

**United States Department of the Interior**

**U.S. Fish and Wildlife Service**

**Arizona Ecological Services Office**

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In Reply Refer To:  
AESO/SE  
22410-2004-F-0447

July 27, 2011

Ms. Karla S. Petty, Arizona Division Administrator  
Federal Highway Administration  
U.S. Department of Transportation  
4000 North Central Avenue, Suite 1500  
Phoenix, Arizona 85012

Re: Biological Opinion on Tonto and Oak Creek Bridge Development

Dear Ms. Petty:

Thank you for your November 30, 2010, letter, received in our office on December 7, 2010, requesting initiation of formal consultation under section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This consultation will address impacts that may result from the proposed "Bridge Construction over Tonto and Oak Creeks" located on private lands and the Tonto National Forest (TNF) in Gila County, Arizona (AZ).

You concluded that the project "may adversely affect" the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and its designated critical habitat. You also concluded that project would have "no effect" to the Yuma clapper rail (*Rallus longirostris yumanensis*). No effect determinations do not require review by the Fish and Wildlife Service (FWS) and are not addressed further.

Additionally, you concluded that the project "may affect, but is not likely to adversely affect" the threatened spikedace (*Meda fulgida*) and you determined that the project would "not adversely modify" proposed spikedace critical habitat. Our concurrence for spikedace is included at the end of this biological opinion. Due to the anticipated finalization of spikedace critical habitat prior to project implementation, we recommend that if the project will "adversely affect" spikedace critical habitat along Tonto Creek, you seek consultation reinitiation.

As of September 30, 2010, the Court dissolved the injunction that led to the bald eagle in the Sonoran Desert Area being returned to the Endangered Species list in 2008. While you included the bald eagle in your biological assessment, the bald eagle is currently no longer on the Endangered Species list. As a result, there is presently no need to consult under section 7 of the Act for the bald eagle. The bald eagle is now protected through the Bald and Golden Eagle

Ms. Karla S. Petty, Arizona Division Administrator

Protection Act. Should the project change or new information about the bald eagle discovered that would require an Eagle Act permit, please contact our office for guidance and Technical Assistance.

This biological opinion is based on information provided in the October 2010 biological assessment and evaluation, additional information, written correspondence between our agencies, telephone conversations between our staffs, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

### **Consultation History**

- December 15, 2009: NEPA scoping meeting attended by FWS and project proponents.
- November 30, 2010: Formal consultation initiated.
- January 26, 2011: FWS requested clarification of biological assessment.
- March 1, 2001: Federal Highway Administration (FHWA) responded to FWS request for additional information.
- April 26, 2011: FWS requested extension due to court-ordered workload.
- July 6, 2011: FWS sent a draft biological opinion to FHWA.
- July 19 & 20, 2011: FHWA, TNF, and Army Corps of Engineers (Corps) submit comments on draft biological opinion to FWS.

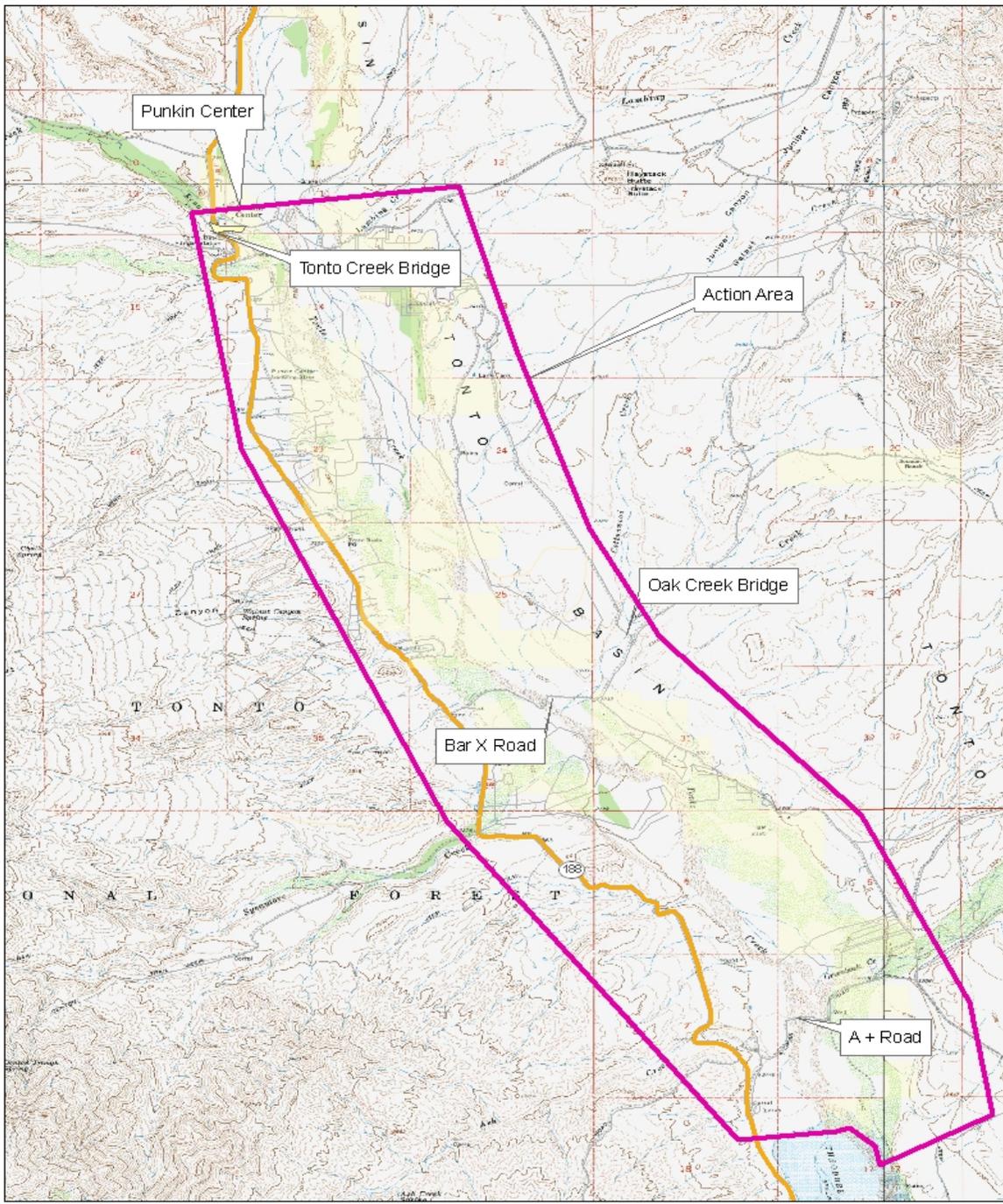
### **DESCRIPTION OF THE PROPOSED ACTION**

The Gila County Public Works Division (Gila County), the FHWA, and the AZ Department of Transportation (ADOT) plan to construct a bridge over Tonto Creek and another over Oak Creek near Punkin Center and Roosevelt Lake in Gila County, AZ. The FHWA is the lead Federal agency for the project and this Section 7 consultation, while the US Forest Service (USFS) and Army Corps of Engineers (Corps) are other supporting and permitting Federal agencies. The project is located on private lands and lands administered by the TNF.

The Action Area for this project is between the community nearest A Cross Road (near Roosevelt Lake) upstream to Punkin Center (including Tonto Creek) (Figure 1). Construction activities will occur within Waters of the US (Waters), therefore, a Clean Water Act Section 404 Permit is required from the Corps and a Section 401 Water Quality Certificate from the State of AZ is required. The appropriate permit will be confirmed by the Corps during the permitting process. Because the total acreage of new disturbance within the full construction footprint will be in excess of one acre (total will be about 23.0 acres), an AZ Pollutant Discharge Elimination

Ms. Karla S. Petty, Arizona Division Administrator

System permit will be required and a Storm Water Pollution Prevention Plan (SWPPP) will be prepared.



**Figure 1.** Action Area for Proposed Tonto and Oak Creek Bridges, Gila County, AZ

Ms. Karla S. Petty, Arizona Division Administrator

More details of the proposed action can be found within the Biological Assessment for this project (ADOT 2010) and subsequent correspondence clarifying the proposed action (FHWA 2011). FHWA discretion for biological opinion re-initiation ceases with completion of construction, implementation of mitigation measures, and project closeout, when the bridge, approaches, and any road improvements are turned over to the proponent. In this case, Gila County is the proponent and is being assisted with project development and construction by ADOT.

