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In Reply Refer To:
AESO/SE
22410-2010-F-0587

March 1, 2011

Thomas Puto, Project Manager
Federal Highway Administration
12300 West Dakota Avenue
Lakewood, Colorado 80228

RE: Control Road Bridge Replacement

Dear Mr. Puto:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated February 4, 2011, and was received on that date. At issue are impacts that may result from the proposed Control Road Bridge Replacement located on the Tonto National Forest (Tonto) in Gila County, Arizona. The proposed action "may affect" the Chiricahua leopard frog (*Lithobates chiricahuensis*).

In your letter, you requested our concurrence that the proposed action "may affect, is not likely to adversely affect" the Mexican spotted owl (*Strix occidentalis lucida*) and critical habitat. We concur with your determination for the Mexican spotted owl and its designated critical habitat and provide our rationales in Appendix A.

This biological opinion is based on information provided in the February 4, 2011, biological assessment (BA), telephone conversations, e-mail correspondence, field investigations, 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, bridge construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

July 16, 2010: Project scoping letter sent to our office.

September 22, 2010: Conference call conducted between staff from the Federal Highways Administration (FHWA), Tonto, CH2M Hill (private consultant), and our office to discuss project specifics.

January 6, 2011: Draft BA received from FHWA via e-mail.

January 20, 2011: Comments on draft BA provided to FHWA via e-mail.

January 25, 2011: Conference call conducted between staff from the FHWA, Tonto, and our office to discuss project specifics and appropriate conservation measures.

February 4, 2011: Final BA and request for consultation received from the FHWA via e-mail.

February 4-24, 2011: Informal discussion and coordination on project review and evaluation between our office, the FHWA, and the Tonto.

February 24, 2011: Draft BO provided informally to FHWA and Tonto via e-mail.

February 24, 2011: Received e-mail from FHWA and voice mail from Tonto; no comments on draft BO.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The FHWA, in cooperation with the Tonto and Gila County, Arizona, proposes to replace seven bridges along Forest Highway 51 (also known as Control Road and National Forest System Road 64). These bridges require replacement to meet safety and structural standards. The existing structures will be demolished and removed for off-site disposal. The collective footprint of the project lies entirely within the Tonto's Payson Ranger District, in central Arizona, north of Payson in Gila County. The bridges cross Webber, Bonita, Perley, Moore, Lewis, and Ellison creeks, as well as Roberts Draw (listed in order of geographic occurrence from west to east). Please see Figure 1, page 2 in the BA for a map of the region and affected bridge crossings.

Bridge replacement will be performed in one of two ways at each of the seven locations:

1) The existing bridge would be closed and demolished. The debris would be removed and a new bridge constructed along the same alignment. To maintain traffic flow, a temporary water crossing would be constructed with approach lanes connecting with the road. The temporary water crossing would be removed and the approach lanes would be returned to pre-construction contours and stabilized or revegetated after the new bridge is operational.

2) The existing bridge would be kept open to convey traffic while a new bridge is constructed on a parallel alignment. Once the new bridge is operational, the old bridge would be closed, demolished, and the debris would be removed. The existing stone abutments would remain in place.

In either method, demolition and construction operations would involve construction activities such as clearing, grading, and trenching. These actions also could include use of pile drivers, depending on the specific design. Only the vegetation and/or trees that are necessary for constructing the new bridge would be cleared. Equipment that would be onsite and used at least part of the time could include, but not be limited to, trackhoes, graders, bulldozers, welding trucks, light duty cranes, concrete mixers, and dump trucks.

In coordination with our office and the Tonto, the FHWA has developed several conservation measures to minimize potential effects to the Chiricahua leopard frog and its habitat. Conservation measures to address general effects to habitat include:

1) Design each replacement to minimize the amount of disturbance within the stream channels and the amount of vegetation cleared.
2) Implement appropriate best management practices during construction to minimize the potential for erosion and offsite transport of sediments.
3) Return each site, as near as practicable, to pre-construction contours upon completion of construction.
4) Stabilize and, where appropriate, revegetate all disturbed soils.

Conservation measures to address potential effects to the Chiricahua leopard frog include:

1) A biologist who has completed the Chiricahua Leopard Frog Certification Workshop will conduct leopard frog protocol surveys when construction occurs at bridge crossings identified to be closest to recent Chiricahua leopard frog reintroduction sites (Bonita, Perley, Moore, Lewis, and Ellison creek bridge crossings). These surveys will be regularly conducted from July 1 through September 30 as precipitation from the seasonal monsoon is most likely to induce dispersal behavior. In addition, surveys will be conducted for two consecutive days after a precipitation event occurs in the local watershed within any or all of these five drainages, if under construction. This survey strategy is designed to help determine if reintroduced frogs are dispersing downstream from reintroduction sites during the construction phase of this project to provide for adaptive management if necessary.

2) Prior to commencement of construction, on-site personnel will receive training by a qualified biologist on the identification of a leopard frog (the Chiricahua leopard frog is the only species of leopard frog in the project area).

3) If a Chiricahua leopard frog is observed in an active construction site, the location, date, and time of the sighting will be reported via email to our office within 72 hours of occurrence. In this event, the biologist will subsequently perform a survey covering a 0.5 mile radius around the construction site, and the findings of this survey will be reported via email to our office within 72 hours of occurrence. If the survey

reveals that Chiricahua leopard frogs are actively dispersing from one or more reintroduction sites, FHWA will coordinate with our office on adaptive management.

