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AESO/SE  
2-21-01-F-124

May 17, 2001

Mr. Larry G. Sears, District Ranger  
Blue Ridge and Long Valley Districts  
Coconino National Forest  
HC 31 Box 300  
Happy Jack, Arizona 86024

Attn: Beth Humphrey

Subject: Final Conference Opinion on the 13-Mile Rock Allotment Management Plan, Coconino National Forest, Yavapai and Coconino counties, Arizona

Dear Mr. Sears:

This document transmits the U.S. Fish and Wildlife Service's (Service) conference opinion based on our review of the proposed 13-Mile Rock Allotment Management Plan located in the Coconino National Forest, Yavapai and Coconino counties, Arizona, and its effects on Chiricahua leopard frog (*Rana chiricahuensis*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your November 7, 2000, request for formal conference was received on November 13, 2000.

Your November 7, 2000, request also included the proposed critical habitat for the Mexican spotted owl (*Strix occidentalis lucida*). The final designation of critical habitat for the Mexican spotted owl was published in the Federal Register on February 1, 2001 (66 FR 8530). Forest Service land within Arizona and New Mexico, as well as other areas specified in the rule, was not included in the final designation of Mexican spotted owl critical habitat. Therefore, this conference opinion will not address critical habitat for the Mexican spotted owl.

A draft of the conference opinion, dated March 29, 2001, was provided per the Forest Service's request. We received your written comments, dated May 7, 2001, on May 9, 2001. Your comments have been considered and incorporated, as appropriate, into this final conference opinion. Your comments included a concern that the additional parameter for determining if incidental take has been exceeded (page 23 of the draft conference opinion, #1 of the second paragraph) "ties the Forest Service to the conditions stated in the environmental assessment." However, the parameter does not specify the use of numbers or ratings from the environmental

assessment and therefore did not modify the language from the draft opinion. We understand that an assessment may differ based on the factors you described (e.g., observers level of expertise, detail used for data collection, amount of field reconnaissance, etc.) that may or may not equate to an actual change on the ground. We believe that significant changes in assessments of the range conditions should require an appropriate level of comparative analysis to determine whether the change can be attributed to an actual change in range conditions, or to a difference in observers, data collection, different methodology, and/or other factors.

Additionally, please note that in the draft opinion, there was only one term and condition implementing reasonable and prudent measure number one. In response to your comments and to further clarify the intent of the measure, the original term and condition has been broken up into three terms and conditions.

This conference opinion is based on information provided in the November 6, 2000, biological assessment and evaluation (BAE); the October 1999 draft environmental assessment (EA), and other sources of information. A complete administrative record of this conference is on file at this office.

### **Consultation History**

Forest Service Land and Resource Management Plans (Forest Plans) provide guidance and direction for managing National Forests and Grasslands for a 10-15 year period. The plans establish goals, objectives, standards, and guidelines for multiple-use and sustained-yield management of renewable resources. Standards and guidelines for the management and conservation of threatened, endangered, and proposed species, including proposed and (1) designated critical habitat, are included in the Forest Plans. Forest Plans provide direction for the protection and enhancement of all threatened, endangered, and proposed species' populations, (2) habitat proposed or designated as critical, (3) site-specific evaluation of all projects and activities, and (4) initiation of consultation with the Service, as appropriate. These plans, as amended, also contain guidance specific to grazing actions and threatened and endangered species. Certain aspects related to ongoing grazing activities have been considered as part of previous consultations on the Plans and their amendments for the eleven National Forests and National Grasslands of the Forest Service' Southwest Region. Forest Plan consultations did not include an evaluation of site-specific effects to listed species that may result from the continuation of ongoing domestic livestock grazing. However, the Forest Plans, as amended, and the resulting biological opinions issued by the Service, did provide general and specific guidance to be incorporated into site-specific grazing management decisions.

The Coconino National Forest Plan was the subject of a formal section 7 consultation, resulting in a biological opinion dated April 1, 1986 (2-21-83-F-014). The opinion concluded that the Plan was not likely to jeopardize the continued existence of the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus anatum*), Arizona cliffrose (*Purshia* (=

*Cowania subintegra*), or San Francisco Peaks groundsel (*Senecio franciscanus*). The opinion further concluded that the Plan would promote the conservation of these species.

On February 6, 1998, the Regional Director of the Service's Southwest Region and the Acting Regional Forester of the Forest Service's Southwest Region signed a consultation agreement that defined the process, products, actions, and schedule for completion of consultation for the ongoing site specific grazing activities on an allotment-by-allotment basis in the Forest Service's Southwest Region. The management of ongoing grazing is administered under Forest Plans and annual operating plans. The primary focus of the Ongoing Grazing Activities on Allotments of the Southwestern Region of the Forest Service was ongoing grazing on 158 allotments identified in civil cases: *Forest Guardians v. United States Forest Service and Daniel Glickman, U.S. Department of Agriculture*, CIV97-2562 PHX-SMM, filed December 12, 1997, and *Southwest Center for Biological Diversity, et al v. U.S. Forest Service, and Apache-Sitgreaves, Coconino, Coronado, Gila, Prescott, and Tonto National Forests*, CIV97-666 TUC-JMR, filed October 23, 1997. Ongoing grazing activities on additional allotments would be considered as time and resources were available (without compromising the time-line established in the consultation agreement for consultation on the 158 allotments). These two lawsuits were filed due to the Forest Service's noncompliance with the Endangered Species Act for not consulting with the Service on threatened and endangered species.

On February 13, 1998, the Forest Service requested initiation of formal consultation on their ongoing and long-term grazing program. The consultation package contained the basic information required to begin formal consultation and included the "Grazing Guidance Criteria for Preliminary Effects Determinations for Species Listed as Threatened, Endangered, or Proposed for Listing" dated February 13, 1998. As provided for in the consultation agreement, additional information, including an allotment-by-allotment assessment of the effects to listed species and summary cumulative effects analysis were provided in a supplemental biological assessment dated May 1, 1998.

The Service responded on March 5, 1998, with a concurrence on the use of the guidance criteria with conditions. These conditions included: (1) additional criteria for evaluations of effects to listed fish, lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), and Mexican long-nosed bat (*L. nivalis*); (2) maintaining an administrative record for each allotment which supports the "may affect, not likely to adversely affect" determination; and (3) that within six months, the Forest Service and Service would meet to review a sample of the determinations made using these criteria. The Service amended our concurrence letter March 31, 1998, to include a technical clarification. National Forests applying the Guidance Criteria are responsible for documenting how criteria have been met for "no effect" and "may affect, not likely to adversely affect" determinations. These individual allotments where the criteria have been met satisfy informal section 7 consultation requirements.

On July 9, 1998, the Service received the Forest Service's June 30, 1998, notice of preparation of a National Environmental Policy Act (NEPA) document regarding the 13-Mile Rock Allotment Management Plan (AMP), including the renewal of a 10-year grazing permit.

On September 30, 1998, the Service received the Forest Service's September 24, 1998, request for comments on a proposal for managing the rangeland use of the 13-Mile Rock Range Allotment. This proposal appears in the October 1999 EA as Alternative 3.

In a letter dated February 9, 1999, and the attached Decision Memo, the Forest Service informed the Service that you would be implementing the installation of fences and water lanes at lower West Clear Creek in the Heifer Pasture. The fencing and water lanes were part of the overall management proposal for the allotment. However, due to uncertain funding for completing the analysis process, the Forest Service decided to move forward with this action. The Forest Service stated that the "decision was made after careful consideration of the impacts to wildlife and fish species, riparian habitat, recreation use, cultural resources and permitted livestock use, and is not subject to appeal."