### **Geotechnical Investigations**

Geotechnical investigations for the project will be performed by AMEC. The scope of work for geotechnical investigations will involve drilling 26 borings to characterize the subsurface profile at the two bridge sites (Tonto Creek and Oak Creek) and along the access roads within the project limits. The borings will be drilled to depths ranging from 10 to 150 feet (ft) below existing grades using rotary percussion and hollow-stem auger methods. The work area required to conduct this work will be approximately 30 ft by 65 ft. AMEC does not anticipate the need for road construction or grading to conduct this work. Geotechnical activities will require approximately one month for completion.

These activities, while included in the proposed action, were described as being completed in March 2011 (FHWA 2011). As a result, geotechnical investigations are no longer discussed in this biological opinion.

### **Tonto Creek Bridge**

The Tonto Creek Bridge will be located in the vicinity of Punkin Center near “the Store” crossing. The east side of the Tonto Creek Bridge will be located along the existing Greenback Valley Road alignment and ends near Escondido Road. The west side will be located along existing Old Hwy 188 at the top of the hill, directly east of the TNF Reno Administrative Site entrance.

The Tonto Creek Bridge will be 1,980 ft in length. The preliminary bridge design consists of fifteen 132-ft spans of precast concrete American Association of State Highway and Transportation Officials (AASHTO) girders across Tonto Creek. The bridge will be supported on fourteen two-column concrete piers. Foundation for the bridge piers and abutments will require drilled shafts. The shafts will be six-ft in diameter for the piers and four-ft in diameter for the abutments.

Approximately 3,600 linear ft of reconstructed two-lane road, a majority of that being Old Hwy 188, will also be included with the work. The improvements on the west side include the lowering of Old Hwy 188 around the curved section of the road to reduce the height of the bridge and the embankment fill required for the west approach. The temporary construction footprint for the Tonto Creek Bridge work totals approximately 23.0 acres. Permanent riparian habitat ground disturbance from the bridge construction is approximately 0.21 acre.

Ms. Karla S. Petty, Arizona Division Administrator

### **Oak Creek Bridge**

Proposed work at the existing Oak Creek/Cline Boulevard (FR 423) crossing will include the construction of the Oak Creek Bridge. The temporary disturbance area for construction of the Oak Creek Bridge will be approximately 3.5 acres, with disturbance from pier construction within the ordinary high water channel being less than 0.1 acre.

The proposed improvements at Oak Creek consist of a two-span 140-ft long precast concrete girder bridge. The bridge will include one (1) three-column pier placed in Oak Creek and will be supported on drilled shaft foundations similar to the Tonto Creek Bridge. Approximately 1,450 linear ft of the existing dirt road near the proposed bridge will be chip-sealed. The Oak Creek Bridge component of the project is located entirely on TNF lands.

### **Stream Access, Heavy Equipment, and Lay-Down Areas**

Construction-related disturbance will occur along existing Old Hwy 188, in staging and stockpile areas, and along the western end of Greenback Valley Road, which will be used during construction to access the creek bed. Local staging areas are anticipated to be located at the Gila County Road Yard along Old Hwy 188, along the southern portion of Old Hwy 188, and on private property directly adjacent to the project limits.

Earthwork will generally consist of clearing and grubbing in work areas, cut and fill operations, bridge construction, and paving using a variety of heavy equipment that could include bulldozers, backhoes, dump trucks, graders, and pavers. It is anticipated that general site clearing will occur within the existing Gila County right-of-way (R/W) and within temporary construction easements. It is anticipated that excavation for the roadway along Old Hwy 188 can be accomplished using conventional construction techniques and blasting will not be required. In general, materials generated from these cuts can be used for embankment fill.

### **Timing of Construction**

Once construction activities begin, they are expected to last between 12 and 14 months depending on flow conditions within the creeks. There is no specific identified timing for which month construction will actually begin or what year other than the earliest work could occur is October 2012. However, some restrictions are included in the conservation measures discussed below.

During construction, traffic restrictions, detours and/or road closures to the southern section of Old Hwy 188 would be required. Accommodations will be made for access into and out of the TNF Reno Administrative Site.

Ms. Karla S. Petty, Arizona Division Administrator

### **Post-Construction Roads and Bridge Maintenance**

Once the Tonto Creek Bridge is in service, Gila County would cease maintenance on the Store and the A Cross Road creek crossings. There are no major structures within the project area that would be affected or need to be modified as part of this project. Anticipated maintenance activities for the bridges will likely include debris removal around the piers every 3 to 5 years.

### **Conservation Measures**

#### *Southwestern willow flycatcher*

- A qualified biologist shall conduct protocol pre-construction surveys for southwestern willow flycatcher for two breeding seasons prior to the start of construction activities. The qualified biologist must be permitted by the FWS to conduct protocol surveys for southwestern willow flycatchers. Surveys shall be conducted within all potential and suitable habitats within 0.5 mile of the project limits.
- Gila County will prepare a site restoration plan for the Tonto Creek construction footprint and the Store and A Cross road crossings. Site rehabilitation will be implemented by the contractor (prior to de-mobilization from the project) in coordination with the TNF. The site restoration plans will include landscaping and planting and monitoring. Gila County and the TNF will monitor these areas for successful vegetation establishment for two years. Results will be reported to Gila County and ADOT Environmental Planning Group.
- In order to reduce potential disturbance to flycatchers in the project areas, the clearing and grubbing and access road construction shall be conducted October 1 through April 14, outside of the breeding season for southwestern willow flycatchers. Removal of riparian woodland vegetation shall be avoided where possible. Removal of trees in areas of temporary disturbance shall be minimized. Natural regeneration of native plants shall be supported by cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.
- Once the Tonto Creek Bridge is in service, Gila County would cease maintenance on the Store and A Cross Road stream crossings. The TNF has agreed to close these roads using barricades and signs. The closure of the existing crossings at Punkin Center (Store) and A Cross Road would remove current impacts of vehicular traffic (e.g., noise, dust) utilizing the existing crossings and eliminate the need for maintenance. Gila County will develop a restoration plan (see above) for these roads that will include scarifying the roadways and planting with native seed mixtures. These closures will allow for the potential regeneration of riparian habitat within currently disturbed areas of Tonto Creek.

Ms. Karla S. Petty, Arizona Division Administrator

- As a result of the road closures and bridge development, the points of access to Tonto Creek will change, possibly causing unanticipated impacts. In order to manage for this possibility, Gila County will develop a public information campaign to educate the public on the closure of Tonto Creek road crossings through project website postings, local postings, and Town Hall meetings. Gila County will advise multiple law enforcement agencies of potential trespassing issues associated with use of closed creek crossings and vandalism of barricades/signs. Monitoring of closed roads will occur regularly by Gila County in coordination with the TNF.

#### *Spikedace and other aquatic species*

- Within 15 days of the start of construction activities, a qualified biologist shall conduct surveys for native fish and amphibians within areas of standing or flowing water within the construction footprint. If native fish and/or amphibians are observed within the construction area, ADOT Environmental Planning Group will be notified.
- If construction activities will be initiated in areas with standing or flowing water, a qualified biologist shall be present on site to monitor for native fish and amphibians. The qualified biologist must possess the Federal and state permits appropriate for relocating or excluding native species outside of the construction footprint.

#### *Threatened and endangered species*

- During final project design, the FWS list of threatened, endangered, proposed, and candidate species, the TNF list of sensitive species, and the AGFD Heritage Database Management System will be reviewed by a qualified biologist to determine if new species and/or critical habitat have been identified or any changes in listing status have occurred. The Biological Evaluation shall be updated to reflect any changes.
- All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be seeded using species native to the project vicinity.

### STATUS OF THE SPECIES AND CRITICAL HABITAT

#### **Southwestern willow flycatcher**

##### *Description*

The southwestern willow flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy “fitz-bew” or a “fit-a-bew”, the call is a repeated “whitt”. It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Howell and Webb 1995). The historical breeding range of the southwestern willow flycatcher included southern California (CA), AZ, New Mexico (NM), western Texas, southwestern

Ms. Karla S. Petty, Arizona Division Administrator

Colorado (CO), southern Utah (UT), extreme southern Nevada (NV), and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

#### *Listing and critical habitat*

The southwestern willow flycatcher was listed as endangered, without critical habitat on February 27, 1995 (USFWS 1995). Critical habitat was later designated on July 22, 1997 (USFWS 1997a). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (USFWS 1997b).

