DRAFT
ENVIRONMENTAL ASSESSMENT
FOR
LESLIE CANYON WATERSHED

(Bar Boot Ranch /99 Bar Ranch)

SAFE HARBOR AGREEMENT

COCHISE COUNTY,

ARIZONA

Prepared by:

U.S. Fish and Wildlife Service

Leslie Canyon National Wildlife Refuge

And

Arizona Ecological Services Office

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

On July 13, 2007 Alysa F. Bennett, 99 Bar Ranch Limited Liability Limited Partnership, (Participant 1), and Mr. Josiah and Mrs. Valer Austin, owners of the Bar Boot Ranch (Participant 2) submitted an application for an Enhancement of Survival Permit and Safe Harbor Agreement under section 10(a)(1)(A) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The Leslie Canyon Watershed Safe Harbor Agreement (USFWS 2008, March 7, 2008) (Agreement) will result in the implement of recovery activities including the reestablishment of the covered species, and the restoration and maintenance of suitable habitat for these species by improving watershed conditions upstream from Leslie Canyon National Wildlife Refuge (NWR), and provide for the natural expansion of covered species into improving species habitats in the upper watershed. The draft Agreement is incorporated herein by reference.

The enrolled properties (99 Bar and Bar Boot ranches) (Figure 1) include 24,585 acres in the upper Leslie Canyon watershed downstream from the Coronado National Forest boundary and upstream from the Leslie Canyon NWR. Under this Agreement, the Participants will work to enhance and maintain the portion of the Leslie Canyon watershed on the enrolled properties. This will be accomplished through the implementation of watershed improvements, such as partial fencing, erosion control activities, and other riparian/hydrologic improvements, and reestablishment of covered species during the 50-year duration of the Agreement and associated section 10(a)(1)(A) Enhancement of Survival permit. The enhancement of survival permit shall cover ongoing land use activities, watershed improvement activities, and species related management and monitoring activities.

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose for which an Environmental Assessment (EA) is being prepared is to:

- respond to Participants' application for a section 10(a)(1)(A) Enhancement of Survival permit for the threatened Chiricahua leopard frog (*Rana chiricahuensis*), endangered Yaqui chub (*Gila purpurea*), endangered Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*), threatened Yaqui catfish (*Ictalurus pricei*), threatened beautiful shiner (*Cyprinella formosa*), and endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) (Covered Species) related to recovery activities that have the potential to result in incidental take, pursuant to the Act section 10(a)(1)(A) and its implementing regulations (50 CFR Parts 13 & 17) and policies (64 FR 32717, 52686, and 69 FR 24084);

- implement recovery activities for the Covered Species, through reestablishment, restoration, and maintenance of suitable habitat by improving watershed conditions upstream from Leslie Canyon NWR, and provide for the natural expansion of Covered Species into the upper watershed;

- ensure compliance with the Act, National Environmental Policy Act (NEPA), and other applicable federal laws and regulations.

1.3 NEED FOR THE PROPOSED ACTION

The need for the action is based on the potential that the management activities proposed by the Participants on the enrolled properties could result in incidental take of the Covered Species, thus the need for a section 10(a)(1)(A) Enhancement of Survival permit.

1.4 DECISION TO BE MADE BY THE RESPONSIBLE OFFICIAL

The scope of the analysis in this EA covers the direct, indirect, and cumulative environmental effects of approving this Agreement and issuing a section 10(a)(1)(A) Enhancement of Survival permit and anticipated future effects of implementation of the Agreement (including the incidental take authorization). The decisions to be made are which alternative to implement and whether the alternative to be implemented will have a significant impact over the existing environment, which would require the preparation of an Environmental Impact Statement.

2.0 ALTERNATIVES

This section presents details of the preferred alternative and other alternatives that have been considered. NEPA requires that Federal agencies consider a range of alternatives that could reduce the environmental impacts of the particular projects under consideration. The analysis of the environmental consequences of these alternatives is discussed in Section 4 of this document.

2.1 ALTERNATIVE 1: NO ACTION

In the No Action Alternative, the U.S. Fish and Wildlife Service (FWS) would not approve the draft Agreement nor issue the associated section 10(a)(1)(A) Enhancement of Survival permit. Therefore, while the private lands upstream of Leslie Canyon NWR are protected from residential development, no other efforts would be made to coordinate improvement of watershed conditions, restoration of habitat, or re-establishment of Covered Species populations within the watershed. Recovery efforts for the Covered Species would primarily occur on Federal lands, with minor participation of non-Federal land owners. The No Action alternative provides the baseline for comparison of environmental effects of the preferred alternative.

2.2 ALTERNATIVE 2: LESLIE CANYON WATERSHED SAFE HARBOR AGREEMENT (PREFERRED)

The preferred alternative is the approval of the draft Agreement and issuance of the section 10(a)(1)(A) Enhancement of Survival permit. The preferred alternative is intended to contribute to the conservation and recovery of the Covered Species.

Under this Agreement, the Participants would be covered by the section 10(a)(1)(A) Enhancement of Survival permit to enhance or create new habitat, protect existing habitat, and/or allow populations of the Covered Species to be re-established on their lands.

Specifically, the management activities in the Agreement will assist in meeting the delisting criteria for beautiful shiner and Yaqui catfish, and the downlisting criteria for Yaqui chub and Yaqui topminnow (USFWS 1995) by securing and protecting Leslie Creek. Additionally, the management activities in this Agreement would assist in recovery efforts for the Chiricahua leopard frog by helping to establish a second metapopulation in Recovery Unit 3 around the Leslie Canyon NWR population (USFWS 2007). It would further improve and create breeding habitat, assist in conductivity with the Coronado National Forest, and reduce threats within the watershed. Huachuca water umbel does not have an approved recovery plan, but reestablishment of this plant in riparian communities and wetted soils has been part of the recovery actions throughout its range and is consistent with these efforts.