4) To the extent practicable, FHWA will schedule the construction of the Bonita, Perley, Lewis, Moore, and Ellison bridge crossings as early in the year as possible to maximize the amount of work performed at these particular sites prior to June 30 in order to minimize the amount of work performed when Chiricahua leopard frogs might be dispersing (July 1 to September 30).

We consider the action area for this project to include the rights-of-way for the Control Road (or other roads required for use), the construction footprint at each crossing (anticipated to be less than 4 acres at each crossing), a 0.5 mile radius from each construction site (to account for noise-related effects), as well as 0.5 mile downstream of any bridge crossing (to account for potential generation and transport of sediment from project implementation). Construction is estimated to take approximately 12 weeks for each bridge, regardless of the method described above, and more than one bridge may be under construction at any one time. This project is scheduled to be completed within the 2011 calendar year.

STATUS OF THE SPECIES

Chiricahua Leopard Frog

Rangewide

The Chiricahua leopard frog was listed as a threatened species without critical habitat in a Federal Register notice dated June 13, 2002. Included was a special rule to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Act. The frog is distinguished from other members of the *Lithobates pipiens* complex by a combination of characters, including a distinctive pattern on the rear of the thigh consisting of small, raised, cream-colored spots or tubercles on a dark background; dorsolateral folds that are interrupted and deflected medially; stocky body proportions; relatively rough skin on the back and sides; and often green coloration on the head and back (Platz and Mecham 1979). The species also has a distinctive call consisting of a relatively long snore of 1 to 2 seconds in duration (Platz and Mecham 1979; Davidson 1996). Snout-vent lengths of adults range from approximately 2.1 to 5.4 inches (Platz and Mecham 1979; Stebbins 2003). The Ramsey Canyon leopard frog (*Lithobates* "*subaquavocalis*"), found on the eastern slopes of the Huachuca Mountains, Cochise County, Arizona, has recently been subsumed into *Lithobates chiricahuensis* (Crother 2008) and recognized by us as part of the listed entity (USFWS 2009). In December 2010, we announced plans to propose critical habitat for the species by March 8, 2011.

The range of the Chiricahua leopard frog includes central and southeastern Arizona; west-central and southwestern New Mexico; and, in Mexico, northeastern Sonora, the Sierra Madre Occidental of northwestern and west-central Chihuahua, and possibly as far south as northern Durango (Platz and Mecham 1984; Degenhardt et al. 1996; Lemos-Espinal and Smith 2007; Rorabaugh 2008). Reports of the species from the State of Aguascalientes (Diaz and Diaz 1997) are questionable. The distribution of the species in Mexico is unclear due to

limited survey work and the presence of closely related taxa (especially *Lithobates lemosespinali*) in the southern part of the range of the Chiricahua leopard frog. Historically, the frog was an inhabitant of a wide variety of aquatic habitats, including cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,281 to 8,890 feet. However, the species is now limited primarily to headwater streams, springs and cienegas, and cattle tanks into which nonnative predators (e.g. sport fishes, American bullfrogs, crayfish, and tiger salamanders) have not yet invaded or where their numbers are low (USFWS 2007). The large valley-bottom cienegas, rivers, and lakes where the species occurred historically are populated with nonnative predators at densities which the frog cannot coexist.

The primary threats to this species are predation by nonnative organisms and die offs caused by a fungal skin disease – chytridiomycosis. Additional threats include drought; floods; degradation and loss of habitat as a result of water diversions and groundwater pumping; improper livestock management; altered fire regimes due to fire suppression and livestock grazing; mining, development, and other human activities; disruption of metapopulation dynamics; increased chance of extirpation or extinction resulting from small numbers of populations and individuals; and environmental contamination (USFWS 2007). Loss of Chiricahua leopard frog populations is part of a pattern of global amphibian decline, suggesting other regional or global causes of decline may be important as well (Carey et al. 2001). Witte et al. (2008) analyzed risk factors associated with disappearances of ranid frogs in Arizona and found that population loss was more common at higher elevations and in areas where other ranid population disappearances occurred. Disappearances were also more likely where introduced crayfish occur, but were less likely in areas close to a source population of frogs.

Based on 2009 data, the species is still extant in the major drainage basins in Arizona and New Mexico where it occurred historically; with the exception of the Little Colorado River drainage in Arizona and possibly the Yaqui drainage in New Mexico. It has not been found recently in many rivers within those major drainage basins, valleys, and mountains ranges, including the following in Arizona: White River, West Clear Creek, Tonto Creek, Verde River mainstem, San Francisco River, San Carlos River, upper San Pedro River mainstem, Santa Cruz River mainstem, Aravaipa Creek, Babocomari River mainstem, and Sonoita Creek mainstem. In southeastern Arizona, no recent records (1995 to the present) exist for the Pinaleño Mountains or Sulphur Springs Valley; and the species is now apparently extirpated from the Chiricahua Mountains. Moreover, the species is now absent from all but one of the southeastern Arizona valley bottom cienega complexes. In many of these regions Chiricahua leopard frogs were not found for a decade or more despite repeated surveys. As of 2009, there were 84 sites in Arizona at which Chiricahua leopard frogs occur or are likely to occur in the wild. There are an additional four captive or partially captive refugia sites. At least 33 of the wild sites support breeding. In New Mexico, 15-23 breeding sites were known in 2008; the frogs occur at additional dispersal sites. The species has been extirpated from about 80 percent of its historical localities in Arizona and New Mexico. Nineteen and eight localities are known from Sonora and Chihuahua, respectively. The species' current status in Mexico is poorly understood; however, it has been found in recent years in western Chihuahua. Some threats, such as introduced nonnative predators and the threat of catastrophic wildfire, appear to be less important south of the border, particularly in the

mountains where Chiricahua leopard frogs have been found (Gingrich 2003; Rosen and Melendez 2006; Rorabaugh 2008).