On May 11, 2001, the 10<sup>th</sup> circuit court of appeals set aside designated critical habitat in those states under the 10<sup>th</sup> circuit's jurisdiction (NM). The FWS decided to set aside critical habitat designated for the southwestern willow flycatcher in all other states (CA and AZ) until it could re-assess the economic analysis.

On October 19, 2005, the FWS re-designated critical habitat for the southwestern willow flycatcher (USFWS 2005a). A total of 737 river miles across southern CA, AZ, NM, southern NV, and southern UT were included in the final designation. The lateral extent of critical habitat includes areas within the 100-year floodplain.

As a result of legal actions, the FWS will be re-designating flycatcher critical habitat rangewide. A proposed rule is anticipated to be published in August 2011, with a final expected to be published in the summer of 2012.

A final recovery plan for the southwestern willow flycatcher was signed by the FWS Region 2 Director and released to the public in March, 2003 (USFWS 2002). The Plan describes the reasons for endangerment, current status of the flycatcher, addresses important recovery actions, includes detailed issue papers on management issues, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit established throughout the subspecies range and establishing long-term conservation plans (USFWS 2002).

#### *Habitat*

The southwestern willow flycatcher breeds in dense riparian habitats from sea level in CA to approximately 8,500 ft in AZ and southwestern CO. Historical egg/nest collections and species' descriptions throughout its range describe the southwestern willow flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964, Hubbard 1987, Unitt 1987). Currently, southwestern willow flycatchers primarily use Geyer willow (*Salix geyeriana*), coyote willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolio*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.* 1997).

Ms. Karla S. Petty, Arizona Division Administrator

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod *et al.* 2005, Cardinal and Paxton 2005). Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in AZ and other parts of the bird's range. In 2001 in AZ, 323 of the 404 (80 percent) known flycatcher nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (USFWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Sogge *et al.* 2005).

The introduced tamarisk leaf beetle was first detected affecting tamarisk within the range of the southwestern willow flycatcher in 2008 along the Virgin River in St. George, UT. Initially, this insect was not believed to be able to move into or survive within the southwestern United States. Along this Virgin River site in 2009, 13 of 15 flycatcher nests failed following vegetation defoliation (Paxton *et al.* 2010). As of 2010, the beetle has been found in southern NV/UT and northern AZ within the flycatcher's breeding range. Because tamarisk is a component of about 50 percent of all known flycatcher territories (Durst *et al.* 2008), continued spread of the beetle has the potential to significantly alter the distribution, abundance, and quality of suitable flycatcher nesting habitat.

#### *Rangewide distribution and abundance*

There are currently 288 known southwestern willow flycatcher breeding sites in CA, NV, AZ, UT, NM, and CO (all sites from 1993 to 2007 where a territorial flycatcher has been detected) holding an estimated 1,299 territories (Durst *et al.* 2008).

It is difficult to arrive at a grand total of flycatcher territories since not all sites are surveyed annually. Numbers have increased since the bird was listed and some habitat remains unsurveyed; however, after nearly a decade of intense surveys, the existing numbers are just past the upper end of Unitt's (1987) estimate of 20 years ago (500-1000 pairs). About 50 percent of the 1,299 estimated territories (Table 1) throughout the subspecies range are located at four general locations (Cliff/Gila Valley – NM, Roosevelt Lake - AZ, San Pedro River/Gila River confluence – AZ, Middle Rio Grande, NM).

Ms. Karla S. Petty, Arizona Division Administrator

*Arizona distribution and abundance*

While numbers have significantly increased in AZ (145 to 459 territories from 1996 to 2007) (English *et al.* 2006, Durst *et al.* 2008), overall distribution of flycatchers throughout the state has not changed much. Currently, population stability in AZ is believed to be largely dependent on the presence of two large populations (Roosevelt Lake and San Pedro/Gila River confluence). Therefore, the result of catastrophic events or losses of significant populations either in size or location could greatly change the status and survival of the bird. Conversely, expansion into new habitats or discovery of other populations would improve the known stability and status of the flycatcher.

Table 1. Estimated rangewide population for the southwestern willow flycatcher based on 1993 to 2007 survey data for AZ, California, Colorado, New Mexico, Nevada, Utah, and Texas<sup>1</sup>.

State	Number of sites with WIFL territories 1993-07 <sup>2</sup>	Percentage of sites with WIFL territories 1993-07	Number of territories <sup>3</sup>	Percentage of total territories
Arizona	124	43.1 %	459	35.3 %
California	96	33.3 %	172	13.2 %
Colorado	11	3.8 %	66	5.1 %
Nevada	13	4.5 %	76	5.9 %
New Mexico	41	14.2 %	519	40.0 %
Utah	3	1.0 %	7	0.5%
Texas	?	?	?	?
Total	288	100 %	1,299	100 %

<sup>1</sup>Durst *et al.* 2008.

<sup>2</sup>Site boundaries are not defined uniformly throughout the bird's range.

<sup>3</sup>Total territory numbers recorded are based upon the most recent years survey information from that site between 1993 and 2007.

Ms. Karla S. Petty, Arizona Division Administrator

### *Critical habitat*

Flycatcher critical habitat was designated in 2005, and as a result of legal challenges, will be re-evaluated and proposed in August 2011 and finalized in the summer of 2012. The 2005 flycatcher critical habitat designation will remain in effect through the proposal and finalization of the 2011/2012 designation.

The primary constituent elements of critical habitat are based on riparian plant species, structure and quality of habitat and insects for prey. The physical or biological features of critical habitat are a variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, and fine sediments that help develop and maintain these constituent elements (USFWS 2005a). The primary constituent elements are:

1. Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:
  - a. Trees and shrubs that include, but are not limited to, willow species, box elder, tamarisk, Russian olive, cottonwood, stinging nettle, alder, ash, poison hemlock, blackberry, oak, rose, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut.
  - b. Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 to 30 meters (m) (6 to 98 ft). Lower-stature thickets (2 to 4 m or 6 to 13 ft tall) are found at higher elevation riparian forests, and tall-stature thickets are found at middle- and lower-elevation riparian forests;
  - c. Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy;
  - d. Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (*i.e.*, a tree or shrub canopy with densities ranging from 50 percent to 100 percent); or
  - e. Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 ac) or as large as 70 ha (175 ac).
2. A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees; dragonflies; flies; true bugs; beetles; butterflies/moths and caterpillars; and spittlebugs.

Ms. Karla S. Petty, Arizona Division Administrator

A variety of river features are identified as the physical or biological features of critical habitat such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (USFWS 2005a).

### *Past Consultations*

Since listing in 1995, at least 187 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the flycatcher's range. This list of consultations can be found in the administrative record for this consultation. We concluded in our biological opinion for the Southwestern Regional Land and Resource Management Plan (LRMP) (USFWS 2005b, #2-22-03-F-366) that ongoing upland grazing associated with Management Area 6J (Code 1423) of Tonto Creek on the TNF would cause a sub-lethal response to the flycatcher. The LRMP concluded that continued grazing can facilitate decreased bank stabilization, increased run-off, increased sedimentation, increased erosion, and reduced capacity of soils to hold water. These factors would reduce the occurrence, longevity, and quality of the habitat-based Primary Constituent Elements of flycatcher critical habitat. The LRMP was completed prior to the USFS adopting a policy of rangeland adaptive management in Chapter 90 of FSH 2209.13. Since flycatcher critical habitat was finalized in 2005, at least 26 formal opinions have been completed in AZ (within and outside designated critical habitat). While many opinions were issued for the previous critical habitat designation, the stream reaches and constituent elements have changed.

Activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, improper grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.). In 2009, introduced tamarisk-eating leaf beetles (that were not anticipated to persist within the range of the southwestern willow flycatcher) were detected defoliating habitat within the flycatcher's range. Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

Conservation measures associated with some consultations and Habitat Conservation Plans (HCP) have helped to acquire lands specifically for flycatchers on the San Pedro, Verde, and Gila rivers in AZ and the Kern River in CA. The Roosevelt HCP occurs within the conservation space of Roosevelt Lake, and the primary mitigation measure for this HCP was to acquire lands with flycatcher habitat on other nearby streams. No properties were acquired within the Roosevelt Management Unit (where this Action Area for this biological opinion occurs). However, the management of an upland farm on the Salt River side of Roosevelt Lake was changed in order to attempt to plant and farm flycatcher habitat. Also, a Forest Protection Officer was hired to help reduce the effects of recreationists on flycatcher habitat in the Roosevelt Lake/Tonto Basin Area. Additionally, along the lower CO River, the U.S. Bureau of Reclamation is currently attempting to establish riparian vegetation to expand and improve the distribution and abundance of nesting flycatchers. A variety of Tribal Management Plans in CA, AZ, and NM have been established to guide conservation of the flycatchers. Additionally, during the development of the 2005 critical habitat rule, management plans were developed for some private lands along the Owens River in CA and Gila River in NM. These are a portion of the conservation actions that have been established across the subspecies' range.

Ms. Karla S. Petty, Arizona Division Administrator

## ENVIRONMENTAL BASELINE

The Environmental Baseline includes past and present impacts of all Federal, State, or private actions 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 and private actions which are contemporaneous with the consultation process. The Environmental Baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

The Action Area for this project extends beyond the footprint of the Tonto Creek and Oak Creek bridges. Therefore, because the project involves two bridges intended to improve access between the communities on the east side of Tonto Creek and primarily Punkin Center (on the west side of Tonto Creek), we are describing the Action Area as area between the community nearest A Cross Road (near Roosevelt Lake) upstream to Punkin Center (including Tonto Creek) (Figure 1). The Tonto Creek Bridge area occurs on private land and the Oak Creek Bridge occurs on TNF land. The surrounding lands along Tonto and Oak creeks within the Action Area are a mixture of private and TNF lands.

Since the early 1970s, the residents of Tonto Basin, Gila County, and the Federal government have discussed and studied the need for a bridge crossing the Tonto Creek in Tonto Basin. The variable Tonto Creek flows have restricted creek-crossings and inconvenienced residents along the east side of the creek. The larger stream flows can render Tonto Creek impassable for an average of two to three weeks per event, and up to six weeks during major floods.

Within the footprint of the Tonto Creek Bridge, Tonto Creek is an interrupted perennial stream (ADWR 1994) where a portion of the stream does not flow year-round. Open water and saturated soils typically occur in this area seasonally. However, larger winter or spring flows typically generate water through the Action Area, with the magnitude of the flows determining how long the surface flow will persist.

There are three low-water crossings presently used to cross Tonto Creek during dry and low-flow events. During dry periods or low-flow events, these crossings can be passable by passenger vehicle. The existing crossings are referred to as Punkin Center (Store), Bar X Road (approximately 3.6 miles downstream of the Store crossing), and A-Cross Road (located approximately 2.7 miles downstream of the Bar X Road, within the conservation space of Roosevelt Lake). Since the 1996 Roosevelt Dam modifications, the operating pool elevation for the reservoir has increased to 2,151 ft, which can inundate A-Cross Road, located at approximately 2,146 ft. Current maintenance activities for the existing crossings primarily consist of regular blading of the roadways following periods of inundation. The amount of ground-disturbance/blading within the floodplain required to maintain these crossings can be quite extensive, especially following a large flood event.

Ms. Karla S. Petty, Arizona Division Administrator

The Oak Creek crossing consists of four (4) 48-inch metal pipe culverts across Oak Creek. The crossing was recently washed out due to heavy rain/runoff in the area. Regular maintenance occurs at this crossing, including roadway blading and clearing of debris in the immediate area. A more permanent improvement is necessary in order to provide connectivity and road access between Punkin Center and parcels south of Oak Creek on the east side of Tonto Creek.

Aerial photography indicates that the number of existing dwelling units on the east side of Tonto Creek is approximately 480. Since 1980, permits have been issued for approximately 380 structures, of which 171 have been for housing starts (both manufactured and site built). Currently, no community wastewater facilities exist within Tonto Basin.

Throughout the entire Tonto Creek Basin (which extends beyond the immediate Action Area, but is still able to influence environmental conditions in the Action Area), the water demand has increased from 2000 acre-ft annually (AFA) in the 1970s to an average of 4,000 AFA from 1986 to 1990 (FHWA 2011). Groundwater demand reduced to 3,050 AFA between 2001 and 2005, which coincides with long-term drought conditions that occurred. Since the 1970s, the population using Tonto Creek Basin water has increased at 6% annually from 1,934 in 1980 to approximately 9,032 in 2005 (FHWA 2011). Most municipal and industrial groundwater use occurs in the Payson and Star Valley locations (FHWA 2011). Within the Action Area, the population growth and water use is likely a fraction of what occurs throughout the entire Tonto Creek Basin. However, we anticipate that there is some water-use increase in the Action Area, but likely not as great as the Payson and Star Valley locations.

Aerial photography indicates that the number of existing dwelling units on the east side of Tonto Creek is approximately 480. Since 1980, permits have been issued for approximately 380 structures, of which 171 have been for housing starts (both manufactured and site built). Currently, no community wastewater facilities exist within Tonto Basin.

On public lands within the Action Area, a variety of TNF managed multiple uses occur such as hiking, hunting, cattle grazing and off-road driving. Cattle grazing is primarily excluded from the Tonto Creek floodplain; however, trespass cattle can sometime occur. Cattle are grazed on private lands and on public lands in the uplands surrounding the creek

Long-term effects to the Tonto Creek watershed from overgrazing in the 1800s and early 1900s (Croxen 1926) may still be occurring today, even as cattle grazing is more reasonably managed throughout the watershed (Alford 1993). Elmore and Kaufman (1994) reported that “simply excluding the riparian area (from grazing) does not address the needs of the upland vegetation or the overall condition of the watershed. Unless a landscape-level approach is taken, important ecological linkages between the uplands and aquatic systems cannot be restored and riparian recovery will likely be limited.” Livestock grazing may alter the vegetation composition of the watershed (Martin 1975, Savory 1988, Valentine 1990, Popolozio *et al.* 1994). It may cause soil compaction and erosion, alter soil chemistry, and cause loss of cryptobiotic soil crusts (Harper and Marble 1988, Marrs *et al.* 1989, Orodho *et al.* 1990, Schlesinger *et al.* 1990, Bahre 1991). Cumulatively, these alterations contribute to increased erosion and sediment input into streams (Johnson 1992, Weltz and Wood 1994). They also contribute in changes to infiltration, water-holding capacity of the watershed, and runoff patterns, thus increasing the volume of flood flows

Ms. Karla S. Petty, Arizona Division Administrator

while decreasing their duration (Brown *et al.* 1974, Gifford and Hawkins 1978, Johnson 1992). As a result, groundwater levels may decline and surface flows may decrease or cease (Cheney *et al.* 1990, Elmore 1992).

Other factors that likely influence the Environmental Baseline in the Action Area on private lands include actions associated with water use, whether it is water diversion, sand and gravel mining, urbanization, or groundwater pumping. Based upon an ADWR map included in supplemental materials to the Biological Assessment, approximately 50 to 60 shallow groundwater wells occur within the Action Area. Out of these wells, there are two Index Wells that can provide groundwater data, but there is no information included for other 50 to 60 wells. One of the two ADWR Index Wells in the Action Area occurs near A Cross Road and its groundwater fluctuation tracks the raising and lowering of Roosevelt Lake. Since the late 1960s, the highest groundwater elevation this A Cross Road Index Well has recorded (approximately three ft) occurred following the raising of Roosevelt Lake to its highest elevation (following the raising of Roosevelt Dam and the filling to new pool elevations after 2009). The other ADWR Index Well near Punkin Center has fluctuated between 11 to 19 feet below the surface. This Punkin Center Index Well shows a trend associated with the fluctuations of flooding and drought in Tonto Creek, but the water is farther from the surface and the fluctuations are less dramatic than the Index Well location at A Cross Road near Roosevelt Lake.

Residents within the Tonto Creek floodplain have requested local government agencies to remove riparian vegetation, debris piles of dead and downed woody vegetation, and naturally formed banks of sand and gravel. This is largely due to the housing areas that have increased within the floodplain and been affected by seasonal flooding. Town Hall meetings have occurred to discuss items like flood insurance, safety measures when the creek is flowing, progress on developing a bridge, and the status of smaller flood diversion structures, etc. Local groups have been formed and concepts such as the channelization of Tonto Creek have been discussed.