The management activities that are identified within the Agreement include:

- restoration and maintenance of riparian vegetation by implementing a series of enhancements to the watershed and riparian vegetation including erosion control projects, management of livestock tanks and ponds, control of invasive species, and upland land treatments;

- control of invasive species, including diseases, that are a distinct threat to the Covered Species (USFWS 1995, 67 FR 40790);

- land treatments to manage grassland and shrub encroachment commonly employed in normal ranching operations that include prescribe fire, herbicide application, and mechanical shrub removal;

- additional measures to enhance vegetation management and Covered Species habitats such as fencing, construction of sediment traps on livestock tanks, creation of additional small refuges, pipelines to assist in persistence of aquatic sites, and maintenance of emergent vegetation to balance both cover and basking sites;

- reestablishment of Covered Species within livestock tanks and ponds pursued in coordination with Arizona Game and Fish Department (AGFD); and,

- continued biological monitoring of reestablished population and adaptive management of these populations and species habitat to adjust management options provided for in the Agreement.

The management activities identified above are expected to provide a net conservation benefit for the Covered Species through watershed improvement activities that will protect and enhance native fish populations and other threatened, endangered, or candidate species that rely on aquatic and riparian resources. These watershed improvement activities will include restoration and maintenance of the native riparian vegetation to improve water storage and recharge, and erosion control to reduce sedimentation and improve soil stability, and reapplication of fire in the

upland vegetation communities through the development and implementation of a fire management plan to be developed for the watershed.

3.0 AFFECTED ENVIRONMENT

The enrolled properties are within the upper watershed of Leslie Creek, which is about 17 miles northeast of the City of Douglas, and about 15 miles east of McNeal, Arizona (see Figure 1). The enrolled properties control activities on the watershed between the Leslie Canyon NWR and the Coronado National Forest, which are the headwaters of Leslie Creek. The 99 Bar Ranch is an approximately 11,585-acre parcel, and is upstream and adjacent to the Leslie Canyon NWR. The 99 Bar Ranch is an active cattle production ranch and was granted a Conservation Easement in December 2001 for the purpose of providing critical watershed protection for Leslie Creek to maintain the integrity of aquatic habitat for endangered and threatened species, and desert riparian habitat for other wildlife species. The Bar Boot Ranch is also located upstream from the Leslie Canyon NWR and is in the process of acquiring a Conservation Easement for approximately 13,000-acres of protected land status. These conservation easements will protect the watershed from development of residential land uses. The Leslie Creek watershed contains ash, willow, and oak riparian communities, and a variety of upland Chihuahuan desert communities including grasslands and juniper/scrub shrublands.

Baseline conditions have been set at zero for the Covered Species for the 99 Bar Ranch, along with baseline conditions for the Bar Boot Ranch, except for the Yaqui chub. An existing population of Yaqui chub was discovered on the Bar Boot Ranch during baseline surveys of the ranch. The baseline condition for Yaqui chub on the Bar Boot Ranch is set at one occupied site. This occupied site must contain a viable population of Yaqui chub with multiple age classes. Enumeration of the population size is difficult for Yaqui chub and biologically irrelevant based upon the natural fluctuations that occur in Leslie Creek on the Leslie Canyon NWR. Population size on the Leslie Canyon NWR may vary from 10,000 to 200 individuals within the same year, and is related to the influences of environmental conditions on mortality and reproduction. Therefore, the baseline conditions for Bar Boot Ranch will be defined as one perennial aquatic site occupied by a viable Yaqui chub population. Population viability will be determined by the presence of a minimum of 200 individuals representing multiple size classes observed in the course of routine monitoring.

3.1 VEGETATION

The affected environment is generally characterized by rolling hills of desert grassland in the valley bottom , and piñon-juniper to oak-dominated woodlands in the upper slopes of the drainage transition. Vegetation within this area includes Sonoran Desert scrub, semi-desert grasslands, mesquite savannas, plains grasslands, Chihuahuan Desert scrub, Madrean oak woodland, and mixed conifer, ponderosa, aspen, and petran (Rocky Mountain) subalpine conifer forest at higher elevations (Brown and Lowe 1980). Grasslands in this area are composed of a variety of primarily native grasses (e.g., *Sporobolus, Bouteloua*) with interspersed shrubs and forbs (*Prosopis, Yucca,* and *Liriodendron*). The Madrean evergreen woodland contains a mix of

open forest (parkland) types, with *Quercus* spp., *Juniperus* spp., and *Pinus* spp. overstories and primarily native grass understories.

Vegetation within riparian communities in the affected environment are very diverse and can include bare-banked livestock ponds, sedges, cattails, coyote willows, mesquites, desert willows, cottonwoods, saltcedar, and Goodings willows. Vegetation within the riparian community are a reflection of the upland vegetation, the elevation, and the local impacts around the aquatic site. Lentic habitats in the area tend to have little emergent vegetation, and submergent vegetation is characterized by *Chara* spp. and *Potamogeton* spp.

Vegetation communities within the affected area are currently impacted by existing land-use activities, such as livestock ranching, recreation, and residential development. Livestock management is conducted by private ranch operators in a patchwork of grazing practices with varying impacts on upland, riparian, and aquatic vegetation. The extent of these impacts, both positive and negative, vary with the grazing intensity, grazing duration, vegetation communities present, and precipitation. Ranch management plans, like those developed with the assistance of NRCS, are developed on some ranches at the discretion of the owner. Construction of new livestock ponds occurs as a need is identified and funding becomes available. This results in a conversion of small localized portions of upland and xeroriparian vegetation communities into aquatic sites with the potential for mesoriparian vegetation communities to colonize saturated soils adjacent to newly constructed ponds. Construction of new wells, water distribution pipelines, and fences would result in localized trimming and removal of vegetation within project areas. These sites would typically be in upland sites, but occasionally will cross riparian vegetation communities. Pipeline construction is usually done along or within existing roadways to minimize vegetation and ground disturbance. Modification of existing habitat would result in impacting some riparian vegetation near the inflow to stock ponds on a short-term basis, but should result in more stable aquatic and riparian vegetation as disturbance from maintenance activities should be less frequent and impact less aquatic vegetation.