The chytridiomycete skin fungus, *Batrachochytrium dendrobatidis* (*Bd*), the organism that causes chytridiomycosis, is responsible for global declines of frogs, toads, and salamanders (Berger et al. 1998; Longcore et al. 1999; Speare and Berger 2000; Hale 2001). Decline or extinction of about 200 amphibian species worldwide has been linked to the disease (Skerratt et al. 2007). In Arizona, *Bd* infections have been reported from numerous populations of Chiricahua leopard frogs in southeastern Arizona and one population on the Tonto National Forest, as well as populations of several other frogs and toads in Arizona (Morell 1999; Davidson et al. 2000; Sredl and Caldwell 2000; Hale 2001; Bradley et al. 2002; USFWS 2007). In New Mexico, chytridiomycosis appears to be widespread in populations in west-central New Mexico, where it often leads to population extirpation. A threats assessment conducted for the species during the development of the recovery plan identified *Bd* as the most important threat to the frog in recovery units 7 and 8 in New Mexico. In recovery unit 6, which includes much of the mountainous region of west-central New Mexico, *Bd* and nonnative predators were together identified as the most important threats. Die-offs typically occur during the cooler months from October-February (USFWS 2007).

The role of the fungi in the population dynamics of the Chiricahua leopard frog is as yet undefined. Some populations are driven to extinction soon after the animals become symptomatic; however, other Chiricahua leopard frog populations can exist with the disease for years (USFWS 2007). For instance, the frog has coexisted with *Bd* in Sycamore Canyon, Santa Cruz County, Arizona since at least 1972. That is the earliest record for *Bd* in the western United States, which roughly corresponds to the first observed mass die-offs of ranid frogs in Arizona. Even in cases where populations exist with the disease, it is an additional stressor, resulting in periodic die-offs that increase the likelihood of local extirpation.

Epizootiological data from Central America and Australia (high mortality rates, wave-like spread of declines, wide host range) suggest introduction of the disease into previously uninfected populations and the disease subsequently becoming enzootic in some areas. Alternatively, the fungus may be a widespread organism that has emerged as a pathogen because of either higher virulence or an increased host susceptibility caused by other factors such as environmental changes (Berger et al. 1998), including changes in climate or microclimate, contaminant loads, increased UV-B radiation, or other factors that cause stress (Pounds and Crump 1994; Carey et al. 1999, 2001; Daszak 2000). Morehouse et al. (2003) found low genetic variability among 35 *Bd* strains from North America, Africa, and Australia, suggesting that the first hypothesis – that it is a recently emerged pathogen that has dispersed widely – is the correct hypothesis. Historical specimen analysis revealed presence of chytridiomycosis in wild African clawed frogs (*Xenopus laevis*) dating to 1938 (Weldon et al. 2004). African clawed frogs were exported to many areas of the globe from Africa for use in human pregnancy testing beginning in the 1930s. Some of the test frogs escaped or were released and established populations in California, Arizona, and other areas. Although other explanations for the origin of the disease are viable, Weldon et al. (2004) suggest that Africa is where the disease originated and that international trade in African clawed frogs was the means of disease dissemination.

If the disease was introduced to the Southwest via escaped or released clawed frogs, it may have spread across the landscape by human introductions or natural movements of secondarily-infected American bullfrogs, tiger salamanders, or leopard frogs. If this is the case, its rapid establishment and spread could be attributable to humans. *Bd* does not have an airborne spore, so it must spread via other means. Amphibians in the international pet trade (Europe and USA), outdoor pond supplies (USA), zoo trade (Europe and USA), laboratory supply houses (USA), and species recently introduced (*Rhinella marinus* in Australia and American bullfrog in the USA and Uruguay) have been found infected with *Bd*, suggesting human-induced spread of the disease (Daszak 2000; Mazzoni et al. 2003).

Free-ranging healthy bullfrogs with low-level *Bd* infections have been found in southern Arizona (Bradley et al. 2002). Tiger salamanders and bullfrogs can carry the disease without exhibiting clinically significant or lethal infections. When these animals move, or are moved by people, among aquatic sites, *Bd* may be carried with them (Collins et al. 2003; Picco and Collins 2008). Other native or nonnative frogs may serve as disease vectors or reservoirs of infection, as well (Bradley et al. 2002). Green and Dodd (2007) found *Bd* in bullfrogs at a fish hatchery in Georgia and suggested the disease could be moved with stocks of fish. Since that study, *Bd* was also confirmed from a bullfrog captured at the Bubbling Ponds Hatchery in Arizona (V. Boyarski, AGFD, pers. comm.). *Bd* could also be spread by tourists or fieldworkers sampling aquatic habitats (Halliday 1998). The fungus can exist in water or mud and thus could be spread by wet or muddy boots, vehicles, cattle, fishing gear, and other animals moving among aquatic sites, or during scientific sampling of fish, amphibians, or other aquatic organisms. The FWS and AGFD are employing preventative measures to ensure the disease is not spread by aquatic sampling.

