FINAL

MALPAI BORDERLANDS HABITAT CONSERVATION PLAN

FOR PRIVATELY OWNED AND STATE TRUST RANGELANDS IN THE MALPAI BORDERLANDS OF SOUTHERN ARIZONA AND NEW MEXICO

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1.0 Introduction and Background

1.1 Purpose and Need

The Malpai Borderlands Habitat Conservation Plan (MBHCP), has been prepared to address the requirements of the Endangered Species Act of 1973 (Act), as amended which arise in connection with activities and programs proposed by the Malpai Borderlands Group (MBG) and its cooperators in the Malpai Borderlands of southern Arizona and New Mexico. MBG is a non-profit coalition of conservation-minded ranchers who, collectively (i.e., as MBG), function as a grass-roots conservation organization and, individually, own or operate working livestock ranches in the Malpai Borderlands. The issue triggering the MBHCP is that some of the conservation activities undertaken by MBG, and some of the ranching activities undertaken by individual Malpai-area ranchers, have the potential to result in "take" (defined, in part, as killing, harming, or harassment) of endangered and threatened species inhabiting the Malpai Borderlands area. This possibility, in turn, triggers the need for MBG to obtain an Incidental Take Permit (ITP) authorizing such take pursuant to section 10(a)(1)(B) of the Act, and, in support of the application for that ITP, to prepare a "conservation plan" (or MBHCP) which describes how the effects of the take are to be addressed. This is the fundamental statutory basis and purpose for the plan.

Additional purposes of the MBHCP are reflected in the organizational objectives of MBG and the operational needs of its member-ranchers. The essence of the MBHCP is to establish the measures and means required to meet the conservation needs of endangered and threatened species in the Malpai Borderlands, and at the same time to preserve MBG's ability to pursue its organizational objectives, to effectively carry out its activities and programs, and to assist its member-ranchers in carrying out their own activities/programs. The MBHCP has a third purpose, which is reflected in the nature of MBG and its programs. As noted above, MBG is essentially a conservation organization seeking to conserve the natural character of the Malpai Borderlands, the quality of its rangelands, and the role of livestock ranching within it. In this sense, the MBHCP serves the conservation purposes of MBG, as distinct from the purposes of the Act, but in most respects is compatible with and complementary to them. In this sense, too, MBG and the MBHCP play "dual" roles in the Malpai Borderlands; on one hand proposing to undertake activities that might result in take of protected species, but which, on the other hand, also confer long-term ecological benefits to the area and to its constituent fish and wildlife populations.

The MBHCP can therefore be said to serve three needs—a biological need, an organizational need, and a regulatory need. It can also be said to have three purposes corresponding to these needs, which are:

- To establish a program that protects and conserves federally listed species inhabiting the Malpai Borderlands in the course of activities and programs carried out by MBG, Malpai-area ranchers, and other MBG partners and cooperators;

- At the same time, to allow for the carrying out of those activities and programs effectively, efficiently, and over the long-term; and,

- To ensure those activities and programs are also carried out in regulatory compliance with the Act, through the proposed issuance of an ITP to MBG pursuant to section 10(a)(1)(B) of the Act and through such other regulatory protections and assurances as may be appropriate.

The MBHCP seeks to achieve these purposes in a number of ways. It addresses all Act issues connected with 19 species of fish, wildlife, and plants inhabiting the Malpai Borderlands and six sets of activities, three of which are typically undertaken by MBG (referred to as "grassland improvement" activities) and three by Malpai-area ranchers (referred to as "ranch management" activities). It also establishes measures to minimize and mitigate take of these species in the course of carrying out the activities; provides for monitoring and Adaptive Management procedures that allow the terms of the plan to adjust through time to pertinent new information, as necessary; establishes a Technical Advisory Committee to help guide implementation of the plan; and provides for assurances to MBG and its member-ranchers that their responsibilities under the plan are clearly defined, are consistent with their economic and operational needs, and will remain predictable over the life of the plan. The MBHCP seeks to balance the species-based conservation goals deriving from the requirements of the Act with the broader, land-based conservation goals reflected by MBG programs and activities.

1.2 Description of the Applicant

1.2.1 Introduction

The Malpai Borderlands Group is a private, non-profit organization established in 1994 by a coalition of ranchers who live in the Malpai Borderlands, which today consists of about two dozen of the approximately 35 ranchers currently present in the area. Early in the development of the group, they created a mission statement through consensus of the board that has been the basis of all decisions and action since that time. The mission statement is:

> *Our goal is to restore and maintain the natural processes that create and protect a healthy, unfragmented landscape to support a diverse, flourishing community of human, plant, and animal life in our Borderlands Region. Together, we will accomplish this by working to encourage profitable ranching and other traditional livelihoods, which will sustain the open-space nature of our land for generations to come.*

It is important to note that the mission has two distinct components, the first is an ecological goal to maintain the integrity and health of the land, and the second is a socio-economic goal to encourage ranching and other livelihoods that are dependant on the land, all of which will be achieved through a collaborative program.

MBG is governed by a Board of Directors of between 9 and 13 individuals (currently including local ranchers, a scientist, a Vice-President of The Nature Conservancy (TNC), a retired Natural

Resource Conservation Service (NRCS) range conservationist, and a retired U.S. Forest Service range conservationist) and is funded through grants from private foundations, tax-deductible contributions, and, in some cases (e.g., with respect to specific projects) grants from state and Federal agencies. This MBHCP, for example, was developed with the support of Federal funding appropriated through section 6 of the Act and administered through the Arizona Game and Fish Department (AGFD) and New Mexico Department of Game and Fish (NMDGF) as a grant.

In the years since its formation, MBG has initiated, completed, cooperated in, or undertaken on an ongoing basis, a wide array of activities and programs, all of which are directed at the accomplishment of its fundamental mission.

Consistent with this mission, MBG has identified three major objectives for its programs:

- restoration of periodic fire as a functional component of the ecology of the Malpai Borderlands;
- improvement of ecological conditions in and the overall ecological health of the Malpai Borderlands through science-driven management; and
- preservation of the economic and cultural traditions of livestock ranching in the Malpai Borderlands and of the natural, open-space character of the area that makes ranching possible.

1.2.2 Organizational Principles

The establishment of MBG was in response to growing threats to ranching interests in the Malpai Borderlands. Because these threats were numerous and profound, the organization that resulted encompassed a broad vision and adopted organizational principles that, in many ways, departed from the traditional approaches and views of ranching and ranchers.

1.2.2.1 Collaboration and Partnership

MBG recognized that because of a number of factors, including the mixed land ownership in the area, the cost and complexity of the programs it wished to undertake (e.g., improved fire management), and the array of statutes and regulations affecting those programs, including those of the Act, collaboration between the Malpai ranching community and the state and Federal agencies, conservation organizations, and academic institutions of the region (all of which they, like most ranchers, had traditionally distrusted) would be essential to the success of their efforts. Collaborative conservation thus became an MBG hallmark.

1.2.2.2 Science

MBG recognized, early on, that the practice and application of good science would be essential to pursuing their goals. This is important because only science can ultimately resolve many uncertainties about resource management issues in the Malpai Borderlands. Accordingly, MBG wanted rigorous science as a foundation for its programs—not science designed merely to

validate its own views. Malpai rancher Bill McDonald put the matter succinctly: "[We] wanted the best and most credible scientists in the U.S. working with us… If the information and research is honest and unbiased, we'll let the chips fall where they may" (Cook 2001).

1.2.2.3 Fire management

Fire management is a major component of MBG's objectives and programs; with respect to the Malpai Borderlands. Fire has the potential to significantly benefit ecological conditions in the area (e.g., in combating brush encroachment) and, with respect to the MBHCP, also has potential for short-term adverse affects to endangered and threatened species inhabiting the area. However, the potential long-term, beneficial landscape level effect of fire can also beneficially affect endangered and threatened species populations. With respect to all three, fire management will be by far the most complex MBG and MBHCP program to coordinate and carry out; is a multi-faceted issue; and will be treated often and in different ways throughout MBG's proposed fire management program generally and the MBHCP specifically.

Since 1994, the ranchers of the Malpai Borderlands, as the collective Malpai Borderlands Group, have built a respected organization and amassed an impressive record of achievement. Carrying its principles and programs forward, furthermore, MBG continues to seek—in part, through the means of the MBHCP—to balance sustainable ranching with sound land stewardship in the Malpai Borderlands; to earn respect for the role it believes ranching plays in the long-term protection of natural values in the area; to maintain and improve the ecological health of the area (including its biotic health, and the members of that biota that are threatened and endangered); and to promote strategic alliances among the ranching, conservation, regulatory, land management, and scientific communities that are necessary to achieve all this.

1.2.3 Past/Current Activities/Programs

Since 1994, MBG has initiated, completed, and/or carried out, on an ongoing basis, a wide range of activities and programs in pursuit of its purposes and mission. This section provides a summary of these programs which, while not comprehensive, is representative of the kinds of work MBG has undertaken to date and, in part under the authorities of the MBHCP, proposes to continue to undertake in the future.

1.2.3.1 Collaboration/Partnership

As discussed in the previous section, a hallmark of MBG's organizational approach is the principle, adopted at the time of its formation, of collaboration with its member-ranchers, partners, and cooperators from across the land management spectrum. MBG also adopted the principle at that time that collaborative conservation efforts in the Malpai Borderlands are best initiated by the private sector, especially where private lands are involved. These decisions, in part, were a reflection of the role MBG had been established to play within the Malpai Borderlands (i.e., to represent the private sector in the area) and its organizational make-up (which consisted of private individuals in the area whose ranches, and collective interests, encompass the majority of the Malpai Borderlands landscape). Thus, MBG has been in an

excellent position to function based on these approaches. Furthermore, MBG has played a central role in many programs and initiatives in the Malpai Borderlands involving multiple landowners, multiple agencies, or both. It has collaborated with many partners over the years, and has helped broker partnerships, as well.

Among MBG's many partners and cooperators in the Malpai Borderlands are the U.S. Fish and Wildlife Service - Ecological Services Division (FWS) and San Bernardino National Wildlife Refuge (SBNWR), U.S. Forest Service (USFS) - Coronado National Forest (CNF), USFS - Rocky Mountain Research Station (RMRS), U.S. Bureau of Land Management - Gila and Las Cruces Districts (BLM), Natural Resources Conservation Service (NRCS), Arizona Game and Fish Department (AGFD), New Mexico Department of Game and Fish (NMDGF), Arizona State Land Department (ASLD), New Mexico State Land Office (NMSLO); Hidalgo Soil and Water Conservation District, Whitewater Draw Natural Resource Conservation District, Arizona State University, University of New Mexico, and TNC.

1.2.3.2 Science/Monitoring/Research

Another key to MBG's organizational approach is the extent to which it has embraced good science in both its principles and programs. This is seen in MBG's Scientific Advisory Committee, which the group established early on to oversee its science program and which meets annually; and in the many monitoring and research efforts currently occurring in the Malpai Borderlands. A key to the latter is the work being done by the RMRS, the USFS's research arm, under a National Ecosystem Management grant. This has resulted in initiation in the Malpai Borderlands of numerous studies pertinent to a variety of range management issues (with MBG ranchers providing research sites), and in the development of research partnerships between MBG and RMRS, as well as other scientists.

Among the studies completed or underway in the Malpai Borderlands as a result of the RMRS program are the following:

- a study on the effects of the 1997 Maverick prescribed burn on New Mexico ridge-nosed rattlesnakes (Holycross et al. 1999);
- a study of historical fire frequencies in the Malpai Borderlands (Kaib et al. 1999);
- a long-term experimental study of the ecological interactions between fire and grazing at McKinney Flats on the Diamond A Ranch (Brown 1999, Curtin 1999);
- a set of studies examining how fire, alone and in combination with grazing, affects plants and animals in shrub-invaded grasslands (Valone 1999); and
- studies to determine how fire can be managed in woodland/savanna ecosystems to improve watershed function (Gottfried et al. 1999).

In addition, as a result of these and other studies and efforts, MBG, MBG-member ranchers, and other MBG cooperators (e.g., agency and university personnel) have established and currently operate approximately 250 individual monitoring sites in the Malpai Borderlands; these are checked annually, at a minimum, provide information on long-term trends in vegetation

composition and health, and examine a variety of other wildlife, plant, and range management questions and issues.

1.2.3.3 Fire Management

One of MBG's primary organizational objectives is restoration of a more natural fire regime to the Malpai Borderlands. Several important steps toward this goal have been taken, including: in 1993, development of a Memorandum of Understanding (MOU) among MBG and nine Federal, state, and county agencies establishing new fire management policies that allowed for prescribed natural fire or wildland fire use for resource benefit; development by MBG of the Malpai Borderlands Regional Fire Management Map (2006), which identifies the preferences of Malpai-area landowners with respect to three options (consult with owner, contain and control, or suppress immediately) in the event a wildland fire is considered for management as a prescribed natural fire; in 2003, development and approval of the Bootheel Fire Management Plan (Smith 2003), which provides guidance for managing fire in the Malpai Borderlands within New Mexico; development by the USFS (with MBG cooperation) of the Peloncillo Programmatic Fire Management Plan, which establishes fire management policies and goals for the Peloncillo Mountains (USFS 2005); and four prescribed burns undertaken cooperatively by the USFS, MBG, and others on a combination of public and private lands in the Peloncillo Mountains (the 1995 Baker burn, 1997 Maverick burn, 2003 Baker II, and 2006 Cottonwood burn).

1.2.3.4 Safe Harbor Agreement

Beginning in 2000, MBG began development of a Candidate Conservation Agreement with Assurances (CCAA) for the Chiricahua leopard frog. After the Chiricahua leopard frog was listed as threatened under the Act in 2002, the draft CCAA was rewritten as a Safe Harbor Agreement (SHA). SHAs are a mechanism established by the FWS under the Act which provide for voluntary endangered species conservation actions to be undertaken on non-Federal lands, in return for which landowners implementing such measures can obtain regulatory assurances protecting their land-use interests should their conservation efforts increase endangered species populations on their lands. MBG's SHA (Lehman 2004), approved in April 2004, provides for landowners to voluntarily allow recovery activities, such as introduction of leopard frogs into stock watering facilities (i.e., stocktanks), to be implemented on their private and state trust lands in the Malpai Borderlands. It then guarantees that stocktanks into which Chiricahua leopard frogs become established under the SHA may be maintained and used in a relatively unrestricted fashion. After a specified conservation term has been satisfied, the SHA also provides for return of an affected stocktank to "baseline conditions" (i.e., to conditions existing prior to the introduction) at the election of any landowner participating in the SHA.

1.2.3.5 Conservation Easement Program

A principal MBG objective is protection of the Malpai Borderlands against the threat of development. Accordingly, MBG has administered and funded a conservation easement program in the Malpai Borderlands since 1995. Under this program, Malpai-area ranchers who do not want their private ranchlands developed have the option to sell a conservation easement

for those lands to MBG which prohibits subdivision and development of the lands. In these transactions the commodity being sold is the development rights to the lands; the seller of those rights, and grantor of the associated conservation easement, is the rancher and owner of the lands; and the purchaser of those rights, and grantee or holder of the associated easement, is MBG. The cost of the purchase is computed as the approximate monetary value of the development rights (i.e., the difference in the fair market value of the land with those rights versus that value without the rights). In its role as holder of these easements, MBG has the ongoing responsibility of monitoring and enforcing the easement terms. Funding for the easement program has been obtained from grants and donations.

Participation in the program has been considerable. To date, a minimum of twelve Malpai-area ranchers have sold, or under the grassbanking program (see below) exchanged, conservation easements to MBG on lands totaling approximately 77,000 acres in the Malpai Borderlands. These conservation easements help to ensure long-term protection of the rural character of those lands and demonstrate the landowners' commitment to the future of ranching in the Malpai Borderlands. In addition, TNC placed a conservation easement prohibiting development on approximately 227,000 acres of Diamond A Ranch during its ownership of the ranch from 1991 to 1994, which stayed with the land when TNC sold the ranch to the Animas Foundation in 1994. Together with the easements purchased by MBG, approximately 328,000 acres of the Malpai Borderlands are now under protection of long-term conservation easements; this represents almost 40% of the area overall, and almost 71% of privately owned lands in the area.

1.2.3.6 Grassbanking Program

The grassbanking program, administered jointly by MBG and the Animas Foundation, is a creative approach to addressing not one, but two MBG objectives, protecting the Malpai Borderlands from development and improving conditions in its grasslands. The program depends upon and is made possible by Diamond A Ranch—by virtue of its great size, its large and abundant grass supply, and its management as a foundation—and works as follows.

If Malpai-area ranchers wish to rest their lands from grazing they may make a request to MBG and the Animas Foundation to pasture their herds on Diamond A Ranch for a specified time period. Under a grassbanking agreement, the rancher agrees to grant a conservation easement to MBG in exchange for equivalent value of the grass consumed by the rancher's cattle during their pasturage on Diamond A Ranch. The grassbank arrangement is thus an exchange of equal value of the conservation easement, as determined by an appraisal, for the equivalent value of forage based on current pasture lease rates. MBG acts as a liaison in the transaction and becomes the holder of the conservation easement.

MBG development, activities, and achievements have been documented in several publications and a more detailed history of the MBG and the Malpai Borderlands can be found in Hillard (1996), Hadley et al. (2007), and Sayre (2003, 2005).

1.3 MBHCP Planning History

MBG has been exploring whether an HCP of some type could be helpful in the carrying out of some of its programs since approximately 1996. The need became evident in the course of planning the 1997 Maverick burn in the Peloncillo Mountains, when significant challenges in addressing the effects of the proposed burn on the New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*) were encountered. These were resolved through section 7 consultation pursuant to the Act, between the FWS and USFS. However, endangered species issues in the Malpai Borderlands have been addressed on an inefficient, project-by project basis, and, as a result, MBG has been considering more comprehensive alternatives to this approach for some time.

Planning for the MBHCP began in earnest in early 2002, when MBG commissioned a study to determine the scope of the endangered species issue in the Malpai Borderlands in relation to its activities and those of its rancher-members. This resulted in completion, in March 2003, of a report entitled, "Problem Assessment: Endangered Species Act Compliance Issues and Needs in the Malpai Borderlands of Southern Arizona and New Mexico" (Lehman 2003). The report concluded, among other things, that MBG's proposed fire management program carries with it the clearest, most unambiguous likelihood of potentially taking federally listed species, and recommended development of a "focused habitat conservation plan (HCP)" to address take in the course of fire management and a few other activities; and that take in the course of other activities could largely be avoided through suitable take avoidance measures. A multi-species/multi-activities HCP was also considered in the course of this assessment, but was felt, by the primary author, to be justified only if MBG had other, non-regulatory purposes in mind in developing the plan.

Actual development of the MBHCP began in May 2004. To assist in this, a Technical Workgroup was convened which met numerous times during the planning process and consisted of representatives from the FWS, SBNWR, AGFD, NMDGF, NRCS, TNC (as an MBG representative), and an MBG consultant serving as primary author of the plan.

1.4 Regulatory Background

The purposes of the Act, among other things, are to provide for the conservation of fish, wildlife, and plants that are threatened with extinction; to provide a means whereby the ecosystems upon which such species depend may be conserved; and to ensure that Federal departments and agencies conserve endangered and threatened species and utilize their authorities in furtherance of the Act's purposes. The Act is administered, with respect to terrestrial and freshwater fish, by the FWS, and, with respect to marine species and anadromous fish, by the National Oceanographic and Atmospheric Administration - Fisheries (NOAA).

The following sections briefly summarize the Act provisions that are pertinent to the MBHCP.

1.4.1 The "Take" Prohibition.

The Act and Federal regulations (50 CFR 17.31 and 17.32) prohibit the "take" of endangered and threatened species of fish and wildlife. Section 3 of the Act defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct." Federal regulation (50 CFR 17.3) further defines the term "harm" in the take definition to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering." The term "harass" in the definition of take means "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." Thus, take as defined by the Act with respect to fish and wildlife can include direct killing or injury, indirect killing or injury as a result of habitat modification (under the "harm" definition), and significant disruption of essential behavioral patterns (under the "harass" definition).

1.4.2 Section 10(a)/HCPs

During the 1983 Act reauthorization process, Congress amended section 10(a) of the statute to provide for the issuance of ITPs with respect to projects on non-Federal lands that result in take of listed species. Section 10(a)(1)(B) of the Act defines incidental take as take that "is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Under section 10(a)(2)(A), any application for an incidental take permit must include a "conservation plan" that details, among other things, the impacts of the taking on affected species and how those impacts will be minimized and mitigated. Such plans have come to be known as "Habitat Conservation Plans" or "HCPs," and thus represent the supporting document (and biological basis) for an ITP. Under section 10(a)(2)(B) of the Act, the taking under an HCP must be incidental and the HCP must be found to minimize and mitigate the impacts of the taking of affected species to the maximum extent practicable, to provide for adequate funding, and to ensure that the taking will not appreciably reduce the likelihood of the survival and recovery of affected species in the wild.

1.4.3 Critical Habitat

Section 4(a)(3) of the Act provides for the designation of "critical habitat" for endangered and threatened species at the time such species are listed, and, as seen above, section 7(a)(2) requires Federal agencies to ensure that their actions are not likely to adversely modify or destroy critical habitat. Critical habitat comes into play under the Act only in the context of section 7 consultations; thus, critical habitat affects private lands only to the extent that the owners of lands designated as critical habitat undertake actions requiring Federal funding or a Federal permit.

1.4.4 Other Act Provisions

In addition to ITPs under section 10(a)(1)(B), and incidental take statements under section 7, take of federally listed species can also be authorized under the Act through "enhancement of

survival" permits under section 10(a)(1)(A) and special regulations under section 4(d). Enhancement of survival permits authorize take of listed species for the purpose of scientific studies, captive breeding programs, and recovery activities; it is also the mechanism employed to authorize incidental take under Safe Harbor Agreements and Candidate Conservation Agreements with Assurances.

Section 4(d) of the Act permits the FWS to issue protective regulations where deemed necessary to protect threatened species. This is the mechanism under which the FWS in 1975 prohibited take of threatened species generally (since the Act itself prohibits take only of endangered species). Section 4(d) has also been used to authorize incidental take that occurs within the context of activities which otherwise confer a conservation benefit to affected species. For example the FWS authorized take of Chiricahua leopard frog under a section 4(d) rule promulgated concurrently with the listing in 2002, in the course of stocktank maintenance and use on private and state lands (67 FR 40790).

1.4.5 Coordination with State Wildlife Agencies

Arizona currently has no statue regulating species of concern or that lists species as threatened or endangered. However, AGFD does monitor the status of species and addresses the management of those species under planning activities. The Wildlife of Special Concern in Arizona is a list of 116 species for which habitat management should be emphasized by land management agencies. The Wildlife of Greatest Conservation Need under the Comprehensive Wildlife Conservation Strategy addresses the full array of wildlife and habitats, but focuses on identifying and managing the "wildlife and biotic communities of greatest conservation need". AGFD works cooperatively with land management agencies, private landowners, and FWS to conserve species of concern and recover federally listed species.

New Mexico, through the Wildlife Conservation Act (WCA), maintains a list of threatened and endangered species. It further prohibits take of individuals of species listed as endangered under WCA without appropriate permits. A summary of this statute and its relationship to the MBHCP's covered species and other species in the covered area that may be impacted are in Appendix B. MBG may also need to apply for a permit under the scientific or zoological provisions of WCA for species covered by the ITP associated with the MBHCP. If other species in the covered area will be taken that are listed endangered under WCA, the state permit would need to be amended to include those species. These permits may be valid for a single year or may cover multiple years. Reporting requirements for any state permits will be incorporated into the MBHCP annual report, if acceptable by NMDGF. MBG, under WCA, may qualify for "designated cooperator" status through the MBHCP and the associated IA. MBG will explore this option with NMDGF, if applicable.

2.0 Overview of the Planning Area

2.1 Description of the Area

The Malpai Borderlands consists of approximately 865,950 acres (1,353 square miles) of desert landscape which straddles the southeastern corner of Arizona (in Cochise County) and the southwestern corner of New Mexico (in Hidalgo County).[1] Topographically, the Malpai Borderlands is characteristic of the Basin-and-Range geologic region, with rugged, forested north-south trending mountain ranges and broad intervening valleys. The term "Malpai," coined by the ranchers who live there, is an Anglicization of the Spanish "*Mal país*," meaning "badlands," while the term "borderlands" refers to the fact that the area abuts the international border between U.S. and Mexico. Visually, the area resembles an upright triangle with the U.S./Mexican border forming its southern boundary, Arizona Highway 80 forming its diagonal western boundary, and the Arizona/New Mexico border bisecting it south-to-north (Figure 2-1). The Malpai Borderlands encompasses two distinct geomorphic regions: the San Bernardino Valley/southern Peloncillo Mountains on the west side of the area (in Arizona and New Mexico); and the Animas Valley/Animas Mountains on the east side (in New Mexico only).

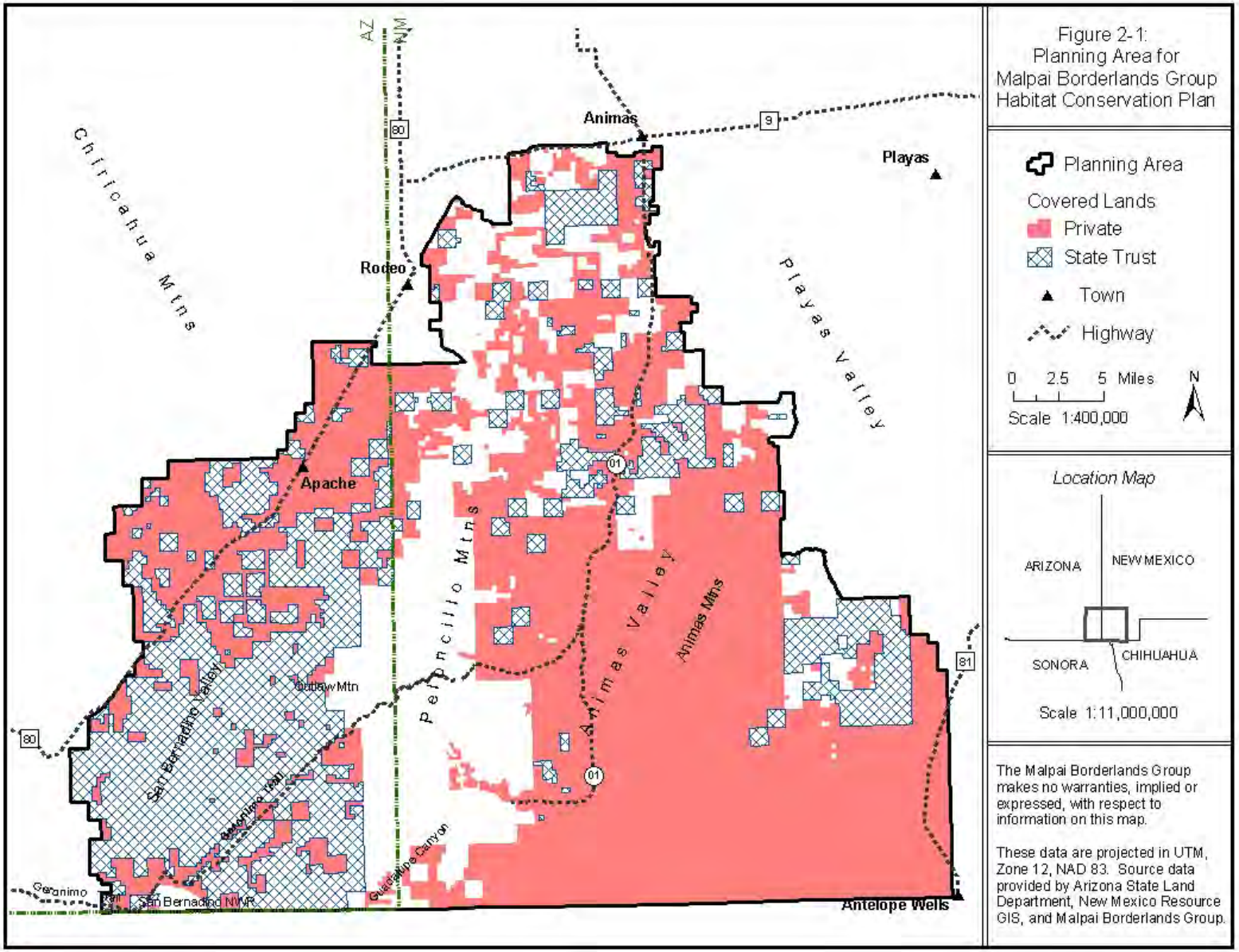
Adjacent to or near the Malpai Borderlands, principal features include: the City of Douglas, Arizona (approximately five miles due west of the southwest corner of the area); the Chiricahua Mountains (the southern end of which lies alongside the area's western boundary); Portal, Arizona (a town at the foot of the east side of the Chiricahua Mountains); Rodeo, New Mexico (a town lying along the area's northwest border); Animas, New Mexico (a town lying just outside the area's northern tip); and Playas Valley and Playas Lake (immediately to the east of the Malpai Borderlands).