On April 24, 2000, the Service received the April 21, 2000, biological assessment analyzing the effects of reauthorizing permitted livestock grazing activities in the National Forest System Lands in the Southwestern Region of the Forest Service on threatened, endangered, and proposed species. In this biological assessment, the Forest Service determined that the proposed 13-Mile Rock AMP was not likely to destroy or adversely modify proposed critical habitat for either the loach minnow (*Rhinichthys cobitis*) or the spikedace (*Meda fulgida*). The assessment also included a summary of consultation determinations that had been made as of March 22, 2000. Consultations regarding the 13-Mile Rock Allotment consisted of "may affect - not likely to adversely affect" determinations for the following species: bald eagle, Gila trout (*Oncorhynchus gilae*), loach minnow, Mexican spotted owl, razorback sucker (*Xyrauchen texanus*) and its critical habitat, southwestern willow flycatcher (*Empidonax traillii extimus*), spikedace, and Yuma clapper rail (*Rallus longirostris yumanensis*). A determination of "no jeopardy" was made for the Colorado pikeminnow (formerly the Colorado squawfish) (*Ptychocheilus lucius*).

On November 1, 2000, the Service received a letter from the Forest Service, dated October 28, 2000, including a summary description of the Preferred Alternative for managing livestock use and rangeland resources on the allotment and the draft EA. The letter also provided notice of the formal 30-day public comment period on the draft EA. The Preferred Alternative was identified as Alternative 5 of the EA. Alternative 5 is the subject of this conference and is described below under "Description of Proposed Action."

On November 13, 2000, the Service received the Forest Service's request for formal conference, dated November 7, 2000, regarding the effect of the proposed action on the Chiricahua leopard frog and proposed critical habitat for the Mexican spotted owl. The request included the November 6, 2000 "Biological Assessment and Evaluation for Mexican Spotted Owl Proposed Critical Habitat and Chiricahua Leopard Frog." The letter states that informal consultation with

the Service had been completed for the Mexican spotted owl on August 26, 1999, through the Streamlined Consultation Process for grazing-related activities proposed in Alternative 5 of the AMP. A determination of “may affect - not likely to adversely affect” was made and concurrence with the finding was received by the Forest Service on December 13, 1999. A separate Biological Assessment and Evaluation regarding the effects of non-grazing related activities was completed on January 3, 2000. A “no effect” determination for Mexican spotted owls was made.

In a letter dated January 30, 2001, the Service acknowledged the initiation of formal conferencing on the Chiricahua leopard frog and proposed critical habitat for the Mexican spotted owl.

In a letter dated March 29, 2001, the Service provided a draft conference opinion for the Forest Service to review and provide comments. Written comments from the Forest Service regarding the draft conference opinion were dated May 7, 2001, and received by the Service on May 9, 2001.

## **CONFERENCE OPINION**

### **I. DESCRIPTION OF PROPOSED ACTION**

The Beaver Creek and Long Valley Ranger Districts of the Coconino National Forest propose to renew the livestock grazing permit for the 13-Mile Rock Allotment. The life of the permit is 10 years. The purpose of the proposed action is to implement Forest Service policy pertaining to livestock forage, to authorize livestock grazing on the 13-Mile Rock Allotment, to provide long term management direction through an AMP, and to reduce the differences between existing and desired condition. The current grazing management was established in a 1987 AMP. Various management adjustments have been made since, leading to the present grazing management plan.

The proposed action is for the issuance of a permit to allow grazing 550 cow/calf and bulls year round. Some modifications to the existing management plan have been developed to further the Forest Service’s land management goals. The proposed AMP includes a plant phenology-based grazing strategy, pattern of grazing use and permitted livestock numbers, and maintenance of existing range structures. Additionally, the AMP includes the addition of range structures, soil and vegetation improvements, pinyon-juniper grassland maintenance, browse species maintenance and improvement, riparian vegetation monitoring and potential restoration at Cottonwood Spring, and general allotment monitoring. The AMP is described more specifically below.

#### *Livestock Grazing Strategy*

- Maximum forage utilization levels would not exceed 40 percent average use within each pasture. This utilization level includes use by wildlife (e.g., elk). Livestock would be moved

to the next pasture scheduled for grazing if the grazing use approaches the 40 percent use level. Where livestock have access to West Clear Creek during the winter dormant period, a 20 percent or less utilization of woody species is acceptable if all three age classes of riparian vegetation are present. Only five percent use is allowed in riparian areas if the middle age class is absent.

- Livestock use would continue to be managed under the current plant phenology-based strategy with the graze half, rest half pattern in the high and mid-elevation pastures and annual use in the low elevation pastures. Pastures would be grazed for 20 days or less during the growing season and up to 60 days during the dormant season. The approximate length of graze for each pasture is planned during development of the annual operating plan (AOP) based on anticipated plant growth and resource needs; the actual length of graze each year can vary from the AOP schedule, depending on the actual plant growth stage encountered in each pasture.
- Wildlife breeding areas and key wintering habitat needs, soil conditions, and vegetative groundcover (plants and litter) would be specifically considered when planning annual livestock grazing use. During drought years, livestock would not be allowed to use pastures scheduled for rest that year.
- The Winter Unit would continue to be grazed for 60 days during the dormant season (January through February) each year until the proposed pasture division fence is installed. When the division fence is complete, the grazing period would be reduced to approximately 30 days in each pasture during the dormant season. Existing livestock trails would be used to move livestock to the less steep country for grazing when livestock are moved into the Winter West Pasture in February.
- Livestock would be moved through the Winter West and Winter East Pastures during June within a maximum of 10 days using existing livestock trails. Livestock would be driven through the pasture and will not be allowed access to West Clear Creek.
- Livestock will be grazed in the Heifer Pasture for approximately 20 days in March. The two restricted access points to West Clear Creek will be used as the water sources for the herd during this grazing period. The herd will then be moved to the Wingfield Mesa group of five pastures.
- During June, livestock will be driven through the Heifer Pasture toward the summer grazing pastures over a maximum of five days. The main herd will move through the pasture in one to two days. The gates to the two restricted livestock access points on West Clear Creek will be closed during this time. If newborn calves cannot move through the pasture with the herd within the anticipated one to two-day move, the calves and their mothers will be allowed to stay for an additional two to three days while the remainder of the herd is moved through the Winter Unit(s). The gates to the water lanes will be opened while the calves and their mothers are allowed to stay in the Heifer Pasture. The calves and their mothers will be moved out of the Heifer Pasture to rejoin the main herd within three days.
- The Toms/Good Enough Pasture would be grazed every other year when the northern tier of pastures is being grazed to synchronize the graze half, rest half strategy with the four allotments to the north of the 13-Mile Rock Allotment.
- The Bob's and Cactus Pastures would not be grazed.

- Three of the four Wingfield Mesa pastures would be grazed each year under a rest-rotation strategy for 100 days each spring, with the sequence of use and rest altered each year among the pastures. The growth rate of cool season grasses would be monitored to determine the allowed length of the grazing period in each pasture.

#### Existing Rangeland Management Structures

- All existing range structures would be maintained, including fencing, dirt tanks, water storages, pipelines, riparian exclosures (Cottonwood Spring), and water lanes at West Clear Creek.
- The bottom barbed wire on old fences would be replaced with smooth wire to wildlife standards. A schedule would be developed for replacing the bottom barbed wire of old fences with smooth wire and raising the height to at least 45.7 centimeters (cm) (18.0 inches (in)) above the ground for exterior and interior pasture fences and waterlots throughout the allotment, except in antelope habitat where the bottom wire should be 53.3 cm (21.0 in) above the ground, within the next 10 years. Wildlife movement patterns and key wintering and breeding locations will determine the priorities for this work. Work with Arizona Department of Transportation (ADOT) to replace and raise the bottom wire on right-of-way fences along SR 260. Gates will be left open at waterlots when livestock leave each pasture.

#### Additional Rangeland Management Structures

- Approximately 4.0 kilometers (k) (2.5 miles(mi)) of three-strand, barbed wire fence (built to wildlife standards) will be constructed to divide the Winter Unit into the Winter East and Winter West Pastures, thereby reducing the length of the graze period from 60 days in the Winter Unit to 30 days each in the Winter East and Winter West Pastures. The fence line will be located from Black Mountain south to Runner and Parsons Tanks, and then to Thirteen-Mile Butte (Figure 1, “New fence”). Water lots will be constructed around Runner and Parsons Tanks to allow access from each of the new pastures.
- Approximately 1.1 k (0.7 mi) of fence between the Heifer and Cactus Pastures needs to be replaced. The fence would be moved to include approximately 65.0 hectares (h) (160 acres (ac)) of what is now the southernmost end of the Cactus Pasture (south of West Clear Creek) into the Heifer Pasture (Figure 1, “Realign fence”). No access to West Clear Creek by livestock would be allowed in this area.