Overall, there continues to be a variety of land and resource uses along Tonto Creek that have negatively affected the distribution, abundance, and quality of flycatcher habitat, including effects from historical overgrazing, combined with current ongoing upland use and other factors such as drought. But, because these are watershed level effects, they are broad in nature and complex. Transportation and recreational impacts, such as driving through the floodplain at existing crossings or off-road on all-terrain vehicles can prevent vegetation from growing. Continued groundwater extraction and stream diversion removes water from the stream needed by vegetation. However, given the abundance of smaller wells and lack of past and current monitoring, to what degree these activities impact the overall Action Area or portions within it are not well documented.

Helping to compensate for these land uses has been the more recent practice of excluding cattle grazing on TNF lands (through the Tonto Creek Riparian Unit) and maintaining Tonto Creek as an unregulated stream and allowing it, through most of the area, full access to the floodplain. These two factors are likely the most significant reasons why flycatcher nesting habitat occurs within the Action Area.

Ms. Karla S. Petty, Arizona Division Administrator

*Status of the species and critical habitat in the action area*

Lower Tonto Creek from the proposed bridge location to the high water marks of Roosevelt Lake (approximately A Cross Road) has four known flycatcher breeding sites, where the number of flycatcher territories detected has varied from year-to-year. This portion of Tonto Creek is designated as critical habitat and supports the primary constituent elements. Additional flycatcher breeding sites occur farther upstream from the project area on Tonto Creek near the Town of Gisela and Rye Creek and also downstream of the project area within the conservation space of Roosevelt Lake. The number of flycatcher territories within the conservation space of Roosevelt Lake can be over 150 territories and one of the largest rangewide.

Near A Cross Road, two breeding sites occur that have varied between 2 and 30 flycatcher territories annually since 2005. Also since 2005, near Bar X Road, the number of flycatcher territories has varied from 10-20 territories.

The Tonto Creek Bridge footprint is located on private land and as a result, prior to 2010, flycatcher surveys had not been conducted at this site. Protocol surveys for flycatchers were conducted within the project area in 2010. Three flycatcher territories were located within 0.5 mile of the project limits: two pairs were located approximately 0.25 and 0.4 mile downstream (south) of the project limits; an unpaired male was located approximately 0.4 to 0.5 miles south of the project limits. Additionally, a total of two migrant (non-singing) flycatchers were detected within the survey area during the first survey period. Figure 2 shows the general location and suitability of riparian patches for WIFLs within the survey area. Suitable habitat for flycatcher nest placement does not occur within 0.5 mile of the survey areas depicted in Figure 2.

Suitable habitat for WIFLs does not exist at the Oak Creek/Cline Boulevard crossing; this area consists of primarily of mesquite and catclaw acacia with other desertscrub species. The nearest suitable riparian habitat is located more than 0.6 mile downstream along Oak Creek at the confluence with the east bank of Tonto Creek. This confluence area is located near the existing Bar X Road crossing, adjacent to several private properties.

## EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Ms. Karla S. Petty, Arizona Division Administrator

Based upon the current distribution and abundance of flycatchers in the Action Area, we do not anticipate that there will be any direct or indirect effects that would incidentally take flycatchers. However, there is no firm date when project construction will occur, other than it could occur at the earliest in October 2012. As a result, the project could begin years from the completion of this biological opinion. In that time frame, due to the relatively quick growth of riparian habitat and abundance of nearby nesting flycatchers, flycatchers could move to nest in areas within or nearer to the project footprint. As a result, the proposed conservation measures will continue to evaluate the distribution and abundance of flycatchers in the Action Area and will be important to determine whether to re-evaluate this biological opinion's conclusion.

### **Direct effects**

Based upon the current distribution of flycatchers, we do not anticipate that there will be any direct effects to flycatchers as a result of the construction of the Tonto Creek Bridge. No flycatcher nests are known to occur within the riparian habitat removal area in the project footprint, known territory centers are at least 0.25 mile away. Additionally, riparian habitat removal in the project footprint; will occur while flycatchers are on their wintering grounds in Central America or northern South America. Therefore, no impacts to eggs or young could occur. Because construction activities will take over a year to complete, construction will occur while migrating, nesting, or dispersing flycatchers are present along Tonto Creek. Due to the current lack of dense riparian vegetation in the construction areas, flycatchers would not be expected to frequently occur in those locations. Also, construction activities are not anticipated to create conditions that would lure flycatchers into the project footprint. Because of the current habitat configuration and the distance nesting flycatchers are from the bridge location, we do not believe it is reasonable to anticipate that the construction or increase in traffic and/or traffic speed will cause flycatchers to collide with traffic. In the rare instance where a flycatcher may occur near project activities, flycatchers would be anticipated to leave the area and escape any threatening situation due the mobility of flight. Best Management Practices will be used during construction activities, therefore no toxic substances are anticipated to cause injury or death.

We also do not anticipate that construction and improvement of the Oak Creek Bridge will result in any direct effects to flycatchers. Because the Oak Creek stream and floodplain do not support the conditions that can develop the expansive and dense riparian vegetation flycatchers seek for nesting and foraging, flycatchers are not anticipated to occur in this Oak Creek Bridge area.

### **Indirect effects**

Based upon the current distribution of nesting and migrating flycatchers and quality of riparian vegetation within the Tonto Creek Bridge footprint, we do not anticipate that habitat removal, construction activities (including noise), or the bridge structure will harm or harass flycatchers.

Because there is no flycatcher habitat at the Oak Creek Bridge location, we do not anticipate that flycatchers will visit that location; therefore, no anticipated indirect effects are expected to occur.