2.1.1 Land Ownership/Management

Landownership in the Malpai Borderlands is a mosaic of privately owned lands, State Trust Land, and federally administered public lands. On the San Bernardino Valley/Peloncillo Mountains side of the area, principal public land management agencies are the ASLD, USFS, and BLM. Ranchers in this area operate their grazing programs on their own private lands, as well as on State and Federal lands through grazing leases (Section 2.2.1). Another important land manager on this side is SBNWR, which is administered by the FWS and is situated at the extreme southwestern corner of the Malpai Borderlands and the southern end of the San Bernardino Valley.

The Animas Valley/Animas Mountains side of the Malpai Borderlands is comprised of the 321,700-acre Diamond A Ranch and 12 smaller ranches. The Diamond A Ranch was purchased by TNC in 1991, which in 1994 sold the property to the Animas Foundation, a non-profit organization established expressly to purchase, manage, and administer the ranch. The Diamond A Ranch is subject to a conservation easement established by TNC during the period of its

[1] The area may be variously referred to in the MBHCP as the Malpai Borderlands, or the planning area. The covered area refers to the privately owned and state trust land within the planning area to be covered under the ITP on which the MBHCP applies (see Section 3.4).


AZ
NM
Animas
Playas
Rodeo
Apache
Chiricahua Mtns
Playas Valley
Peloncillo Mtns
Animas Valley
Animas Mtns
Outlaw Mtn
San Bernadino Valley
Geronimo Trail
Guadalupe Canyon
Geronimo
San Bernadino NWR
Antelope Wells
80
9
81
01
Figure 2-1:
Planning Area for
Malpai Borderlands Group
Habitat Conservation Plan
Planning Area
Covered Lands
Private
State Trust
Town
Highway
0 2.5 5 Miles
N
Scale 1:400,000
Location Map
ARIZONA
NEW MEXICO
SONORA
CHIHUAHUA
Scale 1:11,000,000
The Malpai Borderlands Group makes no warranties, implied or expressed, with respect to information on this map.
These data are projected in UTM, Zone 12, NAD 83. Source data provided by Arizona State Land Department, New Mexico Resource GIS, and Malpai Borderlands Group.

ownership, among other things, prevents subdivision or sale of the ranch for development. Today, it is operated both as a working cattle ranch and for conservation and scientific purposes. Of the ranch's total acreage, the Animas Foundation owns 226,900 acres outright and leases 72,400 acres on its east side from the Phelps-Dodge mining company, which purchased that portion of the ranch in 1970 (Wolf 2001). Land ownership is summarized in Table 2-1.

Table 2-1:
Land Ownership in the Malpai Borderlands[1]

Ownership Type	Landowner	Total Acres	% of Total
Private	Private owners	460,000	55%
State	AZ State Lands Dept	125,000	15%
	NM State Lands Dept	72,000	9%
	State subtotal	197,000	24%
Federal	USFS[2]	88,000	11%
	BLM	81,000	10%
	FWS[3]	2,300	0.3%
	Federal subtotal	171,300	21%
Totals		828,300	100%

[1] Source: Wolf (2001); figures are approximate.
[2] Coronado National Forest, Douglas Ranger District.
[3] SBNWR.

2.1.1.1 Privately owned Lands

Privately owned lands are scattered throughout the Malpai Borderlands and are typically intermixed with other ownerships. Most private lands in the Malpai Borderlands are open rangeland operated as livestock ranches.

Approximately 35 separate ranches currently exist in the Malpai Borderlands, 24 of which are currently involved in MBG programs. A "ranch" is typically comprised of a base of privately owned lands together with state trust and Federal lands used for grazing under ASLD, NMSLO, USFS, or BLM grazing leases. Most of these ranches engage in livestock grazing for their primary livelihood, although some also engage in non-ranching (but ranching compatible) activities such as guiding mountain lion hunts. Malpai ranchers vary in size from approximately 15,000 acres to 40,000 acres. Most developed ranch facilities (e.g., houses, barns, etc., with the exception of holding corrals, fences, and watering sources) occur within the private portions of the ranches. However, livestock pastures do not generally observe the boundaries between public, state trust, and private lands, but follow natural features (e.g., ridgelines) or manmade features (e.g., stocktanks). The result is that private lands, state trust lands, and Federal lands are often co-mingled within individual pastures and are effectively indistinguishable from each other, at least for purposes of livestock management.

A second, potentially significant use of private lands in the Malpai Borderlands area has begun to emerge in recent years—rural residential development. To date this is confined to the periphery of the area, especially near the towns of Animas, Rodeo, Portal, and Douglas, where subdivision

of rangeland into 20- and 40-acre parcels (or "ranchettes") appears to be on the increase. Although data are limited, many such lots are available and sales appear to be brisk, with many buyers from outside the region (Sayre 2003). How many of these parcels have been built on or may be built on in the future is unclear; however, the potential for fragmentation and loss of the Malpai Borderland's rangelands represented by such development (or future development) is a primary MBG concern.

2.1.1.2 State trust Lands

(A) Arizona. State trust lands on the Arizona side of the Malpai Borderlands were established in 1912 under the Arizona Enabling Act. Under the Arizona Enabling Act, the State of Arizona was granted ownership of four sections of land per township; however, because the land in many townships was already claimed, the state was authorized to claim *in lieu* sections elsewhere, including the Malpai Borderlands. As a result, state lands are scattered throughout much of the Malpai Borderlands and in some areas (e.g., the San Bernardino Valley) are concentrated into relatively large blocks. These state trust lands are owned and administered by ASLD and are managed primarily to produce revenue for the Arizona State Trust, which supports 14 beneficiaries, including the state's school system, hospitals, and penitentiaries. In the Malpai Borderlands, state trust lands are leased primarily for livestock grazing.

(B) New Mexico. State trust lands on the New Mexico side were initially established in 1850 under the Organic Act, which created the Territory of New Mexico and set aside sections 16 and 36 of every township to support the schools of the territory. This was followed in 1898 by legislation that expanded the beneficiaries of these territorial lands to include universities, hospitals, charitable organizations, and penitentiaries. In 1910, the New Mexico Enabling Act, which established New Mexico statehood, added sections 2 and 32 of every township as state trust lands. New Mexico state trust lands are owned and administered by NMSLO, which today manages roughly 9 million acres of surface land and 13 million acres of subsurface mineral rights on behalf of 21 beneficiaries; the proceeds of each acre of these lands is designated to a specific institution, with the majority held in trust for public schools. New Mexico state trust lands are managed for a wide variety of uses including livestock grazing; development of oil, gas, mineral, and geothermal resources; water exploration and development; recreational development; and recreational and educational activities.

2.1.1.3 Federal Lands

Federal lands in the Malpai Borderlands principally occur in three areas. The most prominent of these geographically are the Peloncillo Mountains, a north-south trending range the southern end of which straddles the Arizona-New Mexico border near the center of the Malpai Borderlands. This area comprises approximately 85,000 acres and is managed by the USFS, as part of the CNF Douglas Ranger District. The Peloncillo Mountains represent one of 12 so-called "sky islands" (high-elevation mountain ranges that rise from the desert floor and support diverse floral and faunal arrays) occurring in the CNF. The Peloncillo Mountains themselves extend to 6,625 feet in elevation.

Much smaller in size, but of major ecological importance, is the 2,309-acre SBNWR managed by the FWS. SBNWR lies at the southern end of the San Bernardino Valley on the Arizona-Mexico Border within an elevation range of 3,700 to 3,900 feet. The importance of this refuge lies in the fact that it encompasses the lower reach of Black Draw, one of the few significant riparian corridors in the Malpai Borderlands. It contains scattered riparian, marshland, and aquatic habitats that are the result of artesian wells and seeps. It supports populations of federally listed fish that occur nowhere else in the Malpai Borderlands and in few locations elsewhere (Section 4.1). Protecting these habitats and fish represents the primary mission of the SBNWR and was the principal reason for its establishment in 1982.

In addition to the above, portions of the Malpai Borderlands are owned and administered by BLM. BLM lands in the Malpai Borderlands occur primarily as scattered parcels in and to the east of the northern end of the area, but also include a few sections south and southwest of the Peloncillo Mountains.

2.1.2 Environmental Setting

The Malpai Borderlands is part of the "basin and range" geologic region, which encompasses much of the American west and is characterized by linear mountain ranges separated by broad, flat basins. The Malpai Borderlands consists of three basins (the San Bernardino, Upper San Simon, and Animas valleys) separated by two ranges (the Peloncillo and Animas mountains). In addition, the Continental Divide (with a maximum elevation of just over 9,000 feet) runs along the crest of the Animas Mountains.

The Malpai Borderlands are an area of exceptional biological diversity. This is a function of both elevational range (valley bottom to mountain top) and the fact that the area lies at the convergence of several major topographic regions and plant and animal biotic communities. Here, the southern end of the Rocky Mountain biotic region (with a temperate climate) terminates and the northern end of the Mexican Highlands biotic region (with a subtropical climate) begins; the Malpai Borderlands and surrounding area thus represent the northern tip of the ranges of a number of subtropical species (Brown 1982). Illustrating the former is the periodic occurrence of jaguars in the Malpai Borderlands, one of which was photographed in the Peloncillo Mountains by MBG rancher Warner Glenn in 1995 (Glenn 1996) and another in the Animas Mountains in 2006 (Warner Glenn, pers. comm.). The Malpai Borderlands also lie at the juncture of the Sonoran and Chihuahuan deserts and the edge of the American high plains and support at least ten vegetation associations. As a result of this range of elevation, topography, and vegetation communities, the Malpai Borderlands region supports approximately 400 species of vertebrates, including 264 birds (137 of which breed in the area), 55 reptiles and amphibians, and 80 mammals, as well as a long list of invertebrates (Wolf 2001).

The climate of the Malpai Borderlands is semi-arid with relatively low precipitation, low humidity, and high summer temperatures. Precipitation averages 12 to 24 inches per year depending on elevation and falls primarily during two rainy periods—summer rainfall, which usually occurs in local torrential convection showers; and winter rainfall, which is usually slow and can occur over several days duration.

2.2 Land Use Management

The Malpai Borderlands have been occupied by humans since the archaic period, 3,500 years before present (BP) and likely to approximately 10,000 years BP (Fish et al. 2006). The current condition of the landscape is due to a combination of natural and human related factors primarily the result of a combination of events in the early 1900s. Much of our discussion of ecological condition of this landscape is related to historical uses and climatic conditions of this area which are summarized in Appendix D.

2.2.1 Livestock Grazing Management in the Malpai Borderlands

2.2.1.1 State Trust Lands

Livestock grazing on state trust lands is governed by grazing leases issued to individual ranchers by ASLD in Arizona and NMSLO in New Mexico. The principal components of ASLD and NMSLO grazing leases are:

- the term of the lease (usually 10 years);
- the permissible stocking rates (typically expressed as animal-units, or AUs); and
- a requirement for the lessee to obtain range improvement and land treatment permits for the construction of ranch facilities (e.g., fencelines) or to undertake certain management efforts (e.g., mesquite control or prescribed burns) on state trust lands.

ASLD and NMSLO leases are typically renewable upon the expiration of the lease at the request of the lessee, provided there were no major lease defaults during the previous lease term.

ASLD, with respect to its role in administering leases, has entered into two agreements with other Arizona state agencies—a Memorandum of Understanding (MOU) with the Arizona Game and Fish Commission (AGFC), and a programmatic agreement with the Arizona State Parks Board's State Historic Preservation Office (SHPO). The February 1987 MOU with AGFC concerns the enhancement of wildlife and other resource values on state trust lands and commits ASLD, among other things, to:

- notify the AGFD of all proposed projects or actions that may affect wildlife habitat on state trust lands (including grazing management plans and alteration of vegetation by fire, chemical, or mechanical means);
- to consult with and obtain recommendations from AGFD prior to initiation or authorization of such projects or actions; and
- to allow the AGFD to conduct wildlife census and habitat evaluations on state trust lands.

In accordance with this MOU, ASLD routinely forwards the range improvement and land treatment permit applications it receives to AGFD for review. ASLD generally incorporates AGFD recommendations into the range improvement and land treatment permits it issues.

The August 2000 programmatic agreement with the SHPO concerns the protection of sites that may qualify for inclusion on the Arizona Register of Historic Places. The agreement commits ASLD to establish a program that ensures that archeological and historic sites on state trust lands are not inadvertently harmed or sold as a result of ASLD actions, including issuance of range improvement and land treatment permits. In practice, this means that locations subject to ground-disturbing activities are routinely surveyed prior to commencement of the activities being considered, to determine whether archeological or historical sites are present, and that any such sites found are avoided or otherwise protected.

2.2.1.2 Federal and Private Lands

Livestock grazing on Federal lands—as on state lands—is governed by leases issued by the applicable agency (USFS or BLM) to individual ranchers utilizing its lands for grazing purposes. With respect to the Act, grazing on Federal lands is addressed under the section 7(a)(2) consultation process, not the section 10 HCP process (as with grazing on private and state trust lands); thus, no aspect of grazing on Federal lands is addressed by the MBHCP, nor are Federal lands considered to be part of the MBHCP's covered area (Section 3.4).

Grazing on private lands, is not governed or regulated by any government authority. However, because private and state trust lands are often co-mingled and indistinguishable within individual livestock pastures, in practice grazing management on private lands in the Malpai Borderlands is usually equivalent to that which occurs on associated state trust lands. If no state lands are involved, private-land grazing can be practiced however the landowner wishes.

2.2.1.3 NRCS

The NRCS is neither a regulatory nor a land management agency, and its role in grazing and range management issues in the Malpai Borderlands is largely advisory and at the invitation of individual ranchers. The NRCS plays an important and crucial role in these issues for two reasons: first, it has the resources to provide significant technical, scientific, and funding assistance to Malpai-area ranchers; and, second, over the years it has established trusted relationships with those ranchers. Consequently, the NRCS has been a working partner in the Malpai Borderlands for many years.

There are two mechanisms through which the NRCS is able to advise Malpai Borderlands ranchers on the wise use of rangeland resources, both on private and state trust lands—Cooperator Agreements and Coordinated Resource Management Plans (CRMP), which provide standards and guidance for various conservation practices and ranch management activities. In addition, by joining the applicable NRCS Conservation District (which, in the Malpai Borderlands, is the Whitewater Draw Natural Resource Conservation District in Arizona and the Hidalgo Soil and Water Conservation District in New Mexico), the rancher creates a legal pathway through which the NRCS can assist in inventory and planning on non-Federal lands via these mechanisms. Cooperator Agreements are general in nature, and do not by themselves commit a rancher to any specific conservation-related action or plan. To date, cooperative plans

have been completed and signed for 13 Malpai-area ranches, and the area subject to these plans totals approximately 336,000 acres (D. Decker, pers. comm.).

2.2.2 Current Ecological Problems/Conditions

A number of ecological problems currently afflict the Malpai Borderlands. Generally, this is the result of over-grazing in combination with drought at the turn of the 19th century and a century of fire suppression policies. The combination of weather and these other factors have left the area with a number of unfavorable and self-perpetuating conditions. Among these are de-vegetation and resulting erosion, encroachment of woody brush into the area's historic grasslands, and a reduction in the role of wildfire in the area's ecosystems that affects each of the preceding conditions.

To combat these problems and improve ecological function in the Malpai Borderlands, MBG and its cooperators for some time have applied and experimented with a number of techniques to increase the incidence of beneficial fire in the area, to restore and increase vegetative productivity, to control erosion, and to suppress brush encroachment. Among these are managed fire (including prescribed burns), various types of erosion control structures, and various types of brush control measures. Taken together, these three sets of activities—fire management, erosion control, and mechanical brush control—comprise MBG's overall "grassland improvement" program, which it proposes under the MBHCP to continue, in some cases to expand, and which is also explicitly included in and covered by the plan (Section 3.5.1).

2.2.2.1 Lack of Ecologically Appropriate Fire Management

(A) Historical Perspective. Fire almost certainly played an important role in the ecology of the Malpai Borderlands prior to Euro-American settlement. Bahre (1985) concluded that fires were "fairly frequent" in southern Arizona grasslands prior to 1882, and Kaib (1998) suggests that desert grasslands in this area likely burned approximately once every 8-12 years. In addition, evidence suggests that both Native Americans and early settlers in the region used fire as a management tool (Sayre 2000). These fire regimes likely played a crucial role in maintaining the area's grasslands by suppressing woody species and encouraging new growth. However, fire incidence in the Malpai Borderlands has decreased dramatically during most of the 20th century. This is the result of several factors, including discontinuation of managed range fires with the introduction of wood fencing in the 1910s and 1920s; in some periods (e.g., the early 1900s) the lack of sufficient herbaceous cover to sustain fires; and since then, increasingly effective and thorough fire suppression policies which remained in place until the 1990s. The result, in recent decades, has been the near elimination of natural fire from its historical role in the Malpai Borderlands, and the loss of its clear ecological benefits.

Concurrent with this has been a steady encroachment of woody shrub species into the historical grasslands of the Malpai Borderlands, a phenomenon that has triggered interest in restoring fire to the area—both in its managed form (management ignited prescribed fire, or "prescribed burns") and its managed natural form (prescribed natural fire). Lack of fire in the Malpai Borderlands and improving and correcting this situation was a primary motivating factor in the formation of MBG in 1994.

At that time, three factors more-or-less constrained effective fire management of the type MBG wished to undertake—the 80-year-old fire suppression policies of state and Federal agencies (in place still in the early 1990s), ineffective coordination between those agencies and the landowners affected by their policies, and the constraints of the Act. The former of these to a large extent has been resolved—e.g., through a 1993 MOU between the agencies and Malpai landowners that set new fire policies for the Malpai Borderlands, development of the Regional Fire Management Map (2006) for the area specifying fire management policies with respect to particular ranches, and development and approval of the Bootheel Fire Management Plan, which provides comprehensive guidance for managing fire in the New Mexico portion of the Malpai Borderlands

(B) Current Circumstances/Benefits of Fire. The constraints of the Act on fire management in the Malpai Borderlands largely remain. These primarily affect private and state trust lands and occur principally as a result of three factors—the Act's prohibition against "take" of federally listed endangered and threatened species, the fact that a minimum of nine such species inhabit the Malpai Borderlands (and the risk that they may be taken in the course of managed fire events), and lack of an efficient mechanism under the Act for approval of fire management activities on a project-by-project basis. As a result of these factors, prescribed burns in the Malpai Borderlands to date have occurred only where Federal lands were involved, in which case related issues have been addressed under Federal authorities. These consist of the 6,000-acre Baker burn in 1995; the 12,000-acre Maverick burn in 1997; the 46,000-acre Baker II burn in 2003, and the 3,000-acre Cottonwood burn. Plans to let natural fires burn on private and state trust lands (under the Bootheel Fire Management Plan) cannot be carried out without significant uncertainties related to the Act; and the real objective of MBG's fire management proposals—restoration of fire across the Malpai Borderlands—has yet to be fully realized.

The potential benefits of such a program are likely considerable. It has been found that mesquite control efforts often fail unless applied in combination with fire (Section 2.2.2.3); and, in studies undertaken in the Altar Valley watershed (approximately 80 miles west of the Malpai Borderlands) Meyer (2000) noted: that numerous grassland areas within that watershed that had recently been burned showed vegetative components similar to pre-settlement conditions; that burning appeared to be effective on small mesquite trees and reduced the vigor of mid-sized trees; and that live basal areas, grasses, and forage production were significantly greater, and bare ground and shrubs significantly less, in burned as compared to unburned areas within certain sites within that watershed.

2.2.2.2 Erosion

(A) Types/Sources of Erosion. The primary types of erosion occurring in the Malpai Borderlands are sheet erosion, channel and gully erosion, and floodplain downcutting and headcutting. Sheet erosion (which occurs across broad areas of poorly vegetated ground surface) likely accounts for a majority of erosion in the area in terms of sediment produced. However, gully erosion (which moves downward from steeper slopes as runoff cuts through inadequately vegetated uplands and washes), floodplain downcutting (a form of gully erosion), and

headcutting (also a form of gully erosion, which moves up ephemeral stream channels from their mouths) are often more visible and severe, in part because they are more localized. As a result of the latter types of erosion, many small to medium-sized arroyos have formed within ephemeral stream channels and across floodplains in the Malpai Borderlands over the years, creating a network of incised arroyos and washes in many areas. Stream channel erosion (a relatively large-scale form of gully erosion, typically occurring in perennial streambeds) has also occurred in the area, most conspicuously in Black Draw in SBNWR. All of these types of erosion produce significant quantities of sediment, much of which finds its way into downstream perennial streams where it can significantly degrade aquatic habitats.

(B) Control Measures. MBG and Malpai-area ranchers have undertaken a variety of efforts to control erosion over the years. Grasses have been restored in some areas, which eliminates or helps slow sheet erosion, while many measures to combat gully and stream channel erosion have also been implemented, including:

- gabions (rock-filled wire-mesh containers set into a stream channel or gully);
- contour plowing (to slow runoff and increase infiltration);
- construction of earthen reservoirs equipped with spillways and sandtraps (to prevent washouts and capture sediment);
- construction of dikes and drop structures (to prevent headcutting); and
- installation of spillways, culverts, and water bars around stocktanks and roadways.

More recently, MBG and its cooperators have been moving toward a group of relatively simple erosion control structures that are, nevertheless, very effective (Peter Warren, pers. comm.). These include “one-rock dams” (consisting of one-thick layer of rock placed within shallowly eroded areas such as ephemeral drainages); “loose rock-rubble” check dams (dams or plugs of heavy rock placed within gullies to slow water velocities); splash basins (pads of rock placed where airborne or high-velocity water strikes the ground surface); channel deflectors (also constructed of rock, which deflect water flows from vulnerable cutbanks), and others. Such structures are the key component of MBG’s current erosion control plans because they are simple, can be constructed using little more than rock, and work ingeniously by allowing natural processes that in the past have been destructive to reverse themselves and become corrective. This is accomplished, for example, by installing one-rock dams, point bars, and check dams in combinations and size configurations appropriate to a given area and then “letting nature take over.” The structures begin by armoring the treated sites and arresting continuing erosion; this then slows runoff rates leading to sediment deposition and build-up; naturally transported seed then deposits on these developing substrates and vegetative cover begins taking hold.

2.2.2.3 Brush Encroachment

(A) History/Effects. The encroachment of woody brush, including mesquite, from the lowlands of the Malpai Borderlands into its upland grasslands appears to have begun at the turn of the 19th century. Brush species, with their relatively deep root structure, are more capable of withstanding drought than grasses and forbs, and have been favored during this period. Brush encroachment seems to have occurred at gradually increasing rates, and to have been

significantly accelerated by another drought in the mid-1950s, estimated to have been the most severe in 350 years (Sayre 2000). Today, mesquite and other brush species occur in unwanted areas and/or at excessively high densities across much of the Malpai Borderlands and represent a potentially permanent shift in vegetation from grassland to shrubland.

The effects of brush encroachment are significant. It has been found, for example, that when mesquite canopy cover exceeds about 16 percent, herbaceous cover is greatly reduced (Kincaid et al. 1959) which, in turn, significantly increases erosion rates, since the amount of bare ground and soil movement increases as vegetative cover decreases.

(B) Control Measures. There are two methods currently or potentially available to control mesquite and other invasive brush species in rangelands: fire management (addressed in Section 3.5.1.1); and mechanical control (e.g., chaining and grubbing; Section 3.5.1.3). Each of these measures has been used at one time or another in the Malpai Borderlands, often in combination with each other and with the seeding of grasses. Mechanical control, however, is relatively costly on a per-acre basis, which tends to limit its use, and rising fuel costs in recent years have further limited its use. Prior to completion of the MBHCP, for example, mechanical brush control activities in the Malpai Borderlands likely totaled no more than about 100 acres per year, and cumulatively, areas treated in this fashion to date likely do not total more than about 1,000 acres (P. Warren, pers. comm.). In addition, while the short-term results of mechanical brush control are fairly good, over the long-term (10-20 years) brush species re-colonize treated areas unless fire is used in combination with other control methods (Sayre 2000). Nevertheless, MBG and Malpai-area ranchers wish to have mechanical brush control as an available option and its use on a limited basis will likely continue; it could even increase if results from current brush control treatment studies in the Malpai Borderlands were to identify a particularly effective form of mechanical treatment.

3.0 Overview of the MBHCP

The MBG has prepared the MBHCP for the purpose of obtaining an incidental take permit, pursuant to section 10(a)(1)(B) of the Endangered Species Act, to take species while engaging in otherwise legal activities. In accordance with section 10(a)(2)(A), the MBHCP specifies:

- the impact which will likely result from such taking;
- what steps MBG will take to minimize and mitigate such impacts and the funding that will be available to implement such steps;
- what alternative actions to such taking MBG considered and the reasons why such alternatives are not being utilized; and
- such other measures that the Secretary may require as being necessary or appropriate for purposes of the plan.

To accomplish this purpose, the MBHCP also describes:

- the activities and programs of MBG and of individual Malpai-area ranchers who collectively make up MBG;
- the conservation interests of endangered and threatened species inhabiting the Malpai Borderlands; and

The specific issue triggering the plan is the fact that some of the activities proposed by MBG and Malpai-area ranchers have the potential to result in "take" of federally listed species inhabiting or potentially inhabiting the Malpai Borderlands; this, in turn, results in the need for an ITP authorizing such take.