#### Soil and Vegetation Improvements

- In the Maverick Basin South and Tin Can South Pastures, livestock would be used to scarify soils on up to 121 h (300 ac) just before the summer monsoon rains when soils are dry, and an appropriate mix of cool and warm season perennial native grass and forbs species would be planted in selected areas where soil compaction occurs (Figure 1, “Scarify And Seed”). One pasture would be treated at a time and at least one pasture would be treated within the first five years of the 10-year planning cycle. The second pasture would be treated within the first five years only if the treatment and required rest from grazing could be coordinated with thinning and burning projects approved for the Good Enough-Tule 20K area. Scarification and seeding would occur before the summer rains begins (year one) and/or in the fall,

allowing for a short pass-through in the fall and full rest the following year (year two). The next year (year three), the treated pasture may be grazed, depending on the vegetative response to treatment and the plant phenologic stage, soil condition, and precipitation.

- For the Wingfield Mesa pastures, approximately 809 h (2,000 ac) within Terrestrial Ecosystem Survey mapping units 382 and 383 would be prescribe-burned within the first five years to stimulate forage plants and increase plant diversity (Figure 1, “Tobosa Grass Rx Burn”). Approximately 405 h (1,000 ac) would be burned within the first three years, and 405 h (1,000 ac) would be burned during the last two years. Burning would be done during the summer months for maximum smoke dispersal, using existing roads for fire lines and boundaries. Adjacent land owners would be coordinated with. Spot seeding would be done, if needed, with an appropriate mix of native grasses and forbs, immediately after burning.
- Cool season native grasses and forbs will be seeded on productive soil units in the Winter, Heifer, and Wingfield Mesa pastures. Seed will be scattered and livestock used to scarify the soil and plant the seed during the normal grazing operations year.

#### *Pinyon-Juniper Grassland Maintenance*

- Cut, lop, and scatter immature juniper trees on approximately 1,052 h (2,600 ac) of pinyon-juniper grasslands in the Winter, Maverick Basin, Tin Can, and Tanque Aloma Units over the next five years to maintain the savannah-like grasslands (Figure 1, “Lop And Scatter Juniper”). Pinyon-juniper and shrubs would be allowed to fill in on rocky areas. All gambel oak, pinyon, and large alligator juniper trees would remain uncut.
- Christmas tree cutting would be used to harvest juniper trees on 162 h (400 ac) within the southeast corner of the Winter Pasture, and the southern one-third of the Tanque Aloma Pasture within the next five years.

#### *Browse Species Maintenance and Improvement*

- Approximately 405 h (1,000 ac) of decadent browse plants will be prescribe-burned over 10 years in the Winter Unit (Figure 1, “Browse Rx Burn”). Burning will be coordinated with the permittee, cooperating and affected agencies, Tribes, and private individuals. Site-specific burn plans will be developed with criteria to manage impacts to air shed, soils, water quality, wildlife, visual quality, and vegetation.

#### *Riparian Vegetation at Cottonwood Spring*

- Monitor recovery of the woody riparian vegetation within the Cottonwood Spring livestock exclosure for three years. If recovery of these species is slow or not occurring, plant pole-sized woody riparian vegetation. (See “Environmental Baseline” for further information regarding Cottonwood Spring.)

#### *Monitoring*

- Monitor riparian, soil, and vegetative conditions; vegetative ground cover; forage utilization; Best Management Practices (BMPs); impacts to threatened, endangered, and sensitive wildlife, fish, and plant species and cultural resources; and permittee compliance. The

Arizona Department of Environmental Quality monitors water quality and the Arizona Game and Fish Department monitors and manages general wildlife populations.

## II. STATUS OF THE SPECIES

The Chiricahua leopard frog (*Rana chiricahuensis*) was proposed for listing as a threatened species without critical habitat in a Federal Register notice dated June 14, 2000. The rule included a proposed special rule to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Act. This species is distinguished from other members of the *Rana 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 one to two seconds in duration (Davidson 1996, Platz and Mecham 1979). Snout-vent lengths of adults range from approximately 54.0 to 139.0 millimeters (mm) (2.1 to 5.4 in) (Stebbins 1985, Platz and Mecham 1979). The Ramsey Canyon leopard frog (*Rana subaquavocalis*) is similar in appearance to the Chiricahua leopard frog, but it often grows to a larger size and has a distinct call that is typically given under water (Platz 1993).

The Chiricahua leopard frog is an inhabitant of cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 1,000 to 2,710 meters (m) (3,281 to 8,890 feet (ft)) in central and southeastern Arizona; west-central and southwestern New Mexico; and in Mexico, northern Sonora, and the Sierra Madre Occidental of Chihuahua, northern Durango and northern Sinaloa (Platz and Mecham 1984, Degenhardt *et al.* 1996, Sredl *et al.* 1997). The distribution of the species in Mexico is unclear due to limited survey work and the presence of closely related taxa (especially *Rana montezumae*) in the southern part of the range of the Chiricahua leopard frog. In New Mexico, of sites occupied by Chiricahua leopard frogs from 1994-1999, 67 percent were creeks or rivers, 17 percent were springs or spring runs, and 12 percent were stock tanks (Painter 2000). In Arizona, slightly more than half of known historic localities are natural lotic systems, a little less than half are stock tanks, and the remainder are lakes and reservoirs (Sredl *et al.* 1997). Sixty-three percent of currently extant populations in Arizona occupy stock tanks (Sredl and Saylor 1998).

Populations on the Mogollon Rim are disjunct from those in southeastern Arizona. Based on preliminary analysis of allozymes, the Rim populations may represent a taxon distinct from the southern populations (James Platz, Creighton University, pers. comm. 2000). However, mitochondrial DNA work at the University of Denver does not support this conclusion (N. Benedict, pers. comm. 1999). Additional work is needed to clarify the genetic relationship among Chiricahua leopard frog populations.

Die-offs of Chiricahua leopard frogs were first noted in former habitats of the Tarahumara frog (*Rana tarahumarae*) in Arizona at Sycamore Canyon in the Pajarito Mountains (1974) and

Gardner Canyon in the Santa Rita Mountains (1977-78) (Hale and May 1983). From 1983-1987, Clarkson and Rorabaugh (1989) found Chiricahua leopard frogs at only two of 36 Arizona localities that had supported the species in the 1960s and 1970s. Two new populations were reported. During extensive surveys from 1995-2000, primarily by Arizona Game and Fish Department personnel, Chiricahua leopard frogs were observed at 60 localities in Arizona (Sredl *et al.* 1997, Rosen *et al.* 1996, Service files). In New Mexico, the species was found at 41 sites from 1994 -1999; eight of 31 of those were verified extant during 1998-1999 (Painter 2000). During May-August 2000, the Chiricahua leopard frog was found extant at only eight of 34 sites where the species occurred in New Mexico during 1994-1999 (C. Painter, pers. comm. 2000). The species has been extirpated from about 75 percent of its historic localities in Arizona and New Mexico. The status of the species in Mexico is unknown.

Based on Painter (2000) and the latest information for Arizona, the species is still extant in all major drainages in Arizona and New Mexico where it occurred historically; however, it has not been found recently in many rivers, valleys, and mountains ranges, including the following in Arizona: White River, East Clear Creek, West Clear Creek, Silver 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, Sonoita Creek, Pinaleno Mountains, Peloncillo Mountains, Sulphur Springs Valley, and Huachuca Mountains. In many of these regions Chiricahua leopard frogs were not found for a decade or more despite repeated surveys. Recent surveys suggest the species may have recently disappeared from some major drainages in New Mexico (C. Painter, pers. comm. 2000).