Ms. Karla S. Petty, Arizona Division Administrator

### *Habitat removal*

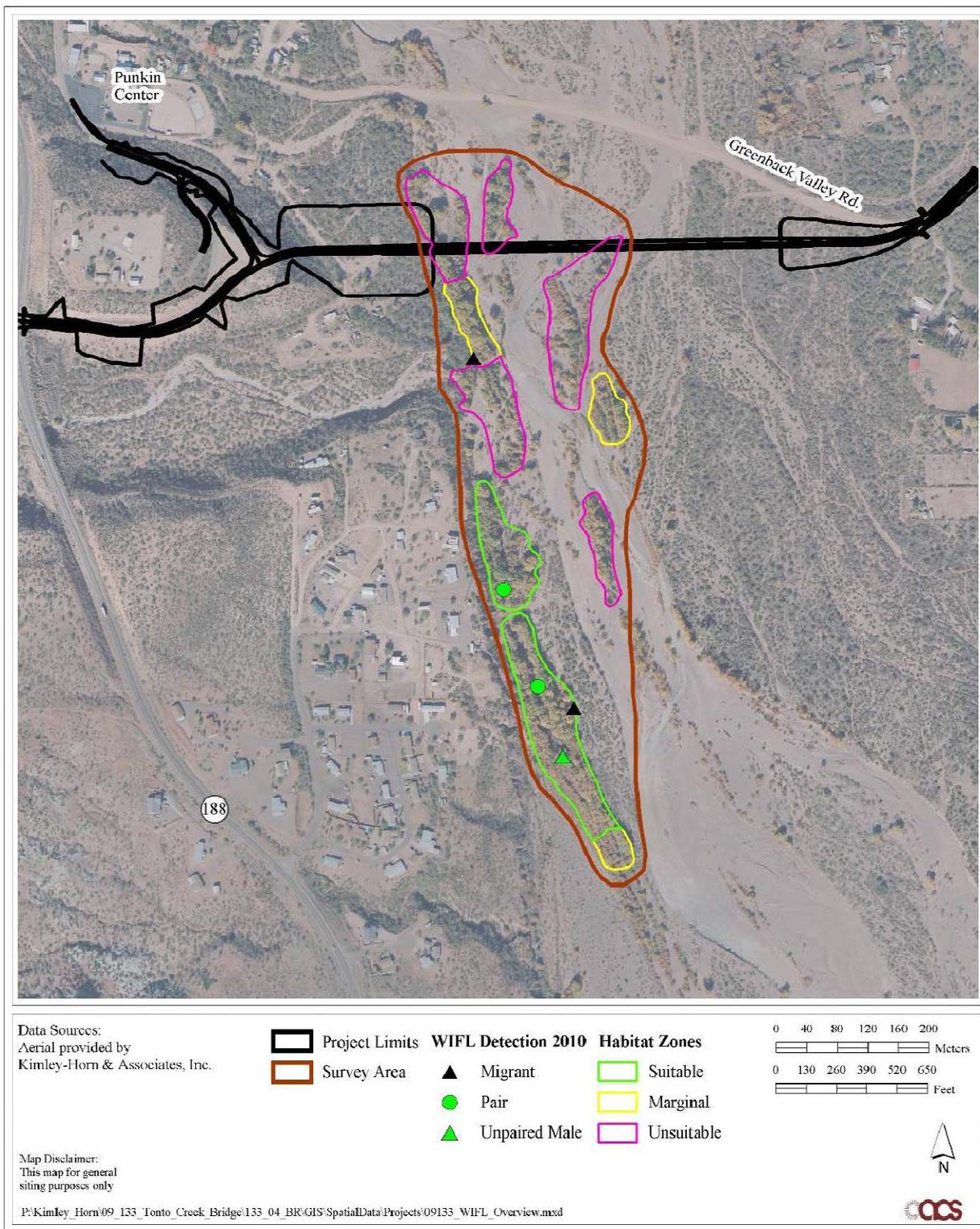
Based upon the current distribution and abundance nesting flycatchers and riparian vegetation, we do not anticipate that the 0.20-0.30 acre of riparian habitat removed within the Tonto Creek Bridge project footprint will harm flycatchers, because of the small amount of habitat removed, its current quality, and distance from known flycatcher territories. The three known flycatcher territories in the surrounding area occur in linear patches of riparian vegetation with the closest being about 0.25 mile away (Figure 2). Upstream of the flycatcher detections toward the construction area, habitat patches were described as unsuitable or marginal flycatcher habitat. As a result, it is not likely these areas currently have the quality of vegetation that would attract flycatchers for nest placement, but could possibly be used for foraging, dispersal, or migration stopover locations. Similarly, because of the distance these habitat patches are from territory centers where flycatchers are likely nesting, we do not anticipate that their fragmentation will lead to increased predation of flycatchers or brood parasitism of nests. The proportion of vegetation (approximately 0.20-0.30 acre) being removed in the bridge footprint is a small fraction of the overall riparian habitat available in the immediate area (approximately 8 -10 acres). Therefore, as a result of the distance the bridge is currently away from the center of flycatcher territories; the current marginal quality of the habitat for nest placement being removed; and the small amount of vegetation being removed, we conclude that currently this 0.20-0.30 acre of habitat is not a resource relied upon by flycatchers for their nesting success. As a result, the removal of this vegetation in its current configuration and quality is minor.

### *Use of construction areas*

Because construction activities will take over a year to complete, construction will occur while migrating, nesting, or dispersing flycatchers are present along Tonto Creek. Due to either the lack of riparian vegetation in the construction areas (following removal) or lack of dense riparian vegetation adjacent to the footprint, flycatchers would not be expected to frequently occur or rely upon resources in those locations. However, because flycatchers are mobile, there are rare instances where a flycatcher could occur within the project footprint or near access roads and its behavior altered by the proposed actions. For example, a flycatcher could be flushed from a perch while foraging, dispersing, perching, or resting. We anticipate that if these instances occurred, they would be rare and infrequent, and the affect of those few incidents would be insignificant.

### *Noise*

The Biological Assessment describes that existing ambient noise levels at four sites within the project footprint range from 49 to 56 decibels, adjusted (dBA). Results of the noise analysis indicate that although hourly traffic volumes are likely to increase with operation of the new bridge, the increase in traffic noise levels would be less than 2 decibels near the roadway and less than 1 decibel at distances up to 300 ft from the roadway. Noise abatement is considered if the sound level approaches 67 dBA, or substantially exceeds existing levels. ADOT defines “approach” as 3 dBA. Therefore, the change in noise from the baseline is likely to be negligible.



**Figure 2.** Flycatcher locations and habitat assessment near proposed Tonto Creek Bridge, 2010 Flycatcher Breeding Season, Gila County, AZ

Ms. Karla S. Petty, Arizona Division Administrator

Temporary increases in noise will occur during construction activities. Construction equipment generates peak noise in the range of 85 to 90 dBA, with backup alarm noise peaking at 95 dBA. Maximum noise from backup alarms is estimated to attenuate to 65 dBA at 0.25 mile, 60 dBA at 0.5 mile, and 53 dBA at 1 mile from the source. Noise levels will decrease with distance as uneven ground surfaces will cause attenuation. In addition, noise from these backup alarms will occur intermittently and not at a constant rate.

Based upon the current distribution of flycatchers and habitat condition, we do not anticipate that construction noise and future noise from traffic will cause adverse affects to flycatchers. Currently, known territory centers are at least 0.25 mile away, therefore due to the distance the noise levels will not increase dramatically. Also, flycatchers are not anticipated to frequently use and/or rely upon habitat nearest the bridge (see above). Flycatchers are known to nest successfully near areas that are not quiet, but have some existing level of relatively persistent ambient noise. For example, flycatchers have nested successfully in close proximity to a four-lane highway and near a remote rural two-lane bridge and a sand and gravel operation near Camp Verde, AZ. Additionally, the dense riparian vegetation in which flycatchers are typically found nesting could also attenuate noise. Therefore, due to the distance of nesting habitat from the construction and bridge area, we anticipate that noise from construction activities is likely an insignificant effect to flycatchers.

#### *River flow*

There will be no channelization or concrete scour floors associated with the Tonto Creek Bridge construction. The type of piers and spacing being utilized will allow the creek's low-flow braids to continue to meander through the area. The bridge has been designed to pass the 100-yr storm event with minimal impact to the upstream and downstream water surface elevation (+0.25 ft). Disturbance from pier construction within the ordinary high-water channel of Tonto Creek amounts to less than 0.1 acre. As a result, we believe the Tonto Creek Bridge will be constructed in a manner that will minimize changes to river flow and allow flood flows to move through relatively unimpeded, not causing noticeable change in the distribution, abundance, or quality of existing flycatcher habitat, or its future germination, growth, or recycling. Therefore, as a result of allowing the river to move through the bridge area relatively unimpeded, we believe the construction and design of the Tonto Creek Bridge will be a minor effect on flycatcher habitat.

#### *Change in access points*

The construction of the Tonto Creek Bridge will change access points in the Action Area, by closing two existing stream crossings (Store/A Cross) and replacing the Store crossing with the proposed bridge. The Bar X Road will remain in existence and is located in about the middle of the Action Area. These changes could direct creek access and recreation into unused areas, cause increases in existing areas, and reduce human activity in some areas.

Ms. Karla S. Petty, Arizona Division Administrator

There are proposed conservation measures to help reduce and minimize the effects to flycatcher habitat from the change in points of access. At the Store and A Cross Road stream crossings, the roads will not be maintained, instead they will be closed with structural barriers and signs. Also, to minimize and reduce potential impacts that could arise by funneling access and recreation at the remaining Bar X Road crossing or the new Tonto Creek Bridge, a public education campaign and continued management by the TNF will occur. As a result of these conservation measures, any potential impacts to flycatchers and their habitat from a change in access points are anticipated to be localized.

The result of closing the Store and A Cross Road stream crossings and vegetation improvement efforts could result in re-establishment of riparian vegetation and flycatcher habitat (approximately five acres), however there is anticipated to be limitations for vegetation growth at both locations. The groundwater Index Well at Punkin Center (near the Store crossing) describes groundwater elevation near 11 ft deep. As a result of groundwater being this far from the surface, simply removing impacts of vehicles will not facilitate the return of flycatcher nesting habitat. In contrast, groundwater elevation is relatively high near the A Cross Road crossing, but rehabilitation activities and vegetation growth may not persist as long as other locations due to storage of Roosevelt Lake water at this location.

### **Critical Habitat**

As a result of the proposed action, we anticipate that there will be adverse affects to the existing 0.2-0.3 acre of flycatcher critical habitat at the new Tonto Creek Bridge location. Those effects will be to primary constituent element number one, which focuses on riparian plants and various configurations of habitat.