Thus, functionally, the MBHCP derives from three distinct purposes (which, can be characterized as organizational, biological, and regulatory, respectively) and is driven and defined by a specific set of components, participating interests, and regulatory issues, and by the relationships and interactions between them. The latter are fundamental to every aspect of the plan and consist, specifically, of the following:

- a set of covered activities (i.e., activities specifically addressed by the plan) in two categories (referred to as grassland improvement activities and ranch management activities);
- the specific entities proposing or planning to undertake those activities (i.e., MBG and individual Malpai-area ranch owners);
- a set of covered species (which, because of the potential effects of the covered activities on the species, are also addressed by the plan);
- a conservation program (i.e., activities proposed to address those effects and to protect the species);
- a set of entities and organizations who, in addition to MBG and Malpai-area ranchers, play substantial roles in the plan as MBG partners and cooperators; and
- the issue of incidental take and the functioning of the proposed ITP (the former being the specific potential effect of the covered activities on the covered species at issue in the

plan; the latter being the specific legal authority that both permits such take), and, with respect to any ITP holder or beneficiary, causes implementation of the MBHCP (or applicable parts or measures of the MBHCP) to be an enforceable legal requirement.

In light of its importance, this section describes the regulatory and organizational structure of the MBHCP, particularly with respect to the above six components; and where relevant, it also explains the associations and relationships between particular plan components or interests and the effects of those relationships, if any. Sections 5.0, 6.0, and 8.0 of the plan describe the details of the conservation program, funding, and the "no surprises" policy in relation to changed and unforeseen circumstances. Table 3-1 in the section can be consulted for a convenient overview of the plan.

3.1 Plan Structure/Organization

The MBHCP is organized and structured with respect to four sets of criteria or standards:

- the statutory requirements of section 10(a) of the Act and its implementing Federal regulations;
- FWS policy guidance (as applicable);
- generally accepted HCP format and practices; and
- additional elements (structurally or functionally) that are needed based upon the MBHCP stemming from its own particular contexts.

The first three of these result in a statutorily complete HCP, the required elements of which are shown in the following list of components making up the MBHCP. Characteristics of the plan resulting from the fourth criterion are also shown in the following list and are described in Section 3.1.2.

3.1.1 Required Elements

The essential components of the MBHCP (i.e., those required by statute, regulation, and other accepted standards that make it statutorily and functionally complete) consist of the following.

3.1.1.1 Permittee

This is MBG, who will hold the proposed ITP associated with the MBHCP (Section 3.2.2.1); in addition, Malpai-area ranchers may voluntarily become parties to the plan (Section 3.2.1.2) through Certificates of Inclusion (Section 5.3.2).

3.1.1.2 Covered Species

This consists of 19 species of fish, wildlife, and plants in four species assemblages: 11 aquatic species, 4 grassland species, 2 riparian species, and 2 montane species (Sections 3.3 and 4.0). Covered species, whether listed under the Act or not, must be addressed as though they were listed as threatened or endangered.

Table 3-1:
Summary and Overview of MBHCP Context, Coverage, and Related Features

Context[1]	Purpose		Covered Activities Category	Covered Activities	Applicability of HCP When Carried Out: By MBG	Applicability of HCP When Carried Out: By Malpai-area Ranchers w/ MBG Assistance[3]	Applicability of HCP When Carried Out: By Malpai-area Ranchers w/o MBG Assistance[3]	HCP Coverage Provided By:[4] For MBG	HCP Coverage Provided By:[4] For Ranchers	Activities Not Covered by HCP[5]
MBHCP	To protect federally listed T&E species in the course of MBG and rancher programs and activities, providing for the needs of both (see S. 1.1 of MBHCP)	Activities Included in MBG Programs and Covered by the MBHCP	Grassland Improvement Activities[2] (S. 3.5.1)	Fire Management[2] (S. 3.5.1.1)	Mandatory (S. 3.2.1)	Mandatory (S. 3.2.1)	Voluntary (S.5.3)	MBG Permit (S. 3.2.1)		By MBG: Grassbanking Program; Conservation Easement Program; and Others (S. 2.2.1)
				Erosion Control (S. 3.5.1.2)	Mandatory (S. 3.2.1)	Mandatory (S.5.3)	Voluntary (S. 5.3)	MBG Permit (S. 3.2.1)	COI (S. 5.3.2)	
				Mechanical Brush Control (S. 3.5.1.3)	Mandatory (S. 3.2.1)	Mandatory (S.5.3)	Voluntary (S. 5.3)	MBG Permit (S. 3.2.1)	COI (S. 5.3.2)	
All MBG Programs/ Activities	Embodied in organizational objectives: To restore fire to, improve ecological conditions in, and preserve the Malpai Borderlands and ranching livelihoods (see S. 1.2 of the HCP)		Ranch Management Activities[2] (S. 3.5.2)	Livestock Management (S. 3.5.2.1)		Mandatory (S.5.3)	Voluntary (S. 5.3)		COI (S. 5.3.2)	By Ranchers: Livestock Grazing (S. 3.6); and All activities not otherwise covered
				Linear Facility Construction (S. 3.5.2.2)	N/A	Mandatory (S.5.3)	Voluntary (S. 5.3)	N/A	COI (S. 5.3.2)	
				Stocktank Maintenance/ Use (S. 3.5.2.3)	N/A	Mandatory (S.5.3)	Voluntary (S. 5.3)	N/A	COI (S. 5.3.2)	

[1] Refers to the fact that activities covered by the MBHCP are a subset of MBG and Malpai-rancher programs and activities overall (i.e., consist of those requiring regulatory coverage under the Act).
[2] Fire management activities are assumed to always be carried out by or in cooperation with MBG; other grassland improvement activities will usually, but not necessarily always, be carried out by, in cooperation with, or with the assistance of MBG; ranch management activities will always be carried out by individual Malpai ranchers either with MBG assistance or on their own.
[3] Activities conducted by Malpai ranchers are subject to MBHCP requirements only if they accept MBG assistance in carrying them out (see previous footnote) or if they voluntarily accept them.
[4] COI = Certificate of Inclusion (an agreement between MBG and a Malpai rancher specifying MBHCP measures to which the rancher voluntarily agrees, and which extends the authorities of MBG's ITP to the rancher).
[5] Refers to activities that are included in or are part of MBG's overall programs or those of Malpai-area ranchers but are not included as covered activities under the MBHCP.

3.1.1.3 Covered Area

This consists of all private and state trust lands within the Malpai Borderlands (Section 3.4).

3.1.1.4 Covered Activities

This consists of two general categories of activities, with three sets of activities in each: Grassland Improvement Activities, which includes: fire management, erosion control, and mechanical brush control; and Ranch Management Activities, which includes: livestock management, linear project construction, and stocktank maintenance and use (Sections 3.5.1 and 3.5.2, respectively).

3.1.1.5 Permit Term

The term of the proposed ITP is 30 years (Section 3.8.), and maybe renewed.

3.1.1.6 Conservation Program

The MBHCP conservation program consisting of: goals and objectives (Section 5.1); take minimization measures (Section 5.5); mitigation measures (Section 5.6); a monitoring program consisting of compliance monitoring measures and biological effectiveness monitoring measures (Section 5.7); an Adaptive Management program (Section 5.8); a Technical Advisory Committee to help implement the plan (Section 5.9); and an annual report (Section 5.10).

3.1.1.7 Funding

Section 6.0 identifies MBG's funding responsibilities, and that of MBHCP participants and cooperators, as well as potential sources of additional funding.

3.1.1.8 Incidental Take

Section 7.0 of this document identifies the sources and type of incidental take anticipated from activities undertaken during implementation of the MBHCP, the anticipated effects of the incidental take on the covered species; and the alternatives considered to minimize and mitigate for the incidental take.

3.1.1.9 Changed and Unforeseen Circumstances

A description of Changed Circumstances and "No Surprises" assurances provided by FWS with respect to Unforeseen Circumstances and their relationship to the "unforeseen circumstances" (Section 8.0).

3.1.1.10 Permit & COI Administration

Section 9 of this document discusses the process for (A) amending the MBHCP and ITP; (B) voluntary termination of the ITP; and (C) early termination of Certificates or Inclusion (COI).

3.1.1.11 Implementing Agreement

The Implementing Agreement (IA) formalizes the responsibilities under the MBHCP of all signatory parties; and addressing a range of legal HCP issues (Appendix B).

3.1.2 Additional Elements.

MBHCP features that derive from its contextual circumstances and/or result in circumstances that in some way characterize the plan, limit or extend its authorities, and/or require special attention in its implementation are as follows:

3.1.2.1 Plan Scope

First, the MBHCP's scope (i.e., the regulatory coverage it puts into place) encompasses the entire 828,000-acre Malpai Borderlands area and all reasonably determinable and foreseeable issues and needs associated with the Act currently connected with, or likely in the future to be connected with, activities planned or being undertaken by MBG and Malpai-area ranchers, has resulted in regulatory coverage under the plan of 19 species of fish, wildlife and plants (ten of which are not currently listed under the Act, but by being covered in the MBHCP they will be addressed as though they are listed), and six sets of covered activities. Because of these factors, implementing the plan will present many challenges—in terms of planning and carrying out the covered activities; coordinating the many activities and MBHCP parties and cooperators involved in the plan; in some cases coordinating multiple layers of authority (especially with respect to fire management); and integrating the covered activities with the endangered species conservation program.

3.1.2.2 MBHCP's Conservation Orientation

Second, the MBHCP is unusual in the important sense that it is conservation-oriented in its own right. That is, the activities covered by the plan do not represent actions expected to modify, degrade, or destroy natural ecosystems or habitats, as in many HCPs, but to the contrary represent conservation programs designed to improve long-term ecological conditions in the Malpai Borderlands. To the extent these activities conflict with endangered and threatened species, this will primarily consist of temporary, short-term effects (e.g., occasional mortality, injury, or harassment to individuals of such species), but will not typically involve the more serious, long-term effects of habitat loss. Under these circumstances the overall net effect of the MBHCP on endangered and threatened species is expected to be beneficial.

3.1.2.3 Plan Context

A related issue involves the context within which the MBHCP occurs and the role the plan plays within that context. This can be seen in the fact that the MBHCP's covered grassland improvement activities (as well as its covered ranch management activities) will be undertaken in concert with MBG conservation activities that are not covered by the plan (because these activities are not expected to result in take). An example of the latter is MBG's conservation easement program, which is designed to preserve the natural conditions of the Malpai Borderlands and thus complements the covered grassland improvement activities. In the context of the MBHCP, there are two distinct sets of MBG activities—those that are covered by the plan and those that are not covered. The distinction between the two is therefore determined by the regulatory considerations of the Act, not by any inherent MBG purpose. Taken together the MBHCP-covered MBG activities and non-MBHCP-covered MBG activities form a comprehensive, land-based conservation strategy designed to protect, preserve, and improve the entirety of the Malpai Borderlands landscape.

There is a second issue to consider within this issue of context—the MBHCP's species conservation program. These activities, in the context of the MBHCP, serve the relatively straight-forward purpose of protecting covered species in the course of carrying out the covered activities. With respect to MBG programs overall, the MBHCP's species conservation activities are essentially a subset of MBG conservation purposes (described above), and within that land-based strategy represent a more limited, species-based strategy designed to meet the specific requirements of the Act.

3.1.2.4 Applicability to MBG/Malpai-area Ranchers

A final point involves the relationship between MBG and its member-ranchers. Malpai-area ranches for the most part function independently of MBG. While MBG is subject to the MBHCP's conservation requirements or recipients of its regulatory coverage, the Malpai-area ranchers are not *per se* subject to the MBHCP's conservation requirements or recipients of its regulatory coverage. The MBHCP, however, includes provisions under which Malpai area ranchers may voluntarily enroll (through COIs) and implement the MBHCP's conservation requirements and therefore be recipients of its regulatory coverage. A detailed description of the roles, rights, and responsibilities are found in Section 5.3 of this plan.

3.2 Roles and Responsibilities

3.2.1 Plan Activities/Parties/Cooperators

Implementing the MBHCP will involve the carrying out of activities of several different types, and participation by numerous individuals, organizations, and agencies who will be acting in several capacities and roles. This section therefore describes: the types or categories of activities that will be undertaken or carried out under the MBHCP; the particular entity or entities that will undertake each such activity; and the type of participation in, or role in relation to, the MBHCP each such entity will play in the carrying out of each such activity.

3.2.1.1 Types of Activities

Generally, two types of activities are addressed by and will be implemented under the MBHCP. These are:

(A) Covered Activities. The covered activities consist of activities planned or proposed by MBG and/or Malpai-area ranchers which have the potential to result in take of federally listed species and are therefore included in the MBHCP's regulatory coverage. Two categories of activities are covered by the plan: those planned or proposed to improve ecological conditions in the Malpai Borderlands, referred to as Grassland Improvement Activities (Section 3.5.1); and those planned or proposed in the course of managing and operating individual Malpai-area ranches, referred to as Ranch Management Activities (Section 3.5.2).

(B) Conservation Program Activities. The conservation activities, on the other hand, consist of activities and measures established by the MBHCP pursuant to the Act for the purpose of protecting federally listed species and other covered species in the course of carrying out the covered activities described above. The conservation activities include take minimization measures, a monitoring program, various program implementation measures and procedures, and other measures; described in Section 5.0 of the plan.

3.2.1.2 Types of Participation.

Implementing the MBHCP will also involve participation by a wide range of individuals, organizations, and entities, each of whom will belong to one or another (or, in some cases, both) of two categories of such participation: (a) MBHCP participants; or (b) MBHCP cooperators. For purposes of the plan, these are defined as follows:

(A) MBHCP Participant. An MBHCP participant consists of any individual or entity who has accepted specified responsibilities under the MBHCP, which are formalized and made binding as a result of:

- holding the plan's associated ITP;
- being signatory to the plan's associated IA (Section 3.7); or
- being signatory to a Certificate of Inclusion (COI) (Section 5.3.2).

(B) MBHCP Cooperator. An MBHCP cooperator, on the other hand, consists of an entity who has no formal responsibilities under the MBHCP (as determined by the ITP, the IA, or a COI), but who participates indirectly or as a result of other arrangements, agreements, or responsibilities. Examples of MBHCP cooperators include research personnel (e.g., from the RMRS) who carry out range management-related studies in the Malpai Borderlands, and fire officials and crews who assist in managing prescribed fire in the Malpai Borderlands.

3.2.1.3 Roles of Participants and Cooperators

The roles MBHCP participants and cooperators will play in the plan, with respect to the activities included in it, are as follows.

(A) HCP Participants Undertaking Conservation Program Activities. A total of eight entities are (or likely will be) MBHCP participants under the MBHCP, which, by definition, means that they have been assigned (through the ITP), have voluntarily accepted (under the IA), or will likely voluntarily accept (under the COI process) specified activities and responsibilities in implementing the plan's conservation program, which responsibilities are also (or also will likely be) formalized and made binding either through the ITP, the IA, or COIs. These entities (together with the specific mechanism tying each to the plan) are:

The Malpai Borderlands Group (ITP & IA)	U.S. Fish & Wildlife Service (ESO & SBNWR.) (IA)
Individual Malpai-area ranchers (COIs)	Arizona Game & Fish Department (IA)
New Mexico Department of Game & Fish (IA)	Arizona State Land Department (IA)
New Mexico State Lands Office (IA)	Natural Resources Cons. Service (IA)

(B) HCP Participants Undertaking Covered Activities. In addition to its role in implementing the conservation program, MBG will be the primary party coordinating and overseeing the covered grassland improvement activities, and will help carry out those activities. In addition, to the extent they become MBHCP participants in accordance with the plan, Malpai-area ranchers will be the primary parties carrying out the covered ranch management activities, and, in some cases, will help carry out the grassland improvement activities.

(C) HCP Cooperators Undertaking Covered Activities: Over the life of the plan there are likely to be many MBHCP cooperators, including but not limited to:

U.S. Forest Service (fire personnel)	Arizona State Land Department (the State Forester)
U.S. Forest Service (RMRS)	U.S. Bureau of Land Management (fire personnel)
The Nature Conservancy	NMNRD, Forestry & Resources Conservation Division
Arizona State University	University of New Mexico
Hidalgo Soil and Water Cons. District	Whitewater Draw Natural Resource Cons. District

3.2.2 The "Programmatic" Approach

The MBHCP is a "programmatic" plan, meaning: that its regulatory scope encompasses the land–use interests of not one, but potentially many individuals and entities; and that its associated ITP is held by one entity on behalf of itself and other entities. The advantages of the approach are twofold—it allows an entire group of entities (and activities) to fall under the coverage of a single HCP and ITP (as opposed to multiple, duplicative HCPs needing to be prepared individually); and, once the HCP and proposed ITP are in place, allows their coverage to be implemented on an as-needed basis.

There are also three essential requirements to the approach. First, activities included in a programmatic HCP must be described as clearly as circumstances allow; since what is covered in such plans is often not actual or particular activities, but generic classes or types of activities. Second, because the authorities of a programmatic ITP are vested in the permittee, and because the entities on behalf of whom the ITP is held by definition are not the permittee, a specific mechanism or process is necessary for conveying the ITP's authorities and responsibilities to

those on behalf of whom the ITP is held. And third, because, notwithstanding the first requirement, the actual activities involved in individual projects may not be fully reflected in the generic description in the HCP, a mechanism is also necessary for documenting the specifics in individual cases in which a landowner seeks coverage under a programmatic HCP and ITP.

3.2.2.1 Role of MBG

(A) Permittee. In the case of the MBHCP, the party proposing to hold the plan's associated ITP is the Malpai Borderlands Group. MBG will hold the ITP on behalf of itself, with respect to carrying out the plan's grassland improvement activities; (Section 3.5.1) and on behalf of individual Malpai-area ranchers, with respect to carrying out ranch management activities (Section 3.5.2). The conveyance of the authorities of MBG's ITP to individual Malpai ranchers, and documentation of the activities covered by the MBHCP and its ITP in individual cases, is accomplished under the plan via a COI jointly executed by MBG and an individual rancher. A pre-approved "template" COI for use in preparing these documents under the MBHCP is provided in Appendix C.

The responsibilities of MBG as the Permittee are described throughout the plan, but broadly consist of implementation (i.e., helping carry out specific covered activities and conservation program activities); coordination (of the many individuals, agencies, organizations, and activities involved in plan implementation); and administration and oversight (e.g., preparing annual reports, securing plan funding, chairing the plan's Technical Advisory Committee, and effecting participation in the plan by willing Malpai ranchers). MBG is also responsible for ensuring legal compliance with the Act by any entity (including itself) subject to the authorities of its ITP

(B) Authorized Designee. MBG may, however, transfer certain of its responsibilities under the MBHCP to a suitable designee. To do this it must:

- inform the FWS in writing of its intention to transfer such responsibilities to a designee;
- identify the designee;
- explain the relationship of the designee to MBG and the designee's qualifications to carry out the MBHCP's responsibilities on behalf of MBG;
- detail the specific actions and measures the designee will carry out (or, alternately, will not carry out); and
- obtain concurrence with the transfer from the FWS in writing.

Notwithstanding any such designation, MBG understands that it is responsible for any and all actions undertaken by the authorized designee and remains solely responsible for ensuring that the responsibilities assigned to it under the MBHCP are fully met and carried out.

3.2.2.2 Participation by Ranchers

As noted above, because the authorities of an HCP derive from its associated ITP, and because MBG is the only permittee under the plan, individual Malpai-area ranchers are not subject to the MBHCP or its requirements, nor are they included within its regulatory authorities or benefits.

However, because individual ranchers may wish MBG assistance with a project or may wish to be included under the MBHCP in order to have possible incidental take as a result of their activities and projects authorized by the ITP, the MBHCP has provisions to include individual ranchers. Section 5.3 describes procedures for rancher enrollment and participation in the MBHCP in detail. The main points are that:

- Enrollment in the MBHCP by Malpai-area ranchers can be effected with respect to the entire plan (i.e., to all covered activities applicable to ranchers) or with respect to any single covered activity or combination of covered activities;
- By participating in the plan, a rancher in effect becomes a sub-permittee to MBG's ITP, and, for the duration of the period of enrollment, obtains its regulatory protections and authorities, but is also subject to all plan requirements applicable to the enrolled activities;
- As described above, enrollment and participation in the MBHCP by individual Malpai ranchers is voluntary, but may be prompted by either: a desire for Malpai assistance to implement a covered activity, in which case enrollment is a condition of this assistance, or if an individual Malpai rancher seeks regulatory coverage for implementation of covered activities that could result in take of listed species without Malpai assistance.

Rancher enrollment in the MBHCP involves MBG and the interested rancher only and employs a simple documentary mechanism: a COI, which formalizes the rancher's commitment to implement applicable requirements of the plan and which extends the ITP's regulatory coverage to the rancher and for the activity or activities enrolled (Section 5.3.2).

As previously noted such participation is voluntary and is based upon a rancher's desire for Malpai assistance or their own wish to enroll in the MBHCP. However, in making this decision, it is critical that Malpai-area ranchers understand the relative benefits, responsibilities, and liabilities of participating in the HCP versus not participating. Non-participation means that a rancher is under no obligation as a result of the HCP and need not implement its take minimization, monitoring, and reporting measures. It also means that the regulatory benefits are not obtained.

3.2.2.3 Benefits/Responsibilities of Participation.

As seen above, participation in the MBHCP carries with it the regulatory protections provided by the ITP, consisting of legal coverage should take of federally listed species occur in the course of carrying out the covered activities; and the plan's "No Surprises" assurances (Section 8.1). Participation also carries with it the responsibility to implement the conservation measures required by the plan with respect to the activities in question; in any given case, these would consist primarily of applicable take minimization, mitigation, monitoring, and reporting measures described in Sections 5.5, 5.6, 5.7, and 5.10, respectively.

As previously noted, participation is the rancher's decision. However, once a rancher elects to participate in the plan and a COI has been prepared and signed, all applicable conservation

measures then become binding for the term specified by the COI. However, the MBHCP does provide for early termination procedures for COI holders (Section 9.2).

3.3 Proposed Covered Species

The term "covered species" refers to those species for which the MBHCP provides specific conservation measures and to which the coverage of the plan's associated ITP applies. Thus, take of a covered species that occurs in the course of carrying out one or more of the plan's covered activities is expressly authorized by the ITP.

Eighteen fish and wildlife species and one plant are covered by the MBHCP. These are shown in Table 3-2, together with their listing status under the Act, under the New Mexico Wildlife Conservation Act, and under applicable Arizona state designations. Also shown in Table 3-2 are the species assemblages that are referred to through out the MBHCP. These species assemblages are based upon the general habitat of each species (Section 4.0).

As also seen in Table 3-2, 10 of the 19 covered species are not currently listed under the Act. They are nevertheless covered under the MBHCP as a result of two considerations—first, the possibility that, over the life of the plan's 30-year term, any one or more of them could become listed (in which case the requirements of the Act would then apply); and, second, the fact that any one or more of them could be killed, injured, harmed, or harassed (i.e., "taken") in the course of carrying out the plan's covered activities. Given the latter, if any currently unlisted species inhabiting the Malpai Borderlands was to become listed at some future date, coverage of the species within the MBHCP (or another HCP) would be needed. The advantage of considering such species in the plan now is that, in the event such a listing should occur, coverage under the plan would already have been accomplished and no (or relatively few) further actions to satisfy the Act's requirements with respect to such species would be needed.

Consequently, the plan's 10 currently unlisted covered species would be already named on its associated ITP, with the caveat that the ITP will not become effective with respect to such species until a time of an actual future listing because a legal taking of such species cannot, by definition, occur until the time of actual listing. However, these species are treated under the plan as if they are already listed, meaning that any conservation measures specified by the MBHCP and applicable to them must be implemented from the outset of the plan. The rational of this strategy is that through proactive conservation, a future need to list these species may not occur.

Selection of the MBHCP's covered species and covered activities; involved what is essentially a risk-benefit analysis. The starting point for this analysis was all federally listed and state sensitive species potentially found within the Malpai borderlands. The issue under consideration is the possibility that particular species might be taken in the course of implementing the covered activities. Factors also pertinent to this analysis include the extent to which areas affected by covered activities are inhabited by listed species; the extent to which take could be avoided through take minimization measures; the magnitude of the possibility of take; and the potential costs of meeting the Act's conservation requirements with respect to species covered by the plan.

Through this process the covered species list was focused onto the 19 species most likely to be taken through the MBHCP's covered activities.

A total of 19 species and six sets of activities were selected for coverage under the plan. The MBHCP encompasses a total of 114 species/activity combinations (or 19 covered species x 6 sets of covered activities). However, coverage under the plan is not needed, and has not been requested, for all such combinations since in many cases there is little to no likelihood of interaction between particular species and activities; only the leopard frogs and Mexican gartersnakes, for example, occur in stocktanks and are likely to be affected by stocktank

Table 3-2:
Species Covered by the Malpai Borderlands HCP

Species Assemblage	Species	Federal Status[1,2]	WCA Status[1]	AZ Status[3]
Aquatic Species	Yaqui chub	E		WSC
	Yaqui topminnow	E		WSC
	Yaqui catfish	T		WSC
	Yaqui sucker			WSC
	Mexican longfin dace			
	Mexican stoneroller			
	Beautiful shiner	T		WSC
	Chiricahua leopard frog	T		WSC
	Lowland leopard frog	SC	E	WSC
	Northern Mexican gartersnake	SC	E	WSC
	Huachuca water umbel	E		HS
Grassland Species	Black-tailed prairie dog	RC/A		WSC
	Western burrowing owl	SC		
	Northern aplomado falcon	E	E	WSC
	White-sided jackrabbit	SC	T	
Riparian Species	Western yellow-billed cuckoo	CS/WBC		WSC
	Western red bat	SC		WSC
Montane Species	N.M. ridge-nosed rattlesnake	T	E	
	Mexican spotted owl	T		WSC

[1] **E** = Endangered; **T** = Threatened.
[2] **SC** = Species of concern, which is not a formal classification but means that the FWS is concerned about these species and that further biological study is needed to resolve their conservation status (61 FR 7595); generally includes former category 2 candidate species. **RC** = Species the FWS has removed from the candidate list because currently available information does not support a proposed listing. **A** = Species that are more abundant or widespread than previously believed and that are not subject to the degree of threats sufficient to warrant continuing candidate status or issuance of a proposed or final listing. **CS/WBC** = Candidate Species with a Warranted but Precluded finding; this classification refers to species for which the FWS has found that sufficient data exist to support Act listing but for which listing is precluded by other higher-priority actions (61 FR 7595).
[3] **HS** = Highly Safeguarded (meaning that collection is prohibited); **WSC** = Wildlife of Special Concern (AGFD in prep.).