Numerous studies indicate that declines and extirpations of Chiricahua leopard frogs are at least in part caused by predation and possibly competition by nonnative organisms, including fishes in the family Centrarchidae (*Micropterus* spp., Lepomis spp.), bullfrogs (*Lithobates catesbeianus*), tiger salamanders (*Ambystoma mavortium mavortium*), crayfish (*Orconectes virilis* and possibly others), and several other species of fishes (Clarkson and Rorabaugh 1989; Sredl and Howland 1994; Fernandez and Bagnara 1995; Rosen et al. 1996, 1994; Snyder et al. 1996; Fernandez and Rosen 1996, 1998). For instance, in the Chiricahua region of southeastern Arizona, Rosen et al. (1996) found that almost all perennial waters investigated that lacked introduced predatory vertebrates supported Chiricahua leopard frogs. All waters except three that supported introduced vertebrate predators lacked Chiricahua leopard frogs. Sredl and Howland (1994) noted that Chiricahua leopard frogs were nearly always absent from sites supporting bullfrogs and nonnative predatory fish. Rosen et al. (1996) suggested further study was needed to evaluate the effects of mosquitofish, trout, and catfish on frog presence.

Waters at the Beatty's Guest Ranch in the Huachuca Mountains supports one of the most robust and dense populations of Chiricahua leopard frogs. Mosquitofish occupy all the waters at the Ranch, suggesting predation by mosquitofish may be insignificant; however, the coexistence of these species could be influenced by other factors, such as abundant escape cover, high adult frog survivorship, and high reproductive output in terms of numbers of frog egg masses produced. Examination of studies with other ranid frog species illustrates the likely effects of trout on Chiricahua leopard frogs.

Disruption of metapopulation dynamics is likely an important factor in regional loss of populations (Sredl and Howland 1994; Sredl et al. 1997). Chiricahua leopard frog populations are often small and habitats are dynamic, resulting in a relatively low probability of long-term population persistence. Historically, populations were more numerous and closer together. If populations winked out due to drought, disease, or other causes, extirpated sites could be recolonized via immigration from nearby populations. However, as numbers of populations declined, populations became more isolated and were less likely to be recolonized if extirpation occurred. Also, most of the larger source populations along major rivers and in cienega complexes have disappeared.

Fire frequency and intensity in Southwestern forests are much altered from historical conditions (Dahms and Geils 1997). Before 1900, surface fires generally occurred at least once per decade in montane forests with a pine component. Beginning about 1870-1900, these frequent ground fires ceased to occur due to intensive livestock grazing that removed fine fuels, followed by effective fire suppression in the mid to late 20th century (Swetnam and Baisan 1996). Absence of ground fires allowed a buildup of woody fuels that precipitated infrequent but intense crown fires (Swetnam and Baisan 1996; Danzer et al. 1997). Absence of vegetation and forest litter following intense crown fires exposes soils to surface and rill erosion during storms, often causing high peak flows, sedimentation, and erosion in downstream drainages (DeBano and Neary 1996). These post-fire events have likely resulted in scouring or sedimentation of frog habitats (Wallace 2003).

An understanding of the dispersal abilities of Chiricahua leopard frogs is key to determining the likelihood that suitable habitats will be colonized from a nearby extant population of frogs. As a group, leopard frogs are surprisingly good at dispersal. In Michigan, young northern leopard frogs (*Lithobates pipiens*) commonly move up to 0.5 mile from their place of metamorphosis, and three young males established residency up to 8.4 miles from their place of metamorphosis (Dole 1971). Both adults and juveniles wander widely during wet weather (Dole 1971). In the Cypress Hills, southern Alberta, young-of-the year northern leopard frogs successfully dispersed to downstream ponds 3.4 miles from the source pond, upstream 0.6 mile, and overland 0.6 mile. At Cypress Hills, a young-of-the-year northern leopard frog moved 5 miles in one year (Seburn et al. 1997). The Rio Grande leopard frog (*Lithobates berlandieri*) in southwestern Arizona has been observed to disperse at least one mile from any known water source during the summer rainy season (Rorabaugh 2005). After the first rains in the Yucatan Peninsula, leopard frogs have been collected a few miles from water (Campbell 1998). In New Mexico, Jennings (1987) noted collections of Rio Grande leopard frogs from intermittent water sources and suggested these were frogs that had dispersed from permanent water during wet periods.

Dispersal of leopard frogs away from water in the arid Southwest may occur less commonly than in mesic environments. However, there is evidence of substantial movements even in Arizona. Movement may occur via locomotion of frogs or passive movement of tadpoles along streamcourses. The maximum distance moved by a radio-telemetered Chiricahua leopard frog in New Mexico was 2.2 miles in one direction (R. Jennings, C. Painter, pers. comm. 2004). In 1974, Frost and Bagnara (1977) noted passive or active movement of Chiricahua and Plains (*Lithobates blairi*) leopard frogs for 5 miles or more along East Turkey Creek in the Chiricahua Mountains. In August, 1996, Rosen and Schwalbe (1998) found up to 25 young adult and subadult Chiricahua leopard frogs at a roadside puddle in the San Bernardino Valley, Arizona. They believed that the only possible origin of these frogs was a stock tank located 3.4 miles away. Rosen et al. (1996) found small numbers of Chiricahua leopard frogs at two locations in Arizona that supported large populations of nonnative predators. The authors suggested these frogs could not have originated at these locations because successful reproduction would have been precluded by predation. They found that the likely source of these animals were populations 1.2 to 4.3 miles away. In September 2009, 15-20 Chiricahua leopard frogs were found at Peña Blanca Lake west of Nogales. The nearest likely source population is Summit Tank, a straight line distance of 3.1 miles overland and approximately 4.1 miles along intermittent drainages.