Prescribed fires, thinning, and other land treatments occur within the affected area to varying degrees, based upon the landowner/operator's desire and funding availability. Prescribed fire, chaining, pushing, and herbicide use are intended to control shrubs in shrub-invaded grasslands or reduce fuel levels in forested areas. This would result in maintaining grasslands with more historical levels of shrub component than are generally present today. Thinning of forest vegetation would reduce fuels and reduce the likelihood of a stand-replacing catastrophic fire. These activities are designed to maintain existing or historical vegetation types, but the end result is opening up the shrub or canopy cover of many vegetation types.

Recreational activities have very little impact on vegetation communities, but locally severe impacts to vegetation can occur. Recreational activities can be a conduit for invasive, non-native plant species, which could be spread from one area to another. Once these species become established within an ecosystem, they are often difficult to control or eradicate. This often can change the structural components of the surrounding lands and the ecological function. This is often most severe in the case of fire-adapted non-native species invading non-fire-adapted

vegetation communities. The change in fire ecology can result in a complete conversion from native vegetation to the non-native species.

3.2 WILDLIFE

Wildlife present within the affected environment includes those species common to semi-arid grassland and Madrean encinal, and include: desert mule deer (*Odocoileus hemionus crooki*), Coues' whitetail deer (*O. virginianus couesi*), mountain lion (*Felis concolor*), black bear (*Ursus americanus*), bobcat (*F. rufus*), coyote (*Canis latrans*), javelina (*Dicotyles tajacu*), white-nosed coati (*Nasua narica*), scaled quail (*Callipepla squamata*), Gambel's quail (*Lophortyx gambeli*), Montezuma quail (*Crytonyx montezumae*), curve-billed thrasher (*Toxostoma curvirostre*), white-winged dove (*Zenaida asiatica*), black-necked gartersnake (*Thamnophis cyrtopsis*), and Mohave rattlesnake (*Crotalus scutulatus*).

Existing stock ponds are used not only by domestic livestock, but also by many wildlife species. They are not only useful for native species, but also to non-native predators and competitors of Chiricahua leopard frogs. New construction of livestock ponds and improved water supply distribution could result in easier dispersal of these non-native predators and competitors.

Recreation within this area includes the harvest of some game species. If recreational use of off-highway vehicles were to occur in the covered area, it would disrupt wildlife movement and, when used irresponsibly, can result in damage to existing vegetation used by various species of wildlife.

3.3 LISTED, PROPOSED, AND CANDIDATE SPECIES

The FWS has determined that the following listed, proposed, or candidate species occur in the affected area: the endangered jaguar (*Panthera onca*), the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), the threatened Chiricahua leopard frog, the endangered Yaqui topminnow, the endangered Yaqui chub, the endangered Yaqui catfish, the threatened beautiful shiner, the endangered Huachuca water umbel, and the candidate western yellow-billed cuckoo (*Coccyzus americanus*).

Jaguar: The jaguar was listed as endangered from the United States and Mexico border southward to include Mexico and Central and South America (37 FR 6476, 50 CFR 17.11). The species was originally listed as endangered in accordance with the Endangered Species Conservation Act of 1969 (ESCA). Pursuant to the ESCA, two separate lists of endangered wildlife were maintained, one for foreign species and one for species native to the United States. The jaguar appeared only on the List of Endangered Foreign Wildlife. In 1973, the Endangered Species Act (Act) superseded the ESCA. The foreign and native lists were replaced by a single ''List of Endangered and Threatened Wildlife,'' which was first published in the **Federal Register** on September 26, 1975 (40 FR 44412). The jaguar can be characterized as a large, heavy-bodied, big-headed cat with yellowish to tawny, spotted with black rosettes or rings in horizontal rows along the back and sides, with most rings being a tannish color. This species can

be found in Sonoran desertscrub up through subalpine conifer forests, with elevation ranging from 1,600 feet to below 9,000 feet. Threats contributing to the decline of this species include: clearing of habitat, destruction of riparian areas, fragmentation or blocking of corridors may prevent jaguars from recolonizing previously inhabited areas, and shooting and predator control have contributed to its decline.

Southwestern willow flycatcher: The southwestern willow flycatcher was listed as endangered on March 29, 1995 (60 FR 10693), with critical habitat designated on October 18, 2005 (70 FR 60885). The subspecies is a small, migratory bird about six inches (15 cm) long, with grayish-green back and wings, a white throat, a light gray-olive breast, and a pale yellowish belly. There are two wingbars visible and the eye ring is faint or absent. The subspecies nests and forages in dense riparian habitats along streams, rivers, lakesides, and other wetlands. The more common plant species used for nesting include willow, boxelder, tamarisk, Russian olive, buttonbush, cottonwood, and mesquite. Historically, the subspecies range includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico. As of the end of the 2005 breeding season, just over 1200 territories were estimated to occur across its range. Since listing, breeding territories have been detected in all states of its historical range, with the exception of west Texas. In Arizona, since listing, territories have been detected on the Agua Fria, Gila, Little Colorado, Salt, San Pedro, Colorado, San Francisco, Hassayampa, Verde, Big Sandy, Santa Maria, Virgin, and Bill Williams rivers, and Pinal, Tonto and Cienega creeks. Most birds likely winter in Mexico, Central America, and possibly northern South America. Migrating individuals have been documented in the area, but nesting has not been observed. The riparian community in this watershed is to small to be suitable breeding habitat for this species.