Table 3-3:
Summary of Covered/Uncovered Species and Covered/Uncovered Activities in the Malpai Borderlands HCP

Species Assemblage	Species Considered	Activities Considered						
		Grazing[1] (Herbivory)	Grazing (Livestock Mgt)	Fire Management	Erosion Control	Mechanical Brush Cont.	Linear Facilities Construction	Stocktank Maint./Use
Aquatic Species	Yaqui chub	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Yaqui topminnow	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Yaqui catfish	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Yaqui sucker	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Mexican longfin dace	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Mexican stoneroller	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Beautiful shiner	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	C. leopard frog	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**[2]
	L. leopard frog	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**
	Mexican gartersnake	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**
	Huachuca water-umbel	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
Grassland Species	Bl.-tailed prairie dog	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	Western burrowing owl	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	N. aplomado falcon	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
	White-sided jackrabbit	Uncovered	**Covered**	**Covered**	**Covered**	**Covered**	**Covered**	Uncovered
Riparian Species	Yellow-billed cuckoo	Uncovered	**Covered**	**Covered**[2,3]	**Covered**	**Covered**	**Covered**	Uncovered
	Western red bat	Uncovered	**Covered**	**Covered**[2,3]	**Covered**	**Covered**	**Covered**	Uncovered
Montane Species	N.M. r.n. rattlesnake	Uncovered	Uncovered[5]	**Covered**[4]	Uncovered[5]	Uncovered[5]	Uncovered[5]	Uncovered
	Mexican spotted owl	Uncovered	Uncovered[5]	**Covered**[4]	Uncovered[5]	Uncovered[5]	Uncovered[5]	Uncovered

[1] See Sections 3.6.
[2] Covered in the event of Changed Circumstances; see Sections 8.3.
[3] See Section 5.5.2.1(C).
[4] See Section 5.5.2.1(D).
[5] Activities uncovered as they do not occur in this vegetation type on non-Federal lands in the covered area.

maintenance. Table 3-3 summarizes the potential covered species/covered activity combinations under the MBHCP and those actually covered by the plan (these are shown in **bold**).

Note that Table 3-3 depicts "Grazing" as a species/activity combination in two ways—one defining it as "herbivory," the other as "livestock management." As also seen, livestock management is covered by the plan with respect to ten species, while herbivory is not covered at all. The reasons for this, and for categorizing grazing in this fashion, are explained in Section 3.6.

3.4 Proposed Covered Area

The term "covered area" refers to the geographic area to which the MBHCP and its associated ITP apply. Generally, the covered area consists of the triangular-shaped Malpai Borderlands area as it is typically depicted on maps (Figure 2-1), which straddles the southern end of the state border between Arizona (in Cochise County) and New Mexico (in Hidalgo County). It includes, specifically, all private and state trust lands within the following defined boundaries:

- on the south — the U.S./Mexico border;
- on the west — from milepost 10 on Geronimo Trail follow current ranch boundaries north to Hwy 80, then north-east along Hwy 80 to the point where the section line between Township 21 South and Township 22 South crosses the highway, then north-west along current ranch boundaries to the National Forest boundary, then north-east along the National Forest boundary to the section line between Township 19 South and Township 20 South, then east to Hwy 80, then north along Hwy 80 to its junction with Hwy 9;
- on the northern — Hwy 9; and
- on the east — the Continental Divide (to where it enters Diamond A Ranch) and thence the boundary of the Diamond A Ranch to its junction with the U.S./Mexico border.

The area covered by the MBHCP does not include Federal (e.g., FWS, USFS, or BLM) lands within the above-described area; Federal lands are addressed by the Act under different provisions than non-Federal lands. This means that regulatory coverage under the Act is not provided by the MBHCP with respect to those portions of Malpai Borderlands ranches that occur on Federal lands and are grazed under Federal permits. The listed species issues on those lands, if any, are addressed by the FWS and the Federal agency involved under the consultation requirements of section 7 of the Act.

3.5 Proposed Covered Activities

For purposes of the plan, the term "covered activities" refers to activities planned or proposed in the Malpai Borderlands by MBG, individual Malpai-area ranchers, or both, to which the coverage of the plan's associated ITP apply. A covered activity, in other words, is one which is legally covered by the ITP if take of the covered species should occur while it is being conducted or carried out, and one for which the assumption has been made that such take is a potential result of the activity.

As previously seen, covered activities under the MBHCP consist of two general categories referred to as grassland improvement activities and ranch management activities. These categories are comprised of three distinct subsets of activities—fire management, erosion control, and mechanical brush control under the grassland improvement activities; and livestock management, linear facility construction, and stocktank maintenance and use under the ranch management activities. Covered activities under the MBHCP therefore consist of six sets or subsets of activities within two broad categories.

The two categories of covered activities are distinguished from each other in several ways. The grassland improvement activities are relatively large-scale endeavors serving landscape-level conservation purposes. The ranch management activities are more narrowly focused on ranch-level concerns. As seen in Section 3.2.2, they are also carried out by different HCP participants—the grassland improvement activities, typically, by MBG, and the ranch management activities by Malpai-area ranchers. This distinction, furthermore, accounts for the primary difference between the two in terms of plan function.

3.5.1 Grassland Improvement Activities

For the purposes of the MBHCP, grassland improvement activities are defined as those expressly designed and carried out to correct, ameliorate, or improve a specific adverse grassland condition (e.g., lack of beneficial range fire, gully or stream channel erosion) and to meet the long-term interests of ecosystem health, watershed function, and grassland stability and productivity. They are not intended to address day-to-day ranch operation or management—except to the extent that, over the long-term, they help maintain the landscape-level conditions that make ranching possible. The MBHCP covers or addresses three categories of grassland improvement activities: fire management; erosion control; and mechanical brush control.

3.5.1.1 Fire Management

A number of factors have reduced fire to a relatively rare event in the Malpai Borderlands, yet the benefits of fire to southwestern grassland ecosystems are well-documented (McPherson 1997). Among other things, fire significantly reduces the density of woody brush, slows its spread, and increases grass and forb production—all of which are among MBG's grassland improvement objectives. MBG has not developed specific goals for the program except as stated in its objectives: "Restoration of periodic fire as a functional component of the ecology of the Malpai Borderlands." Based on likely historical fire frequencies in the Malpai Borderlands, fire management goals under the program would provide for fire return intervals similar to or approximating the historic average rate of once every 8 to 12 years (Kaib 1998) with a minimum return frequency of no less than three years. This would allow frequencies short enough to effectively impact mesquite encroachment, but not result in detrimental effects to perennial grasses. This minimum return frequency is within the natural variation around the average return frequency of 8 to 12 years. Fire in the Malpai Borderlands will be managed to try to avoid return intervals of less than three years. Observations at Fort Huachuca have shown that more frequent

return intervals can lead to decline in native grass vigor and abundance (D. Robinett, pers. comm.).

(A) Definitions. For purposes of the discussion of fire and fire management throughout this document, the following fire-related terms are defined below. Certain additional fire-related definitions are also shown in Table 5-3.

(1) *Managed Fire*. A fire burning under specific, pre-planned conditions designed to accomplish identified resource management objectives and benefits, includes both prescribed fire and wildland fire use.

(2) *Prescribed Fire*. A fire which is under a plan, deliberately ignited by fire personnel, and managed for resource benefit. In the MBHCP, this type of fire is also referred to as a "prescribed burn."

(3) *Wildland Fire*. A fire ignited by a natural occurrence, such as lightening. It may be designated and managed as a managed wildland fire, also referred to as wildland fire use, or suppressed as a wildfire

(4) *Wildfire*. An unwanted wildland fire not designated and managed as a managed wildland fire and requiring appropriate suppression action.

(5) *Fire Use*. A term for both wildland fire use, managed wildland fire, and prescribed fire. MBG's overall proposed fire management program is an example of fire use.

(6) *Fire Management Plan*. A plan written and agreed to by all parties which establishes guidelines for determining whether fires resulting from a natural ignition should be treated as a wildland fire, coordinates the response to such fires, and ensures that management objectives and legal responsibilities are met. Fire management plans can also include prescribed fires. The Bootheel Fire Management Plan (Smith 2003) is an example.

(B) Covered Activities. There are two categories of fire that are included in this plan: managed fire (a term including prescribed fire and managed wildland fire); and uncontrolled wildfire. Generally, the effects of managed fire are intended to be, and usually are, beneficial, while the effects of uncontrolled wildfire, although greatly dependent on conditions and circumstances, has the potential, at least, to be significantly adverse. In addition, fire camps are or must be established to support fire suppression or management activities in the Malpai Borderlands; whether for prescribed burns, wildland fires, or wildfires. MBG and other fire planners and managers, as applicable, shall undertake necessary and appropriate measures to ensure that such camps do not result in unnecessary take of the covered species or in destruction or significant damage to important habitats of these species. The fire management activities covered in the MBHCP consist of all activities and programs necessary for implementation of MBG's fire management objectives, including:

(1) Managed Fire. Managed fire designed to restore more natural fire regimes to the Malpai Borderlands and consisting of a combination of: prescribed fire conducted under appropriate supervision by professional fire managers and the guidance of written burn or fire management plans, as applicable; and managed wildland fire under appropriate supervision by professional fire managers, in accordance with the 2006 (or similar) Malpai Borderlands Regional Fire Management Map, and fire management plans as applicable and appropriate (e.g., the Bootheel Fire Management Plan), and

(2) Wildfire. All on-the-ground fire management, control, suppression, and monitoring activities and practices normally and customarily associated with conducting prescribed fire and managing wildland fire.

(C) Activities Not Covered. Activities and decisions of Federal incident commanders and/or burn bosses are not covered by the MBHCP and need to be addressed under separate section 7 consultations.

3.5.1.2 Erosion Control

The primary types of erosion occurring in the Malpai Borderlands are sheet erosion, channel and gully erosion, floodplain downcutting, and headcutting. Erosion control measures planned or already underway to combat erosion include: construction or placement of simple, rock-based erosion control structures (e.g., one-rock dams and loose-rock-rubble check dams) within ephemeral stream channels, floodplain downcuts, etc.; on the ground surveys and evaluations to identify areas most needing improvement and determine optimal placement of these structures; and in some cases, re-vegetation and planting of native grasses.

These structures work by allowing natural processes that in the past have been destructive to reverse themselves and become corrective (Section 2.2.2). Most are surprisingly low in impact to construct or install, and few require use of heavy equipment or the ground surface disturbances typically associated with its use. In most cases, preparation of a given project site can be accomplished with hand tools, and materials for erosion control structures can be obtained within walking distance of a site. Materials will typically consist of hand-sized to 50-lb or 100-lb rocks, most of which can be collected or dug up from the areas immediately surrounding the site, transported by wheelbarrow, and placed by hand into the various configurations needed. Wooden posts, obtained either commercially or locally in the form of mesquite trunks, and/or commercially obtained rock may also be used to supplement local supplies.

(A) Covered Activities. Include all activities necessary to address two categories of erosion in the Malpai Borderlands: small-scale, acute, and semi-acute erosion (e.g., gullies, headcuts, and small arroyos); and sheet erosion. Activities covered under the plan to prevent, minimize, or repair these categories of erosion include, respectively:

(1) Within stream channels, headcuts, downcuts, and similar areas, hand construction of erosion control structures (e.g., one-rock dams, loose rock-rubble check dams, small wire-

basket gabions, and similar structures) utilizing local or supplemental materials (e.g., rock, posts, and local vegetation)

(2) Within grasslands generally, planting of native grasses and forbs (including site-preparation, seeding, and related activities), the purpose of which is to increase ground cover, reduce erosion, restore grasslands generally, and restore native grasses and forbs specifically; and

(3) All vehicle and equipment uses associated with the above activities.

3.5.1.3 Mechanical Brush Control

Mechanical brush control is another method for controlling encroachment of woody brush species into grassland vegetation associations and helping restore native grasslands. It is costly on a per-acre basis, which tends to limit its use to relatively small areas (e.g., in the tens of acres, typically) and/or particular situations (e.g., heavy brush accumulations in relatively discrete areas). Prior to the completion of the MBHCP, mechanical brush control activities in the Malpai Borderlands likely have averaged approximately 100 acres per year over the last 15 years, with 800 acres of mesquite grubbed along the Geronimo Trail in 1993-94 and about 600-700 acres treated in 2002-2003 at Culberson Camp, Doubles Adobes Camp, and Lower Black Bill Steel Rim (B. Brown, pers. comm.). Though no specific estimates have been provided, mechanical brush control in the future is likely to continue at roughly similar levels. In any case, cost considerations will likely always prevent mechanical brush control activities in the Malpai Borderlands on a large-scale basis.

A number of mechanical brush control methods may be employed in the course of this activity, including use of "roller-choppers," and grubbing. A "roller-chopper" cuts and breaks brush it into small pieces. This method cuts brush at the base of the stem, but generally leaves the roots intact; grubbing, on the other hand, involves inserting a steel blade beneath the ground at individual brush plants to break the tree below its root crown. Mechanical brush control activities all employ relatively heavy equipment; including bulldozers, backhoes, and "roller-choppers," usually resulting in significant ground impacts and noise.

(A) Covered Activities. Include all mechanical, non-fire related activities in the Malpai Borderlands designed to control or remove mesquite and other undesirable brush species, including, but not necessarily limited to, bulldozing, chaining, roller-chopping, and grubbing.

3.5.2 Ranch Management Activities

Livestock ranching involves a wide range of activities. Among those of interest to the MBHCP are the placement and movement of livestock in and between pastures and locations in accordance with season, forage availability, water availability, etc.; construction of perimeter fencing, cross-fencing, and corrals; construction of livestock watering facilities (e.g., stocktanks, stockponds, troughs, water wells, and waterlines); and maintenance and use of stocktanks. All this is relatively routine on a ranch, and much of this infrastructure is already in place in the

Malpai Borderlands. Nevertheless, new structures and facilities occasionally will be needed (primarily for the purpose of better managing livestock herds) and some existing facilities require periodic maintenance. Therefore, the MBHCP covers or addresses three types of ranch management activities: livestock management, linear facilities construction, and stocktank maintenance and use.

3.5.2.1 Livestock Management

For purposes of the MBHCP, the term "livestock grazing" is defined as two separate and distinct sets of activities: herbivory (or the consumption of vegetation or forage by livestock); and livestock management (or the placement or movement of livestock into, through, or within particular areas within the Malpai Borderlands). The purpose of this distinction is to segregate this rather broad activity into categories useful to the plan. This delineation is useful because it differentiates between livestock-related activities having the potential for take of the covered species which would require regulatory coverage under the plan and activities not likely to result in take which would not require such coverage. MBG does not believe livestock grazing, defined as herbivory, is a likely source of take in the Malpai Borderlands and has therefore not requested that it be a covered activity in the ITP. However, certain aspects of livestock management might result in take and, therefore, are addressed in the HCP.

In the Malpai Borderlands, the most likely circumstances in which such take might occur would result from the presence or placement of livestock within riparian corridors and/or streambeds to water (in which case take of fish or leopard frogs might occur), and within pastures that might contain an northern aplomado falcon nest (in which case damage to northern aplomado falcon nest structures might occur) (Section 7.1).

(A) Covered Activities. For purposes of this section, activities referred to by the term "livestock management" and covered by the plan include the presence or movement of livestock into, through, or within suitable habitats of the plan's covered aquatic, grassland, or riparian species, as applicable, in the Malpai Borderlands. In addition, the actions of Malpai-area ranchers resulting in such livestock presence and movement enjoy the regulatory protections under the ITP, provided that they have enrolled in and become participants in the plan in accordance with procedures described in Section 5.3.

3.5.2.2 Linear Facility Construction/Maintenance

A number of linear-type facilities will occasionally need to be constructed and maintained in the course of ranching in the Malpai Borderlands, including fences, waterlines, utility lines, and roads; of these, the former two will be most common while the latter two will be relatively rare. The purposes of fencing are to delineate the boundaries of a ranch or grazing allotment (referred to as perimeter fencing), to divide the ranch into individual pastures (referred to as cross-fencing) and other areas (e.g., corrals), and to manage the location and movement of livestock. Fencing is important to good range stewardship because it allows for rotational grazing and livestock exclusion from particular areas when necessary (e.g., sensitive habitats); it is also a component of at least two of the MBHCP's take minimization measures. Waterlines convey water from its

source (e.g., springs or wells) to livestock watering locations (i.e., stocktanks; see following section). Utility lines constructed by Malpai ranchers would normally consist of those needed to convey electricity to ranch houses, barns, water wells, and the like; they might be placed above or below ground, and in individual cases would not normally exceed two miles in length. Road construction, similarly, would be limited to relatively short road segments needed to connect ranch facilities or to connect ranch facilities to existing county roads; they would involve road lengths similar to utility-line lengths and would invariably consist of dirt roads.

Fence construction is a relatively low-impact activity; post holes are dug, fence posts set in place, and barbed wire strung. Waterlines are usually placed below ground; construction involves ripping a trench, often with a small commercial trencher, and burying the line 6 to 12 inches deep (the line itself consisting, typically, of PVC pipe 2" or less in diameter). For convenience of routing and construction, water lines are often installed beneath dirt road beds (a practice that significantly limits short-term impacts otherwise associated with waterline projects). Both processes would also include the use of vehicles, typically pick-up trucks operated both on road and off-road. Activities involved in utility line construction would depend on where the line is placed and, if below ground, would be similar to those of waterline construction; if above ground, would be similar to those of fence construction. Road construction would normally involve heavy equipment use (typically bulldozers) and the grading and leveling of road surfaces and shoulders with a combined width up to 30 feet. Maintenance of these facilities would consist of periodic structural repairs, clearing of vegetation and brush from facility corridors, and grading of roads, and might involve hand-clearing of vegetation, mowing (with powered riding mowers or mowing attachments), and grading (e.g., with bulldozers).

(A) Covered Activities. Include all activities normally and customarily associated with fence, waterline, utility line, and road construction and maintenance, including:

(1) For fencelines, corridor grading and preparation;

(2) For fencelines, waterlines, and utility lines, ground surface disturbances required for trench construction and digging of post-holes and utility-poles; and,

(3) All associated vehicle uses in the immediate vicinity of the fence or water line; other associated or incidental activities necessary to these tasks; and all vegetation-clearing, mowing, grading, and similar activities associated with maintenance of these facilities.

The disturbance from this type of activity should average less than 10 miles of linear facility annually over the life of the plan. The maximum width is anticipated to be approximately 30 feet, for a maximum annual disturbance of less than 4 acres from linear facilities, on average.

3.5.2.3 Stocktank Maintenance/Use

Stocktanks (i.e., artificial watering stations) typically occur in two types: above ground tanks with troughs fed from specific point water sources (e.g., springs or wells) and earthen tanks (referred to as "stockponds") typically fed by ground surface runoff. Both types of stocktank are

used and frequented by livestock, and, in the Malpai Borderlands, may also be inhabited by three of the HCP's covered species (Chiricahua and lowland leopard frogs, and Mexican gartersnakes). Stocktanks must also be periodically maintained and repaired, particularly in the case of stockponds as these must be dredged every 10 to 20 years and occasionally repaired (e.g., in the case of flood damage). Stockpond maintenance consists of clearing of accumulated sediment with a bulldozer to prevent eventual filling of the tank, periodic maintenance of banks and spillways, and installation of water bars to prevent erosion, typically involving from 4 to 10 acres of occasional ground disturbance per tank. Stockpond repair could involve similar activities depending on the extent of the problem or damage being repaired. These activities are typically undertaken when the stocktanks are dry, or nearly so.

The regulatory situation with respect to stocktank maintenance and use in the Malpai Borderlands is complicated by the occurrence of two existing regulatory authorities—MBG's existing Safe Harbor Agreement for Chiricahua leopard frog and the FWS's existing 4(d) rule for this species. Thus, stocktank-related activities are covered under the MBHCP with respect to lowland leopard frogs only, unless the regulatory coverage provided by the FWS 4(d) rule should lapse, in which case they would be covered with respect to Chiricahua leopard frogs as well.

(A) Covered Activities. In light of the above, covered activities involving stocktank use and maintenance includes all normal and customary activities associated with:

(1) livestock use of stocktanks - cattle assembling around and standing in such tanks;
(2) periodic maintenance and repair of such tanks; and
(3) all vehicle and heavy equipment use associated with such maintenance and repair.

It should be noted that in regards to the Chiricahua leopard frogs, all the activities described in subsection (1-3) above, are covered under the section 4(d) rule the FWS included in the final rule listing this species as threatened (67 FR 40790). In addition, particular population sites may be covered through enrollment in a Safe Harbor Agreement (Lehman 2004, AGFD and USFWS 2006). However, if the section 4(d) rule should terminate or lapse, it is the intent of the MBHCP that stocktank use and maintenance is a covered activity for Chiricahua leopard frogs in occupied sites not otherwise covered through enrollment in a Safe Harbor Agreement.

3.6 Role of Livestock Grazing under the MBHCP

As discussed in Section 3.5.2, the term "livestock grazing" in the MBHCP is defined as two separate sets of activities: herbivory (or the consumption of vegetation or forage by livestock); and livestock management (or the placement or movement of livestock into, through, or within particular areas). The latter activity is included in the plan as a covered ranch management activity. During development of the MBHCP, MBG, its consultants, and the MBHCP Technical Workgroup considered whether or not to also include livestock grazing (herbivory) within the MBHCP's coverage and weighed a number of factors pertinent to that decision. These factors included possible legal obligations (i.e., the extent to which herbivory is likely to result in take of the plan's covered species); and the costs or risks that coverage or non-coverage, respectively,

might introduce into the plan or into the grazing programs of Malpai-area ranchers. In the end, MBG elected not to include herbivory in the HCP. The reasons for this are explained below.

First, MBG does not believe that herbivory is likely to result in take of any of the HCP's 19 covered species. This is reason enough for its exclusion from the plan's coverage. MBG notes, in addition, that, while livestock grazing (defined as herbivory and livestock management) is obviously central to virtually all ranching operations in the Malpai Borderlands, neither it nor the covered ranch management activities are a central focus of the MBHCP. That focus, in fact, consists of the grassland improvement activities, which are most likely to result in take of the covered species and were the factors primarily triggering the decision to develop the MBHCP.

Second, MBG recognizes that over-grazing in the past has resulted in significant ecological problems in the Malpai Borderlands, and that poorly managed grazing can result in serious adverse effects on rangeland conditions and, in some cases, on threatened and endangered species. However, MBG member-ranches strive to manage their grazing programs responsibly and to maintain rangeland health in the Malpai Borderlands to the highest degree possible as evidenced by trends documented in MBG ongoing vegetation monitoring. Such goals are clearly evidenced by MBG's (and its membership's) objectives and programs and by the MBHCP in, for example: MBG's mission statement and its belief that livestock ranching is essential to preservation of the Malpai Borderlands itself; the grassland improvement measures proposed in the MBHCP; and the fact that many MBG member-ranches are parties to NRCS Cooperator Agreements and Coordinated Resource Management Plans.

Thus, while livestock grazing (herbivory) is not central to the MBHCP's purposes, nor is included within its coverage; it is an integral component of ranch and range management in the Malpai Borderlands. It is also regarded as an essential part of MBG's and MBG member-ranchers' livelihoods and culture; even, to the Malpai Borderlands itself and one that must be managed responsibly if this area is to be sustained over the long-term.

3.7 Implementing Agreement.

In addition to the MBHCP itself, MBG has prepared an Implementing Agreement (IA), which is associated with the plan and in effect extends the authorities of its associated ITP. The IA imparts to those signatories the status of MBHCP participant (Section 3.2.1); provides a mechanism through which commitments under the plan voluntarily accepted by those participants are formalized; summarizes the responsibilities of MBHCP participants (except for Malpai-area ranchers, with respect to whom all tasks otherwise served by the IA are served by the COI process; Section 5.3.2); and provides for dispute resolution procedures.

The IA for the MBHCP is attached to the plan as Appendix B and has seven signatories: the MBG; FWS; AGFD; NMDGF; NRCS; ASLD; and NMSLO.

3.8 Permit Term

The term of the MBHCP and its associated ITP is 30 years.

4.0 Biology of the Covered Species

This section presents relevant biological and life history information for each of the 19 species covered by the MBHCP. For the purposes of the plan, the covered species are categorized into four groups or assemblages based on the habitat types they typically inhabit: aquatic species; grassland species; riparian species; and montane species. These have been adopted in part for convenience, but also for two practical purposes within the plan's structure. First, they allow the plan's take minimization measures (Section 5.5) to be organized by species assemblages rather than individual species, since in most cases, the measures are the same for the species within an assemblage and with respect to a particular activity. Second, in the evaluation of the effects of the plan on the covered species (Section 7.2) they allow those effects to be generally associated with a particular habitat type, and all species within it, rather than with individual species.

Aquatic species habitats in the Malpai Borderlands consist of creeks, cienegas, ponds, and stocktanks. Montane species habitat types are found in the Animas and Peloncillo mountains. These Montane species habitats consist of Madrean evergreen woodland and Petran montane coniferous forest vegetation associations (Brown 1982). Grassland species habitats in the Malpai Borderlands consist of both Southern Arizona semidesert grassland and Upper Sonoran desert shrub associations (Brown 1982). Riparian species habitats in the area are limited to vegetation bordering a few springs and perennial streams, including Black Draw (in SBNWR), Guadalupe Canyon (on the Hadley Ranch), Astin Spring (on the Malpai Ranch) (a.k.a. Aston Springs – the founding family's name is spelled both ways in historic documents), Cottonwood and Sycamore Creeks (on the west side of the Peloncillo Mountains), Baker Canyon (a tributary to Guadalupe Canyon), Cloverdale Creek and Cienega, and the cienega at Diamond A Ranch headquarters.

4.1 Aquatic Species

4.1.1 Rio Yaqui Fish

Seven species of fish are covered by the MBHCP: Yaqui chub (*Gila purpurea*), federally listed as endangered with critical habitat on August 31, 1984 (49 FR 34490); Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*), federally listed as endangered on March 11, 1967 (32 FR 4001); Yaqui catfish (*Ictalurus pricei*), federally listed as threatened with critical habitat on August 31, 1984 (49 FR 34490); beautiful shiner (*Cyprinella formosa*), federally listed as threatened with critical habitat on August 31, 1984 (49 FR 34490); Yaqui drainage Mexican longfin dace (*Agosia* sp.) (Miller et al. 2005), which is not currently listed under the Act, but might become a candidate for future listing as a result of recent taxonomic findings (see below); Yaqui sucker (*Catostomus bernardini*), which is not listed under the Act or a candidate for listing; and Mexican stoneroller (*Campostoma ornatum*), which is also not listed under the Act or a candidate for listing.

All these fish are confined in range to the Río Yaqui Basin, a 73,000-acre watershed in southeastern Arizona and northwestern Mexico, and, in the U.S., currently occur in one or more of only six known locations: Black Draw (Río San Bernardino) and associated ponds on SBNWR, Leslie Creek (part of the San Bernardino/Leslie Creek NWR Complex); House Pond

on the privately owned Slaughter Ranch/Johnson Historical Museum of the Southwest (a Río San Bernardino tributary); Astin Spring on the privately owned Malpai Ranch immediately adjacent to the NWR; West Turkey Creek in the Chiricahua Mountains, lying partially within the El Coronado Ranch (ECR) and partially within CNF; and Rucker Creek on the CNF on the west side of the Chiricahua Mountains. Within the Malpai Borderlands, SBNWR is the primary habitat area for these fish, and is managed specifically for their benefit. In addition, Astin Spring on the Malpai Ranch has been fenced to protect the suitable fish habitat or potential habitat there (a project carried out jointly by the ranch owners and MBG). The conservation potential for all seven species in the Malpai Borderlands (in terms of protective management) is therefore currently excellent.

