Foppen and Reijnen (1994) and Reijnen and Foppen (1994) documented reduced breeding success, lower breeding densities, and higher dispersal rates of willow warblers (*Phylloscopus trochilus*) breeding next to roads that bisect forested habitat. Sogge (1995c) noted that the population decline and changes in the distribution of southwestern willow flycatcher territories at the Tuzigoot bridge were consistent with other studies documenting adverse effects of roads that bisect habitat. In combination with impacts from recreational use described above and mortality from collisions described below, the impacts from traffic noise represent an additional threat to the persistence of southwestern willow flycatchers at this site.

Mortality resulting from collisions with traffic crossing the bridge is a critical, immediate threat to the persistence of flycatchers at the Tuzigoot bridge. Passerines, in general, move widely throughout a habitat patch, particularly early in the season when birds are establishing territory boundaries and attracting mates, feeding newly-fledged young, driving away or being pursued by predators, or when driving away cowbirds. Southwestern willow flycatchers were observed crossing the roadbed of the Tuzigoot bridge (at approximately 1.5 m above the road; 4.9 ft) at least three times within a 45 minute period on May 17, 1994, during a flycatcher training session sponsored by AGFD, National Biological Survey, and the Service. Additional observations of this behavior were made in 1995 (Sogge, pers. comm.). The frequency of road crossings is likely to vary predictably with time of day, nesting stage, territory size and configuration, number of territories within the habitat patch, and unpredictably with random events such as predation and parasitism attempts, flights to maintain territory boundaries, and disturbance from recreational activities. While few studies present data on the probability of avian collisions with automobiles, results from two studies demonstrate the magnitude of the threat. Hodson and Snow (1965) documented several million birds killed annually by automobiles in Great Britain. In the U.S., Remsen (1993) estimates 50 - 60 million avian/automobile collisions annually. A probable road-killed southwestern willow flycatcher was documented in 1994 by AGFD at another location in Arizona where a rural road crosses occupied nesting habitat (Sferra *et al.* 1995). These data, combined with observations of birds crossing the roadbed of the Tuzigoot bridge, demonstrate a critical threat to the persistence of willow flycatchers and other species breeding or migrating at this location.

Indirect effects

Increasing development along the Verde River may have significant effects to the river and its floodplain. Currently, a large-scale residential/light commercial development (Verde Valley Ranch) is being considered for the areas directly adjacent to and surrounding the project area. This development will increase traffic across the Tuzigoot bridge substantially, both in the short-term from construction-related traffic and in the long-term when residences are occupied. During project construction, increased traffic will include heavy machinery and large trucks conveying building materials. It is likely that this increase in traffic through the habitat patch will disturb birds attempting to breed there, and will remove the constituent elements of space for flycatcher population growth, and habitat for cover, shelter, and roost sites within proposed critical habitat. Elimination or modification of constituent elements contributes to adverse modification of critical habitat. Proposed construction within the 100-year floodplain could destroy or adversely modify proposed critical habitat of the southwestern willow flycatcher. Runoff from newly-developed areas may introduce pollutants to the river. As development continues in the Verde Valley, there will be an increased emphasis on ensuring adequate supplies of water for municipal and industrial uses. Sales or transfers of water rights, conservation programs and other methods are likely to be considered. Some of these may have no Federal nexus. Others, particularly any transfers between water right holders on the Verde River and the Central Arizona Project, would have a Federal nexus and additional consultation would likely be required. Additionally,

if the bridge eventually proves insufficient to conduct all the vehicular traffic associated with Verde Valley Ranch or is damaged by future flood events, additional repair work, a wider bridge or additional bridges may be proposed. The former would entail physically removing riparian vegetation from the Tuzigoot bridge habitat patch. The latter option may adversely modify critical habitat with a bridge crossing the Verde River at another site.