Movements away from water do not appear to be random. Streams are important dispersal corridors for young northern leopard frogs (Seburn et al. 1997). Displaced northern leopard frogs will home, and apparently use olfactory and auditory cues, and possibly celestial orientation, as guides (Dole 1968; 1972). Rainfall or humidity may be an important factor in dispersal because odors carry well in moist air, making it easier for frogs to find other wetland sites (Sinsch 1991). Based on these studies, the Chiricahua leopard frog recovery plan (USFWS 2007) provides a general guideline on dispersal capabilities. Chiricahua leopard frogs are assumed to be able to disperse one mile overland, three miles along ephemeral drainages, and five miles along perennial water courses.

The recovery plan strategy calls for reducing threats to existing populations; maintaining, restoring, and creating habitat that will be managed in the long term; translocating frogs to establish, reestablish, or augment populations; building support for the recovery effort through outreach and education; monitoring; conducting research needed to provide effective conservation and recovery; and application of research and monitoring through adaptive management. Recovery actions are recommended in each of eight recovery units throughout the range of the species. Management areas are also identified within recovery units where the potential for successful recovery actions is greatest.

Given the wide-range of this species, several Federal actions affect this species every year. Documents that pertain to these consultations in Arizona can be found in office files or online at: http://www.fws.gov/southwest/es/arizona/Biological.htm. Survey work and recovery projects also occur periodically and are summarized in AGFD agency documents.

Additional information about the Chiricahua leopard frog can be found in Platz and Mecham (1984; 1979); Sredl and Howland (1994); Jennings (1995); Rosen et al. (1996; 1994); Degenhardt et al. (1996); Sredl et al. (1997); Painter (2000); Sredl and Jennings (2005); and USFWS (2007).

Recovery Unit 5

The action area considered under this consultation lies within Recovery Unit 5, which is delineated on the west by the Verde River southeast of Camp Verde, to the north along the interface between the forested mountains and the grasslands and pinyon-juniper woodlands of the Colorado Plateau, to the east where elevations rise into the White Mountains, and to the south where elevations drop below about 4,000 feet which corresponds to the presumed lower limit of the frog's distribution within the recovery unit. Five management units have been delineated within Recovery Unit 5. The action area for this project resides within the Upper East Verde Management Area. The establishment of a metapopulation and a buffer population (relatively isolated population that may serve as a source population if necessary) of Chiricahua leopard frogs within this management area will meet its recovery goals according to the recovery plan (USFWS 2007).

Within Recovery Unit 5, the Chiricahua leopard frog was recently known from three presumed metapopulations:

1) West Mogollon Management Area: the Buckskin Hills area of the Coconino National Forest (Fossil Creek drainage);

2) Upper East Verde Management Area: upper Ellison Creek drainage within the Payson Ranger District of the Tonto; and,

3) Gentry Creek Management Area: the Cherry and Crouch creek area near Young within the Pleasant Valley Ranger District on the Tonto, which is also referred to as the Gentry Creek Conservation and Management Zone.

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 habitat in the general vicinity of the action area consists of two primary biotic communities, Petran Montane Conifer Forest and Interior Chaparral as defined by Brown and Lowe (1980). Elevation of the project area ranges between 5,200 feet and 5,800 feet. Tree species in the area include juniper (*Juniperus sp.*), ponderosa pine (*Pinus ponderosa*), oak (*Quercus sp.*), and willow (*Salix sp.*). Other plant species include Manzanita (*Arctostaphylos manzanita*), various herbaceous species and bunch grasses. Drainages in the project area are generally ephemeral as they approach the Control Road, flowing in direct response to seasonal snowmelt or precipitation events of sufficient magnitude. Specifically, the streams where bridge replacement is proposed (Webber Creek, Bonita Creek, Perley Creek, Moore Creek, Lewis Creek, Ellison Creek, and Roberts Draw) are all ephemeral. The actual

construction sites lack suitable habitat features for Chiricahua leopard frog. This has been further verified with surveys by Tonto staff in each drainage during the summer of 2010. These surveys failed to document the presence of Chiricahua leopard frogs or suitable habitat within the immediate area of the proposed bridge replacement site. However, as discussed above in the Status of the Species, these drainages provide corridors for Chiricahua leopard frog dispersal from occupied sites immediately upstream, where numerous extant Chiricahua leopard frog populations occur within two miles (overland) of these five bridge construction sites. Higher in the watershed, headwaters of these streams maintain either intermittent or perennial flow as a result of spring recharge associated with local groundwater hydrology, where an abundance of potentially suitable habitat may occur.