Threats to the subspecies include and elimination as a riparian habitat reduction, degradation, result of agricultural and urban development. Other reasons for the decline/vulnerability of the flycatcher include: the fragmented distribution and low numbers of the current population; predation; brood parasitism by cowbirds; and other events such as fires and floods that are naturally occurring, but have become more frequent and intense as a result of the proliferation of exotic vegetation and degraded watersheds, respectively.

Western yellow-billed cuckoo: The western yellow-billed cuckoo is currently a candidate for listing, warranted but precluded by higher priority listing actions (66 FR 38611), as a Distinct Vertebrate Population Segment west of the crest of the Rocky Mountains. It is a medium-sized bird of about 12 in (30 cm) in length, and has slender, long-tailed profile, with a fairly stout and slightly down-curved bill, which is blue-black with yellow on the basal half of the lower mandible (bill). Plumage is grayish-brown above and white below, with rufous primary flight feathers. The tail feathers are boldly patterned with black and white below.

Habitat for the species in the eastern United States consists of parks, riparian woodlands, and other deciduous woodlands. This is in contrast to habitat west of the Continental Divide, where suitable habitat is limited to narrow, and often widely separated, riparian cottonwood-willow galleries (salt cedar is also used). Dense understory foliage appears to be an important factor in

nest site selection, while cottonwood trees are an important foraging habitat. The species is usually found at elevations less than 6,600 ft (2,011 m).

Historically, the species was widespread and locally common in California and Arizona; locally common in a few river reaches in New Mexico; common very locally in Oregon and Washington; generally local and uncommon in scattered drainages of the arid and semi-arid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah; and, probably uncommon and very local in British Columbia Currently, Arizona probably contains the largest remaining population among states west of the Rocky Mountains, but numbers in 1999 are substantially less than some previous estimates for Arizona as habitat has declined. One hundred sixty-eight yellow-billed cuckoo pairs and 80 single birds were located in Arizona in 1999, based on preliminary results from a State-wide survey which covered 265 miles (426 km) of river and creek bottoms. Losses of riparian habitats from historic levels have been substantial in Arizona. Despite this, the species is still found in all counties in Arizona. In Colorado and Idaho, the species is rare, and in Nevada, the remaining breeding populations are threatened with extinction, if not already extirpated. The portion of Texas west of the Pecos River has been identified as within the range of the historic western subspecies, but other authors consider birds from this area most similar to eastern yellow-billed cuckoos. The species occurs in the portion of Texas west of the Pecos River, but its conservation status is unknown. The species is wide spread and uncommon to common in central and eastern Texas. Yellow-billed cuckoos have been documented on Leslie Canyon NWR, and may also occur on the Bar Boot and 99 Bar ranches, but no nesting has been documented in this area. Threats to the species include riparian habitat loss, degradation, and fragmentation.

Information summarized above regarding the Covered Species can be found in the Agreement.

3.4 CULTURAL RESOURCES

Those activities associated with existing livestock ranching, and recreation that do not disturb soil typically do not impact cultural resources. However, any construction work related to livestock ponds, wells, pipelines, and fencing that disturb soil potentially impact cultural resources. Activities like this on State Trust Land go through archeological clearance and review process established through the Arizona State Land Department and the State Historic Preservation Officer (SHPO), in accordance with State law. Soil-disturbing activities on private lands are not required to go through cultural resource surveys or consultation with the SHPO. Only when human remains are found on privately owned property is clearance and consultation with the Arizona State Museum required. Therefore, most construction projects on private property do not have cultural resources inventories conducted prior to construction.

3.5 SOCIOECONOMIC ENVIRONMENT

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, mandates that Federal agencies identify and address, as appropriate, disproportionally high and adverse human health or environmental effects of programs on minority or low-income individuals.

The socioeconomic environment throughout the affected area varies greatly with location. Potential Chiricahua leopard frog conservation sites would range from undeveloped springs and livestock ponds to backyard ponds and captive breeding facilities. The most common potential sites would be livestock ponds, used for watering livestock associated with private grazing operations. These are of economic benefit to the owner/operators of these grazing operations.

3.6 WETLANDS

Areas subject to jurisdiction under Section 404 of the Clean Water Act include those areas that fall at or below the "plane of ordinary high water" of these waterways as defined by 33 CFR 323.2. Natural wetlands that occur within the affected environment are much reduced from historical accounts of the area. Loss of wetlands has been one of the factors that threaten the continued existence of most of our native aquatic and semi aquatic species. Most wetlands are small and centered around small isolated springs or along the margins of small streams. Some small cienegas and marshes exist in the covered area. Current impacts from construction activities in wetlands within the affected environment are regulated through the Army Corps of Engineers and the Arizona Department of Environmental Quality under the authority of the Clean Water Act.

3.7 LAND USE

The existing land use within the affected environment is associated with livestock grazing operations on open rangeland. These same rangelands are used for a variety of outdoor recreational activities, ranging from hunting and fishing to hiking and possible off-highway vehicle use. As the increased demand for rural residential housing continues, especially in outlying areas, there is a general conversion of land use from agricultural to residential.

3.8 WATER RESOURCES

Water resources in the affected environment include a few intermittent reaches of stream and several run-off or groundwater-filled livestock ponds. Water resources in this area also include groundwater that is pumped for agricultural and residential use.

Water use for livestock ranching is fairly constant. New water developments for livestock ranching are developed based upon identified needs to improve livestock operations and to improve livestock movements and utilization of forage across the range. New wells and distribution pipelines are often constructed to provide more reliable water sources than are currently available at existing tanks. Residential water resources may be improved, but major increases are unlikely due to the conservation easements on the Bar 99 and Bar Boot ranches.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 ALTERNATIVE 1: NO ACTION

Under the No Action Alternative, the FWS would not approve a Safe Harbor Agreement for the Covered Species nor issue a section 10(a)(1)(A) Enhancement of Survival permit to cover management activities specified in the Agreement. No management activities would be undertaken to improve the watershed for the protection and enhancement of native fish populations and other threatened, endangered, or candidate species that rely on aquatic and riparian resources.