Native riparian ecosystems, especially in the arid Southwest, are disappearing rapidly. Because riparian zones often follow the gradual elevation changes of a watershed, they are often desirable for road and pipeline construction leading to greater impacts to riparian ecosystems. In the early years of livestock management, emphasis was on the uplands with very little concern for riparian areas. In fact riparian areas were considered “sacrifice areas” in range management schemes. As a result, serious damage to stream channels and aquatic habitat occurred. It was not until the 1970's that serious consideration was given to managing riparian areas. Riparian areas are widely recognized as crucial to the overall ecological health of rangelands in the western U.S.; however, many are in degraded condition, largely as a result of poorly managed livestock grazing (U.S. General Accounting Office 1988). Livestock tend to congregate in riparian areas for extended periods, eat much of the vegetation, and trample streambanks, often eliminating other benefits of riparian habitat (e.g., fish and wildlife habitat, erosion control, floodwater dissipation). Riparian areas, however, have ecological importance far beyond their relatively small acreage because they have a greater quantity and diversity of plant species than adjoining land.

Threats to this species include predation by nonnative organisms, especially bullfrogs, fish, and crayfish; disease; drought; floods; degradation and destruction of habitat; water diversions and groundwater pumping; disruption of metapopulation dynamics; increased chance of extirpation or extinction resulting from small numbers of populations and individuals; and environmental

contamination. 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 fish in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), bullfrogs (*Rana catesbeiana*), tiger salamanders (*Ambystoma tigrinum mavortium*), crayfish (*Oronectes virilis* and possibly others), and several other species of fish (Fernandez and Rosen 1998, Rosen *et al.* 1996, 1994; Snyder *et al.* 1996; Fernandez and Bagnara 1995; Sredl and Howland 1994; Clarkson and Rorabaugh 1989). 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.

Disruption of metapopulation dynamics is likely an important factor in regional loss of populations (Sredl *et al.* 1997, Sredl and Howland 1994). 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 have disappeared.

Fire frequency and intensity in the mountain ranges of southeastern Arizona and southwestern New Mexico are much altered from historic conditions. 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 20<sup>th</sup> century (Swetnam and Baisan 1996). Absence of ground fires allowed a buildup of woody fuels that precipitated infrequent but intense crown fires (Danzer *et al.* 1997, Swetnam and Baisan 1996). 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). Following the 1994 Rattlesnake fire in the Chiricahua Mountains, Arizona, a debris flow filled in Rucker Lake, a historic Chiricahua leopard frog locality. Leopard frogs (either Chiricahua or Ramsey Canyon leopard frogs) apparently disappeared from Miller Canyon in the Huachuca Mountains, Arizona, after a 1977 crown fire in the upper canyon and subsequent erosion and scouring of the canyon during storm events (Tom Beatty, Miller Canyon, pers. comm. 2000). Leopard frogs were historically known from many localities in the Huachuca Mountains; however, natural pool and pond habitat is largely absent now and the only breeding leopard frog populations occur in man-made tanks and ponds. Crown fires followed by scouring floods are a likely cause of this absence of natural leopard frog habitats. Bowers and McLaughlin (1994) list six riparian plant species they

believed might have been eliminated from the Huachuca Mountains as a result of floods and debris flow following destructive fires.

Recent evidence suggests a chytridiomycete skin fungi is responsible for observed declines of frogs, toads, and salamanders in portions of Central America (Panama and Costa Rica), South America (Atlantic coast of Brazil, Ecuador, and Uruguay), Australia (eastern and western States), New Zealand (South Island), Europe (Spain and Germany), Africa (South Africa, “western Africa”, and Kenya), Mexico (Sonora), and United States (8 States) (Speare and Berger 2000, Longcore *et al.* 1999, Berger *et al.* 1998, S. Hale pers. comm. 2000). Ninety-four species of amphibians have been diagnosed as infected with the chytrid *Batrachochytrium dendrobatidis*. In Arizona, chytrid infections have been reported from four populations of Chiricahua leopard frogs (M. Sredl, pers. comm. 2000), as well as populations of Rio Grande leopard frog (*Rana berlandieri*), Plains leopard frog (*Rana blairi*), lowland leopard frog (*Rana yavapaiensis*), Tarahumara frog (*Rana tarahumarae*), canyon treefrog (*Hyla arenicolor*), and Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*) (Davidson *et al.* 2000, Sredl and Caldwell 2000, Morell 1999, S. Hale pers. comm. 2000). The disease was recently reported from a metapopulation of Chiricahua leopard frogs from New Mexico; that metapopulation may have been extirpated (C. Painter, pers. comm. 2000). The proximal cause of extinctions of two species, the Australian gastric brooding frogs and the golden toad (*Bufo periglenes*) in Costa Rica, was likely chytridiomycosis. Another species in Australia for which individuals were diagnosed with the disease may be extinct (Daszak 2000).

The role of the fungi in the population dynamics of the Chiricahua leopard frog is as yet undefined; however, it may well prove to be an important contributing factor in observed population decline. Rapid death of recently metamorphosed frogs in stock tank populations of Chiricahua leopard frogs in New Mexico was attributed to post-metamorphic death syndrome (Declining Amphibian Populations Task Force 1993). Hale and May (1983) and Hale and Jarchow (1988) believed toxic airborne emissions from copper smelters killed Tarahumara frogs and Chiricahua leopard frogs in Arizona and Sonora. However in both cases, symptoms of moribund frogs matched those of chytridiomycosis. Chytrids were recently found in a specimen of Tarahumara frog collected during a die off in 1974 in Arizona. This earliest record for chytridiomycosis corresponds to the first observed mass die-offs of ranid frogs in Arizona.

The origin of the disease is unknown, but epizootiological data from Central America and Australia (high mortality rates, wave-like spread of declines, wide host range) suggest introduction of the disease into naive 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 global climate change (Daszak 2000, Pounds and Crump 1994). If it is a new introduction, its rapid colonization could be attributable to humans. The fungus 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 (*Bufo marinus* in Australia and bullfrog in the USA) have been found infected with chytrids, suggesting human-induced spread of the disease (Daszak 2000). Chytrids 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, and other animals moving among aquatic sites, or during scientific sampling of fish, amphibians, or other aquatic organisms. The Service and Arizona Game and Fish Department are employing preventative measures to ensure the disease is not spread by aquatic sampling.

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

### III. 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 (50 CFR §402.02). 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 means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. In streams, the action area is often much larger than the area of the proposed project because impacts may be carried downstream with the flow and radiating channel adjustments, both upstream and downstream, are normal whenever stream channels are altered (Dunne and Leopold 1978). The action area for the proposed action is the entire 13-Mile Rock Allotment.

The 13-Mile Rock Allotment is located approximately 77 k (48 mi) south of Flagstaff, north and west of the Mogollon Rim. It is bounded by West Clear Creek to the north, Clover and Tom's Creeks to the east, the Verde River to the west, and State Highway 260 to the south. The allotment is within the Beaver Creek and Long Valley Ranger Districts on the Coconino National Forest and occurs within both Coconino and Yavapai Counties. The allotment covers approximately 15,860 h (39,191 ac) and includes 20 pastures (Figure 2).

Elevations range from 1,158 m (3,800 ft) to 2,073 m (6,800 ft). Vegetation within the allotment is diverse, including 2,583 h (6,271 ac) of desertscrub/grasslands, 8,723 h (21,555 ac) of pinyon-juniper/grasslands, 317 h (784 ac) of pinyon-juniper/pine, 1,745 h (4,311 ac) of ponderosa pine, 1,903 h (4,703 ac) of pine/oak/juniper, 159 h (392 ac) of pine/oak canyons, 317 h (784 ac) of mixed conifer canyons, and 159 h (392 ac) of riparian. The allotment is surrounded mainly by Forest Service allotments (Buckhorn to the north and Hackberry/Pivot Rock and Fossil Spring to the south) with some private land to the west near the Verde Valley.

The allotment is within portions of three 5<sup>th</sup> Code Watersheds (subwatersheds) of the Verde River Basin: Fossil Creek (11 percent of the allotment), West Clear Creek (80 percent), and Horseshoe Reservoir (nine percent). Most of the allotment drains to West Clear Creek, which flows east to west into the Verde River. The Horseshoe subwatershed drains directly into the Verde River. The Fossil Creek subwatershed drains south into Sandrock Canyon, then into Fossil Creek several miles downstream, and finally, to the creek's confluence with the Verde River several miles downstream from the allotment's southwestern boarder. Portions of the Verde River, West Clear Creek, Meadow Canyon, Clover Creek, Toms Creek, and Cottonwood Spring occur within the allotment, encompassing approximately one percent of the total area.