The Service anticipates significant increases in concentrated and dispersed activity along the Verde River as a result of establishing the Verde Valley Ranch. These are being addressed in a separate consultation with the Army Corps of Engineers and a permit applicant. However, because Tuzigoot bridge is necessary for this development, these effects are also discussed here. Proposed developments adjacent to the Verde River riparian corridor will situate various activities adjacent to occupied and potential southwestern willow flycatcher nesting habitat. Ambient noise levels are expected to increase with levels of sustained activities associated with residences and businesses. Residents are also likely to use the Verde River riparian area for walking, running, fishing, and other recreational activities. Such activities may effect flycatcher behavior, or may adversely modify habitat by the establishment of trails. Further, future residents of Verde Valley Ranch are likely to own pets, including domestic cats. Free-ranging domestic cats are potential predators on songbirds (R. Ohmart *in litt.*, Rodriguez-Estrella *et al.* 1991). Predation of songbirds can significantly affect population dynamics (Martin 1989). Stallcup (1992) estimates that domestic cats kill 4.4 million birds/day in the United States. Even where predation by domestic cats is not significant overall, it likely presents a serious threat to endangered species (Rodriguez-Estrella *et al.* 1991). Increased predation would exacerbate existing pressures on the southwestern willow flycatcher. Finally, Verde Valley Ranch residents may place bird feeders on their properties. This may increase local feeding opportunities for brown-headed cowbirds, in turn increasing the potential for cowbird parasitism of southwestern willow flycatchers along the Verde River.

The Service anticipates that direct and indirect effects of current activities facilitated by the Tuzigoot bridge, including the proposed Verde Valley Ranch development, will result in take of southwestern willow flycatchers and the loss of the site as a flycatcher breeding location if measures are not taken to avoid or minimize effects. The Service further anticipates that those activities will result in the adverse modification of proposed critical habitat along the Verde River. The Service listed the flycatcher as endangered because at current population levels, and with continuing threats, extinction is forseeable. Thus, incidental take of individuals, loss of this local nesting site, and loss or modification of adjacent habitat for flycatcher population expansion would further jeopardize the continued existence of the southwestern willow flycatcher.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future, State, or private activities that have no Federal connection, that are reasonably certain to occur within the action area of the

Federal action subject to consultation. It is anticipated that the ongoing private actions described in the Environmental Baseline and Effects of the Action sections will continue in the action area.

CONCLUSION

After reviewing the proposed action, the current status of the southwestern willow flycatcher and razorback sucker, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the southwestern willow flycatcher or the razorback sucker, nor result in the adverse modification of designated or proposed critical habitat for the razorback sucker and southwestern willow flycatcher, respectively.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits the taking (harass, harm, pursue, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. The concept of harm includes 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. Case law has affirmed that taking does harm to listed species when there is definable injury or death to individuals. 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 taking within the bounds of the Act, provided such taking is in compliance with the incidental take statement provided in the biological opinion. The measures described below are nondiscretionary, and must be undertaken by the agency or made a bindng condition of any grant or permit issued to the applicant, as appropriate.

The Service anticipates that the proposed repair of the Tuzigoot bridge under the reasonable and prudent measures specified in this biological opinion will result in incidental take of razorback sucker. The anticipated level of take is not known. Because of the rarity of this species, the allowable level of incidental take will be set at one individual. Therefore, if during the proposed action, the number of razorback suckers found dead in the project area exceeds one, NPS must reinitiate consultation with the Service immediately to avoid violation of section 9 of the Act. 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, as required by 50 CFR 402.14(i).

REASONABLE AND PRUDENT MEASURES FOR THE RAZORBACK SUCKER

The Service believes the following reasonable and prudent measures are necessary and appropriate to avoid take of the razorback sucker and adverse modification of proposed critical habitat.

1. Efforts to minimize the risk of injury to individual razorback suckers will be made part of the construction plans for this project.

2. Efforts to minimize contamination of the riparian area from pollutants and to restore the affected area with native plants will be made part of the plans for this project.

3. Documentation of all aspects of the project will be made part of the plans for this project.

TERMS AND CONDITIONS FOR IMPLEMENTATION FOR THE RAZORBACK SUCKER

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

1. The following terms and conditions will implement reasonable and prudent measure 1.

   1.1 The minimal amount of equipment will be used in the ponded area when breaching the earthen dam.

   1.2 The dam will be breached at the area that allows for the least amount of work in the ponded area to both breach and restore it, and that removes as much standing water as possible from the construction area.

   1.3 Before any work is begun, if there are areas of standing water in the work area, these will be surveyed for the presence of razorback sucker and if any fish are found, they will be removed and placed in the river outside of the project area.

   1.4 If any razorback suckers are captured alive and released, or are found dead, the action agency will inform the Service within one working day.