Specifically, management of existing aquatic sites would be consistent with current land uses, with the majority of these sites managed in association with livestock grazing. Land use of upland vegetation communities would be related to existing land uses, ranging from livestock ranching. Construction of new livestock ponds, wells, and pipelines would continue at the existing rates, based upon funding and the need for new sites for livestock operations. Construction of fences to exclude livestock from all or portions of livestock tanks and natural aquatic sites would occur within the covered area at existing levels to accommodate the needs of livestock operations. Any modifications to existing habitat, like the development of silt traps on existing livestock ponds, would occur to meet needs of the property owner. Modification of existing habitat for the Covered Species is not likely to occur for the conservation of these species under this alternative. Habitat modification may still occur to facilitate management of livestock or recreation needs. Additionally, control of non-native aquatic predators and competitors would not occur in a systematic manner and would likely only occur only on Federal lands. This would result in a situation where non-native species would likely recolonize Federal lands on a periodic basis and control efforts of non-native species would need to be ongoing.

4.1.1 Vegetation

No change in the current impacts to vegetation communities, from those described in section 3.1 above, are expected under this alternative. Conservation of the Covered Species on non-Federal lands would not necessarily be part of the considerations in any management of existing vegetation within the affected area. Any protection of vegetation that provides habitat for the Covered Species would be incidental to existing land uses or through the desires of individual landowners.

4.1.2 Wildlife

No change in the current impacts to wildlife, as described in section 3.2 above, is expected under this alternative. Conservation of the Covered Species on non-Federal lands would not necessarily be part of the considerations in any management of existing wildlife within the affected area.

4.1.3 Listed, Proposed, and Candidate Species

No change in the current impacts to listed, proposed, or candidate species, as described in section 3.3, is expected under this alternative. Conservation of the covered species on non-Federal lands would not necessarily be part of the considerations in any management of listed, proposed, or candidate species within the covered area, unless through some other agreement such as an HCP, individual Safe Harbor Agreement, or a Candidate Conservation Agreement with Assurances. Conservation of the Covered Species would continue on Federal lands consistent with section 7 consultations and recovery activities.

4.1.4 Cultural Resources

No change in the current impacts to cultural resources, as described in section 3.4 above, is expected under this alternative.

4.1.5 Socioeconomic Environment

No change in the current impacts to the socioeconomic environment, as described in section 3.5 above, is expected under this alternative. This alternative will not provide the potential beneficial effects expected from the preferred alternative from additional funding that would be targeted towards conservation that would also be beneficial to livestock operations on non-Federal lands. Furthermore, the assurances given to non-Federal landowners through a Safe Harbor Agreement would not be available to land owners under this Alternative to address the Covered Species that may disperse onto their non-Federally owned lands. This lack of assurances may result in economic issues for landowners who desire to develop their lands at a future time or need to work on an aquatic site in a manner that might result in take of any of the Covered Species.

4.1.6 Wetlands

No change in the current impacts to wetlands, as described in section 3.6 above, is expected under this alternative. This alternative may result in less incentive to maintain permanent wetlands for fear on the landowner's part that the wetland may provide habitat for a species listed under the Act. There would not be the incentives to improve floodplain protection, nor for the ecological function, persistence, and diversity of vegetation communities of the Covered Species.

4.1.7 Land Use

No change in the current impacts to land use, as described in section 3.7 above, is expected under this alternative. Conservation of the Covered Species on non-Federal lands would not necessarily be part of the considerations in any existing land use. Any protection of habitat for the Covered Species would be incidental to existing land uses or through the desires of individual landowners.

4.1.8 Water Resources

No change in the current impacts to water resources, as described in section 3.8 above, is expected under this alternative. Conservation of the Covered Species on non-Federal lands would not necessarily be part of the considerations in any management of existing water resources. Any protection of habitat for the Covered Species would be incidental to existing water resource uses or through the desires of individual landowners.

4.2 ALTERNATIVE 2: LESLIE CANYON WATERSHED SAFE HARBOR AGREEMENT (PREFERRED)

The action under this alternative would be the approval of the Agreement and issuance of the section 10(a)(1)(A) Enhancement of Survival permit to the Participants. Implementation of the Agreement would be an indirect result of the approval of the Agreement and permit issuance.

4.2.1 Vegetation

The Participants propose to undertake management activities that will restore and maintain riparian vegetation through erosion control projects, management of livestock tanks and ponds, control of invasive species, and upland land treatments. Direct erosion control activities, such as rock-and-wire gabion construction or construction of other erosion-control devices (e.g., simple rock dams, earthen dams, and gradient-reduction methods) will provide for the maintenance of important aquatic vegetation for the Covered Species. Additionally, livestock tanks and ponds may be used as rearing/refuge sites for the Covered Species. Invasive species pose a major threat to the Covered Species; therefore the Participants will work to eliminate these threats on the enrolled properties. Land treatments (i.e., fire, herbicide application, and mechanical removal) will be employed to control vegetation on the enrolled properties as a part of normal ranching operations.

Indirect effects of issuing the permit and implementing the Agreement are likely to consist of both short-term negative and long-term beneficial impacts on vegetation in and around the enrolled properties. Management of existing riparian areas and stock tanks to reduce impacts from livestock grazing should enhance vegetation in these areas. In lentic and lotic systems, management of livestock in accordance with a ranch management plan would also likely improve vegetation in existing habitats, or maintain the vegetation that exists, if the livestock management is consistent with, or already under, a ranch management plan. Thus, conservation measures such as partial fencing of livestock ponds and riparian areas could result in improvements, in both quantity and quality, of shoreline and emergent vegetation.