Range condition analysis for this allotment was conducted in 1959 and 1970. Both analyses conclude that the allotment was predominately classed as "poor" or "fair", with a few areas classed as "good." Parker 3-step range transect data is also available from 1953, 1980, and 1998-1999. Recent reports show range conditions across the entire allotment have generally improved, including a stable or upward trend in vegetation and soil stability on nearly all transects. Consolidation of the management of the 13-Mile Rock, Wingfield Mesa, and Tule-Toms allotments in 1981 and the exclusion fencing of the east side of the Verde River to reduce unauthorized and trespass livestock in the mid-1980's are cited as steps in making such improvements. Additionally, the Forest Service believes that the implementation of the current livestock management strategy, which began in 1987, is also a factor in the improving conditions.

In the mid 1970's, the original 13-Mile Rock Allotment was permitted for 310 head of cattle (cow/calf) year-long. In 1981, management of the 13-Mile Rock Allotment was consolidated with the management of the Tule-Toms Creek Allotment and the Wingfield Mesa Range Allotment. Permitted use on these two allotments (125 head, summer use and 125 head, winter use, respectively) were combined with that of the original 13-Mile Rock Allotment. Over time, the number of cattle permitted on the combined allotments increased: 1981-1987 the estimated capacity was 450 head of cattle year-long, in 1988 it was raised to 500, and in 1989 it increased to the current level of 550. The increases resulted from the implementation of the 1987 management plan and a corresponding increase in range capacity.

Current management of the 13-Mile Rock Allotment is year-long grazing with graze half, rest half in mid- to high-elevation pastures. The mid- to high-elevation pastures are where elk and cattle would be competing for forage. The graze half, rest half strategy is synchronized with four allotments to the north to reduce competition between wildlife and livestock over a larger area. The maximum permitted number of livestock is 550 cows/calves and bulls and six horses. Bulls are grazed year-long with cows, therefore calving occurs throughout the year. Movement, control, and grazing use is directly tied to the plant phenological growth stage with dormant season graze periods as long as two months and growth season graze periods of 20 days or less.

In 1998, grazing was eliminated in the Heifer Pasture until livestock access to West Clear Creek could be regulated, particularly during the June vegetation growth season. It is currently being

used as a “driveway” between the Winter Pasture and the Wingfield Mesa East Pasture (east to west) in early spring and then to return west, toward the fall pastures, in late spring. Bob’s and Cactus pastures, which are separated from the main allotment by West Clear Creek, are currently not in use. These pastures were historically grazed by small herds of bulls or heifers. The current permittee does not separate bulls and heifers from the main herd and does not use either pasture. Water sources in Bob’s Pasture are unreliable and livestock are able to access West Clear Creek from the Cactus Pasture.

In general, the existing allotment conditions are as follows. Of the total allotment area, 12,018 h (29,698 ac) (78 percent) of the range is estimated at full capacity, 499 h (1,233 ac) (three percent) is estimated at potential capacity, and 2,944 h (7,275 ac) (19 percent) is estimated to have no capacity. A majority, 13,681 h (33,806 ac) (86 percent), of the soils within the allotment are rated in satisfactory condition, while 2,179 h (5,385 ac) (14 percent) are rated in unsatisfactory condition. None of the three subwatersheds within the allotment have been identified by the State of Arizona as “water quality limited.” Riparian surveys show that West Clear Creek, Clover Creek, and Toms Creek, are in “proper functioning condition” (PFC). Meadow Canyon is rated as “functional.” The PFC determination is based on the interaction of vegetation, landform/soils, and hydrology. Current surveys have not been conducted for the portion of the Verde River adjacent to the allotment or for Cottonwood Spring.

In 1998, one of the watergap fences excluding livestock from Cottonwood Spring was down. Cattle from the allotment trespassed into the riparian corridor resulting in severe damage to riparian vegetation and streambanks and a loss of proper riparian function. The fence was repaired and maintained with no further trespass expected. The area was visited in August 1998 and April 1999 by members of the Interdisciplinary Team of Forest Service resource specialists selected to process the environmental analysis of the AMP. They found in 1998 and 1999 that ground cover vegetation was greatly recovered and in 1999 that woody riparian species were beginning to re-establish, and soil deposition had occurred from recent rains. It is unlikely that Chiricahua leopard frogs would occur within the Cottonwood Spring area. Cottonwood Spring is at an elevation of approximately 975 m (3,200 ft). The Chiricahua leopard frog has not been observed in this portion of its range below 1,524 m (5,000 ft) (M. Sredl, pers. comm. 2001).

The Verde River is not within the allotment, but could be impacted by watershed conditions and management actions on the allotment. The Verde River corridor is also impacted by recreation use, agriculture, and development of private lands. The allotment is fenced to exclude permitted livestock from accessing the river, however, livestock from the allotment are able to trespass into the riverbed when recreationists cut fences in the Wingfield Mesa South Pasture. Trespass livestock from private and Federal land occasionally access the Verde River, also. Prescott National Forest has now fenced the boundary of several allotments to exclude livestock from the river. The stretch of the Verde River adjacent to the 13-Mile Rock Allotment is designated as “Scenic” under the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 *et seq.*). It is used heavily for recreation.

Recreational use within the allotment includes camping, hunting, fishing, hiking, horseback riding, firewood gathering, some four-wheel and all-terrain vehicle driving, and driving for pleasure. Camping use within the allotment is either dispersed or occurs within the developed, but rustic, Clear Creek Campground. The campground is administered by the Forest Service, but currently operated by a recreation concessionaire company. The campground is fenced to exclude livestock. The fence is maintained by the range allotment permittee. Adjacent to SR 260, a portion of the General Crook Trail occurs within the 13-Mile Rock Allotment. The trail crosses West Clear Creek in the Heifer Pasture. The trail was traveled extensively by the military and civilian settlers and their livestock in the late 1800's. The historic trail was recently identified and the portion within the allotment is frequently used by hikers, horseback riders, and some bicyclists.

Currently, conflicts between recreation and livestock grazing are minimal. Pasture gates left open by recreationists, particularly during heavy recreation season in the upper elevations and fall hunting season, results in reduced efficiency and effectiveness of the livestock management strategy (i.e., unwanted grazing in some areas, time and money expenditures to the permittee and the Forest Service). Gates are now wired open in pastures not being used and signs are posted on gates that need to be closed. Past recreationists have often left open gates along the Verde River, allowing livestock access to the river from the Wingfield Mesa pastures. Those gates have now been fenced and blocked, with river access provide to recreationists by cattleguards across main roads.

### **Status of the Species Within the Action Area**

The range of the Chiricahua leopard frog in Arizona can be divided into two general areas: (1) the southeastern part of the state and (2) centered along the Mogollon Rim. Populations occurring in the Coconino National Forest occur within the northern portion of the species' range. Threats to the species occur throughout its range, but the populations above the Mogollon Rim appear to be have relatively poor persistence (J. Rorabaugh, U.S. Fish and Wildlife Service, pers. comm. 2001). Chiricahua leopard frog has been documented in two stock ponds within the 13-Mile Rock Allotment: Wilbur Pasture at New Tank in 1972 and Tanque Aloma Pasture at Tanque Aloma in 1993. Extensive surveys for target reptiles and amphibians, including the Chiricahua leopard frog, were conducted by Arizona Game and Fish Department (AGFD) on the Coconino National Forest between 1992 and 1999. Few Chiricahua leopard frogs were found during these surveys. New Tank and Tanque Aloma were not occupied during the most recent surveys of the sites, conducted in 1996 and 1997, respectively. However, Mud Tank, which is located within the Fossil Creek Allotment adjacent to the 13-Mile Rock Allotment to the south, is currently occupied (C. Taylor, U.S. Forest Service, pers. comm. 2001). AGFD observed Chiricahua leopard frogs approximately 3.0 k (2.0 mi) southwest of Mud Tank in an unnamed tank near Divide Tank in 2000 and approximately 3.0 k (2.0 mi) southwest of that tank at Buckskin Tank in 1999. Also in 1999, the AGFD observed the Chiricahua leopard frog at the Partnership Tank north of approximately 1.6 k (1.0 mi) north of the east end of the Winter

Pasture. Suitable<sup>1</sup> habitat for leopard frogs occurs throughout the 13-Mile Rock Allotment, as well as in the adjacent allotments, in numerous scattered stock ponds, springs, creeks, and drainages. In approximately 1999, the New Tank water source was fenced to exclude livestock. The Forest Service and AGFD are discussing the potential for release of Chiricahua leopard frog tadpoles into New Tank. Tadpole release is also being discussed for Tanque Aloma, but as a supplemental site (C. Taylor, pers. comm. 2001).