2. The following terms and conditions will implement reasonable and prudent measure 2.

   2.1 No toxic chemicals or vehicles shall be stored or deposited within the floodplain during or after construction.

   2.2 All re-vegetation within the project area will utilize native species that occur within floodplains of central Arizona, particularly Goodding's willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), boxelder (*Acer negundo*), and velvet ash (*Fraxinus velutina*).

3. The following terms and conditions will implement reasonable and prudent measure 3.

   3.1 A written report shall be submitted to the Service within 90 days after project completion. This report shall document the project, as implemented, and shall include dated photographs of the project before project initiation and after project completion. The report shall also include a discussion of the compliance with the specified alternatives.

The Service anticipates that implementation of the proposed project will result in the incidental take of one southwestern willow flycatcher each year breeding birds are present at the site. However, under the reasonable and prudent measures specified below, the Service does not anticipate take of the southwestern willow flycatcher.

REASONABLE AND PRUDENT MEASURES FOR THE SOUTHWESTERN WILLOW FLYCATCHER

The Service believes the following reasonable and prudent measures are necessary and appropriate to avoid take of the southwestern willow flycatcher and adverse modification of proposed critical habitat.

1. Avoid and minimize southwestern willow flycatcher mortality resulting from collisions with vehicles by reducing speed on the road that approaches Tuzigoot bridge from both directions to 25 miles/hour.

2. Minimize disturbance to southwestern willow flycatchers from noise generated by vehicular traffic using the bridge.

3. Minimize disturbance to southwestern willow flycatchers from recreational activities in the area enabled by the operation of the bridge.

4. Avoid disturbance to southwestern willow flycatchers from activities associated with the repair of the bridge by conducting repairs during the non-breeding season (October through April)

TERMS AND CONDITIONS FOR IMPLEMENTATION FOR THE SOUTHWESTERN WILLOW FLYCATCHER

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

1. The following terms and conditions will implement reasonable and prudent measure 1.

   1.1 The Town of Clarkdale, in cooperation with NPS, shall post and enforce a 25 mile/hour speed limit on the road on both sides of the Tuzigoot bridge. Additionally, the Town of Clarkdale will install rumble strips on the road as an additional measure to affect speed reduction should posting and enforcement efforts of the 25 mph limit fail to limit speed to the posted limit.

2. The following terms and conditions will implement reasonable and prudent measures 2 and 3.

   2.1 NPS shall cooperate in the development and implementation of a riparian habitat/ southwestern willow flycatcher research, management, and education program with the proponents of the proposed Verde Valley Ranch development or any other similar development facilitated by Tuzigoot bridge.

3. The following terms and conditions will implement reasonable and prudent measure 4.

   3.1 All repair work on the bridge should be completed in 30 days during the months of November and December as specified in NPS (1994).

Reporting Requirements

Upon locating a dead, injured, or sick endangered or threatened species specimen, initial notification must be made to the Service's Law Enforcement Office in Mesa, Arizona. Care should be taken in handling sick or injured specimens to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death or other biological purposes. In conjunction with the care of sick or injured endangered species or preservation of biological materials from a dead

animal, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use 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 section 7(a)(1) responsibility for the species.

The Service recommends the following actions:

1. In cooperation with AGFD, Coconino and Prescott National Forests, the Service, and private land owners, initiate and maintain a cowbird trapping program in the project area to reduce brood parasitism of willow flycatcher nests and other avian species.

2. Acquire additional suitable or potential southwestern willow flycatcher habitat in the Verde River watershed, and implement management plans to maintain or recover habitat, reduce disturbance, and reduce brood parasitism by brown-headed cowbirds. If such habitats are already in possession of NPS, implement these management plans on those lands.

3. In cooperation with the proponents of any large-scale residential, commercial, or industrial development, develop an educational program that focuses on the function, ecological services, and biological diversity of arid land riparian systems. Such programs should be targeted at school children K-12 and include classroom and field components that offer students both a conceptual background and experiential/investigative opportunities.

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

REINITIATION -- CLOSING STATEMENT

This concludes formal consultation on the actions outlined in the Draft Environmental Assessment: Northeast Abutment Slope Repair at Verde River Bridge. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of

incidental take is reached; (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.

If we can be of further assistance, please contact Rob Marshall or Bruce Palmer.

Sincerely,

Sam F. Spiller
State Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
Director, Arizona Game and Fish Department, Phoenix, AZ

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