Yaqui chub, Yaqui topminnow, Mexican longfin dace, and others within this fish community also occur in Cajon Bonito and on Rancho San Bernardino, Sonora, Mexico just south of the Malpai Borderlands in what is probably the best remaining habitat for these species throughout their known range. These habitats are owned and managed by ranchers who are MBG cooperators, and, on Rancho San Bernardino, wetlands restoration programs are underway which will significantly improve habitat conditions for these species in this area (P. Warren, pers. comm.; B. Radke, pers. comm., respectively). None of the seven fish are currently known to occur on the east side of the Malpai Borderlands, Animas Valley and Animas Mountains).

Unless otherwise indicated, the following life history information for these species is adopted from the Río Yaqui Fish Recovery Plan (USFWS 1995); distribution information is from the sources indicated.

4.1.1.1 Yaqui Chub.

Yaqui chub live in deep pools in creeks, cienegas, and other stream-associated quiet waters. Habitat preferences vary by life stage, with young fish preferring marginal habitats and lower ends of riffles and adults preferring deep, permanent pools, undercut banks next to large boulders, debris piles, and roots of large trees (USFWS 2002a). Growth to maturity is rapid, often within the first summer of life; reproductive potential is therefore high and large populations can develop quickly from a few adults. Spawning is protracted throughout the warmer months with the greatest activity in spring. Under the right conditions, spawning can also occur during the autumn (B. Radke, pers. comm.). The Yaqui chub was near extinction in the U.S. in the late 1960s, but has survived due to considerable hatchery production, habitat acquisition, and reintroduction efforts. Critical habitat for the Yaqui chub consists of all aquatic habitats on the SBNWR; the constituent elements of critical habitat include clean, permanent water with deep pools and intermediate areas with riffles in the Río Yaqui drainage, areas of detritus or heavily overgrown cut banks, and the absence of introduced exotic fishes (49 FR 34490). In addition to their status under the Act, Yaqui chub are considered WSC in Arizona (see Table 3-2).

The Yaqui chub has a very limited geographic range, occurring only at the headwaters of the Rio Yaqui basin in Arizona and for a short distance (about 3 km) into Mexico (Miller et al. 2005). Currently, Yaqui chub occur in every perennial wetland on SBNWR (B. Radke, pers. comm.),

and in up to seven different ponds on El Coronado Ranch and throughout portions of West Turkey Creek (B. Radke, pers. comm.). They are also found in most wetlands just south of SBNWR in Mexico and can pioneer upstream during flood events. Yaqui chub have not been documented in Astin Spring for several years, but could re-occupy the site during flood conditions. In West Turkey Creek, Yaqui chub were considerably more abundant in 2000 than in 2001 (291 versus 119 adults, respectively), a consequence, evidently, of chemical and electroshock treatments undertaken in the intervening year to remove non-native fish.

4.1.1.2 Yaqui Topminnow.

Yaqui topminnow typically live in shallow, warm, quiet waters (e.g., cienegas and marshes), but can disperse through any flowing water during the warm summer months. Preferred habitats consist of dense mats of algae and debris along stream margins or in eddies below riffles. Yaqui topminnows become most abundant in marshes, especially those fed by thermal springs or artesian outflows. Females may have 20 or more young per brood and can breed at intervals of just 20 days. Reproduction occurs year round where winter temperatures are moderated by spring inflows, but under conditions of fluctuating temperature begins in early April and ends in October. Threats to the species include competition with western mosquitofish (*Gambusia affinis*), a widely introduced exotic, and plant succession (i.e., to cattail marshes) within their limited aquatic habitats. Yaqui topminnow are considered WSC in Arizona.

Yaqui topminnow are found in every wetland on SBNWR and in Astin Spring (B. Radke, pers. comm.). They also disperse readily during flood flows; for this reason, they can be found anywhere in Black Draw and its tributaries during flood seasons and can disappear from particular wetland sites only to reappear years later.

4.1.1.3 Yaqui Catfish.

Juvenile Yaqui catfish are profusely speckled, while adults are fairly unicolored, dark gray to black dorsally, white to grayish beneath. The species is usually found in large streams in areas of medium to slow current over gravel and sand substrates. Besides this information on basic habitat preference, little is known about the life history and ecology of this fish (49 FR 34490). Critical habitat for the Yaqui catfish consists of all aquatic habitats on the SBNWR, the constituent elements of which include clean, unpolluted permanent water in streams with medium current and clear pools in the Río Yaqui drainage that are free of introduced exotic fishes (49 FR 34490). Threats to the species include habitat modification and actual and potential hybridization with introduced, non-native catfishes (e.g., channel catfish and blue catfish). Yaqui catfish are considered WSC in Arizona.

The historical range of the Yaqui catfish most likely included the northernmost part of the Río Yaqui basin in Arizona and the Río Yaqui and Río Casas Grandes basins in Sonora and Chihuahua, Mexico. However, with the exception of a population of Yaqui catfish stocked in the upper Santa Cruz River in Arizona in 1899 (which persisted until the 1950s), no specimens documenting its presence in the U.S. are known. In the late 1990s, Yaqui catfish were

established on SBNWR and ECR, and today catfish exist in Twin Pond on SBNWR, in House Pond on Slaughter Ranch, and on ECR.

4.1.1.4 Beautiful Shiner.

Beautiful shiner are bluish in color when breeding, often masked with a wash of orange, pink, or yellow; non-breeding coloration is tan to olivaceous dorsally, metallic sliver laterally. The species is found in a variety of habitats, but the largest populations appear to occur in the riffles of small streams (49 FR 34490). In Mexico, it has been reported in intermittent pools or creeks which have high percentages of riffle habitat when flowing in wet periods. It is also a mid-water-column species, remaining near, but rarely within the beds of plants or other cover along pond margins. Like the Yaqui catfish, however, little else is known about the life history and ecology of this fish, although it is thought to be similar to that of the red shiner (49 FR 34490). Critical habitat for the beautiful shiner consists of all aquatic habitats on the SBNWR, the constituent elements of which include small permanent streams with riffles or intermittent creeks with pools and riffles in the Río Yaqui drainage with clean unpolluted water that is free of introduced exotic fishes (49 FR 34490). Beautiful shiner are considered WSC in Arizona.

The beautiful shiner historically occurred in the U.S. only in San Bernardino Valley in Arizona (now designated as the Yaqui form) and the Mimbres River in New Mexico (now designated as the Guzman form). In Mexico, its range includes the Río Yaqui system, Guzman basin, and Bavicora and Sauz basins. The Guzman form was extirpated in the U.S. by about 1951 and the Yaqui form by 1970; the latter, however, was re-established in SBNWR in 1990, where it has adapted well to off-channel ponds established as refugia for this and other fish species.

4.1.1.5 Mexican Longfin Dace.

Longfin dace are one of the most abundant, widely distributed native fish in the Southwest and may occur within particular habitats in very high densities. They appear to be well adapted to streams that experience periodic, high-intensity flooding and are capable of migrating upstream during floods to occupy isolated perennial stream reaches (P. Warren, pers. comm.). However, the Mexican longfin dace of the Río Yaqui drainage is of particular interest because it is considered to be an as yet undescribed variety that has a more highly restricted range than the species as a whole (Miller et al. 2005). The range of the Rio Yaqui variety includes the Sulphur Springs Valley and San Bernardino Valley in Arizona southward throughout the Rio Yaqui basin. Should this be confirmed and accepted by taxonomists, the taxon could be determined to be suitable for listing under the Act at a future time.

Mexican Longfin dace currently occur in several wetlands on SBNWR and throughout portions of Black Draw. Stronghold habitats consist of perennial portions of Black Draw on the refuge and Silver Creek just south of the refuge in Mexico (B. Radke, pers. comm.). The Mexican longfin dace also occurs in up to five ponds on ECR and throughout portions of West Turkey Creek.

4.1.1.6 Yaqui Sucker

The Yaqui sucker is typically found in small mountain and desert creeks, deep pools, and runs and rapids of medium-sized rivers. In Arizona, the species historically inhabited the deeply incised creek and headwater springs of San Bernardino Creek up to an elevation of about 7,800 feet. Relatively little is known about the life history and ecology of the Yaqui sucker, although spawning is apparently prolonged, lasting from May to mid-August. Its historical range included the Río Yaqui basin in Sonora and Chihuahua, Mexico, where it remains fairly common, and southeastern Arizona. Reported to be abundant in Astin Spring (just outside SBNWR) in 1967, the species apparently disappeared by 1969 or 1970 when the entire San Bernardino system dried up as a result of groundwater pumping.

4.1.1.7 Mexican Stoneroller

The Mexican stoneroller, a member of the minnow family, typically inhabits clear, fast riffles, chutes, and pools in moderate to high-gradient creeks and headwaters with gravel or sandy bottoms. Its range is divided into two disjunct areas—the Río Grande system of the Big Bend region in southern Texas, and the Río Yaqui system of northern Mexico and extreme southeastern Arizona. In Arizona, the Mexican stoneroller originally occurred throughout the Río Yaqui basin and was originally described in the 1880s from Rucker Canyon in the Chiricahua Mountains, where it occurred naturally. Today, the species persists in Arizona, but in small numbers and in only two locations; Rucker Canyon and San Bernardino Creek in SBNWR (AGFD 2003). Current threats to the species include aquifer pumping, reduction in stream flows, water diversion, drought, post-wildfire increased siltation, and predation by non-native green sunfish and rainbow trout. In Arizona, the Mexican stoneroller is considered a WSC, in Texas it is considered threatened, and in Mexico, endangered.

4.1.2 Chiricahua Leopard Frog

The Chiricahua leopard frog (*Lithobates* [=*Rana*] *chiricahuensis*) was federally listed as threatened on June 13, 2002 (67 FR 40790), at which time a section 4(d) rule was also promulgated exempting the prohibition against the take of Chiricahua leopard frogs for normal operations and maintenance of stocktanks on non-Federal lands (Section 5.5.3.3). Primary factors cited as the basis for listing include significant population declines as a result of destruction, alteration, and fragmentation of the species' aquatic habitats; disease; and predation by introduced aquatic predators, especially bullfrogs and predatory fish (67 FR 40790). Chiricahua leopard frogs are considered WSC in Arizona.

Unless otherwise indicated, the following information for this species is adopted from FWS (67 FR 40790).

Chiricahua leopard frogs are stout-bodied, medium-sized frogs, generally green in color. The breeding season varies with elevation, occurring between May and October at higher elevations (above 5,900 feet) and between mid February and June at lower, warmer elevations (below 5,900 feet). Chiricahua leopard frogs are generally nocturnal but are sometimes active in waterside vegetation during the day. They are capable of surprising migrations—distances of up to 5 miles

have been recorded—which allows them to move from one water source to another in response to changing habitat conditions. Dispersal occurs along drainages with permanent or semi-permanent water, along intermittent streams during wet weather, and even overland during wet weather.

Chiricahua leopard frogs inhabit a variety of aquatic habitats including cienegas, ponds, lakes, streams, and stocktanks. Stocktanks are an important, even critical, habitat resource for leopard frogs, accounting for 38 percent of occupied aquatic sites rangewide in surveys conducted between 1994 and 2001, and, in Arizona, for fully 63 percent of occupied sites; it is for this reason that FWS established the section 4(d) rule noted above.

The historical range of the Chiricahua leopard frog roughly encompassed central and southeastern Arizona, west-central and southwestern New Mexico, and portions of northern Mexico. Today, it occurs in two distinct areas in the U.S.: a southern group of populations located in mountains and valleys south of the Gila River in southeastern Arizona, extreme southwestern New Mexico, and Mexico; and northern montane populations in west central New Mexico and along the Mogollon Rim in central and eastern Arizona. In the Malpai Borderlands, known populations of Chiricahua leopard frogs currently occur only in the SBNWR, at the Rosewood Tank on the Magoffin Ranch, in two stock tanks on the Diamond A Ranch, and in a pond on the Cañocito Ranch (P. Warren, pers. comm.; J. Stuart, pers. comm.).

4.1.3 Lowland Leopard Frog

The lowland leopard frog (*Lithobates* [=*Rana*] *yavapaiensis*) is not currently listed under the Act nor is it a candidate species, but it is considered by the FWS to be a species of concern. This designation consists, generally, of species that the FWS termed category 2 candidate species prior to 1996, at which time it revised the candidate classification system and dropped category 2 candidates. Today, only what were previously termed category 1 candidates in most cases remain designated as candidate species (61 FR 7595). The lowland leopard frog is listed as endangered by the State of New Mexico and is considered WSC in Arizona.

The lowland leopard frog is a medium-sized frog, tan or brown to tan-brown in color, sometimes with greenish highlights. It is distinguished from the Chiricahua leopard frog by its lack of the "salt and pepper" thigh pattern. Lowland leopard frogs breed from February through April and occasionally (during relatively wet years) into autumn; eggs are laid in late winter and early spring and tadpoles usually transform into frogs from June to August. Like the Chiricahua leopard frog, lowland leopard frogs are known to migrate fairly long distances from one water body to another; dispersals up to three miles have been recorded (RECON 2002).

Lowland leopard frogs are found primarily in small to medium-sized streams, but also occur in small springs, stocktanks, and occasionally larger rivers. They have also been propagated in backyard pools and school ground projects (RECON 2002). Lowland leopard frogs on average are found at lower elevations than Chiricahua leopard frogs, generally occurring below 5,500 feet and usually below 3,000 feet.

The historical range of the lowland leopard frog included the lower Colorado River and its tributaries in Nevada, California, Arizona, and New Mexico, and northern Sonora and extreme northeastern Baja California, Mexico. Today, it is extirpated from California and possibly Nevada, likely as a result of factors similar to those affecting Chiricahua leopard frogs. In Arizona, lowland leopard frogs occur in the central, southwestern, southeastern, and extreme northwestern parts of the state. In the Malpai Borderlands, on the Arizona side, they have been documented on SBNWR, adjacent private lands, and Rancho San Bernardino (just south of the refuge in Sonora, Mexico); and, on the New Mexico side, in Guadalupe Canyon—all within the past two years (B. Radke, pers. comm.; Jim Stuart, pers. comm., respectively).

4.1.4 Northern Mexican Gartersnake

The northern Mexican gartersnake (*Thamnophis eques megalops*) is not currently listed under the Act, but is considered by the FWS to be a species of concern. It is listed as endangered by the State of New Mexico and is considered WSC in Arizona. Threats to the species include loss and degradation of its aquatic habitats as a result of dewatering, channel modification, conversion of habitats for agricultural use, poorly managed grazing, and other activities; introduction of non-native aquatic predators (especially bullfrogs) into those habitats; and over-collection (71 FR 56228).

The northern Mexican gartersnake, like most gartersnakes, is aquatic and has a viviparous or ovoviviparous reproductive strategy (i.e., bears live young). It is primarily a Mexican species, with only the extreme northern end of its range occurring in the United States. Its historical range extended from central Arizona and southwestern New Mexico, south along western Mexico to Oaxaca in southern Mexico. In recent decades, however, northern Mexican gartersnakes appear to have become increasingly rare and patchily distributed within the U.S. portion of their range. For example, since the late 1980s, northern Mexican gartersnakes have been known from only three localities in New Mexico (two in Grant County and one in Hidalgo County) and one locality in Arizona (SBNWR, Cochise County). However, surveys conducted at the three New Mexico locations in the last few years have yielded no records of the snake (NMDGF 2002), while only a single adult female has been observed on SBNWR in recent years (in 2005) (B. Radke, pers. comm.). Precisely what this means is not clear, however. Small numbers of northern Mexican gartersnakes may still occur in any of these locations or in other, unreported locations. Their apparent disappearance from three previously occupied habitat areas might also signal a general continuing decline of the species within the U.S. portion of its range.

Northern Mexican gartersnakes are associated with a variety of vegetation associations (including pine and oak woodlands, grasslands, and shrublands) and use terrestrial, underground dens as winter hibernation sites; however, they are essentially aquatic animals, occurring throughout most of the year in and immediately adjacent to relatively permanent surface waters and associated riparian vegetation. Aquatic habitats typically inhabited consist of wetlands, marshes, and streams characterized by standing or slow-moving shallow water and vegetated banks. Northern Mexican gartersnakes are typically found between about 3,400 and 5,400 feet in elevation.

4.1.5 Huachuca Water Umbel

The Huachuca water umbel (*Lilaeopsis schaffneriana* ssp. *recurva*) was federally listed as endangered on January 6, 1997 (62 FR 665). Critical habitat for the species was designated on July 12, 1999 (64 FR 37441), but does not include any area within the Malpai Borderlands. Factors cited for listing were collecting, disease, predation, competition with non-native species, and degradation and destruction of habitat resulting from livestock overgrazing, water diversions, dredging, and groundwater pumping (62 FR 665). The Huachuca water umbel has the status of HS in Arizona (Table 3-2).

Unless otherwise indicated, the following information for this species is adopted from FWS (62 FR 665).

The Huachuca water umbel was first described in 1881 based on the type specimen collected near Tucson, Arizona. The Huachuca water umbel is an herbaceous, semi-aquatic, perennial plant with slender leaves that grow from creeping rhizomes. Three to ten very small flowers are borne in an umbel that is always shorter than the leaves. The species reproduces sexually through flowering and asexually from rhizomes, with the latter probably being the primary reproductive form. As a result, while the extent of occupied *Lilaeopsis* habitat can be ascertained, the number of individual plants in a population is nearly impossible to determine because of the intermeshing nature of the rhizomes; thus, a *Lilaeopsis* population can be composed of one or many individuals.

The Huachuca water umbel occurs in cienegas (mid-elevation wetland communities usually surrounded by relatively arid environments) and along streams and rivers at mid elevations from 3,500 to 6,500 feet. These aquatic environments are extremely rare in the desert southwest and much reduced from their historical abundance (about 10% remaining), and the Huachuca water umbel is correspondingly rare. This species has an opportunistic strategy, however, generally occurring in upper watersheds that do not experience scouring floods and in micro-sites where interspecific plant competition is low. *Lilaeopsis* grows on wetted soils along the periphery of the channel or in small openings in the understory. In stream and river habitats the species can occur in backwaters, side channels, and nearby springs. If the stream channel is flooded, this species can rapidly expand its population and occupy disturbed habitat until interspecific competition exceeds its tolerance. The expansion and contraction of *Lilaeopsis* populations appears to depend on the presence of refugia where the species can escape the effects of scouring floods, a watershed that has an unaltered hydrograph, and a healthy riparian community that stabilizes the channel. The density of *Lilaeopsis* plants and size of *Lilaeopsis* populations fluctuate in response to both flood cycles and site characteristics. Thus, some sites have only a few sparsely distributed plants while others exhibit dense mats of the species.

As of its listing in 1997, the Huachuca water umbel had been documented in 22 sites in Santa Cruz, Cochise, and Pima counties, Arizona, and in adjacent Sonora, Mexico west of the continental divide. The plant had been extirpated from six of those sites, however, and the remaining sites occur in four major watersheds—the San Pedro River (nine sites), Santa Cruz River (four sites), Río Yaqui basin (two sites), and Río Sonora basin (one site). One of the two

Río Yaqui basin populations occurs in the San Bernardino/Leslie Creek NWR Complex, where the species occurs naturally in Leslie Creek. Patches of the plant were recently transplanted from Leslie Creek into Black Draw on SBNWR, the outlet of Twin-II Pond, and the upstream end of Twin-II Pond in an effort to ensure the persistence of Huachuca water umbel on the Refuge. The patches in Twin-II Pond were outcompeted and essentially eliminated by other native wetland species, but the Black Draw patches are still viable (W. Radke, pers. comm.). The species also naturally colonized one pond on the refuge, although this population decreased as plant competition around the pond increased.

4.2 Grassland Species

The term "grassland community" or "grassland species habitat" is defined to include areas within the Malpai Borderlands that are typically below 5,000 feet in elevation, contain relatively gentle slopes to rolling hills down into valley bottoms. This vegetation community is dominated by grass species with forbs and sparse shrub cover. In some areas, shrubs, such as mesquite, have become the dominant cover in this vegetation community. Grassland communities are typically bordered by montane communities at higher elevations and are dissected by drainages and arroyos, some with xeroriparian to mesoriparian vegetation. With respect to the Malpai Borderlands, such areas specifically include: the San Bernardino Valley, the Animas Valley, and the Playas Valley.

4.2.1 Northern Aplomado Falcon

The northern aplomado falcon (*Falco femoralis septentrionalis*) was federally listed as endangered on March 27, 1986 (51 FR 6686). Critical habitat for the species has not been designated. Factors cited for listing were habitat degradation (i.e., brush encroachment into open rangeland habitats) and contamination with organochlorine pesticides (51 FR 6686). The northern aplomado falcon is also listed as endangered by the State of New Mexico and is considered WSC in Arizona. In 2006, a proposal to re-establish northern aplomado falcon populations in New Mexico and Arizona was finalized. This plan includes re-introduction of captive-bred northern aplomado falcons in New Mexico in cooperation with willing landowners and managers over the next 10 years. As part of this effort, FWS designated any northern aplomado falcons that re-establish in New Mexico or Arizona as "non-essential experimental" under the section 10(j) rule of the Act (71 FR 42298). Under section 9 of the Act, a population designated as experimental is treated as threatened, regardless of the species designation elsewhere in its range. In conjunction with the designation of the non-essential experimental population, a section 4(d) rule was promulgated to enhance survival of the species. This section 4(d) rule exempted any incidental take, within the boundaries of the non-essential experimental designation, from the section 9 prohibitions against take of this species (71 FR 42298).

Unless otherwise indicated, the following information for this species is adopted from FWS (51 FR 6686).

The northern aplomado falcon is a colorful bird of prey intermediate in size between the kestrel and peregrine falcon. The species appears to be non-migratory throughout its range. Nesting chronology appears to be variable, with egg-laying recorded from January to September,

although eggs are usually laid in April or May. Northern aplomado falcons do not build their own nests, but use nest sites constructed by corvids (e.g., Chihuahuan ravens) and other raptors. Nest sites are found in structures such as multi-stemmed yuccas and large mesquite trees, as well as other trees. Northern aplomado falcons feed on a variety of prey including birds, insects, rodents, small snakes, and lizards. In eastern Mexico, birds account for 97 percent of total prey biomass, but insects represented 65 percent of prey individuals (Hector 1985). In one study, 82 bird species were accounted for in prey remains; of these, the most common were meadowlarks, common nighthawks, northern mockingbirds, western kingbirds, brown-headed cowbirds, Scott's oriole, mourning doves, cactus wrens, and pyrrhuloxia, suggesting a preference for medium-sized songbirds(USFWS 2002a). Documented invertebrate prey includes grasshoppers, beetles, dragonflies, cicadas, crickets, butterflies, moths, wasps, and bees (USFWS 1990). Based on several studies, the USFWS (2002a) estimates northern aplomado falcon home range size to be about 8,400 acres. For management purposes this can be described by a circle with a radius of two miles around a particular habitat feature (e.g., a nest site).

Northern aplomado falcon habitat is variable throughout its range and includes palm and oak savannahs, various desert grassland associations, and open pine woodlands. Within these variations, the essential habitat elements appear to be open terrain with scattered trees, relatively low ground cover, an abundance of insects and small to medium-sized birds, and a supply of nest sites. The historical range of the northern aplomado falcon in New Mexico and Arizona occurred in the Chihuahuan Desert, which is comprised of three basic community types; desert scrub, desert grassland, and woodland. Northern aplomado falcons are primarily associated with grasslands, although small patches of scrub and woodland may be used (USFWS 2006).

Historically, the northern aplomado falcon occurred in southern New Mexico, southeastern Arizona, southern Texas, much of Mexico, and the western coast of Guatemala. It was extirpated from the U.S. as a breeding species by the 1950s. Formal surveys and reliable sightings submitted to FWS show that a small number of northern aplomado falcons have been sighted in the United States during every decade since the 1960s (71 FR 42298). In addition, a resident pair of northern aplomado falcons in Luna County, New Mexico bred successfully in 2002, fledging three young. Another pair was reported near this site in 2002, but no nest was located and only one pair was present 2 days later (Meyer and Williams 2005). The 2002 nest represented the first successful reproduction by naturally occurring northern aplomado falcons in the U.S. in 50 years. Meyers and Williams (2005) reported at least eight individual falcons in Luna County between 2000 and 2004. The species occurred historically in Hidalgo County, and there have been five reports of northern aplomado falcons in or near the Animas Valley from the 1990s through the early 2000s (Meyer and Williams 2005). These sightings suggest that suitable habitat is likely to occur in the Malpai Borderlands for northern aplomado falcons to potentially nest there in the future. It is also likely that some landowners in the New Mexico portion of the Malpai Borderlands would participate in the reestablishment program being implemented under the non-essential experimental population designation (71 FR 42298). Figure 5-1 in Section 5.4.1.1 depicts what is considered to be suitable or potential northern aplomado falcon habitat in the Malpai Borderlands.

4.2.2 Black-tailed Prairie Dog

The black-tailed prairie dog (*Cynomys ludovicianus*), formerly designated by the FWS as a candidate species, was removed from the candidate list (Table 3-2) in 2005 because it has been found to be more abundant or widespread than previously believed and is not subject to the degree of threat sufficient to warrant continuing candidate status or issuance of a proposed or final listing (70 FR 24870). The black-tailed prairie dog is considered a WSC in Arizona.

The black-tailed prairie dog is one of five prairie dog species occurring in North America, two of which are already listed under the Act. Prairie dogs are fossorial and highly social, living in aggregations called colonies or towns (groups of colonies are called complexes) and excavating extensive systems of underground burrows. Historically, black-tailed prairie dog colonies numbered in the many thousands and covered hundreds of thousands of acres. Prairie dog towns are an ecosystem unto themselves and many other species are often associated with and benefit from them, including black-footed ferrets, ferruginous hawks, and burrowing owls. Black-tailed prairie dogs are diurnal, spending most of their day above ground. Unlike white-tailed, Gunnison's, and Utah prairie dogs they do not hibernate, but are active year-round. Black-tailed prairie dogs crop the vegetation in and around their colonies very close to the ground and often girdle and kill brush. The results, generally, are low-growing vegetation, a high percentage of bare ground, and an absence of brush in and around prairie dog colonies.

The historical range of the black-tailed prairie dog included portions of 11 states, Canada, and Mexico and may have encompassed as much as 600,000 square miles and 100 million acres of occupied habitat (65 FR 5476). Today, the species is found in 10 states; including: Colorado, Wyoming, Montana, North Dakota, South Dakota, Kansas, Nebraska, Oklahoma, Texas, and New Mexico. Significant contractions have occurred to this species' range around the eastern and southwestern periphery of the historical range. Prairie dog complexes within the remaining range are small and widely scattered. This is primarily the result of three factors: conversion of rangelands to agriculture (about 1880-1920); large-scale control and eradication efforts (about 1918-1972); and the arrival of sylvatic plague within the species' range (beginning in the 1940s). As a result, the black-tailed prairie dog's overall historical range has contracted by about 20 percent, occupied habitat has declined by about 99 percent (from approximately 100 million acres to less than one million), and only seven black-tailed prairie dog complexes larger than 10,000 acres in size remain rangewide (65 FR 5476).