Reasons for decline of this species on the Coconino National Forest include habitat and/or metapopulation fragmentation and isolation and the occurrence of introduced predators, including crayfish, bullfrogs, and fish, particularly salmonids and centrarchids (Sredl, *et al* 1995).

There are no previous conference opinions addressing the Chiricahua leopard frog within the action area of the proposed action.

#### IV. 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.

The effects of livestock grazing on ranid frog populations are not well-studied. Munger *et al.* (1994) found that sites with adult Columbia spotted frogs (*Rana luteiventris*) had significantly less grazing pressure than sites without spotted frogs. However, in a subsequent survey he found no differences (Munger *et al.* 1996). Bull and Hayes (2000) evaluated reproduction and recruitment of the Columbia spotted frog in 70 ponds used by cattle and 57 ponds not used by cattle. No significant differences were found in the number of egg masses or recently metamorphosed frogs in grazed and ungrazed sites. Seventeen percent of the sites were livestock tanks. The California red-legged frog (*Rana aurora draytonii*) coexists with managed livestock grazing in many places in California. Ponds created as livestock waters have created habitats for red-legged frogs and livestock may help maintain habitat suitability by reducing coverage by cattails, bulrush, and other emergent vegetation (US Fish and Wildlife Service 2000). On the other hand, exclusion of cattle from the Simas Valley, Contra Costa County, corresponded with reestablishment of native trees and wetland herbs, reestablishment of creek pools, and expansion of red-legged frog populations (Dunne 1995).

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<sup>1</sup>For the purposes of this conference opinion, “suitable” habitat refers to areas that are likely to be inhabitable by the Chiricahua leopard frog. Such habitat may or may not be currently occupied. “Potential” habitat is that which may become “suitable” either through natural processes or with some level of management.

Maintenance of viable populations of Chiricahua leopard frogs is thought to be compatible with well-managed livestock grazing. Grazing occurs in most of the habitats occupied by this frog. For instance, a large and healthy population of Chiricahua leopard frogs coexists with cattle and horses on the Tularosa River, New Mexico (Randy Jennings, Western New Mexico University, pers. comm. 1995). Effects of grazing on Chiricahua leopard frog habitat probably include both creation of habitat and loss and degradation of habitats. Construction of tanks for livestock has created important leopard frog habitat, and in some cases has replaced destroyed or altered natural wetland habitats (Sredl and Saylor 1998). Sixty-three percent of extant Chiricahua leopard frog localities in Arizona are stock tanks, versus only 35 percent of extirpated localities (Sredl and Saylor 1998), suggesting Arizona populations of this species have fared better in stock tanks than in natural habitats. Stock tanks provide small patches of habitat, which are often dynamic and subject to drying and elimination of frog populations. However, Sredl and Saylor (1998) also found that stock tanks are occupied less frequently by nonnative predators (with the exception of bullfrogs) than natural sites.

Adverse effects to the Chiricahua leopard frog and its habitat as a result of grazing may occur under certain circumstances. These effects include facilitating dispersal of nonnative predators; trampling of egg masses, tadpoles, and frogs; deterioration of watersheds; erosion and/or siltation of stream courses; elimination of undercut banks that provide cover for frogs; loss of wetland and riparian vegetation and backwater pools; and spread of disease (U.S. Fish and Wildlife Service 2000, Belsky *et al.* 1999, Ohmart 1995, Hendrickson and Minckley 1984, Arizona State University 1979, Jancovich *et al.* 1997). Creation of livestock waters in areas without aquatic habitats may provide the means for nonnative predators, such as bullfrogs and crayfish, to move across arid landscapes that would otherwise serve as a barrier to their movement. Increased erosion in the watershed caused by grazing can accelerate sedimentation of deep pools used by frogs (Gunderson 1968). Sediment can alter primary productivity and fill interstitial spaces in streambed materials with fine particulates that impede water flow, reduce oxygen levels, and restrict waste removal (Chapman 1988). Eggs, tadpoles, and metamorphosing Chiricahua leopard frogs are probably trampled by cattle on the perimeter of stock tanks and in pools along streams (US Fish and Wildlife Service 2000). Juvenile and adult frogs can probably avoid trampling when they are active. However, leopard frogs are known to hibernate on the bottom of ponds (Harding 1997), where they may be subject to trampling during the winter months. Cattle can remove bankline vegetation cover that provides escape cover for frogs and a source of insect prey. However, dense shoreline or emergent vegetation in the absence of grazing may favor some predators, such as garter snakes (*Thamnophis* sp.), and the frogs may benefit from some open ground for basking and foraging. At a tank in the Chiricahua Mountains, Sredl *et al.* (1997) documented heavy cattle use at a stock tank that resulted in degraded water quality, including elevated hydrogen sulfide concentrations. A die off of Chiricahua leopard frogs at the site was attributed to cattle-associated water quality problems, and the species has been extirpated from the site since the die off.

Chytrid fungus can survive in wet or muddy environments, and could conceivably be spread by cattle carrying mud on their hooves and moving among frog habitats. The disease could also be

spread by ranch hands working at an infected tank or aquatic site and then traveling to another site with mud or water from the first site. Chytrids could be carried inadvertently in mud clinging to wheel wells or tires, or on shovels, boots, or other equipment. Chytrids cannot survive complete drying, thus, if equipment is allowed to thoroughly dry, the likelihood of disease transmission is much reduced. Bleach or other disinfectants can also be used to kill chytrids (Longcore 2000). Chytrids, if not already present, could immigrate to the 13-Mile Rock Allotment naturally via frogs or other animals. Chytridiomycosis is not known to occur within or in the vicinity of the allotment (J. Rorabaugh, pers. comm. 2001), and may have a low probability of immigration to the action area. Conversely, the fungus may be present, but as yet undiscovered.

Chytrids could be moved among aquatic sites during intentional introductions of fish or other aquatic organisms. 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, or perhaps fish and crayfish could all be carriers of chytrids. In addition to possibly introducing chytrids, such activities would also facilitate introduction of nonnative predators with which the Chiricahua leopard frog cannot coexist. Maintenance of roads and tanks needed for the grazing program could provide fishing opportunities and facilitate access by anglers, hunters, or other recreationists, who may inadvertently introduce chytrids or may intentionally introduce nonnative predators for angling or other purposes.

The current grazing regime on the 13-Mile Rock Allotment was established in 1987. Since that time, ground cover, range vegetation conditions, and grass forage production have become stable or improved. Allowable use of upland species in all pastures is a 40 percent. A maximum use of 20 percent of woody species would be allowed where livestock have access to West Clear Creek during the winter dormant period if all three age classes of riparian vegetation are present. If the middle age class is not present, only five percent use would be allowed. Salt would be used to achieve livestock distribution objectives or to correct over-use areas. The salt would be a reasonable distance from water or natural congregating areas, such as swales, drainages, riparian areas, and meadows.