Within Upper East Verde Management Area, there have been several Chiricahua leopard frog recovery efforts that were conducted in 2009 and 2010. Some of these include habitat-improvement projects, installment of protective fencing around Chiricahua leopard frog breeding habitat and reintroduction sites, and numerous reintroductions of Chiricahua leopard frogs immediately upstream of the action area. Since 2009, approximately 2,000 tadpoles and 1,600 juvenile Chiricahua leopard frogs have been reintroduced in the vicinity of the project and we anticipate additional releases in subsequent years (see Table 1). We consider the species as extant at all reintroduction sites referenced in Table 1. Chiricahua leopard frogs in this area have been observed dispersing from their release sites before. For example, on June 30, 2010, a Chiricahua leopard frog was documented by AGFD staff just below the La Cienega Ranch along Ellison Creek, immediately north of the Ellison Creek construction site. This observation indicates that frogs will move on the landscape, as expected given their known biology, natural history, and behavior.

Release Date	Release Sites < 2 miles of Action Area	# of Larvae	# of Juveniles
07-17-2009	Unnamed Trib of Ellison Creek (“Trib 4”)	82	118
07-17-2009	Lewis Creek	82	90
09-11-2009	Low Tank	462	295
09-11-2009	Moore Saddle Tank 2	482	148
07-16-2010	Unnamed Trib of Ellison Creek (“Trib 4”)	0	54
07-16-2010	Lewis Creek	0	50
07-16-2010	Low Tank	0	100
07-16-2010	Unnamed Trib of Ellison Creek (“Trib 3”)	0	50
07-27-2010	Preacher Canyon Wildlife Exclosure	33	242
08-23-2010	Unnamed Creek-Cabin Draw	349	197
08-23-2010	Unnamed Tributary to Big Canyon	111	94
08-23-2010	Big Canyon	119	79
08-23-2010	Pieper Hatchery Spring	230	75
Total		1,950	1,592

Table 1: Chiricahua leopard frog releases in 2009 and 2010 in the Upper East Verde Management Area.

As stated above, five bridge replacement sites occur in drainages that may be used by dispersing Chiricahua leopard frogs. These bridge crossings occur at Bonita Creek, Perley Creek, Moore Creek, Lewis Creek, and Ellison Creek. According to Forest Service staff, the

closest distance between a construction site and an extant Chiricahua leopard frog population is a quarter mile (overland); from the Lewis Creek reintroduction site to the Lewis Creek bridge crossing (J. Wilcox, Tonto NF, pers. comm.). The farthest distance between a construction site and an extant Chiricahua leopard frog population is two miles (overland) from the Moore Saddle Tank 2 reintroduction site to the Perley Creek bridge crossing.

Other Federal, State, or private activities occur in the area including minor construction associated with private residences scattered in the area as private inholdings; livestock grazing; recreation; timber and thinning operations; reforestation and seeding of burned areas; chaining; seeding of native and nonnative species; fire suppression; natural and prescribed fire; noxious weed control; and other special uses such as firewood and post cutting, and municipal water developments. Recreation-related activities include hunting, camping, day/picnic use, hiking, horseback riding, all-terrain vehicle and off-highway vehicle use, and maintenance activities for campgrounds, roads, or trails. Recreational activities and recreational infrastructure (i.e. roads, trails, structures, and campground development) may contribute to habitat fragmentation, habitat loss, creation of travel corridors, air pollution, audio and visual disturbance, and other disturbances caused by wildlife/public interactions.

The Little Green Valley Allotment Complex is the primary livestock grazing operation in the action area. Allotment management, as consulted on in 2008, has led to several Chiricahua leopard frog habitat improvement projects being implemented, breeding habitats secured, and numerous Chiricahua leopard frog reintroductions identified in Table 1. These actions were designed to minimize potential adverse effects from livestock grazing in occupied Chiricahua leopard frog habitat as discussed in the 2008 Biological Opinion and incorporated by reference here.

We believe the aggregate effects of activities described immediately above are not inconsistent with Chiricahua leopard frog recovery in the Upper East Verde Management Area and in some cases, may promote the recovery of this species in this area.

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.

Because of the lack of permanent suitable habitat for Chiricahua leopard frogs in the action area, we expect Chiricahua leopard frogs to be present in the action area only when actively dispersing from nearby extant populations or swept downsteam, as tadpoles, from extant populations. The most likely streams where Chiricahua leopard frogs or their larvae could be present as a result of these natural mechanisms are Bonita Creek, Perley Creek, Moore Creek, Lewis Creek, and Ellison Creek bridge crossings.

The following represents the most-likely scenarios that could result in adverse effects to the Chiricahua leopard frog:

1) Chiricahua leopard frog tadpoles could be physically injured from construction activities should any tadpoles be washed downstream from extant populations during precipitation-induced, temporary stream flows and stranded in short-term pools within the construction zone(s).

2) Chiricahua leopard frogs could disperse downstream from nearby extant populations and onto an active construction sites and be potentially harassed, physically injured or killed from construction activities.

The FHWA has specifically proposed conservation measures that are designed to minimize potential adverse effects to Chiricahua leopard frogs from project implementation such as within-channel construction activities and the temporary use of low-water crossings, as discussed above in the Description of the Proposed Action. Generally, conservation measures are designed to minimize the scope and timing of construction work that could occur during the time of year when Chiricahua leopard frogs may attempt to disperse from extant population sites. In addition, an aggressive survey strategy has been proposed to identify when dispersal may be occurring and minimize the likelihood that individual frogs could be injured by active inter-agency cooperation and adaptive management if necessary. While collectively, these measures are expected to minimize adverse effects to Chiricahua leopard frogs, it is unlikely that, in the event of a dispersal episode, every frog would be detected via survey efforts. Therefore, it is reasonable to conclude that while potential adverse effects can be minimized, they are unable to be reasonably eliminated.