In Arizona, black-tailed prairie dogs historically occurred in the southeast corner of the state south of the Gila River and east of the Santa Cruz River. They were extirpated from the state by the 1930s (65 FR 5476). The species still occurs in New Mexico, but only in scattered remnant populations and primarily east of the Pecos River (65 FR 5476). In the Malpai Borderlands, large numbers of black-tailed prairie dogs were historically reported in the Animas and Playas valleys (New Mexico Black-Tailed Prairie Dog Working Group 2001), but these valleys are no longer occupied. The remnants of a colony were documented on the Alamo Hueco Ranch a few hundred yards east of the boundary with the Diamond A Ranch (Ben Brown, pers. comm.). In 2000, the Animas Foundation initiated an experimental reintroduction of black-tailed prairie dogs onto Diamond A Ranch. A total of 100 individuals were introduced onto four sites at

McKinney Flats on the southeast corner of the ranch. Three of these introduced colonies have survived for five years and are reproducing (P. Warren, pers. comm.).

4.2.3 Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is not currently listed under the Act but is considered by the FWS to be a species of concern (Table 3-2).

The western burrowing owl is a small to medium-sized owl with long legs and prominent spotting and barring. It is a semi-fossorial species that lives and nests in the abandoned burrows of prairie dogs, ground squirrels, foxes, badgers, and other burrowing mammals, which it enlarges or modifies by digging with its feet. Although nocturnal, burrowing owls often perch conspicuously during daylight hours at the entrance to their burrows or on low nearby posts. Burrowing owls nest singly or in pairs, and are often clustered in small colonies. Western burrowing owl flight is low, undulating, and often hovering like that of the kestrel.

Western burrowing owls typically inhabit grasslands, prairies, and open shrublands dominated by mesquite, yucca, and cactus at low (2,800 to 5,500 feet) to middle (5,000 to 7,500 feet) elevations. They are often associated with prairie dog communities, apparently because of the abundance of burrows in such areas. They also occur in open areas near human activities and habitations such as golf courses, airports, agricultural areas, and undeveloped lands in or near urban areas.

Generally, western burrowing owls breed in North America, but winter south of the U.S./Mexican border from Mexico south to Guatemala and El Salvador. The historical range of the species includes Arizona, California, Colorado, Idaho, Iowa, Kansas, Louisiana, Minnesota, Montana, North Dakota, Nebraska, New Mexico, Nevada, Oklahoma, Oregon, South Dakota, Texas, Washington, Wyoming, Canada, and Mexico. In Arizona and New Mexico, they are generally considered uncommon, but locally abundant. During a 2001-2002 survey conducted by the AGFD, burrowing owls were observed at 19 percent of 150 previously known sites checked (Brown and Mannon 2002). Most of these were observed along the lower Colorado River near Yuma, Arizona, where they were often associated with burrows along concrete-lined irrigation canals. According to this survey, microhabitats used by owls in order of decreasing occurrence were irrigation canal, prairie dog town, creosote flat, canal/levee, pasture, grassland, and fallow field.

In the Malpai Borderlands area, western burrowing owls are permanent residents and breed in the Animas Valley and in the McKinney Flats prairie dog reintroduction area on Diamond A Ranch. They have also been observed in San Bernardino Valley and on SBNWR, and on some private and state land within the valley. They are often reported to be associated with banner-tail kangaroo rat dens or mounds (D. Decker, pers. comm.). Figure 5-2 in Section 5.4.1.1 shows a generalized depiction of burrowing owl habitat in the Malpai Borderlands.

4.2.4 White-sided Jackrabbit

The white-sided jackrabbit (*Lepus callotis*) is not currently listed under the Act but is considered by the FWS to be a species of concern. It was listed as threatened by the state of New Mexico, on January 24, 1975.

The white-sided jackrabbit is one of four species of hares (Family Leporidae) occurring in New Mexico, which include the black-tailed jackrabbit (*L. californicus*), white-tailed jackrabbit (*L. townsendii*), and the snowshoe hare (*L. americanus*). The black-tailed jackrabbit occurs in sympatry with the white-sided taxon. The two species can be distinguished by the patterning of black and white on the ears; *L. callotis* has conspicuously white-tipped dorsal ear surfaces with the anterior ear surface conspicuously dark, while the opposite is true in *L. californicus*. Both species are able to expose varying amounts of white fur on their sides and flanks, but in the white-sided jackrabbit this pelage is more extensive and striking.

In New Mexico, white-sided jackrabbits are observed almost unvaryingly in pairs, and of three known pairs of the species collected in the state, all consisted of a male and a female (Bednarz 1977), suggesting that mated animals remain together on a long-term basis. Pair bonds may serve to ensure the sexes stay together all year, because densities of the species are generally low (Dunn et al. 1982). Daytime observations of white-sided jackrabbits are uncommon as the species is primarily nocturnal (NMDGF files). Dunn, et al. (1982) reported the minimum breeding season for white-sided jackrabbits to be 18 weeks (mid-April to mid-August). Several litters are probably produced each year, with litter size appearing to average 2.2 young (Bednarz 1977). White-sided jackrabbits apparently spend the daylight hours concealed in depressions or scrapes scratched out from the bases of grass clumps, observations of the species at that time are typically of animals flushed from cover. In New Mexico, white-sided jackrabbits feed primarily on sedge nutgrass, a sedge species, and various shortgrass species including buffalo-grass (Bednarz 1977). Sedge nutgrass is the only non-grass item found in significant amounts in the animal's diet (NMDGF files).

In the U.S. portion of the species' range, white-sided jackrabbits appear to be a virtual obligate of grasslands (Conley and Brown 1977, Bednarz 1977). In the Animas and Playa Valleys, plants common in areas inhabited by this species include blue grama, black grama, tobosa, buffalo grass, wolftail, flatsedge, snakeweed, soap-tree yucca, and honey mesquite. More than 97 percent of all observations of this species have been in pure grasslands and less than 3 percent in grasslands with varying amounts of forbs and shrubs (Bednarz and Cook 1984). While the white-sided jackrabbit shares its range with the black-tailed jackrabbit, the two generally occupy different habitats (Conway 1976, NMDGF files), with white-sided jackrabbits being found in areas of pure grassland to the virtual exclusion of its congener. In areas where grassland is invaded by shrubs and forbs, *L. californicus* outnumbers *L. callotis* proportional to the extent of invasion.

White-sided jackrabbits ranges from extreme southwestern New Mexico, southward across the Mexican Plateau to Oaxaca, including approximately 18 Mexican states. The subspecies occurring in New Mexico (*L. c. gaillardi*) (Hall 1981) also occurs southward through the Mexican Plateau in Chihuahua (Anderson 1972), Durango (Baker and Greer 1962), and probably

Sonora (Carie 1997). The other subspecies (*L. c. callotis*) is confined to Mexico and occurs south of *L. callotis gaillardi*. In New Mexico, white-sided jackrabbits are found only in the Animas Valley on Diamond A Ranch and in limited parts of the southern Playas Valley east of Diamond A Ranch in southern Hidalgo County (Bednarz 1977). New Mexico is the only place in the U.S. where the species occurs.

White-sided jackrabbits are highly elusive and were reported only a few times after the species was discovered in 1892 along the U.S./Mexican border (Mearns 1895). Two were later collected in the Playas Valley in 1931 (Anderson and Gaunt 1962). During investigations conducted between May and August 1976, Bednarz (1977) speculated that the number of white-sided jackrabbits in the Animas Valley was 250 to 300 individuals. Five years later, surveys revealed that sightings of black-tailed jackrabbits had increased 2½ times and sightings of desert cottontails (*Sylvilagus audubonii*) by about four times, while white-sided jackrabbit sightings had decreased to approximately half of the mean reported by Bendarz (1977). Bednarz and Cook (1984) postulated that numbers of *L. callotis* had decreased as the density and vigor of grasses declined, while *L. californicus* and *S. audubonii* numbers increased in response to an increase in forb and shrub cover. Overall, the status of this species in New Mexico as well as its far broader Mexican range is unclear. In New Mexico, loss or degradation of grassland habitat within its restricted range is the primary threat to white-sided jackrabbits.

4.3 Riparian Species

The term “riparian community” or “riparian species habitat” is defined to include those areas within the Malpai Borderlands having sufficient surface or groundwater to support relatively complex associations of deciduous vegetation, including species such as Ash, walnut, cottonwood, and willows for example. Herbaceous-dominated wetlands, known locally as cienegas, are also included in this category. Riparian communities can occur at any elevation and the vegetation in a particular riparian patch often reflects the surrounding vegetative community. Such areas specifically include, but are not necessarily limited to: (i) Black Draw (SBNWR); (ii) Astin Spring (Malpai Ranch); (iii) Guadalupe Canyon (Hadley Ranch); (iv) Cottonwood and Sycamore creeks (westside of Peloncillo Mountains); (v) Baker Canyon (tributary to Guadalupe Canyon); (vi) Clanton Draw; and (vii) the cienega at Diamond A Ranch headquarters.

4.3.1 Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is not currently listed under the Act; however, in 2001, in response to a petition to list the species, the FWS determined two things: that the yellow-billed cuckoo in the western U.S. met the FWS’s criteria as a Distinct Population Segment (DPS); and that the petitioned listing with respect to the DPS was warranted, but precluded by higher priority listing actions (66 FR 38611). The western yellow-billed cuckoo DPS is therefore currently designated by the FWS as a candidate species and is considered WSC in Arizona.

Unless otherwise indicated, the following information for this species is adopted from FWS (66 FR 38611).

The western yellow-billed cuckoo is a medium-sized bird with a slender, long-tailed profile and a fairly stout, down-curved bill. It is a member of the family Cuculidae, all of which share the common feature of a zygodactyl foot in which two toes point forward and two point backward.

Nesting in western yellow-billed cuckoos occurs almost exclusively near water and typically in relatively large blocks of riparian habitat with cottonwoods and willows. Dense understory foliage appears to be an important factor in nest site selection, while cottonwoods appear to provide important foraging habitat. Yellow-billed cuckoos feed on katydids, caterpillars, and other large insect prey. Although they usually raise their own young, yellow-billed cuckoos are facultative brood parasites, occasionally laying their eggs in the nests of other bird species or other yellow-billed cuckoos. Development of the young is very rapid, with a breeding cycle of just 17 days from egg-laying to fledging of young. Yellow-billed cuckoo nesting peaks later than in most co-occurring bird species (mid-June through August) and nesting densities are relatively high, ranging from 1 to 15 pairs per 40 hectares (99 acres) in a New Mexico study and from 8.2 to 26.5 pairs per 40 hectares in an Arizona study. Western yellow-billed cuckoos are typically inconspicuous during breeding, except when calling to attract or communicate with mates.

The western yellow-billed cuckoo historically bred throughout western North America from southern British Columbia to Mexico. This species was widespread and locally common in California and Arizona, locally common in a few river reaches in New Mexico, locally common in Oregon and Washington, and locally uncommon in scattered drainages in the arid and semi-arid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah. However, the species has declined substantially in the west over the past fifty years in both range and population numbers. Today, the northern limit of breeding in the coastal states is in the Sacramento Valley, California and in the western interior states is southern Idaho. The species over winters from Columbia and Venezuela south to northern Argentina.

Among states west of the Rocky Mountains, Arizona probably contains the largest remaining western yellow-billed cuckoo population; in a 1999 statewide survey, 168 yellow-billed cuckoo pairs and 80 single birds were recorded. This is substantially below previous estimates for the state, including a 1976 estimate of 846 pairs for the lower Colorado River and five major tributaries. This is likely attributable to widespread losses of the species' riparian woodland habitats in the state, currently estimated at only about 10 percent of their historical abundance. In New Mexico, western yellow-billed cuckoos remained fairly common in the mid-1980s along the Río Grande River between Albuquerque and Elephant Butte Reservoir and along the Pecos River in southeastern New Mexico. However, a recent status review concluded that continuing declines of the species in the state are likely due, as in Arizona, to loss of riparian woodland habitats.

In the Malpai Borderlands, western yellow-billed cuckoos were first recorded in 1999at the SBNWR, where they are a regular nesting species; in the San Bernardino Valley west of and also within, Guadalupe Canyon; and near the Malpai area in the town of Portal in the Chiricahua Mountains. Figure 5-3 (Section 5.4.1.1) shows the location of riparian areas in the Malpai

Borderlands where yellow-billed cuckoos either have occurred or where the habitat is considered suitable for the species.

4.3.2 Western Red Bat

The western red bat (*Lasiurus blosseveillii*) is not currently listed under the Act, but is considered by the FWS to be a species of concern. In Arizona, it is considered WSC and is protected through Order 14 of the Arizona Game and Fish Commission (as are all bats) and cannot be taken, alive or dead, nor imported, exported, or otherwise possessed without a special permit. The primary threat to the species is probably past and present loss of broad-leaf riparian communities throughout its range.

Unless otherwise indicated, the following information on this species is from USFWS (2002b) and the Arizona Game and Fish Department website (http://www.azgfd.gov).

The western red bat is a medium-sized bat with short, round ears and dense shaggy fur. The pelage ranges from yellow-brown to bright orange with white-tipped hairs and a white bib beneath the neck. The wing membranes are jet black and the wingspan averages about 12 inches. As a result of recent genetics studies, the western red bat is now considered to be a separate species from the eastern red bat (*Lasiurus borealis*).

Unlike other bat families, many members of the Vespertilionidae Family, including the western red bat, roost in trees and migrate south for winter. Roosts are typically 5 to 35 feet from the ground, are shaded from above and are open below, allowing the bats to drop into flight. Western red bats emerge from their roosts one to two hours after dark and forage on moths, beetles, and other flying insects and usually remain within approximately 1,000 yards of the roost. They usually forage solitarily, although females and offspring occasionally forage in groups. Western red bats mate between August and October; however, like most North American bats, the female stores sperm until spring, when fertilization occurs. Gestation lasts approximately 65 days and young are born between mid-May and June. Litters range from 1 to 5 pups (averaging 2), which begin flying when 3 to 4 weeks old. In late fall, western red bats are thought to migrate to the southern part of their range, where most hibernate.

The habitat of western red bats is mid-elevation broad-leafed woodlands, particularly riparian areas with mature deciduous trees such as sycamores and cottonwoods, which are important roost areas. The species has an extensive, but patchy distribution and has been documented in New Mexico, Arizona, Texas, Utah, Nevada, and California. With the exception of California, however, actual records of western red bats are very limited. During the winter, the species occurs in the lower latitudes of Central and South America. In Arizona and New Mexico, western red bats are known to occupy areas from approximately 2,400 to 7,200 feet in elevation. In the Malpai Borderlands, a population of western red bats occurs in Double Adobe Creek on Diamond A Ranch, which is the only known population in New Mexico (L. Lewis, USFWS, pers. comm.). In the Arizona side of the Malpai Borderlands, a western red bat was captured and photographed by Sarah L. Schmidt on SBNWR at the Hay Hollow Wash windmill during August of 1996.

4.4 Montane Species

The term "montane community" or "montane species habitat" is defined to include areas within the Malpai Borderlands that are typically above 5,000 feet in elevation, contain relatively rugged, steep terrain dissected by canyons and ridges, and consist primarily of forested areas. With respect to the Malpai Borderlands, such areas specifically include: the Peloncillo Mountains (which run south-to-north through the center of the area, straddling the Arizona/New Mexico border); and the Animas Mountains (located in the southeast quarter of the Diamond A Ranch).

4.4.1 New Mexico Ridge-nosed Rattlesnake

The New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*) was federally listed as threatened on August 4, 1978 (43 FR 34479). Critical habitat was designated concurrently with listing and consists of Bear, Spring, and Indian canyons in the Animas Mountains between 6,048 and 8,320 feet in elevation. Primary factors cited as the basis for listing include habitat loss and modification within the species' range (including the possibility of catastrophic, stand-replacing fires), and collection. Collecting in the Animas Mountains between 1961 and 1974 may have totaled as many as 130 individual snakes and may have significantly affected that population (USFWS 2002a). The New Mexico ridge-nosed rattlesnake is listed as endangered by the State of New Mexico.

The New Mexico ridge-nosed rattlesnake is a small, montane species, one of five ridgenose rattlesnake subspecies known from the U.S. southwest and western Mexico. Adult females bear live young, probably in late June to August; mean litter size is five (USFWS 2002a). New Mexico ridgenose rattlesnakes appear to move less frequently, move relatively short distances, and show high fidelity to specific dens or shelters compared to other rattlesnakes (USFWS 1997). They are most likely dormant during the winter months.

New Mexico ridge-nosed rattlesnakes are found in steep, rocky canyons with intermittent streams and on talus slopes at elevations ranging from approximately 5,000 to 8,500 feet. Access to rock shelters with moderate interstitial spaces is probably a key habitat component. At lower elevations, this species probably occurs primarily in the bottoms of steep, heavily wooded canyons while at higher elevations they may be found in woodlands, open woodlands, and chaparral on exposed slopes and plateaus (USFWS 2002a). In both cases mature woodlands appear to be an essential habitat element.

New Mexico ridge-nosed rattlesnakes currently occur in only three known populations—the Animas and Peloncillo mountains in southwestern New Mexico and southeastern Arizona, and the Sierra San Luis in Sonora and Chihuahua, Mexico. In the U.S., the largest known population occurs in the Animas Mountains. The species was not discovered in the Peloncillo Mountains until 1987; since then, 27 individual snakes have been documented within 13 general areas running from upper Miller Canyon at the southern end of the range to South Skeleton Canyon at the northern end. Generally, ridge-nosed rattlesnakes in the Animas Mountains are more abundant, occur at higher elevations, and are easier to find than in the Peloncillo Mountains, which are drier and lower. Encounter rates in the Animas Mountains have been reported at one snake per 4.4 person-days of search time (Holycross 1995), and in the Peloncillo Mountains

encounter rates are reported at one snake per 33 person-days (Holycross in USFWS 2002a). Also, ridge-nosed rattlesnakes in the Animas Mountains are often found in association with talus slopes, while such slopes are apparently absent from the Peloncillo Mountains. In the Peloncillo Mountains, ridge-nosed rattlesnakes have not been found above about 6,200 feet in elevation; in the Animas they occur up to 8,500 feet.

4.4.2 Mexican Spotted Owl

The Mexican spotted owl (*Strix occidentalis lucida*) was federally listed as threatened on March 16, 1993 (58 FR 14248). The primary factors cited for listing were habitat alteration as a result of timber management practices, specifically, even-aged management and the danger of catastrophic wildfire (58 FR 14248). It is considered a WCS in Arizona and a Species of Concern in New Mexico. Critical habitat for the species was first designated on February 1, 2001 (66 FR 8530); however, the designation did not include USFS lands in Arizona and New Mexico (a result of certain forest management commitments made by the agencies in those states) or other lands within the Malpai Borderlands. Critical habitat for Mexican spotted owl was redesignated on August 31, 2004 and does not include any portion of the Malpai borderlands (69 FR 53182).

The Mexican spotted owl is distinguished from the northern and California subspecies of this taxon by geographic distribution (see below) and plumage. The Mexican subspecies has larger and more numerous spots, which gives it a lighter appearance. Mexican spotted owl breeding chronology varies somewhat across its range. In Arizona, courtship begins in March, with eggs laid in late March or early April. Hatching occurs in early May, and nestlings fledge 4 to 5 weeks after hatching. Dispersal occurs in mid-September (USFWS 2002a). Seasonal movement patterns are variable, with some individuals remaining in their territories year round, others remaining in the same general area but exhibiting shifts in habitat-use patterns, and still others migrating considerable distances (up to 30 miles) from higher-elevation summer nesting habitat to lower-elevation, more open habitats in the winter (USFWS 2002a). Mexican spotted owl nesting typically occurs between 4,000 feet and 9,000 feet in elevation.

The Mexican spotted owl's range is the largest of the three subspecies, encompassing much of the southwestern U.S. and northwestern Mexico. Distribution within the range is scattered and local, generally corresponding to isolated, high- and mid-elevation mountain and canyon ecosystems within an otherwise arid landscape. Habitat use varies both within the species' range and with respect to owl activity. In the northern part of the range (Utah, southern Colorado, and northern Arizona and New Mexico), owls occur primarily in steep-walled, rocky canyons (USFWS 2002a). Farther south, habitat use is less restricted, with Mexican spotted owls occurring in mixed-conifer, ponderosa pine-Gamble oak, Madrean pine-oak, and Arizona cypress forests, and rocky canyons, as well as encinal oak and associated riparian woodlands. Nesting habitat typically consists of rocky canyons or areas with relatively complex forest structures (e.g., uneven-aged, multi-storied mature, or old-growth stands with high canopy closure), with nests apparently occurring most often in Ponderosa pines (USFWS 2002a). Roosting habitat appears to include a wider variety of tree species than nesting, and, similarly, foraging habitat a wider variety of trees than roosting.

In the Malpai Borderlands the species has been reported from forested canyons in the Peloncillo Mountains on the CNF, and is known to be resident in the Animas Mountains on the Diamond A Ranch (Skaggs 1988, Hubbard 1978). However, surveys in the Peloncillo Mountains in 1997 and 1998 following accepted survey protocols encountered no owls in what is considered the best potential habitat in this area (Duncan 2001).

5.0 Conservation Program

Sections 10(a)(2)(A) and 10(a)(2)(B) of the Act, together with Federal regulation (50 CFR 17.21 and 17.22), require, among other things, that an HCP specify the steps that will be taken to minimize and mitigate the effects of any taking allowed by the plan, the measures that will be taken to monitor the effects of that taking, and the funding that will be made available to implement the plan. In addition, FWS policy requires that an HCP include measurable objectives and goals, and Adaptive Management provisions to ensure that relevant new information can be incorporated into the plan, as necessary. Each of these HCP requirements are addressed in this Section (which describes the measures MBG, participating Malpai ranchers, and other HCP participants will undertake to protect and conserve the covered species in the course of carrying out the covered activities), and Section 6.0 (which describes the plan's funding mechanisms).

The MBHCP serves two fundamental conservation purposes and a business purpose, which are, respectively:

- consistent with MBG's organizational mission: the maintenance of ecologically healthy conditions in the Malpai Borderlands and improvements in those conditions;
- consistent with the requirements of the Act: protection and conservation of federally listed endangered and threatened species in the course of carrying out activities covered by the plan; and
- consistent with the economic needs of livestock ranching in the Malpai Borderlands: consideration of MBG's organizational interests and the business interests and practices of individual Malpai-area ranchers in the course of carrying out measures necessary to protect and conserve endangered and threatened species.

5.1 MBHCP Goals/Objectives

5.1.1 MBHCP Goals

In light of these purposes, the goals of the MBHCP similarly are threefold:

- To maintain and, where necessary, enhance and improve three attributes of ecological health in the Malpai Borderlands (soil stability, biotic integrity, and watershed function);

- To ensure the covered grassland improvement activities necessary to achieve the preceding goal, and the covered ranch management activities referred to in the following goal, are undertaken in a manner consistent with protection of the covered species and their habitats; and,

- To ensure the measures necessary to protect the covered species are undertaken in a manner consistent with the effective carrying out of the covered grassland improvement activities, the covered ranch management activities, and the preservation of ranching and vigorous ranching economies in the Malpai Borderlands over the long-term.

5.1.2 MBHCP Objectives

To achieve these goals the MBHCP also establishes three specific sets of objectives:

5.1.2.1 Grassland Conservation Objectives.

The MBHCP's grassland conservation objectives are, to the maximum extent feasible and consistent with available funding:

- To minimize sheet erosion and identify, abate, and repair areas exhibiting acute erosion (e.g., channel downcutting, floodplain downcutting, and headcutting) in the Malpai Borderlands, as appropriate;

- To halt the encroachment of woody brush species into the area's historical grasslands and correct or reverse such encroachment where it has already occurred; and,

- To conserve and restore grassland habitats and grassland productivity in the Malpai Borderlands and, where appropriate, re-establish native grasses and forbs.

5.1.2.2 Species Conservation Objectives.

The MBHCP's species conservation objectives are, consistent with the requirements of the Act and the business objectives described below:

- To ensure that the impacts of take of the covered species is minimized and mitigated to the maximum extent practicable in the course of grassland improvement and ranch management activities carried out under the plan;

- To ensure that loss or degradation of the habitats of the covered species is also minimized or reversed in the course of these activities; and,

- Where possible and consistent with the MBHCP's other purposes and goals, to assist in recovery of the covered species and the conservation of other wildlife and plants native to the Malpai Borderlands.

5.1.2.3 Business Objectives.

The MBHCP's business objectives are to ensure:

- A predictable regulatory environment with respect to the effects of the plan on MBG's organizational programs and ranching activities in the Malpai Borderlands;

- That the conservation measures required by the plan (whether at plan outset or as a result of its Adaptive Management program) are based on specific, identifiable biological needs and are cost effective and operationally feasible; and,

- To the maximum extent possible and consistent with the species conservation objectives, that the discretion of Malpai-area ranchers to manage their lands (privately owned and state-leased) in accordance with their economic interests and cultural traditions is not significantly diminished, undermined, or eroded as a result of the plan's requirements.

5.2 Conservation Program Summary

The MBHCP was developed to meet the objectives listed above through a basic process for carrying out covered activities while minimizing and mitigating potential effects to covered species in and around the area of the activity, to the maximum extent practicable. It does this in a manner that provides for flexibility in both cost and timing to the extent practicable. Generally speaking, the process is as follows:

- Decide if a rancher needs to or would like to participate (Section 5.3).

- Identify the proposed covered activity (Section 3.5) and the area where the activity is to be implemented. Refer to species habitat and occurrence maps to determine what species associations may be present in the area of the proposed covered activity (Section 5.4).

- Incorporate all Take Minimization Measures for the covered species potentially present in the project area for the relevant covered activity (Section 5.5). This approach is based upon the assumption of species presence, and incidental take minimization measures are organized by "Species Associations" based upon vegetation community types. This approach is taken to minimize the need for costly pre-activity surveys and still minimize take to the maximum extent practicable.

- However, if during the planning process the assumption of species presence is too restrictive, pre-activity surveys may be performed, per approved protocol or other methodologies approved by FWS. Pre-activity surveys should not be to prove absence, but provide a reasonable means to detect presence of species. If presence is not demonstrated, minimization measures for that species are not required for implementation of that activity (Section 5.4.2), except for landscape level minimization measures for Fire Management (Section 5.5.2.1(A)(1-4)), Erosion Control (Section 5.5.2.2(A)(2-4)) and Mechanical Brush Control (Section 5.5.2.3.(A)(2-3)).

- Mitigation Measures for the effects of incidental take under the MBHCP are largely based upon the long-term, ecological benefits of the covered activities on a landscape level (Section 5.6).

- Monitoring responsibilities of enrolled landowners, MBG, and other cooperators are to ensure compliance with the plan's minimization measures and the ecological, or biological, goals of the landscape level out-come of the MBHCP (Section 5.7).

- Monitoring results and new scientific information will be used to improve and modify the MBHCP's conservation strategy through Adaptive Management (Section 5.8).

- A Technical Advisory Committee will be formed to advise MBG in the implementation of the MBHCP and its effectiveness at achieving the stated goals of the MBHCP (Section 5.9).

- The reporting responsibilities and commitments for the MBHCP will include results of implemented activities, compliance monitoring, biological monitoring, and adaptive management decisions. These results will be reported on an annual basis along with any other ITP reporting requirements (Section 5.10).