Construction of new tanks or silt traps on existing livestock ponds would result in short-term disturbance of vegetation and potential conversion of upland or xeroriparian vegetation communities into small aquatic sites with patches of mesoriparian vegetation. The frequency of new livestock tank construction is anticipated to be similar to that under the No Action Alternative, as most land owners will establish livestock tanks in response to the needs of their livestock management. In addition, the areas of disturbance associated with implementing the

Agreement are relatively small, usually less than an acre, and are not likely to result in a significant change to vegetation types or distribution.

The impacts from livestock grazing on the vegetation around these livestock ponds and periodic maintenance of these sites would remain unchanged, or may be decreased with partial fencing and the development and implementation of new ranch management plans, which should result in improvements in vegetation cover on participating properties. This in turn should reduce run-off and sediment accumulation in new and existing tanks. Reestablishment of the Covered Species on the enrolled properties and control of non-native predators/competitors is not anticipated to impact vegetation or vegetative communities.

While we anticipate a general improvement in aquatic and riparian vegetation and conversion of upland, forest, and xeroriparian vegetation to aquatic and mesoriparian vegetation over the life of the permit, because of the small size (usually less than an acre) of stock tanks, impacts from construction are insignificant. The cumulative impacts of implementing the proposed Agreement on vegetation communities should generally be beneficial.

4.2.2 Wildlife

No activity directly related to the issuance of this permit and implementing the Agreement should negatively impact wildlife on the enrolled properties. Indirect effects are likely to consist of increased forage, water, and cover resources for existing wildlife species (e.g., white-tailed deer, javelina, Gambel's and scaled quail) through improved management associated with implementation of the Agreement. If new tanks are constructed, they may increase the range of some species by adding additional localities of suitable habitat. However, due to the anticipated small size and scattered distribution, it is not likely to result in any significant range expansions for any native species. The construction of new pipelines, wells, and fences are also not expected to impact wildlife species or their distribution. Modification of existing habitat is likely to increase the diversity of forage and cover resources and improve community diversity by protecting areas or allowing longer periods between disturbances. Reestablishment of the Covered Species at existing or new aquatic sites would likely result in a small increase in local biodiversity by providing an additional forage for some wildlife species and an additional predator of invertebrates and small vertebrates at these locations. The majority of the state's recreational angling and gigging occurs on large lakes and impoundments on State and Federal lands. The potential non-Federal lands involved would not result in significant, negative impacts to recreational opportunities in any portion of the state.

4.2.3 Listed, Proposed, and Candidate Species

No direct impacts to listed, proposed, and candidate species are anticipated from the issuance of the permit and implementation of the Agreement under this alternative. Indirect impacts to listed, proposed, and candidate species would generally occur when implementing the management activities identified in the Agreement, such as construction activities, the reestablishment of covered species, or returning sites to baseline conditions.

Covered Species

The preferred alternative would likely result in substantial benefit to the Covered Species by improving watershed conditions and reestablishing additional populations on the enrolled properties. Changes in management of aquatic sites and surrounding uplands are proposed to minimize impacts from ongoing land uses by implementing the management activities under this Agreement and maintaining baseline conditions identified for the Covered Species. These changes should promote recovery of the Covered Species and incidental take is likely to be minor relative to the anticipated net conservation benefit of the Agreement.

Construction activities under this alternative could be related to creation of new aquatic sites or modifications to existing aquatic sites. Construction to create new aquatic sites would not negatively impact the Covered Species, but would provide benefits by increasing the number of occupied aquatic sites. Construction related to the modification of existing aquatic and riparian communities, such as silt traps, could have a short-term negative impact, but will be offset with the long-term benefits of improvements in water quality and quantity. It would also reduce the frequency of routine maintenance of these modified stock tanks. The potential short-term impacts of modifying existing aquatic communities are related to the need to dry the sites before using heavy machinery. This is typically done through natural drying of a site, but occasionally through pumping. Therefore, Covered Species are not likely to be present during construction, as they have either sought refuge elsewhere – Chiricahua leopard frogs, or have died through desiccation – all Covered Species. In addition, under this alternative there are measures to reduce impacts to Covered Species through salvage and reestablishment. Light construction, such as partial fencing of aquatic and riparian communities, has a small potential to negatively impact Covered Species, but this is outweighed by the improvements to the quantity and quality of emergent and bankline vegetation used for escape cover. Development of new wells and pipelines could have similar impacts as other construction, when associated with riparian communities. However, any activity that would improve the persistence of existing or new aquatic sites would outweigh any short-term impacts related to construction.

The two remaining potential actions associated with this alternative are the removal of non-native predators/competitors, and the reestablishment of covered species populations. Reestablishment of covered species in appropriate aquatic sites is a major management activity of this alternative. Reestablishments will be accomplished with individuals from existing captive populations or thriving wild populations. They will be placed in unoccupied habitats or to augment existing populations on non-Federal lands within the enrolled properties. Reestablishments are proposed to assist in meeting recovery goals. Therefore, these actions would be beneficial to the continued existence of the Covered Species in Arizona and to their eventual recovery.

Incidental take of Yaqui chub in the occupied site on the Bar Boot Ranch can not be covered directly by the section 10(a)(1)(A) enhancement of survival permit held by the Participants. Since it is likely that incidental take of Yaqui chub in this population may occur under this Agreement, FWS will have to analyze the effects of the Agreement and permitted activities on this species to determine if the level of incidental take anticipated at this population site is likely

to reduce the baseline condition for Yaqui chub. If the level of incidental take is likely to go below the baseline condition, this take will need to be addressed through a Habitat Conservation Plan or a separate section 7 consultation, as applicable. If the level of incidental take is not likely to go below the baseline condition for Yaqui chub, the incidental take anticipated will be addressed in our Intra-Service section 7 consultation on the issuance of the section 10(a)(1)(A) Enhancement of Survival permit.