There is at least some potential for *Bd* to be spread on the landscape from construction machinery that has come into contact with surface water or wetted substrate at bridge crossing construction sites where the fungus exists. However, the construction areas occur in ephemeral channels where the fungus could not persist in the long term. There has not been evidence of the fungus reported from this watershed, and we presume any mud on the construction equipment will have been thoroughly dried upon arriving at the new destination.

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.

Future non-Federal actions within the action area that are reasonably certain to occur include small-scale development activities within private inholdings, recreation, road maintenance, fuels-reduction treatments, elk grazing, and other actions. These actions have the potential to reduce the quality of habitat for the Chiricahua leopard frog and contribute as cumulative effects to the proposed action. Recreational access often involves angling when opportunities exist in an area. Anglers commonly move fish, tiger salamanders, and crayfish among tanks and other aquatic sites to establish a fishery or a source of bait or, in some cases, bait is released at an aquatic site during angling. Water, salamanders, and perhaps fish and crayfish could all be carriers of *Bd*. In addition to possibly introducing *Bd*, such activities would also facilitate introduction on nonnative predators with which the Chiricahua leopard frog cannot coexist.

CONCLUSION

After reviewing the current status of the Chiricahua leopard frog, the environmental baseline for the action area, the effects of the proposed Control Road bridge replacement project and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Chiricahua leopard frog. We make this finding for the following reasons:

1) The FHWA has proposed to schedule as much construction work (at key construction sites) as possible outside the monsoon period when Chiricahua leopard frogs are most likely to be swept into harm's way as larvae during flows or disperse downstream into active construction sites. This measure reduces the likelihood that Chiricahua leopard frogs will be present in the action area during construction.

2) The FHWA has proposed an aggressive survey strategy to identify if Chiricahua leopard frogs might be present in the construction area and whether the likelihood for dispersal movements is high. This strategy should inform personnel of the need for adaptive management might be necessary.

3) Significant reintroduction efforts for the Chiricahua leopard frog have occurred in this immediate area since 2009 and, consequently, the status of this species in this area has vastly improved.

Currently, no critical habitat has been designated for this species, therefore, none will be affected. However, we expect a proposed rule for the designation of critical habitat will be developed prior to the conclusion of this proposed action. We are not certain whether the action area will be included as proposed critical habitat.

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 which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

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

AMOUNT OR EXTENT OF TAKE

We anticipate up to ten Chiricahua leopard frogs and up to 20 Chiricahua leopard frog larvae will be taken as a result of this proposed action. The incidental take is expected to be in the form of harm, harassment, and/or mortality.

Specifically, dispersing Chiricahua leopard frogs are reasonably certain to move downstream from nearby reintroduction sites and into active construction zones during storm events or as a result of other biological cues. In this event, individuals may be incidentally harmed, injured, or killed by project personnel or equipment. In the event of significant precipitation, larvae may be swept downstream into or through active construction sites where injury or mortality may occur.

Sometimes incidental take is difficult to detect or quantify. We anticipate incidental take of Chiricahua leopard frogs will be difficult to detect because of their small body size and inconspicuous behavior and finding a dead or impaired specimen may be unlikely, and masked by seasonal fluctuations in numbers or other causes. Given these limitations and the standard error associated with accepted survey protocols, the number of individuals taken may be underestimated. If 20 percent of the number of individuals expected to be taken (i.e.

two Chiricahua leopard frogs or four larvae) are observed within active construction zones, we recommend contacting this office for continued coordination.

EFFECT OF THE TAKE

In this biological opinion, we determine that this level of anticipated take is not likely to result in jeopardy to the species for the reasons stated in the Conclusions section.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS
In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following:

Reasonable and prudent measures and terms and conditions should minimize the effects of take, and provide monitoring and reporting requirements [50 CFR 402.14(i)(3)]. These measures are non-discretionary.

Chiricahua Leopard Frog

The following reasonable and prudent measure is necessary and appropriate to minimize take of Chiricahua leopard frogs:

1) The FHWA shall monitor incidental take resulting from the proposed action and report to our office at the project's conclusion.

1.1 FHWA shall monitor the action area to ascertain take of individuals and report to our office (written correspondence, e-mail, or phone call), information regarding:

The results of any monitoring efforts conducted and a summary of any situations (and their corrective actions), that occurred during project implementation. The report shall also make recommendations for modifying or refining potential, future conservation measures for implementation of similar projects which are likely to adversely affect Chiricahua leopard frogs (within 90 days of the conclusion of the proposed action).

These reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. If, during the course of the action, the level of incidental take is exceeded, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. FHWA must immediately provide an explanation of the causes of the taking and review with our office the need for possible modification of the reasonable and prudent measures.

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, Arizona, 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. Collaborate with other stakeholders on actions to eliminate nonnative predators at or near Chiricahua leopard frog populations that pose a threat to those populations, and/or prevent existing sites with suitable Chiricahua leopard frog habitat from becoming occupied by nonnative species.

2. Implement protocols designed the minimize the incidental spread of *Bd* using the guidelines provided in Appendix G of the Chiricahua Leopard Frog Recovery Plan (USFWS 2007).