5.3 Rancher Participation in the HCP

Malpai-area ranchers have great latitude in determining their relationship to the MBHCP. How many Malpai-area ranchers will sign onto the plan and to what extent they will participate cannot be predicted. Generally, however, it is expected that many ranchers will participate in the plan, in part because they will see this as being in their personal interests (i.e., with regard to the ITP's regulatory protections); in part, because they will wish to support the conservation "spirit" of the plan. The purpose of this section, therefore, is to establish clear conditions and procedures under which individual Malpai ranchers may become HCP participants if they elect to do so.

5.3.1 Types of Rancher Participation

Individual Malpai-area ranchers can elect to participate in the MBHCP in one of two ways. One of these is incentive-based and is tied to the assistance MBG occasionally provides to its member ranchers. The other is not associated with MBG assistance and is purely voluntary. Both are described in detail in this section and summarized in Table 3-1.

5.3.1.1 Assistance-based Participation.

MBG assists Malpai-area ranchers with activities and projects on their lands in a number of ways, including economic assistance (e.g., cost-sharing), technical assistance (e.g., in designing projects), program development and coordination (e.g., fire management), and cooperative implementation of projects (e.g., construction of erosion control structures). For two reasons, any such assistance to ranchers by MBG, where it involves the MBHCP's covered activities, is considered to represent a matter of importance to the plan's purposes—first, because how an activity undertaken as a result of MBG assistance affects the covered species depends in part on how it is carried out; and, second, because MBG has an affirmative responsibility to minimize

the effects of the covered activities on the covered species. Accordingly, with respect to MBG providing economic, technical, or program assistance to Malpai-areas ranchers for carrying out the covered grassland improvement activities or covered ranch management activities, and to Malpai-area ranchers receiving such assistance, the MBHCP establishes the following two options:

(A) Receipt of MBG Assistance/MBHCP Participation Required. Under this option, any Malpai-area rancher may elect to receive MBG assistance of one or more of the types described above, but, as a condition of receiving such assistance, must, under the terms of this Subsection, agree to enroll in and "participate" in the MBHCP (as the term is defined below). To this extent, therefore, participation in the MBHCP by individual Malpai-area ranchers is mandatory.

(B) No Receipt of MBG Assistance/MBHCP Participation Not Required. Notwithstanding the above, Malpai-area ranchers can still elect not to participate in the MBHCP, if that is their wish, by simply not seeking or accepting MBG assistance for projects on their lands involving the covered activities. In practical terms, such ranchers would either forego such projects that they may otherwise have sought MBG assistance, or would have to undertake such projects on their own, without the regulatory coverage of the ITP.

5.3.1.2 Voluntary Participation.

Malpai-area ranchers can also "participate" in the MBHCP irrespective of the question of MBG assistance by simply deciding that they wish to do so. As seen above, they may do so because they wish to obtain the regulatory protections of the ITP or simply because they wish to support the conservation "spirit" of the plan. In any case, whether a given Malpai rancher participates in the MBHCP or does not participate is at the sole discretion of the rancher.

5.3.1.3 Rules/Conditions of HCP Participation.

In making the decisions allowed for under Subsections (A) and (B) above (i.e., respectively, whether to accept MBG assistance on the condition of MBHCP participation, or whether to participate voluntarily), Malpai-area ranchers need an understanding of what MBHCP participation means, the scope of participation available to them, and the relative costs and liabilities of participating in the plan versus not participating. The latter topic (costs vs. liabilities) is discussed in Section 3.2.2.2 of the plan.

(A) Definition of Participation. Election by any individual Malpai rancher to "participate" in the MBHCP means two things: that the rancher agrees to implement the conservation measures specified by the plan that are applicable to the activities for which he or she has decided to participate; and that the rancher also obtains the regulatory protections of the ITP, including authorization for any incidental take of the covered species that occurs as a result of those activities. Thus, an individual participating in the MBHCP means accepting its responsibilities and obtaining its benefits.

(B) Enrollment in the HCP. Once a particular rancher has decided to participate in the MBHCP, "enrollment" is effected through a written document established specifically for the purpose. This document is described in Section 5.3.2 below and consists of: a COI. Once the enrollment process is completed (i.e., upon the execution of the COI), the enrolled rancher becomes an MBHCP participant, as the term is defined in Section 3.2.2 (and, in effect, a sub-permittee to MBG's ITP) and is obligated by the COI and the applicable portions of the MBHCP specified in the COI. The rancher, in addition, remains under these obligations for the period of time specified by the COI's conservation term, except as otherwise provided for in Section 9.2.

(C) Availability/Scope of MBHCP Participation. Participation in the MBHCP is available to both MBG-member ranchers and ranchers who are not MBG members within the covered area. In addition, any Malpai-area rancher may enroll and participate in the MBHCP: with respect to all or some of the covered ranch management activities; with respect to the covered erosion control or mechanical brush control activities; in the case of fire management, with respect to any activities that MBG carries out in cooperation or partnership with individual ranchers; with respect to any individual project or combination of projects; and for any reasonable time period.

5.3.2 Certificates of Inclusion

In the context of the MBHCP, a COI represents the mechanism by which a Malpai-area rancher's decision to participate in the MBHCP is documented and formalized; by which the details of the commitment(s) made by the rancher under the agreement (i.e., the specific MBHCP conservation measures the rancher agrees to implement) are identified; and by which those commitments are placed into a legally enforceable form.

COIs will involve just two parties (signatories), MBG and the Malpai rancher enrolling and participating in the plan through the COI. None of the wildlife regulatory agencies (FWS, AGFD, or NMDGF) are required to be signatory to COIs, nor is their review of individual COIs prior to signature by MBG or the affected rancher required. Thus it can be seen, in light of these conditions and those described in Section 5.3. above, that the process of enrolling and participating in the MBHCP is both simple, involving just two signatories, and flexible, allowing for broad discretion in selecting the scope of participation. This is deliberate, as it will encourage participation in the plan in the same way that a complicated and restrictive process would discourage such participation.

5.3.2.1 Elements of the COI

When an individual Malpai-area rancher is interested in enrolling and participating in the MBHCP, he or she should notify MBG of this interest verbally or in writing; MBG and the rancher will then work together to determine the specific elements and scope of that participation. Four specific such elements must be identified in a COI:

(A) The Covered Area. As with the MBHCP, COIs must specify an area to which the agreement applies. This may be, depending on the circumstances, all or a portion of the privately owned lands and state trust lands on a ranch

(B) The Covered Activities. The specific activities with respect to which the rancher is enrolling in the MBHCP (i.e., the activities covered by the agreement) must also be specified.

(C) Required Conservation Measures. The conservation measures required by a COI consist of two types of measures specified in the MBHCP and potentially applicable to the COI:

(1) Take Minimization Measures. The take minimization measures required by a COI consist of the measures specified by Section 5.5 of the MBHCP that apply to the covered activities with respect to which a rancher is enrolling in the plan. These can be expressed in the COI in terms of the section numbers specified by the MBHCP that encompass the measures applicable to the covered activities. Thus, for example, if the activity enrolled in the MBHCP consists of a single fenceline project expected to traverse grassland habitat only, the conservation measures required by the COI would consist of all measures specified in Section 5.5.3.2 (A) and (D)of the plan.

(2) Other Conservation Measures. Other conservation measures required by a COI consist of those MBHCP measures that are not take minimization measures and that are specified by the plan as being applicable to Malpai-area ranchers. These consist primarily of the agreement by Malpai ranchers to permit access by MBHCP participants and cooperators to their lands for the purposes of monitoring and study (Section 5.7.3) and certain monitoring and reporting requirements applying to Malpai ranchers (Section 5.10.2).

(D) *Conservation Term*. The last COI element that must be specified is the term of participation (i.e., the time period during which the COI will be in effect). Requirements for this COI element are described in the Section 5.3.2.2 below.

The specifics of each of these COI elements, with the exceptions specified in the following paragraph, are ultimately the decision of the enrolling rancher so long as they are not inconsistent with the purposes, goals, or requirements of the MBHCP. However, MBG will assist the rancher in determining COI terms that meet the rancher's goals and are generally consistent with the MBHCP.

Finally, to facilitate preparation of COIs, the MBHCP provides a pre-approved "template" agreement that can be used in preparing actual COIs. The template includes all required features of a COI document except the particulars involved in any given rancher's enrollment; the latter, which, can simply be filled in to complete the document, and is then ready for signature. The "template" COI is shown in Appendix C of the MBHCP.

5.3.2.2 COI Terms.

Notwithstanding the latitude reserved to Malpai ranchers in determining the terms of MBHCP participation (see above), the following conditions with respect to those terms are, unless otherwise indicated, non-discretionary and must be observed in all COIs:

(A) All Applicable MBHCP Measures Must be Included in the COI. A rancher that chooses to participate may select which covered activities he/she wishes to participate in under the MBHCP, but with those elected covered activities come all the mitigation, minimization, monitoring, and reporting measures that are associated with activities that are selected by the rancher. This means that all conservation measures specified by the MBHCP that apply to any particular covered activity included in a COI are automatically part of the COI (including applicable monitoring and reporting measures).

(B) Determining the Conservation Term. Regarding the conservation term specified in a COI, no such term may be less than that minimally necessary to carry out the project or activity for which the rancher is enrolling in the MBHCP, and not past the expiration date of the ITP. A suggested, but not required, conservation term for COIs that are not limited to single or individual projects is five years, because such a term is sufficiently long to be effective and meaningful, but sufficiently short to represent a comfortable commitment on the part of the affected rancher. Longer or shorter conservation terms are permissible, except as specified above.

5.4 Determining Species Presence

The first step in planning and managing the covered activities with respect to the covered species consists of determining whether any one or more of these species is present in, or in the vicinity of, any area in which a covered activity is being planned or considered. This determination should be accomplished by consulting the Covered Species Occurrence Map(s) and the Species Habitat Maps.

The general approach of the MBHCP is that if the covered activity includes the habitat or is adjacent to the habitat of a covered species, then it is assumed to be present in the covered activity area. Then all the associated minimization measures for these species will need to be implemented as part of the covered activity. The only exception to the assumption of presence would be when the effectiveness or timing of the covered activity is in conflict with the required minimization measures. In this situation, pre-activity surveys could be conducted as described below (Section 5.4.2)

5.4.1 Species Habitat and Occurrence Maps

The purpose of the species habitat maps and species occurrence maps is to assist in the determination of species presence within project areas, and facilitate implementation of the MBHCP's take minimization measures, by providing reference sources for habitat, occurrence, and distribution information for the covered species.

The species habitat maps are described and shown in Section 5.4.1.1 and consist of maps broadly delineating the habitat areas of three of the MBHCP's covered species—the western burrowing owl and northern aplomado falcon (of the grassland species assemblage), and the yellow-billed cuckoo (of the riparian species assemblage). The purpose of these maps is to show in general terms what areas of the Malpai Borderlands are considered or are likely to be habitat for these

species, what the species' distribution in the area is therefore likely to be, and where they might be found in relation to given covered activities and projects.

The species occurrence maps are more specific and consist of maps developed and maintained in accordance with Section 5.4.1.2 for the purpose of recording and maintaining known occurrence and distribution information in the Malpai Borderlands for a specific set of the covered species, consisting of all covered grassland and montane species, both covered riparian species, and three of the covered aquatic species. The distribution of the covered fish species is limited to the SBNWR, so species occurrence maps are not needed at this time. If this distribution changes in the future, maps documenting the covered fish species may be developed.

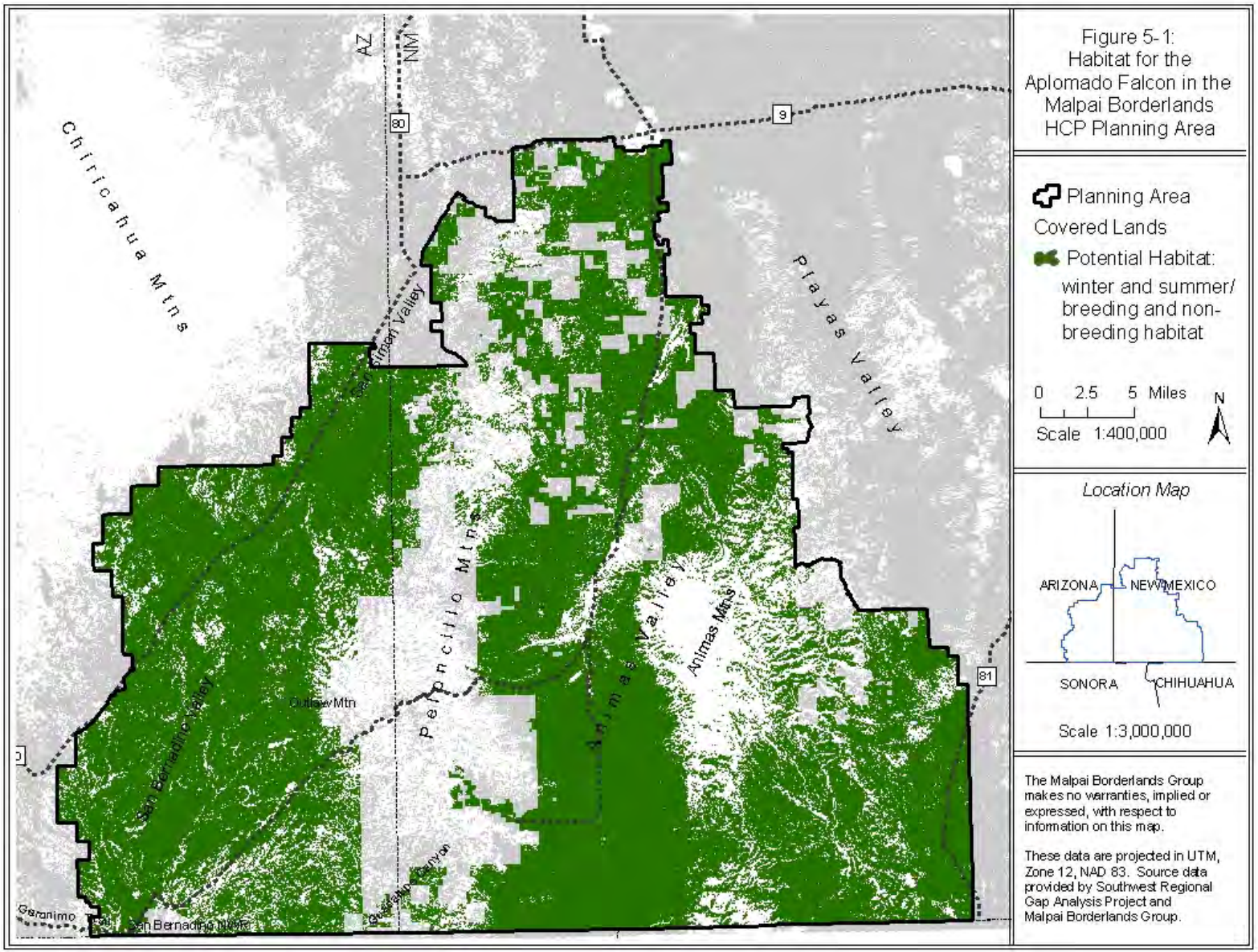
5.4.1.1 Species Habitat Maps

Species habitat maps have been prepared for three of the plan's covered species (the western burrowing owl, northern aplomado falcon, and yellow-billed cuckoo) and show, in general terms, what areas of the Malpai Borderlands are potential habitat for these species and what the species' distribution in the area is likely to be. The habitat maps thus represent a preliminary assessment for the process of determining the presence of these species by showing whether the site of a given project or activity occurs within actual or potential habitat for the species. If this is shown not to be the case, then further efforts to determine presence for the particular species involved may be unnecessary. Accordingly, MBG, Malpai-area ranchers, and other MBHCP participants, as applicable, should consult the habitat maps routinely in planning covered activities and projects with respect to these species. To facilitate this, the three species habitat maps described above are shown in Figure 5-1, Figure 5-2, and Figure 5-3. In addition, larger, table-sized copies of the three maps are housed in MBG's offices at the Malpai Ranch near Douglas, Arizona; in the FWS and AGFD offices in Tucson, Arizona; and in NMDGF's offices in Santa Fe, New Mexico. These maps may be inspected at any of these offices during normal business hours upon request.

Species habitat maps were not created for the other covered species because they are either not likely to be directly impacted by covered activities (aquatic fish species), they have limited distribution in the covered area (aquatic species and black-tailed prairie dogs), low dispersal potential (fish species and black-tailed prairie dogs), their habitat can be delineated simply by elevation (montane species), or their habitat would be delineated by one or more of the other species habitat maps (western red bat). Species habitat maps can be created for these other species, as a need is identified through the Technical Advisory Committee (Section 5.9).

5.4.1.2 Species Occurrence Maps

The species occurrence maps consist of maps developed and maintained for the purpose of identifying, recording, and maintaining known sighting and occurrence information in the Malpai Borderlands for nine of the plan's covered species. These consist of the four covered grassland species (the western burrowing owl, black-tailed prairie dog, northern aplomado falcon, and white-sided jackrabbit); the two montane species (the New Mexico ridge-nosed rattlesnake and the Mexican spotted owl); the two covered riparian species (the western yellow-


AZ
NM
80
9
81
Chiricahua Mtns
Playas Valley
Animas Valley
Animas Mtns
Peloncillo Mtns
San Bernadino Valley
Outlaw Mtn
Geronimo
San Bernadino NWR
Figure 5-1:
Habitat for the
Aplomado Falcon in the
Malpai Borderlands
HCP Planning Area
Planning Area
Covered Lands
Potential Habitat:
winter and summer/
breeding and non-
breeding habitat
0 2.5 5 Miles
Scale 1:400,000
N
Location Map
ARIZONA
NEW MEXICO
SONORA
CHIHUAHUA
Scale 1:3,000,000
The Malpai Borderlands Group makes no warranties, implied or expressed, with respect to information on this map.
These data are projected in UTM, Zone 12, NAD 83. Source data provided by Southwest Regional Gap Analysis Project and Malpai Borderlands Group.

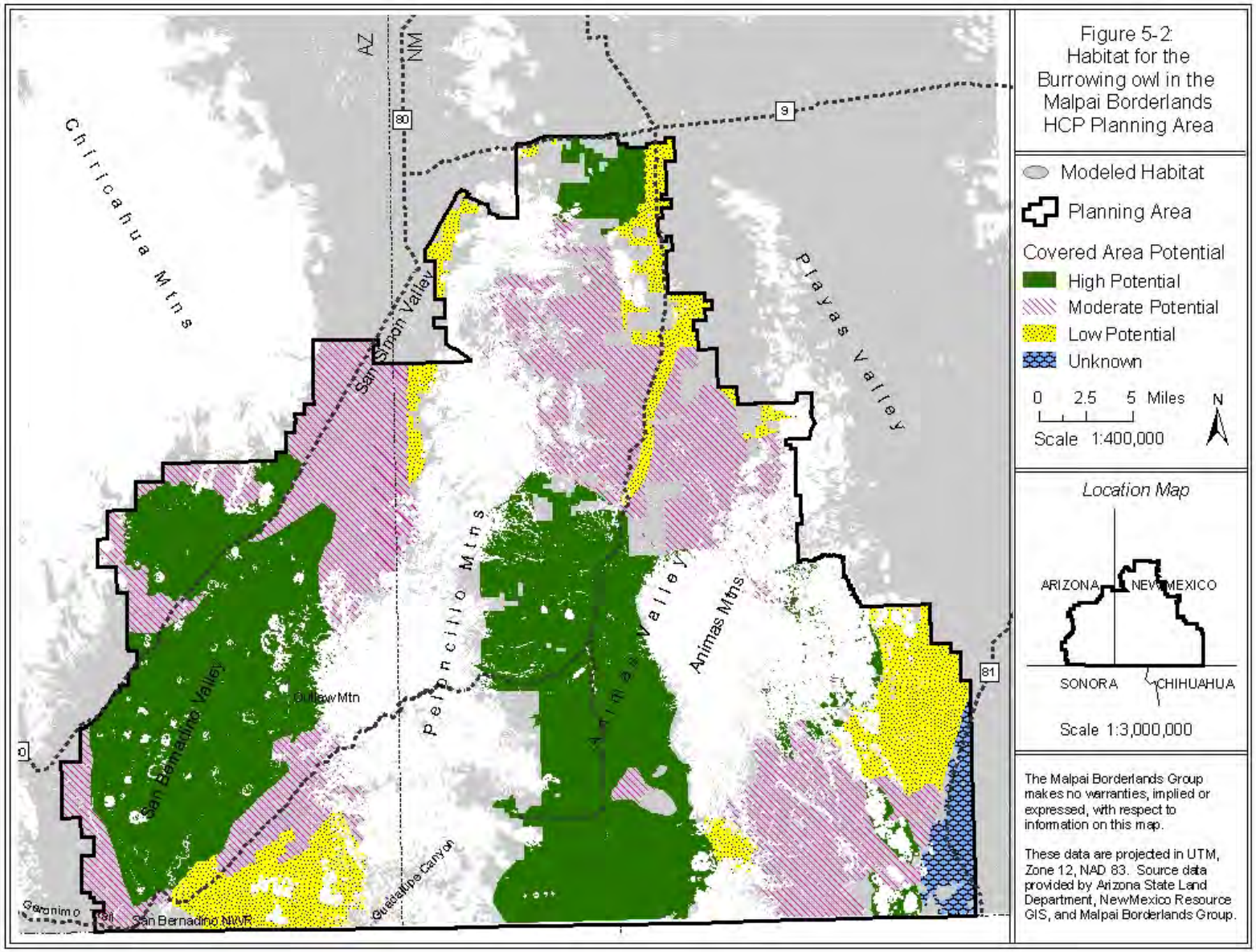


Figure 5-2:
Habitat for the
Burrowing owl in the
Malpai Borderlands
HCP Planning Area
Modeled Habitat
Planning Area
Covered Area Potential
High Potential
Moderate Potential
Low Potential
Unknown
0 2.5 5 Miles
N
Scale 1:400,000
Location Map
ARIZONA
NEW MEXICO
SONORA
CHIHUAHUA
Scale 1:3,000,000
The Malpai Borderlands Group makes no warranties, implied or expressed, with respect to information on this map.
These data are projected in UTM, Zone 12, NAD 83. Source data provided by Arizona State Land Department, NewMexico Resource GIS, and Malpai Borderlands Group.
AZ
NM
Chiricahua Mtns
San Simon Valley
Playas Valley
Peloncillo Mtns
Animas Valley
Animas Mtns
San Bernadino Valley
Outlaw Mtn
Guadalupe Canyon
Geronimo
San Bernadino NWR
80
9
81
6

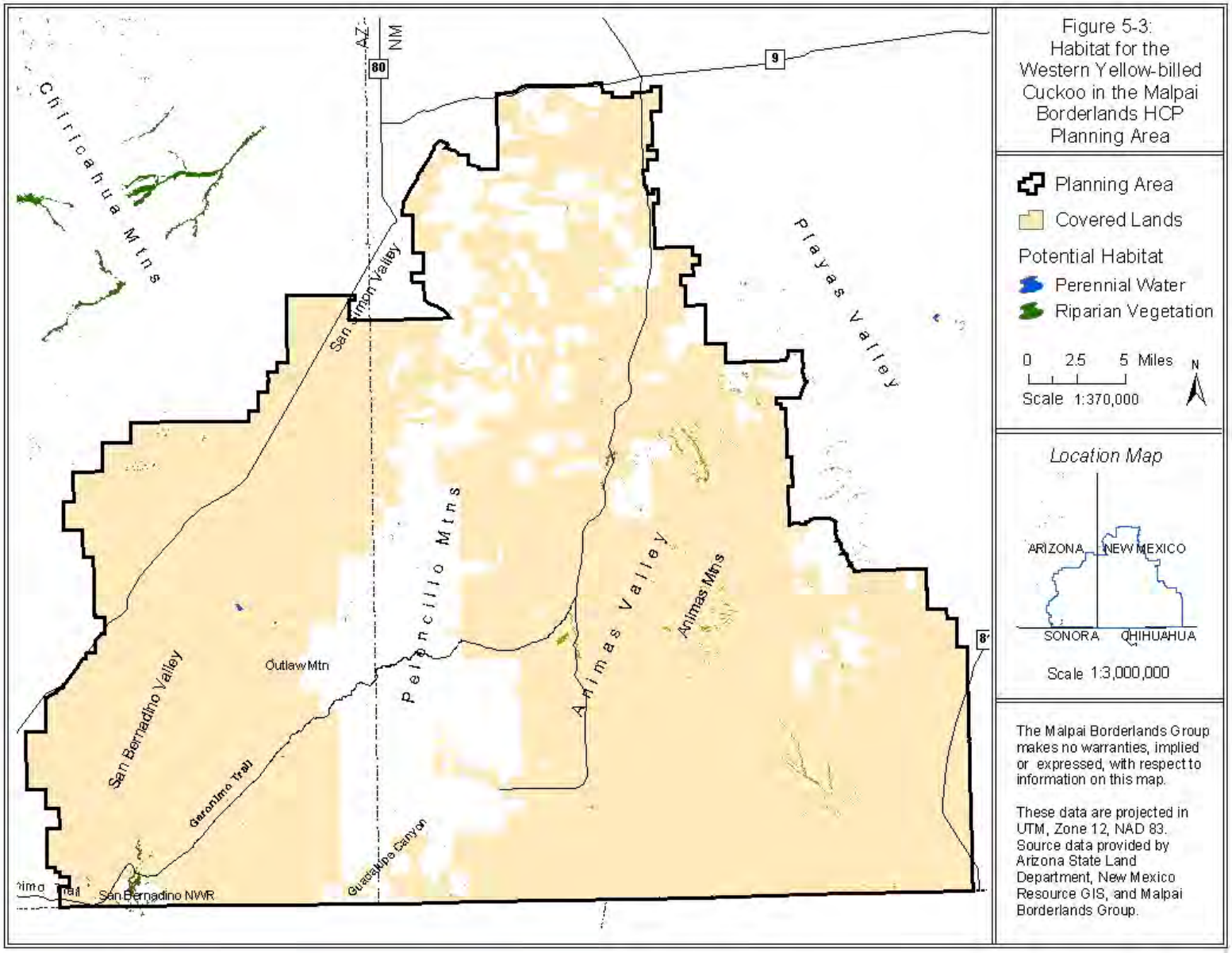


Figure 5-3:
Habitat for the Western Yellow-billed Cuckoo in the Malpai Borderlands HCP Planning Area
Planning Area
Covered Lands
Potential Habitat
Perennial Water
Riparian Vegetation
0 2.5 5 Miles
N
Scale 1:370,000
Location Map
ARIZONA
NEW MEXICO
SONORA
CHIHUAHUA
Scale 1:3,000,000
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These data are projected in UTM, Zone 12, NAD 83. Source data provided by Arizona State Land Department, New Mexico Resource GIS, and Malpai Borderlands Group.
AZ
NM
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9
Chiricahua Mtns
San Simon Valley
Playas Valley
Peloncillo Mtns
Animas Valley
Animas Mtns
Outlaw Mtn
San Bernadino Valley
Geronimo Trail
Guadalupe Canyon
San Bernadino NWR

billed cuckoo and western red bat); and three of the covered aquatic species (the Chiricahua leopard frog, lowland leopard frog, and northern Mexican gartersnake). Like the species habitat maps, the species occurrence maps represent a reference tool for determining the status of these species in the vicinity of areas planned or being considered for covered MBHCP activities and projects. Because they are based on actual sighting information, furthermore, the species occurrence maps will be useful in a number of ways, such as by demonstrating a species' presence in a particular location of interest, by suggesting areas to be avoided in the course of particular plan activities, and by narrowing the areas within which pre-activity surveys might be needed; in some cases the information contained in the species occurrence maps may be sufficient to render surveys unnecessary. Accordingly, MBG, Malpai-area ranchers, and other MBHCP participants, as applicable, should consult the species occurrence maps regularly in planning activities and projects with respect to these eleven species.