Holecheck *et al.* (1998) recommend average utilization levels of 25-40 percent in arid regions of the Southwest where precipitation is less than 30.0 cm (11.8 in). Annual average precipitation in the 13-Mile Rock Allotment varies from approximately 12.7 to 63.5 cm (5.0 to 25.0 in). They found that generally, as average precipitation increases, utilization can increase. Within the range of utilization rates given, several factors determine whether a low, medium, or high value should be selected. Holecheck *et al.* (1998) suggest that, on ranges in good condition with relatively flat terrain and good water distribution, the higher utilization limit may be appropriate. If the range is in poor or fair condition, or the allotment has thin soils, rough topography, and poor water distribution, the lower utilization rate may be appropriate. Martin and Cable (1974) found that an average of 40 percent utilization on rangeland at the Santa Rita Experimental Range maintained perennial grasses over a 10-year period. Also on the Santa Rita Experimental

Range, Martin (1973) recommended resting pastures during spring-summer and winter two years out of three if forage consumption is limited to 50-60 percent utilization. Martin (1975) also recommended stocking cattle at no more than 90 percent of average proper stocking, but with some reductions during prolonged severe drought. Range condition on the 13-Mile Rock Allotment is in stable or improving condition. Because riparian, ground cover, range vegetation and soil conditions, and grass forage production have all improved since implementing changes in 1987, this suggests current and proposed grazing practices will at least maintain if not result in improvements in range condition and riparian condition. Except for Cottonwood Spring, drainages within the allotment are in proper functioning condition. Cottonwood Spring is improving and pole plantings will be carried out, if needed, to increase the likelihood of restoration of the site.

New Tank appears to have the most suitable habitat of the areas that has been evaluated and/or surveyed to date (M. Sredl, Arizona Game and Fish Department, pers. comm. 2001). Establishment of this tank as a refugium for this and other leopard frog species (i.e., northern leopard frog) within New Tank is currently being discussed by AGFD and the Coconino, however, no formal proposal for this activity has been made. This tank is currently fenced to exclude livestock and does not appear to be occupied by introduced predators (M. Sredl, pers. comm. 2001). Other sites that could provide suitable or potential habitat for the Chiricahua leopard frogs have not been identified to the level needed to determine the suitability of the sites to contribute to a metapopulation dynamic. Information needs include, but are not limited to, presence of introduced predators, availability of dispersal corridors between suitable habitats, and timing of livestock in the area relative to the species' breeding season. The dispersal abilities of Chiricahua leopard frogs are not well understood, but available information and observations suggest the species is able to disperse at least 1.6 k (1.0 mi) over land and 8.0 k (5.0 mi) within drainages (J. Rorabaugh, pers. comm. 2001).

The Coconino National Forest has proposed utilization limits on riparian trees and shrubs in West Clear Creek to minimize damage to riparian vegetation. We are not aware of long-term studies to evaluate the effects of 20 percent utilization rates on riparian trees and shrubs, or whether this is adequate to maintain or enhance riparian vegetation communities. Nevertheless, Chiricahua leopard frogs appear able to coexist with riparian grazing under a variety of circumstances; and we are not aware of evidence suggesting they could not coexist under the grazing regime proposed for this allotment.

Chiricahua leopard frogs breed and deposit egg masses from March through August. Frogs at elevations below 1,798 m (5,900 ft) typically deposit egg masses from spring through late summer, but most activity is before June (Frost and Platz 1983). Thus, most egg deposition is likely to have been completed when cattle are in lower elevation pastures to the west of the allotment that are not likely to be occupied by Chiricahua leopard frogs. However, some potential still exists for trampling of egg masses deposited later in the season. Young tadpoles or metamorphosing frogs that overwintered as tadpoles could also be trampled.

Stock tank maintenance would typically occur when tanks are dry or nearly dry. At that time, dams would be repaired or silt would be dredged out of the tanks. During drought, many leopard frogs probably disperse from drying tanks or are killed by predators as waters recede. However, some frogs persist in cracks in the mud of pond bottoms (M. Sredl, pers. comm. 1999) or in clumps of emergent vegetation. Halfmoon Tank in the Dragoon Mountains went dry during June 1996 for 30 days or more. On July 21, 1996, 29 frogs of several different size classes were counted after the tank refilled with the summer monsoons (J. Rorabaugh, pers. obs.). Frogs probably took refuge in thick mats of cattails around the tank, but may have also stayed in cracks in the drying mud of the pond bottom, in rodent burrows, or other retreats that stayed moist. Frogs present in mud or in emergent vegetation could be killed or injured during silt removal or berm repair. If not killed, they may be flushed from moist retreats and die of exposure or dessication, or be killed by predators. If remaining wetted soils and emergent vegetation are completely disturbed or removed during cleaning out of a tank, a frog population could possibly be eliminated.

### **Summary**

The effects to the Chiricahua leopard frog from the proposed action primarily occur in the riparian (in or associated with wetter areas), wetland communities, and stock tanks within the 13-Mile Rock Allotment. These effects may include enhancing dispersal of nonnative predators by providing a means for them to move across the landscape that otherwise might act as a barrier to their movement. Grazing effects also result from the trampling of egg masses, tadpoles, and frogs from livestock having direct access to aquatic habitat. The introduction of diseases such as chytrids can be moved among aquatic sites by cattle and operations. Reduced tanks may adversely affect the Chiricahua leopard frog. However, well-managed livestock grazing can be compatible with maintenance of Chiricahua leopard frogs.

## **V. 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 conference 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.

A majority of the lands in the action area and adjacent areas are owned and managed by the Coconino National Forest. Thus, the effects of most activities likely to occur in the project area would not be considered cumulative effects. However, private inholdings occur near approximately three to four miles of the western edge of the 13-Mile Rock Allotment. Activities could occur on these lands, such as construction of roads, buildings, or other structures and grazing, that might adversely affect the Chiricahua leopard frog. Some activities on private lands in Arizona may require Federal permits, such as 404 Clean Water Act permits from the US Army Corps of Engineers. Effects of these activities would be covered by the section 7 process and are not considered cumulative. Effects of activities in Arizona that do not have a Federal nexus

could be addressed by a section 10(a)(1)(B) incidental take permit, if the Chiricahua leopard frog is subsequently listed, and if the action may result in take of frogs.

## **VI. CONCLUSION**

After reviewing the current status of the Chiricahua leopard frog, the environmental baseline for the action area, and the anticipated effects of proposed livestock grazing activities on the 13-Mile Rock Allotment, and the cumulative effects, it is the Service's conference opinion that the proposed action is not likely to jeopardize the continued existence of the Chiricahua leopard frog. No critical habitat has been proposed, thus none would be affected. We make these findings for the following reasons:

1. The Chiricahua leopard frog is not known to be extant in the 13-Mile Rock Allotment, although it could occur at one or more sites.
2. The Chiricahua leopard frog occurs over a large area of eastern Arizona, western New Mexico and portions of northwestern Mexico. The proposed action affects a very small portion of the species' range.
3. Chiricahua leopard frogs can coexist with well-managed livestock grazing.
4. The Coconino National Forest has already implemented and has proposed additional measures to protect riparian habitats within the allotment and to protect watershed values and range condition.

## **INCIDENTAL TAKE STATEMENT**

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined 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 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 prohibitions against taking the species found in section 9 of the Act do not apply until the species is listed. However, the Service advises the Forest Service to consider implementing the

following reasonable and prudent measures. If this conference opinion is adopted as a biological opinion following a listing or designation, these measures, with their implementing terms and conditions, will be nondiscretionary, and must be undertaken by the Forest Service so that they become binding conditions of any grant or permit issued to the permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to assume and implement the terms and conditions or (2) fails to require the permittee 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 Forest Service or permittee must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

## **I. AMOUNT OR EXTENT OF TAKE**

Because the occurrence of Chiricahua leopard frogs on the 13-Mile Rock Allotment is uncertain, and because the status of the species could change over time through immigration, emigration, and loss or creation of habitats, the precise level of take resulting from this action cannot be quantified. However, given the presence of Chiricahua leopard frogs on the allotment as recently as 1993 (Tanque Aloma in the Tanque Aloma Pasture), the proximity to other areas (Mud Tank, Partnership Tank, Buckskin Tank, unnamed tank near Divide Tank) where populations of Chiricahua leopard frogs are extant, and lack of recent survey data, Chiricahua leopard frogs are likely to occur during the life of the project (10 years). We estimate that take could occur in the following fashion:

1. Mortality of all frogs at one livestock tank due to maintenance activities.
2. Trampling and destruction of egg masses, small tadpoles, and metamorphs.
3. Mortality of recently metamorphosed frogs at one locality (livestock tank, stream, or spring) due to unintentional introduction of chytridiomycosis resulting from cattle moving among frog populations or unintentional transport of water or mud among aquatic sites by ranch hands.
4. Mortality and lost productivity due to sedimentation of pools, loss of bankline and emergent cover, and other forms of habitat degradation in sites where Chiricahua leopard frogs may occur.