The development of the new Tonto Creek Bridge will depend upon the clearing of all riparian vegetation within the 23-acre project footprint (cottonwood, willow, and tamarisk trees). Based upon the current distribution and abundance of habitat, it would result in removing approximately 0.20-0.30 acre of riparian vegetation. The long-term persistence of the bridge and maintenance will subsequently prevent the development of 2-3 acres of riparian habitat in the floodplain area.

As described above, due to the proposed conservation measures associated with management of road closures, we do not anticipate that the change in points of access will cause additional detectable effects to riparian habitat within the Action Area. Also described above, as a result of the bridge design minimizing impacts to stream flow, we do not believe that there will be a detectable change in existing riparian habitat, or will development of future riparian habitat be precluded to a significant extent.

The closure, management, and rehabilitation of the Store and A Cross Road crossings could help generate additional riparian vegetation within the Action Area (up to about five acres). However, as described above, we believe there are some limitations to flycatcher habitat developing and/or persisting at these locations.

Ms. Karla S. Petty, Arizona Division Administrator

## 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. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The Corps Congressional Request Special Study (ACOE 2004) on a Tonto Creek Bridge described that the absence of a Tonto Creek Bridge “significantly reduces development opportunities” on the east side of Tonto Creek. Both the Corps and the FWS identified that the building of this bridge would facilitate the development of housing, and subsequently, we both expressed concern over the source and use of water to support these additional dwellings and its affect on wildlife resources and threatened and endangered species.

This private land on the east side of Tonto Creek has been available for development since the late 1800s and following the establishment of the TNF and Roosevelt Lake in the early 1900s. While other AZ lakeside recreation areas are surrounded by USFS, National Park Service, and other Federal and County lands (largely incapable of supporting a housing community), the east side of Tonto Creek possesses a unique and desirable opportunity to live adjacent to a premier AZ recreational area. However, to date this area on the east side of Tonto Creek near Roosevelt Lake has only been approximately halfway developed (see below). FWS staff had a conversation with a potential land owner, who explained that they were waiting for a bridge to be developed before purchasing land and living on the east side of Tonto Creek (G. Beatty, pers. comm.).

As a result of these circumstances, our conclusion is that while the ability to develop land on the east side of Tonto Creek has occurred for over 100 years, it has been precluded from being fully developed largely for the reasons this project is being proposed. Over the previous 100 years without a bridge, there has been unsafe and unreliable crossing of Tonto Creek, unreliable emergency services access, and unreliable access to schools and other necessary facilities. Therefore, while the opportunity has existed to develop land on the east side of Tonto Creek for over a century, it is our conclusion that the lack of safe access has stalled development. Therefore, with the addition of this bridge, the full development of this area has reached a reasonable level of certainty.

Based upon the Biological Assessment, the undeveloped private land that is east of Tonto Creek outside the floodplain within the Action Area could support between 800 and 900 dwelling units. If all private land is considered, approximately 1,095 total dwelling units could occur. As result, about 320 to 610 additional dwelling units (approximately double the existing 480 dwellings) could be constructed under current conditions on the east side of Tonto Creek. This is a conservative estimate, since build-out would require the splitting and subdividing of every parcel to meet the maximum density allowed. Many of these parcels are not only developed with a dwelling unit, but in many cases also support ancillary buildings. Increases in traffic that would accompany this full build-out condition are estimated to be less than double the current traffic. This would amount to a projected total of 130 vehicles per hour.

Ms. Karla S. Petty, Arizona Division Administrator

Currently, groundwater wells adjacent to Tonto Creek are the source of water for the east side of Tonto Creek communities. About 50-60 shallow groundwater wells were mapped as being included within the Action Area. Two Index Wells occurred within the Action Area, one near the proposed Tonto Creek Bridge and another near A Cross Road. Because this portion of Gila County is outside of an AZ Department of Water Resources Active Management Area (AMA), groundwater resources are not as closely regulated by the State of AZ. The management and permitting of these water resources by ADWR is done without consultation with the FWS.

Six components of river flow regimes, amplitude, magnitude, frequency, duration, timing, and rate of change of hydrologic conditions, strongly influence the structure and function of riparian ecosystems (Poff *et al.* 1997). Following spring flood flows, deposits of moist, bare soil are ideal seedbeds for the millions of seeds being produced by cottonwoods and willows. Seed production is strategically timed to coincide with receding floodwaters. As floodwaters slowly recede through the spring and summer months, surface soil moisture becomes scarce. At this time, it is critical for the roots of the seedling to be able to follow the dropping water table down into the soil profile since seedlings are especially susceptible to drought (Wheeler 2005).

Groundwater pumping can negatively influence the necessary water resources for riparian plants to germinate, grow, and persist. Small reductions in stream flow or ground water levels can cause plants to undergo physiological stress and lose productivity, with possible adverse implications for the flycatcher habitat (USFWS 2002). Even short-term loss of surface flows may reduce bio-productivity and habitat quality by stressing those insects with aquatic larval forms, a portion of the southwestern willow flycatcher's food base (USFWS 2002). Nesting flycatchers do not rely on just the existence of riparian plants, but the persistence of this vegetation in abundant and dense quantities, requiring groundwater near the surface that creates conditions for abundant plant germination, growth, and persistence. Both riparian habitat and insects are the primary constituent elements of flycatcher critical habitat, while elevated groundwater is described as key physical or biological feature. Special management considerations for critical habitat include the concern for the effects of groundwater pumping (USFWS 2005a).

The Biological Assessment describes that current elevation of groundwater near Punkin Center (not influenced by Roosevelt Lake) at one Index Well varied between 11 and 19 ft below the surface. Lite and Stromberg (2005) found that cottonwood and Goodding's willow plants were able to compete successfully with non-native saltcedar plants when the maximum depth to groundwater was less than or equal to eight ft. The processes required for cottonwood and willow growth and survival suffer from water stress when groundwater declines below this threshold. Thus, the importance of maintaining relatively shallow groundwater conditions for establishment and maintenance of willow-dominated habitats cannot be over-emphasized. Once established, long-term survival of these plants requires that the groundwater table not exceed some maximum threshold. Existing data indicate that this maximum threshold is approximately eight ft, but the ideal depth appears to be closer to three to five ft, depending on the species and soil conditions at the site (Parametrix 2008). Therefore, while a mature tree can persist at groundwater elevation eight ft below the surface, the elevation needed for germination and growth of seedlings is much closer to the surface. The greater the distance groundwater is from

Ms. Karla S. Petty, Arizona Division Administrator

the surface, the less likely water elevations can raise to the surface following flood flows and persist long enough for seeds to germinate and young trees to persist.

ADWR (1994) describes that their statewide network of monitoring wells are not ideally located or properly constructed to allow assessment of surface/ground water interactions at a local scale, and as a result, additional monitoring wells should be constructed in some areas.

While there are over 50 shallow groundwater wells in the Action Area, there are only two Index Wells and no long-term monitoring of these Tonto Creek water resources describing how this water may or may not be affecting adjacent riparian vegetation quality or surface flow in Tonto Creek. Nor is there associated with the Biological Assessment an analysis of what local water resources will be needed in the future, where those water sources will be placed, the water that will be required, and to what extent and what area that extraction may or may not affect. Some groundwater extraction occurs in areas that are more isolated from adjacent streams, and have less influence in riparian habitat and stream flow, while other wells are more hydrologically connected to the groundwater resources associated with nearby streams and can have a greater influence on riparian habitat. Also, the effects of groundwater extraction on a stream do not occur the instant a well begins, and do not stop immediately after pumping ceases (ADWR 1994). As a result, there is uncertainty over how continued use of shallow groundwater and any future increases in water use would or would not affect stream and wildlife resources.

The opinion of Salt River Project (G. Kornrumph pers. comm.) was that they did not believe, due to the periodic raising of Roosevelt Lake, that groundwater pumping on the east side of Tonto Creek would affect riparian habitat within the Roosevelt Lake conservation space (downstream of A Cross Road). This conclusion is supported by the Index Well that is located near the upper limit of Roosevelt Lake. However, as shown farther upstream near Punkin Center, the depth to groundwater is much greater. We have seen other instances in AZ where shallow groundwater extraction near the end of streams such as the lower San Pedro River and lower Verde River have shown local impacts to riparian vegetation quality.