The potential for landowners at the end of their participation to return a site to baseline conditions would have an impact on the Covered Species. The negative impacts of removing population sites reestablished under the proposed Agreement should be outweighed by the reestablishment of population sites above the current baseline for the Covered Species, the reproduction and dispersal of individuals from these reestablishment sites to adjacent Federal lands, and their contribution towards recovery for the 50-year term of the Agreement and associated permit. This Agreement should also be successful in encouraging similar recovery actions on private lands within the range of the Covered Species.

Incidental take of individuals in existing populations and breeding facilities from the capture, handling, holding, moving, and reestablishment efforts will be authorized under separate Section 10(a)(1)(A) Research and Recovery Permits with appropriate terms and conditions to minimize impacts to existing populations and individuals. The impacts of this source of take is addressed through the process of issuing separate Research and Recovery Permits and is not addressed further in this document, other than under cumulative impacts.

Other listed, proposed, or candidate species:

Under this alternative, changes in management of aquatic sites should reduce the impacts from land-use activities on aquatic, riparian, and upland listed, proposed, or candidate species. The management activities should result in long-term improvements of the vegetation communities and limit extreme impacts from existing land use through improving management, timing, and duration of livestock grazing.

Typically, construction of new stock tanks would occur in upland or xeroriparian vegetation communities, not in or near existing aquatic and mesic riparian communities. Therefore, impacts would be primarily limited to upland and riparian species (see section 3.3). These impacts would include the conversion of these species' habitats to an aquatic community, which over time may support a mesoriparian community along its banks. The development of a mesoriparian community around a new livestock tank may provide additional habitat for riparian species, but it would not be in a patch size large enough to provide southwestern willow flycatcher or western yellow-billed cuckoo breeding habitat. Other than the habitat impacts, there may be noise-related impacts during construction which could negatively impact upland and riparian species, but these would typically be reduced through pre-construction surveys and timing such activities to avoid critical nesting and dispersal periods. The impacts from the construction of new wells, water distribution pipelines, and modifications to existing livestock ponds would be similar to those described above, but would likely impact less habitat for upland, riparian, and aquatic species (see section 3.3). New wells and water distribution systems would

have the long-term beneficial impact of providing persistent water sources for aquatic communities. Modification of existing aquatic sites, such as exclusion fencing and silt traps, would reduce the amount and frequency of disturbance from routine maintenance and would provide the long-term benefit of allowing the aquatic and riparian vegetation to attain a more mature age with longer periods between disturbances. Negative impacts associated with construction could be reduced or eliminated through appropriate species-specific surveys, timing of construction to avoid breeding and dispersal seasons, and siting of new facilities outside of the existing habitat of these species.

Reestablishment of the Covered Species in riparian and aquatic communities within their historical range should not result in impacts to upland or riparian species, but is likely to impact aquatic species. The Yaqui fish species have continued to co-exist with Chiricahua leopard frogs on the San Bernardino National Wildlife Refuge and Leslie Canyon NWR. Reestablishment of the Covered Species is not expected to represent a significant impact to these listed, proposed, or candidate species. No impacts are expected on upland species.

The removal of non-native predators and competitors in stock tank sites often is accomplished through fencing a site and pumping the tank dry. This temporarily removes the aquatic site from the landscape. Alternative water sources are often provided for livestock and wildlife species. Therefore, negative impacts to upland species are anticipated to be minor, if any. Riparian species may be negatively impacted by the temporary loss of water, but the riparian vegetation will not likely be impacted, and any long-term impacts are anticipated to be insignificant. Aquatic species will be negatively impacted by the temporary loss of the aquatic site, but the presence of non-native predators and competitors in these simple communities usually result in the eventual exclusion of aquatic sensitive species. Impacts to aquatic species will be minimized through pre-renovation salvage of these species and post treatment reestablishment, when possible. Therefore, the impacts of this type of action may be negative in the short-term, but it has long-term positive benefits for this and other native species.

Potential impacts to other special-status species as an indirect result of capture, monitoring, transportation, and reestablishment of the Covered Species will be covered under a separate section 10(a)(1)(A) Research and Recovery permit for those qualified individuals implementing these management activities. These impacts would be analyzed as part of that permitting process, and while noted in this analysis, these impacts are considered a separate action.

4.2.4 Cultural Resources

No activity directly related to the issuance of this permit and implementation of the Agreement is anticipated to impact cultural resources. Indirect impacts of implementation of this Agreement could occur from construction of new or modification of existing stock tanks, wells, and pipelines. Changes in management of aquatic sites, reestablishment of Covered Species populations, and the removal of non-native predators and competitors will not involve ground-disturbing activities and should not impact cultural or historical resources.

Any construction activities would be part of the normal infrastructure improvements related to a livestock operation. Therefore, the impacts from these activities are not completely associated with this alternative and may be common to both of the alternatives. It is anticipated that the participants will enroll existing aquatic habitat sites, and no disturbance of cultural resources will occur. Any maintenance of existing stock ponds is anticipated to be within the previously disturbed areas and would not impact cultural resources. Any renovations of existing stock tanks or construction of new stock tanks, wells, and pipelines could impact cultural resources and will need to be reviewed at the project level in accordance with local, State, and Federal law. Some of the new construction may be funded through various Federal programs administered by NRCS or administered through AGFD. It is anticipated that AGFD will implement this Agreement with Federal funds, such as traditional section 6 or State Wildlife Grants, and compliance with the National Historic Preservation Act will be consistent with current processes that AGFD has established for existing Federal Aid projects.

Any proposed ground-disturbing activities will go through individual project review and appropriate consultation with the SHPO. It is anticipated that any potential adverse effects to cultural resources will be mitigated in accordance with SHPO requirements or the project sites moved to avoid adverse effects. Construction, ground breaking, and any other activity that may impact cultural resources will be better managed under this alternative than if there were no State or Federal agency involvement. Therefore, it is anticipated that no significant local or cumulative impact to cultural resources is likely to occur under this alternative.