3. Collaborate in minimizing potential adverse effects to currently unoccupied recovery sites in the Upper East Verde Management Area necessary to support viable populations and metapopulations of Chiricahua leopard frogs.

4. Collaborate in monitoring extant Chiricahua leopard frog populations and habitats, and implementation of the recovery plan.

5. Continue to support research needed to support recovery actions and adaptive management that pertain to actions undertaken by FWHA.

6. Continue to encourage and develop support for the recovery efforts for the Chiricahua leopard frog in the Upper East Verde Management Area through collaborative public and private partnerships.

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 actions outlined in the 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.

We appreciate the FHWA's efforts to identify and minimize effects to listed species from this project. We also recommend you continue to coordinate the review of this project with the AGFD. For further information please contact Jeff Servoss (x237) or Debra Bills (x239). Please refer to the consultation number 22410-2010-F-0587 in future correspondence concerning this project.

Sincerely,

/s/ Debra Bills for
Steven L. Spangle
Field Supervisor

Electronic Copy:

Cat Crawford, Fish and Wildlife Service, Tucson, AZ
Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ
Jeff Servoss, Fish and Wildlife Service, Phoenix, AZ
John Wilcox, Payson Ranger District, Tonto National Forest, Payson, AZ
Mike Sredl, Nongame Branch, Arizona Game and Fish Department, Phoenix, AZ
Bill Burger, Arizona Game and Fish Department, Region VI, Mesa, AZ

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Appendix A: Concurrence
Mexican Spotted Owl

Federal Status: Listed as Threatened in 1993
Critical habitat designated in 2001

Status in the Action Area

Tonto biologists conducted surveys in the action area for the Mexican spotted owl during the nesting season of 2010. The nearest owl protected activity centers (PACs) to the project area are the Geronimo and Roberts PACs, which surround the Roberts Draw bridge area just north of Control Road. The roost locations within each PAC are approximately 0.75 mile and 0.5 mile from the Roberts Draw bridge, respectively. There is another PAC 0.75 mile west of the Webber Creek bridge crossing. There are no PACs within approximately 2 miles of the remaining five bridge crossings. The Tonto presence/absence surveys (to protocol) of the Geronimo and Roberts PACs in 2010, were not able to locate owls. The most recent occupation of the Geronimo PAC was documented in 1998. Occupation has not been documented in the Roberts PAC since 1996. Table 2 of the BA provides survey findings of the Geronimo and Roberts PACs from 1995 through 2010. Given the lack of steep slopes or canyons that are typical for suitable nesting habitat, the project area is not expected to provide nesting habitat, however foraging habitat may occur within the action area.

The Webber Creek bridge crossing is within a portion of a designated Mexican spotted owl critical habitat polygon. The corner of this polygon is located at the southeast junction of Control Road and Webber Creek, extending approximately 0.5 mile east and south (see Figure 2 of BA).

Potential Effects

The proposed project would not have direct effects on individual spotted owls. Recent surveys did not detect owls within the proposed project area. There is no nesting habitat present and the two owl PACs noted above which are adjacent to the Roberts Draw bridge crossing are not currently occupied. According to Tonto National Forest survey data, owls have not been detected in either of these two PACs since 1998. However, protocol surveys will be conducted again during the 2011 season by a Payson Ranger District biologist to confirm owl presence or absence. This project will be conducted during the Mexican spotted owl breeding season.

The proposed project may have a direct effect on critical habitat for the Mexican spotted owl in the form of potential clearing of vegetation and/or removal of trees in the action area around the Webber Creek bridge replacement. However these effects will be avoided by limiting construction disturbance to areas outside the designated critical habitat. The potential for indirect impacts would be minimized by discriminately clearing only the vegetation and/or trees that are necessary for constructing the new bridge.

Conservation Measures

The following measures would be implemented to minimize impacts to the Mexican spotted owl and its critical habitat:

- Construction at Roberts Draw and Webber Creek will occur only during daylight hours. This would effectively eliminate any potential for adverse effects of construction on spotted owl foraging.

- Tonto biologists will conduct surveys of the Geronimo and Roberts owl PACs at Roberts Draw and the critical habitat at Webber Creek starting in the spring of 2011. If those surveys confirm previous findings, the FHWA may contact our office to request permission to perform night work at these two crossings, if necessary.

- In the event that a nesting pair of Mexican spotted owls is observed by Tonto biologists within 0.5 mile of the project action area, construction would cease at that crossing until the young have fledged from the nest. This information would meet a reinitiation trigger under this consultation.

Rationale for Concurrence

We concur with your "may affect, not likely to adversely affect" determination largely because the species does not appear to be present in the action area based on recent surveys. Surveys will also be conducted in 2011 to confirm these findings. Additionally, construction activities are proposed to occur largely during daylight hours.

With respect to potential effects to critical habitat, the FHWA has proposed to reduce the footprint of work space for the Webber Creek bridge to eliminate work within designated critical habitat. This is indicated in the project action area maps included in the BA. Work will be restricted to the north and west of the critical habitat polygon. Any potential effects to critical habitat would likely occur at the extreme periphery of the critical habitat polygon which lessens the potential severity of adverse effects to the polygon as a whole.

Given the current inactivity of Mexican spotted owls in the action area, the short project implementation time, and the conservation measures designed to minimize potential adverse effects to the species or its designated critical habitat, we are reasonably certain that potential effects described above are likely to be insignificant.