Future residences in the vicinity of Punkin Center will require access to potable water and septic systems. Based on US Environmental Protection Agency (EPA) estimates of average household water use (45 gallons per person per day and an average household size of two people), and the maximum potential build-out on the east side of Tonto Basin, the Biological Assessment calculates that approximately 54,900 gallons of water per day—or approximately 61.5 acre-ft per year—would be withdrawn from the groundwater supplies at full build-out. While the Biological Assessment for this project describes that this water use would account for only a two-percent increase of the annual groundwater demand between the years of 2001 and 2005, that statistic is based on an average annual groundwater demand of 3,050 acre-ft per year within the entire Tonto Basin watershed (including communities such as Payson and Star Valley), not the demand and increase of use in the Action Area.

Additional residences on the east side of Tonto Creek would require a septic system since no community sewer system is available. The AZ Department of Environmental Quality and Gila County have delegation agreements in place to ensure that any new developments would use state-of-the-art techniques and methods for septic system installation to prevent impairment of

Ms. Karla S. Petty, Arizona Division Administrator

water quality in the area and there are no existing plans to develop community water services on the east side of Tonto Creek.

Residential wastewater within Tonto Basin is not treated by a sewage treatment facility and transported off-site; as a result, septic systems ultimately feed to leach fields, which allow the water to naturally filter through the soil and ultimately contribute to groundwater recharge. According to the Biological Assessment (ADOT 2010), this could reduce the overall impact on groundwater withdrawals. However, due to the lack of specifics about the location of fields, water amount, hydrological connection, groundwater elevation, etc. we are uncertain to what extent this would result in a benefit to flycatchers and what additional concerns there may be for water quality.

For this particular action, the FHWA has limited discretion for actions subsequent to the construction of the bridge. Additionally, if effects should begin to occur to riparian vegetation as a result of further use of shallow groundwater for dwellings on the eastern side of Tonto Creek, it would not occur immediately, but likely over a number of years as development advances. Because this area occurs outside of an AZ Department of Water Resources Active Management Area, there is no regulation to ensure that safe-yield (or equilibrium) occurs. Therefore, with the limited discretion by the FHWA, any long-term impacts associated with continued use of groundwater resources would likely be the responsibility of local or county government. However at this time, while we anticipate that increased groundwater use will occur due to the development of these bridges, we do not have the information to accurately assess any impacts.

## CONCLUSION

After reviewing the current status of the flycatcher and its critical habitat, the environmental baseline for the action area, the effects of the Tonto and Oak Creek Bridges and the cumulative effects, it is the FWS's biological opinion that the Tonto and Oak Creek Bridges, as proposed, are not likely to jeopardize the continued existence of the flycatcher, and are not likely to destroy or adversely modify designated flycatcher critical habitat.

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.<sup>1</sup>

We present this conclusion for the flycatcher for the following reasons:

- Based upon the current distribution of habitat and distribution of territories, no incidental take of flycatchers is anticipated to occur due to riparian vegetation removal and construction activities.

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<sup>1</sup> see December 27, 2004, memo from Acting Director Fish and Wildlife Service

Ms. Karla S. Petty, Arizona Division Administrator

- As a result of the Tonto Creek Bridge design, no detectible downstream effects to river flow, flycatchers, and flycatcher critical habitat are anticipated to occur which could adversely affect the distribution, abundance, maintenance, and germination of flycatcher critical habitat.
- As a result of proposed management of access points and closures of roads, no detectible effects to flycatchers and flycatcher critical habitat outside of the project footprint is anticipated to occur.
- As a result of closing the Store and A Cross roads and vegetation rehabilitation, riparian habitat at both crossings is expected to be more abundant than baseline condition. While there are likely limitations in the quality and persistence of habitat that can be established at these road crossings, the habitat that does develop would contribute toward partially offsetting permanent loss of habitat at the Tonto Creek Bridge footprint.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and Federal regulations 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 (50 CFR 17.3) 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 (50 CFR 17.3) 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 that 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.

#### **AMOUNT OR EXTENT OF TAKE**

The FWS does not anticipate the proposed action will incidentally take any flycatchers for the following reasons:

- Flycatcher habitat removal at and near the Tonto Creek Bridge location is not currently is a condition where flycatcher nests are located and is far enough away from known nesting locations that it is not anticipated to be habitat that flycatchers rely upon for foraging, migration, dispersal, or cover.

Ms. Karla S. Petty, Arizona Division Administrator

- Any possible alteration of flycatcher behavior that might occur by flycatchers interacting with construction activities is anticipated to be rare.
- Noise from construction activities is anticipated to be at a low enough level and far enough away from the current distribution of known nesting areas to not alter flycatcher behavior.
- The Tonto Creek Bridge design is not anticipated to detectably alter river flow, flycatcher habitat, and flycatchers nesting downstream.
- No flycatcher habitat or occurrences of flycatchers is anticipated to occur at the Oak Creek Bridge location.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

#### EFFECT OF THE TAKE

In this biological opinion, the FWS determines that incidental take is not likely to occur and the proposed project is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat for the reasons stated in the Conclusions section.

#### **Disposition of Dead or Injured Listed Species**

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, AZ, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

#### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations 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. We recommend that your agency and other Federal agencies involved in this consultation (TNF, Corps), within their appropriate discretion, work with, make recommendations, and/or

Ms. Karla S. Petty, Arizona Division Administrator

develop permit conditions with Gila County to develop groundwater monitoring wells to establish a baseline for existing groundwater extraction that can detect the connectivity to Tonto Creek groundwater, the extent of influence these wells exert on riparian vegetation, and the area influenced by groundwater extraction. With these monitoring wells in place and data analyzed, future use of water from these wells and any additional wells can be used within appropriate levels to ensure that adverse affects to flycatchers and flycatcher habitat does not occur or can be reduced, minimized, and/or mitigated through appropriate conservation measures such as a Habitat Conservation Plan with the FWS.

2. We recommend your agency and other Federal agencies involved in this consultation, within their appropriate discretion, work with Gila County and other interested parties to develop measures to improve the abundance of surface water and groundwater in Tonto Creek.
3. We recommend your agency and other Federal agencies involved in this consultation, within their appropriate discretion, and Gila County work to maintain the natural Tonto Creek hydrologic regime (frequency, magnitude, duration, and timing) connected to an unaltered floodplain.
4. We recommend your agency and participating Federal agencies involved in this consultation, within their appropriate discretion, and Gila County work to encourage future housing is built safely outside of the influence of Tonto Creek flood flows.
5. We recommend your agency and participating Federal agencies involved in this consultation, within their appropriate discretion, and Gila County, support and implement the conservation strategies described in the Southwestern Willow Flycatcher Recovery Plan to maintain, improve, and enhance flycatcher habitat and populations along Tonto Creek and the surrounding Roosevelt Management Unit.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

### **REINITIATION NOTICE**

This concludes formal consultation on the action(s) outlined in the (request/reinitiation request). 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 retained (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 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.

Ms. Karla S. Petty, Arizona Division Administrator

The FWS appreciates the FHWA efforts to identify and minimize effects to listed species from this project. For further information please contact Greg Beatty (x247) or Debra Bills (x239). Please refer to the consultation number, 22410-2004-F-0447 in future correspondence concerning this project.

Sincerely,

/s/ Debra Bills for

Steven L. Spangle  
Field Supervisor

cc:

Kelly Jardine, District Ranger, Tonto Basin Ranger District, Roosevelt, AZ  
Fred Wong, Forest Biologist, Tonto National Forest, Phoenix, AZ  
Marjorie Blaine, Army Corps of Engineers, Regulatory Branch, Phoenix, AZ  
Ken Davis, Federal Highway Administration, Phoenix, AZ

Chief, Habitat Branch, AZ Game and Fish Department, Phoenix, AZ

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Ms. Karla S. Petty, Arizona Division Administrator

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Ms. Karla S. Petty, Arizona Division Administrator

## **Concurrence**

### *Spikedace*

The Biological Assessment and your subsequent correspondence determined that the project “may affect, but will not likely adversely affect” spikedace. Also, you determined that the project “may affect, but will not adversely modify” proposed critical habitat. We concur with your determination for spikedace, because currently there are no spikedace known to occur within Tonto Creek. Should the project result in effects to spikedace critical habitat, we recommend you reinitiate consultation.