In cases where the extent of anticipated take cannot be quantified accurately in terms of number of individuals, the Service may anticipate take in terms of loss of a surrogate species, food, cover, or other essential habitat elements, such as water quality or quantity (US Fish and Wildlife Service 1998). Thus, in addition to the parameters listed above, the following will also be used to determine if incidental take has been exceeded:

1. Ecological conditions do not remain stable or continue to improve under the proposed livestock management. Improving conditions can be defined through measurable improvements in watershed condition, soil condition, trend and condition of rangelands, riparian conditions, and stream channel conditions within the natural capabilities of the landscape.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If the Chiricahua leopard frog is listed and this conference opinion is subsequently accepted by the Service as a biological opinion, the following conditions apply: 1) If incidental take anticipated in the preceding paragraphs is met, the Coconino should immediately notify the Service in writing. 2) If, during the course of the action, the level of anticipated incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation. In the interim, the Coconino must cease the activity resulting in the take if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species. 3) The Coconino must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures. 4) This conference opinion does not authorize any form of take not incidental to the Coconino's proposed action as described herein.

## **II. EFFECT OF TAKE**

In this conference opinion, the Service finds the anticipated level of take is not likely to jeopardize the continued existence of the Chiricahua leopard frog.

## **III. REASONABLE AND PRUDENT MEASURES**

If the Chiricahua leopard frog is listed, the Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the Chiricahua leopard frog:

1. The Coconino National Forest shall continue to monitor the Chiricahua leopard frog and its habitat to document levels of take.
2. Measures shall be implemented to reduce riparian habitat degradation and trampling of egg masses, tadpoles, and metamorph frogs in occupied sites.
3. Personnel education programs and well-defined operational procedures shall be implemented.

## **IV. TERMS AND CONDITIONS**

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent

measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure number one:

- 1.1 During the first spring after a final listing of the species, the Coconino shall, in coordination with AGFD, identify suitable and potential habitat within the 13-Mile Rock Allotment and develop a prioritized plan and schedule for surveying those sites for the presence of Chiricahua leopard frogs. Factors for prioritizing sites for surveying shall include, but not be limited to, (1) historic use, (2) distance from occupied sites, (3) potential for the site to become occupied, and (4) suitability of the habitat. The plan shall be approved by the Service.
- 1.2 During the first survey period (April through September) after listing, surveys shall be completed on historically occupied sites and sites classified as suitable habitat within 5 k (3.0 mi) of currently occupied sites. Remaining sites shall be surveyed in subsequent survey periods based on the prioritization schedule developed in term and condition 1.1. A report summarizing the methodology and results of all surveys conducted each survey period shall be submitted to the Service annually, on or before December 31 of the same calendar year (i.e., 90 days from the end of the survey period).
- 1.3 If Chiricahua leopard frogs are found, the Coconino shall work with the Service to evaluate effects of the action on the frog and its habitat, and shall develop a plan with the Service within 90 days to minimize the effects of the action on the frog.

2. The following term and condition implements reasonable and prudent measure number two:

- 2.1 If leopard frogs are found within the 13-Mile Rock Allotment, the Coconino shall inform the Service within 10 calendar days and shall work with the Service to develop plans within 90 days for minimizing take of leopard frogs at those sites.

3. The following terms and conditions implement reasonable and prudent measure number three:

- 3.1 Live fish, crayfish, bullfrogs, leopard frogs, salamanders, or other aquatic organisms shall not be moved among livestock tanks or other aquatic sites.
- 3.2 If a site is identified as occupied by Chiricahua leopard frogs, water shall not be hauled to the site from another aquatic site or tank that supports leopard frogs, bullfrogs, crayfish, or fish.
- 3.3 If Chiricahua leopard frogs are found on the 13-Mile Rock Allotment, the permittee shall be required to clean any equipment, boots, etc. used at an aquatic site and treat

with a 10 percent bleach solution, or allow such equipment, boots, etc. to dry thoroughly, before using the same equipment, boots, etc. at another aquatic site on the allotment.

- 3.4 All ranch hands, construction personnel, and others implementing the proposed action shall be given a copy of these terms and conditions, and informed of the need to comply with them.
- 3.5 At least 20 days prior to maintaining or cleaning out livestock tanks, the permittee shall inform the Coconino of planned activities. The Coconino shall survey the tank for Chiricahua leopard frogs<sup>2</sup> and if frogs are found, shall work with the Service to develop and implement a plan to minimize take of frogs. Measures to minimize take should include salvage and temporary holding of frogs, limiting disturbance and work areas to the minimum area practicable, leaving stands of emergent vegetation in place, and/or measures to minimize the likelihood of disease transmission. Plans to minimize take shall be approved by the Service.
- 3.6 The Forest Service shall develop a contingency plan within 120 days of the listing of the Chiricahua leopard frog that will address very dry years when multiple tanks may be proposed for maintenance and/or cleaning. This plan will include, but not be limited to, (1) a list of contacts that may conduct or assist in the surveying of tanks for the presence of Chiricahua leopard frogs prior to tank maintenance/cleaning and/or to assist with the implementation or monitoring of minimization measures, (2) general minimization measures that would be applicable to most tanks, and (3) criteria for prioritizing resources for surveys and implementation of minimization measures. The contingency plan shall be approved by the Service.

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

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to the Service's Division of Law Enforcement, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona (480/835-8289) 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, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact

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<sup>2</sup>Surveys shall include a night visit to prospective habitat during which all or at least 1,200 feet of the best habitat along creeks and the entire perimeter of tanks are searched for frogs. Surveys shall be carried out with flashlights/headlamps, and a dip net shall be used to sample for tadpoles and frogs concealed in undercut banks or at the base of emergent vegetation. Surveyors shall also listen for the distinctive call of the Chiricahua leopard frog (Davidson 1996) and watch for egg masses. Surveys shall be carried out from April-September when frogs are most active.

specimens of listed animal species shall be submitted as soon as possible to this office or the nearest AGFD office, educational, or research institutions (e.g., Arizona State University in Tempe) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, the Service should be contacted regarding the final disposition of the animal.

### **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. We recommend implementation of 2 through 4, below, whether or not the species is listed.

1. If listed, we recommend the Coconino assist the Service in development and implementation of a recovery plan for the species.
2. We recommend the Coconino work with the Service and Arizona Game and Fish Department to reintroduce the Chiricahua leopard frog to suitable habitat in New Tank and other areas identified through habitat assessment and surveys conducted in accordance with terms and conditions 1.1 and 1.2.
3. We recommend the Coconino conduct or support comprehensive surveys/assessments (i.e., studies that would provide information beyond the presence/absence of the species) for the Chiricahua leopard frog in all suitable habitats on the 13-Mile Rock Allotment in coordination with the Arizona Game and Fish Department and the Service.
4. We recommend the Coconino work with the Service and Arizona Game and Fish Department to begin an aggressive program to control nonnative aquatic organisms on the Forest, particularly bullfrogs, fish, and crayfish.

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

### **REINITIATION NOTICE**

This concludes the conference for the 13-Mile Rock Allotment Management Plan. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal

consultation if the Chiricahua leopard frog is listed. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

After listing of the Chiricahua leopard frog as threatened and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of formal consultation 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 conference 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 conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

The incidental take statement provided in this conference opinion does not become effective until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the Chiricahua leopard frog has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take. No take of the species is authorized between the listing of the Chiricahua leopard frog and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

We appreciate your interest in furthering the conservation of this species. If we can be of further assistance, please contact Stefanie Barrett (x230) or Debra Bills (x239) at the Arizona Ecological Services Field Office. Please refer to number 2-21-01-F-124 in future correspondence concerning this consultation.

Sincerely,

David L. Harlow  
Field Supervisor

cc: Regional Director, U.S. Fish and Wildlife Service, Albuquerque, NM (ARD-ES)  
Forest Supervisor, Coconino National Forest, Flagstaff, AZ (Attn: Cecelia Overby)  
John Kennedy, Arizona Game and Fish Department, Phoenix, AZ

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