In addition, because of the unique government-to-government relationship between tribal governments, the State of Arizona, and the Federal government, representatives of interested tribal governments will be sent this EA and the Agreement for review during the public review period. If representatives of the tribal governments identify themselves as interested parties, they will be notified of any cultural resources discovered during project planning or implement that potentially could be impacted through implementation of this Agreement.

4.2.5 Socioeconomic Environment

No activity directly related to the issuance of this permit and implementation of this Agreement should impact the socioeconomic environment. There are no indirect effects expected on the permittees from the implementation of this Agreement, as participation is voluntary on each non-Federal landowner's part. The neighboring landowners up and down stream from the enrolled properties are both Federal. In the next watershed to the north a private property owner could have the Covered Species disperse on to his or her property, but he or she has the option to enroll as a neighbor under the Arizona State-wide Chiricahua Leopard Frog Safe Harbor Agreement. The existing section 4(d) rule also recognizes livestock ponds as a benefit to this species, and thus exempts normal maintenance and use of these ponds from the incidental take prohibition for these activities on non-Federal lands. Dispersal of Covered Species from the enrolled properties onto a neighboring Federal grazing allotment may result in a need for the management agency to reinitiate section 7 consultations on the allotments. The Stockpond and Aquatic Habitat Management and Maintenance Guidelines for the Chiricahua Leopard Frog on the Coronado National Forest (USFS 2005) identifies the management actions that would be taken if

Chiricahua leopard frogs would show up in a previously unoccupied allotment. These guidelines are consistent with the existing grazing Biological Opinions and the Chiricahua Leopard Frog Recovery Plan. The covered fish species should not be an issue for the neighboring landowners as they will not disperse across dry land. There are no perennial aquatic sites in the drainage upstream from the enrolled properties, thus no impacts are anticipated for the adjacent Federal allotment permittees. Some costs are associated with applying for a Section 10(a)(1)(B) Incidental Take permit and reinitiating consultation; however, no significant socioeconomic impacts are anticipated.

4.2.6 Wetlands

No activity directly related to the issuance of this permit and implementation of the Agreement should impact wetlands. Indirect impacts of this alternative to the enrolled properties are not expected to be significant. The incentive under this Alternative to improve management of existing wetland resources through the implementation of watershed improvements should result in improvements to ecological function and local beneficial impacts. Any alteration of existing wetlands or fill within waters of the United States will have to be permitted under the Clean Water Act and other applicable State and Federal laws. This includes the construction of new wells and pipelines, or applicable modifications of existing livestock ponds. Any potential effects to wetlands or floodplains would be beneficial through changes in management to improve ecological function, persistence, and habitat diversity.

4.2.7 Land Use

No activity directly related to the issuance of this permit and implementation of the Agreement should impact existing land use. No significant indirect effects are expected from implementation of the Agreement, as it was developed to be compatible with the current land uses. The drilling of new wells and installation of new water distribution pipelines will be in response not only to Covered Species conservation needs, but also to enhance existing land-use practices. No impacts are anticipated on land use by the voluntary reestablishment of Covered Species into aquatic sites, or the removal and control of non-native predators/competitors. No cumulative impacts are anticipated on land use is expected under this alternative.

4.2.8 Water Resources

No activity directly related to the issuance of this permit and implementation of the Agreement should impact water resources. Indirect impacts of implementation of this Agreement may result in improvements to water quality and quantity within and downstream of the enrolled properties. Minor changes in land-use management should improve or maintain vegetative structure in aquatic, riparian, and upland communities. This in turn should improve soil stability and water infiltration, and slow runoff. Construction of new livestock ponds, new well and water distribution systems, and modification of existing habitats may have some initial negative impacts through increased sediment transport, but should eventually improve long-term water quantity, quality, and persistence. All existing water rights would be given preference and any construction of new wells, pipelines, or livestock ponds will need to comply with State and

Federal approval processes for this type of construction. Therefore, site-by-site review will be carried out in accordance with State and Federal law at the time of construction. No impacts on water resources are anticipated from the reestablishment of covered species at or near aquatic sites. The removal and control of non-native predators and competitors may locally reduce water availability in existing aquatic sites, but should be off-set by the temporary availability of alternative water sources. No long-term impact on water resources from removal or control of non-native predators and competitors is anticipated. No significant cumulative impacts are anticipated.

4.3 CUMULATIVE IMPACTS

The Council on Environmental Quality defines cumulative impacts as the incremental impacts of multiple present and future actions with individually minor, but collectively significant effects. Cumulative impacts can be concisely defined as the total effects of the multiple uses and development, including their interrelationships, on the environment. Current impacts to the existing environment within the covered area and impacts from future actions under the Preferred Alternative are described above. Because of the similarity to existing activities, the localized nature of impacts related to the Preferred Alternative, and the temporal nature of these impacts, cumulative impacts are anticipated to be generally neutral or beneficial, and insignificant in and downstream from the enrolled properties.

5.0 PUBLIC INVOLVEMENT

5.1 AGENCY INVOLVEMENT

The draft Agreement and this draft Environmental Assessment were reviewed by AGFD's Nongame Branch, Phoenix, Arizona and Region V Office, Tucson, Arizona.

5.2 PUBLIC REVIEW

This document, along with the Agreement, will be made available for public review. The review period will be for a minimum of 60 days. A Notice of Availability will be mailed to interested parties, tribes, and agencies, and posted on the Arizona Ecological Services Office website (http://www.fws.gov/southwest/es/arizona/).

6.0 LITERATURE CITED

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Appendix A: Figure 1. Map of the Area Covered by the Agreement - Affected Environment