(A) Development of Species Occurrence Maps. MBG shall have primary responsibility for coordinating, compiling information for, and preparing the species occurrence maps. However, to ensure timely completion and the technical adequacy of the maps, the FWS, AGFD, and NMDGF will cooperate with and assist MBG in development of the maps by:

(1) providing technical advice on mapping strategies and methodologies (including the extent to which individual maps may include multiple species);
(2) by conveying to MBG all relevant, reasonably retrievable sighting and occurrence information for the nine affected species contained in their respective files (see below); and
(3) at MBG's request (and as appropriate and feasible) by helping MBG to actually prepare the maps.

(B) Map Updates. In addition, to ensure that the species occurrence maps remain reasonably current, MBG shall also have primary responsibility for periodically updating the maps as necessary to incorporate relevant new information. The FWS, AGFD, and NMDGF also agree to assist MBG in this task but only, to the extent specified in measures (1) and (2) of the preceding paragraph. MBG shall, furthermore, undertake such updates of the species occurrence maps every two years, at a minimum.

(C) Information Sources. Information sources for development of the species occurrence maps will consist of timely, relevant, and reasonably available sighting and occurrence records for these species in the Malpai Borderlands maintained or possessed by selected MBHCP participants and cooperators. These include, but are not necessarily limited to: species sighting and occurrence records present in MBG files; species information known to Malpai-area ranchers as a result of personal observations; sighting and occurrence records resulting from studies and research undertaken in the Malpai Borderlands by MBHCP cooperators; and any such information maintained in and reasonably retrievable from FWS files, AGFD files, and NMDGF files. For purposes of the MBHCP, such information will be considered timely if the observations or records on which it is based were made or collected not more than 10 years prior to the effective date of the plan.

(D) Housing/Use of the Maps. All species occurrence maps developed by MBG will be housed and maintained at their offices at the Malpai Ranch near Douglas, Arizona. Duplicate copies of the maps may also be maintained by participating Malpai-area ranchers, if desired, provided that any such rancher has become a MBHCP participant in accordance with Section 5.3 of the plan and has agreed not to distribute the maps. The species occurrence maps will not be maintained or housed in the offices of state or Federal agencies however, because of their vulnerability in such circumstances to public release under the Federal Freedom of Information Act (in the case of the FWS) and similar state statutes in both Arizona and New Mexico (in the case of AGFD and NMDGF). MBG considers such release to be undesirable because the species location information contained in the maps in some cases is sensitive (e.g., public release would raise the possibility of attracting unauthorized collection of some species) and because of privacy concerns of affected Malpai-area ranchers. Therefore these species occurrence maps may be inspected by any legitimate MBHCP participant or cooperator at MBG's offices during normal business hours upon request, but they may not be released from MBG's care except as specified above.

5.4.2 Pre-activity Survey Alternative

The basic assumption of the MBHCP's conservation program is: if a covered activity occurs within potential habitat for a covered species, implementation should occur as if the species is present (Assumption of Presence). Because situations may occur where the minimization measures of a particular project may reduce the effectiveness or may actually prohibit the implementation of a covered activity, an alternative to this assumption is to conduct pre-activity surveys. While sometimes costly to conduct, pre-activity surveys may provide a means to confirm the presence of a species in the action area and thus, the need to implement incidental take minimization measures at a particular project site. Alternately, pre-activity surveys may indicate absence of a covered species. If the surveys were conducted according to protocol, with the appropriate amount of effort and by qualified individuals, the covered species minimization measures may be waived for the covered activity planned in the survey area. Minimization measures that are listed for all species in a habitat association for a covered activity will not be waived as these are based upon landscape level health as it relates to all species in the watershed and not a specific species, such as the annual and 5-year fire acreage caps.

Pre-activity surveys will fill the need under the plan to determine actual, on-the-ground conditions within planned or proposed project areas and the actual on-the-ground status of the covered species within such areas. Pre-activity surveys will consist of reconnaissance-level, walk-over surveys of areas within which covered activities are planned or proposed, for the purpose of finding the covered species if they are present, unless otherwise noted below. The survey effort should also be related to the impacts of the proposed covered activity. The potential use of heavy equipment and related ground disturbance that would result from construction of linear facilities and implementation of mechanical brush control will necessitate a concerted pre-activity survey within the limited area of proposed activity sites. Whereas, the effects of most erosion control structures, livestock management, and fire management, which would be short-term and dispersed over a larger area, would necessitate a less concentrated survey effort, with the exception of erosion control structures requiring the use of heavy

equipment to construct. This exception is due to the impacts being similar to those of linear facility construction and mechanical brush control. Additionally, stockpond maintenance already has pre-activity surveys as part of the minimization measures and a process to deal with emergency situations. Therefore no further pre-activity survey alternative is needed for this covered activity.

5.4.2.1 Preactivity Surveys Protocols

There are no established survey protocols for many species. If preactivity surveys are to be undertaken, the FWS and state wildlife management agencies will work with MBG to determine what survey techniques and amount of effort would be required. For the purposes of the MBHCP, these efforts would not need to show absence beyond a doubt, but would need to be a reasonable effort, using established techniques, to infer absence. Any disagreement over the effort required for preactivity surveys for species without established protocols can be taken to the TAC to resolve.

(A) Aquatic Species:

Fish – Currently, all the covered fish species in the planning area are on the SBNWR. The assumption of presence is made for the watersheds that drain into Black Draw to avoid indirect effects that could result in take are required. However, if the distribution of these species increases and presence of covered fish species is likely within the covered area preactivity surveys would be an alternative to the presumption of presence. Survey protocol for these species to infer absence would need to be coordinated with SBNWR personnel and be approved by the FWS and/or AGFD or NMDGF.

Leopard frogs - Preactivity surveys would only be appropriate within the Malpai Borderlands in locations where water is present within, near, or downstream of the project site. Preactivity surveys should be conducted in accordance with established protocol for Chiricahua leopard frogs as outlined in the Appendix D of the Malpai Borderlands SHA or updates to this protocol that are recognized by the FWS and/or AGFD or NMDGF.

Mexican gartersnakes – Preactivity surveys would only be appropriate within the Malpai Borderlands in locations where water is present within, near, or downstream of the project site. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

(B) Riparian Species:

Western yellow-billed cuckoo – Preactivity surveys for this species typically includes systematic observations of suitable habitat and/or the use of recorded call and response protocols conducted by qualified individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

Western red bats – Preactivity surveys for this species can include confirmation of presence or identification of roost trees. Presence can be confirmed through mist netting in or near riparian habitats, but this is not a systematic method to determine the location of roost sites. Radio telemetry or light tagging may indicate individual roost trees, but an individual may use several different roost trees in an area. Therefore, if presence is determined all conservation measures should be implemented and impacts to roost trees avoided. The survey effort to infer absence should be in accordance with protocols recognized by the FWS and/or AGFD or NMDGF.

(C) Grassland Species:

Burrowing owl: Preactivity surveys for this species typically include systematic observations of suitable habitat for active burrows which would be conducted by qualified individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

Northern aplomado falcon: Preactivity surveys for this species typically include systematic observations of suitable habitat for nest sites which would be conducted by qualified, permitted individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

Prairie dogs: Preactivity surveys for this species typically include systematic observations of suitable habitat for active burrows which would be conducted by qualified individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

White-sided jackrabbits: Preactivity surveys for this species typically include systematic observations of suitable habitat conducted by qualified individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.

(D) Montane Species:

There are no covered activities proposed on covered lands within the montane species habitats beyond cool season burns. The minimization measures are the definition of the cool season, November 1 through February 28, and the burn prescription parameter limits. The cool season was defined to avoid critical time periods for both covered montane species, New Mexico ridge-nosed rattlesnakes and Mexican spotted owls. The burn prescription parameters which minimize flame length also control rates of spread and should avoid extreme fire behavior that could result in loss of suitable habitat for these species. Because of the limitations on these burns - avoiding active season for New Mexico ridge-nosed rattlesnake, the breeding season for Mexican spotted owls, and prescriptions designed to impact only ground and ladder fuels - species surveys are not required prior to these prescribed fires. However, survey efforts may be useful in determining the location of prescribed burns within covered montane community and are encouraged, as the implementation goal for these burns is to protect habitat for these species.

New Mexico ridge-nosed rattlesnake: Preactivity surveys for this species typically include systematic broad area searches conducted by qualified, permitted individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS and/or AGFD or NMDGF.
Mexican spotted owl: Preactivity surveys for this species typically includes a systematic call playback and response protocol conducted by qualified, permitted individuals. Preactivity surveys should be conducted in accordance with protocols that are recognized by the FWS.

5.4.2.2 Qualified Individuals:

Surveys for animals listed under the Act requires section 10(a)(1)(A) research and recovery permits to be held by the individuals conducting these surveys. In addition, appropriate State permits may be required to conduct surveys on species covered by the MBHCP, whether they are listed under the Act or not. Individuals holding the appropriate Federal and State permits will be considered qualified under the MBHCP. However, casual observations by MBG members, ranchers, and MBHCP participants and cooperators will assist in maintaining species habitat and occurrence maps and may further focus implementation of minimization measures to occupied species habitats.

5.5 Take Minimization Measures

Section 10(a)(2)(A)(ii) of the Act requires that an HCP describe the steps that will be taken to minimize and mitigate the effects of the taking provided for in the plan. Similarly, section 10(a)(2)(B)(ii) requires, for an HCP to be approved, that the effects of such taking be minimized and mitigated to the maximum extent practicable. These terms describe two of the Act's fundamental statutory standards for HCPs, with each one representing a particular type or group of conservation actions. This section addresses the first of these, commonly referred to as take minimization measures.

Take minimization measures consist of adjustments or modifications to the design of a project or activity or to the way in which the project or activity is carried out, to reduce the amount or extent of take of affected species that occurs as a result of the project. As the name suggests, take minimization measures need not eliminate or avoid the possibility of take entirely, but should eliminate conditions or circumstances leading to take that is relatively easy to avoid, and to the maximum extent practicable minimize and mitigate the impacts of such takings. Any incidental take that still occurs would be authorized by the ITP.

The take minimization measures proposed by the MBHCP are arranged in the following subsections with respect to the plan's two categories of covered activities described in Section 3.5 (the grassland improvement activities and ranch management activities), and the three subsets of activities applicable to each of these categories (as described in Sections 3.5.1 and 3.5.2, respectively). The take minimization measures themselves are organized in each subsection with respect to the species assemblages described in Section 4.0 of the plan. Mitigation under the MBHCP is addressed in Section 5.6.

5.5.1 Critical Time Periods and Species Habitat Associations

Many of the minimization measures in the MBHCP are aimed at avoiding direct mortality and harm to covered species. Critical time periods are those portions of the year that covered species, or specific life stages of a covered species, are most vulnerable to the effects of covered activities. These critical periods typically involve times of the year when breeding, nesting, or the rearing of young occur and when vulnerable life stages, such as egg, larvae, tadpoles, nestlings, and pups may be present in the action area. These life stages are most vulnerable to the potential effects of the covered activities in the MBHCP. This section summarizes these critical time periods by species assemblages and species.

5.5.1.1 Aquatic Species

Chiricahua leopard frog (*breeding season*):	May 1 to Oct. 31 (above 5,900') July 15 to Feb. 14 (below 5,900')
Lowland leopard frog (*breeding season*):	January 15 to May 14
Northern Mexican gartersnake (*active season*):	April 1 to October 31 with temperatures from 71° to 91° F

5.5.1.2 Riparian Species

Western yellow-billed cuckoo (*breeding season*):	June 1 to August 31
Western red bat (*pupping season*):	May 15 to July 31

5.5.1.3 Montane Species

New Mexico ridge-nosed rattlesnake (*active period*):	April 1 to November 15 with temperatures above 70° F
Mexican spotted owl (*breeding season*):	March 1 to August 31

5.5.1.4 Grassland Species

Western burrowing owl (*breeding season*):	March 15 to August 14
White-sided jackrabbit (*breeding season*):	April 15 to August 14
Northern aplomado falcon (*breeding season*):	February 1 to July 31

5.5.2 Grassland improvement Activities

5.5.2.1 Fire Management

(A) <u>All Species</u>.

The two primary risks from fire management to all species is the direct effects of the fire itself and the indirect effects the loss of ground cover can have on watersheds.

<u>To minimize the potential for these types of effects, the following measures shall be implemented in the course of fire planning and management under the MBHCP</u>.

(1) <u>Burn/Fire Limits</u>. These measures consist of limits on the amount, extent, and frequency of fire that may permissibly occur under the MBHCP within any given Malpai Borderlands watershed. The burn caps have two components—a specified time period, and a specified maximum percentage of a watershed within which fire may be undertaken or occur over the course of that period. They have the effect, if and when reached, of prohibiting the undertaking of further managed fire in an affected watershed until the required time periods have fully elapsed (and, thereby, of minimizing the potential cumulative effects of fire). The burn frequency limit establishes a minimum return interval for managed fire at the level of individual burn units (thereby ensuring adequate recovery periods). The MBG will make its best effort to include burned acres on non-participating private lands in the planning area in this total, with the limitation that MBG does not have the right to enter non-participating lands. Thus:

(a) <u>*Watershed Burn Cap: 1-Year*</u>. Not more than twenty-five percent (25%) of the ground surface area of any individual watershed in the covered area shall be burned as a result of the combined total acreage of all managed fires (including prescribed burns and wildland fires) undertaken in the watershed in accordance with the MBHCP together with all wildfires occurring in the watershed within any given one-year calendar period.

(b) <u>*Watershed Burn Cap: 5-Year*</u>. Not more than fifty percent (50%) of the ground surface area of any individual watershed in the Malpai Borderlands shall be burned as a result of the combined total acreage of all managed fires (including prescribed burns and wildland natural fires) undertaken in the watershed in accordance with the MBHCP together with all wildfires occurring in the watershed within any given five-year calendar period. The 5-year cap is based upon the sum of the current year with the four prior years.

(c) <u>*Burn Frequency Limit*</u>. In addition to burn caps, which apply at the watershed scale, a burn frequency limit applying at the site scale shall be observed. Specifically, managed fire shall not be undertaken within or permitted to occur on any area in the Malpai Borderlands more frequently than once every three years, except in “blackline”

areas where narrow strips may be burned more frequently to secure burn management units.

(d) *Determining Burn/Fire Limits*. Applicable details about how the one-year watershed caps, five-year watershed caps, and burn frequency 1imits described, respectively, in paragraphs (a), (b), and (c) above will be determined or computed are as follows.

(i) *Determining Burn Area Totals*. For purposes of paragraphs (a) and (b), the area of any given burn unit or site considered to have been burned shall be defined to include the entire acreage inside the perimeter or boundaries of the subject burn or fire (i.e., not on the percentage of area burned within such perimeters or boundaries).

(ii) *Determining 1-Year/5-Year Periods*. For purposes of paragraphs (a) and (b), one-year and five-year periods with respect to any given watershed must be based on calendar years beginning on January 1st and ending on December 31st. However, because the effective date of the MBHCP (i.e., the date upon which it is approved and its associated ITP is issued) will likely be mid-year, the first year of the first 1-year period and the first 5-year period will necessarily be a partial year. The 5-year cap is based upon the sum of the current year with the four prior years.

(iii) *Computing 3-Year Return Frequencies*. For purposes of paragraph (c), the three-year period may be figured based on month and year without reference to day. Thus, for example, under the burn frequency limit an area burned in May 2006 could be re-burned beginning anytime in May 2009.

(e) *Fire Types Applicable to Caps*. Three types of fire are applicable to the watershed burn caps described in paragraphs (a) and (b) above—prescribed burns, wildland fires, and wildfires. In other words, the acreage of the watershed that has burned as a result of all these types of fire within an applicable one-year period or five-year period are considered to count toward the overall cumulative one-year and five-year caps for the watershed that has burned during these periods. This is based upon watershed health and soil stability goals.

(f) *Watershed Map*. A map showing each individual watershed in the Malpai Borderlands to which the watershed burn caps, the burn frequency limit, and burn/fire records (see below) described in this subsection apply is shown in Figure 5-4. Nine such watersheds have been identified: (i) San Simon Creek; (ii) Silver Creek; (iii) Black Draw; (iv) Astin Spring; (v) Guadalupe Canyon; (vi) Clanton Draw; (vii) Cloverdale Canyon; (viii) Animas Creek; and (ix) Playas Creek. Applicable burn cap acreages for each watershed are outlined in Table 5-1.

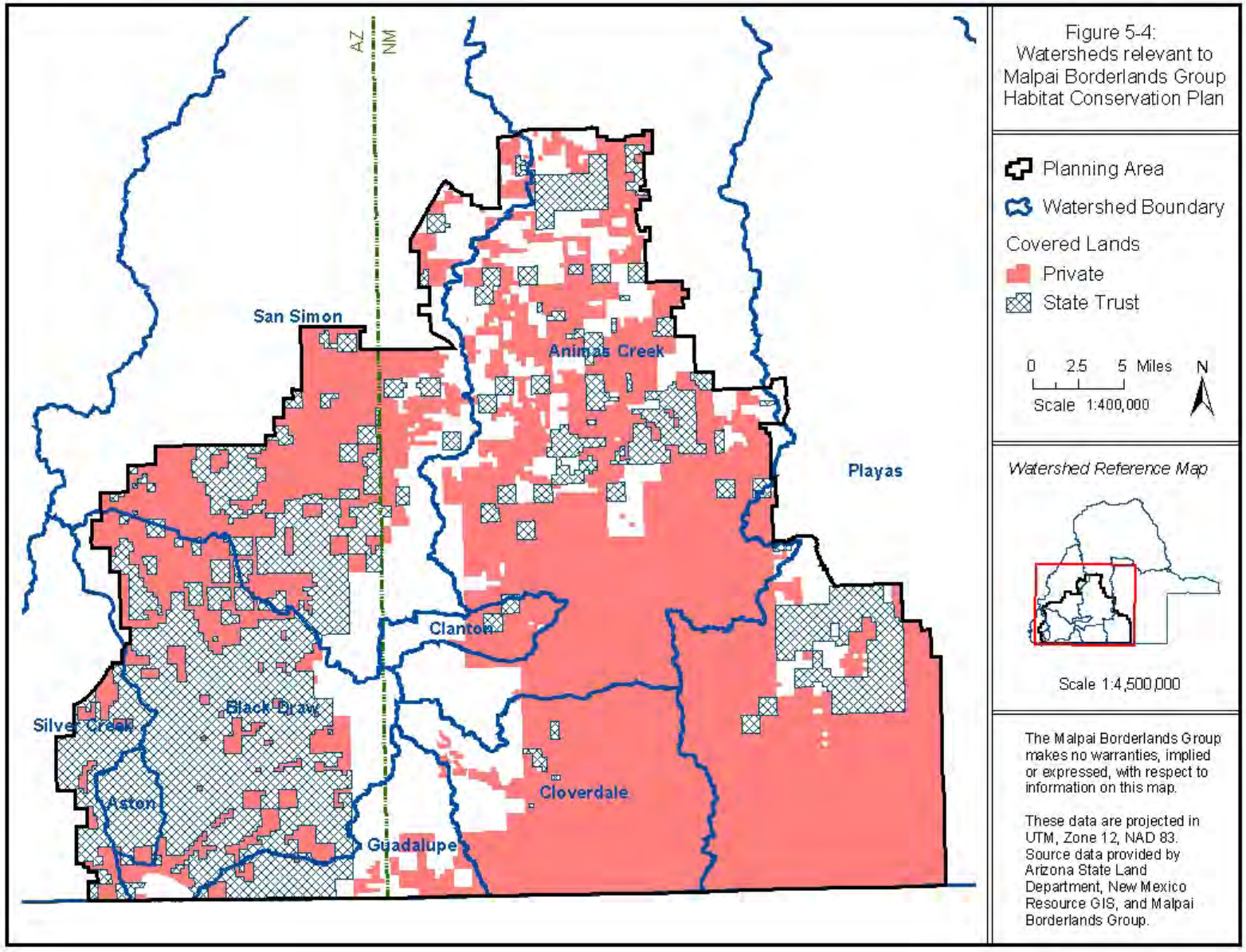
AZ
NM
San Simon
Animas Creek
Playas
Clanton
Black Draw
Silver Creek
Aston
Guadalupe
Cloverdale
Figure 5-4:
Watersheds relevant to
Malpai Borderlands Group
Habitat Conservation Plan
Planning Area
Watershed Boundary
Covered Lands
Private
State Trust
0 2.5 5 Miles
N
Scale 1:400,000
Watershed Reference Map
Scale 1:4,500,000
The Malpai Borderlands Group makes no warranties, implied or expressed, with respect to information on this map.
These data are projected in UTM, Zone 12, NAD 83. Source data provided by Arizona State Land Department, New Mexico Resource GIS, and Malpai Borderlands Group.

Table 5-1:
Watershed Area and Relevant Fire Caps under the MBHCP, in Acres[1]

WATERSHED	Total Watershed Area	Area within Malpai Borderlands	COVERED LANDS			BURN CAPS	
			Private	State Trust	Private & State Trust	1-Year (25%)	5-Year (50%)
Animas Creek	1,379,241	263,242	159,617	34,248	193,865	48,466	96,933
Aston	10,511	10,511	690	9,821	10,511	2,628	5,255
Black Draw	139,392	134,419	35,743	83,404	119,147	29,787	59,573
Clanton	14,493	14,493	7,726	1,118	8,844	2,211	4,422
Cloverdale	94,251	94,251	77,205	967	78,172	19,543	39,086
Guadalupe	39,082	39,082	8,148	9,292	17,440	4,360	8,720
Playas	1,077,374	145,015	113,385	21,612	134,996	33,749	67,498
San Simon	446,138	144,811	68,964	36,996	105,960	26490	52,980
Silver Creek	87,101	20,126	5,040	15,086	20,126	5,032	10,063

[1]Areas do not account for elevation, and therefore underestimate true ground surface areas.

(2) Post-fire Grazing Rest.

(a) All lands within the defined perimeter or boundary of any prescribed burn (as distinct from a wildland fire) carried out or occurring under the authorities of the MBHCP shall be rested from grazing for the entirety of the first growing season following the subject burn. For purposes of this paragraph, the first growing season following any such burn is defined as the period from the date on which the burn is implemented through the following October 31st.

Pasture boundaries, due to access along fence lines, are often convenient boundaries for planning prescribed burns. However, in some situations the logistics of planning a manageable prescribed fire perimeter may not follow pasture boundaries. This can create situations where it is difficult to rest all lands within the planned burn perimeter.

For example, a bare wash bottom may make a convenient burn control line, but the pasture boundary is on a nearby ridge top. In these situations small portions of neighboring pastures may be included in a burn unit in addition to one or more core pastures. In such cases, if less than 15 percent of the pasture is included in a prescribed burn boundary grazing may occur in that pasture during the season following a prescribed burn.

(b) In addition, if precipitation conditions during the first growing season following the subject burn consist of a drought, the period of grazing rest shall, if feasible, be extended through the second growing season following the fire. This rest period will be from the date on which the burn is initiated through October 31st the following year. In addition, the specific criterion applicable to the feasibility of this provision shall consist of the ability of any affected Malpai rancher to do so without significant financial hardship. If observance of a second season of grazing rest would cause significant financial hardship, the provision may be waived at the sole discretion of the affected rancher, in consultation with MBG.

(3) Fire Intensity Management. Research on the effects of wildfire suggests that sediment yields spike sharply when the amount of bare soil following a fire reaches a threshold of about 60-70 percent (Bob LeFevre, pers. comm.). In addition, experience has shown that prescribed fire in the Malpai Borderlands is typically characterized by low-intensity and moderate-intensity burning which result in lesser amounts of bare soil (P. Warren, pers. comm.). Accordingly, planners and managers undertaking fire management activities in the Malpai Borderlands:

(a) Will, in the course of fire planning and management, be cognizant of the need to manage burn intensity and post-fire ground cover percentages so as to minimize sediment yields resulting from prescribed fire through ignition patterns and pre-fire fuel reductions;

(b) Will, with respect to planning and management of prescribed burns, and to the maximum extent feasible and appropriate, design and configure burn units so as to maximize inclusion of areas likely to burn with low- to moderate-intensity and minimize inclusion of areas likely to burn with high intensity, and manage such fires in the same fashion; and,

(c) Will, with respect to wildland fire use, and to the maximum extent feasible and appropriate, plan the response to wildland fires and manage such fires so as to minimize high-intensity burning and maximize low- to moderate-intensity burning.

It is recognized that the measures described in paragraphs (3)(a)-(c) above are in the form of guidelines and cannot be treated as strict MBHCP requirements, and that implementation of the measures will require the professional judgment of fire planners and managers actually carrying out the fire management program. However, success in achieving the intended results of the guidelines to some extent will be determined by the results of the prescribed fires themselves as determined by plan monitoring (Section 5.7). To the extent such monitoring indicates that improved performance in achieving such results is needed, this will be addressed through the plan's Adaptive Management procedures (Section 5.8).

(d) In addition, to help meet the objectives of this subsection, the MBHCP establishes maximum and minimum standards with respect to three fire condition parameters (temperature, relative humidity, and wind speed), which must be satisfied before any prescribed burn carried out under the authorities of the MBHCP may commence (i.e., be ignited) or before any naturally occurring wildland fire may be managed as a prescribed fire. These are shown in Table 5-2.

(4) Fire Camp Location. Fire camps shall not be established:

(a) With respect to aquatic and riparian covered species, within any riparian habitat area, within any perennial stream, or within 1,000 feet of any such habitat or stream; or,

Table 5-2: Mandatory Fire Conditions Parameters for Managed Fire under the MBHCP

Fire Condition Parameter[1]	Maximum Value	Minimum Value
Temperature	95° F	65° F
Relative humidity	30%	10%
Wind speed	25 mph	5 mph

[1] On-site conditions with respect to each parameter must fall between the maximum and minimum values before any prescribed burn may commence or any wildland fire may be managed as a prescribed fire.

(b) With respect to grassland species, within 500 feet of any known active western burrowing owl nest, within 500 feet of any known active black-tailed prairie dog colony, or within 1,000 feet of any known active northern aplomado falcon nest; unless:

(c) Other avoidance distances or measures are approved verbally or in writing: (1) with respect to fire camps by the FWS and AGFD or NMDGF (as applicable), or a quorum of the MBHCP's Technical Advisory Committee (Section 5.9 of the plan).

(d) To ensure observance of the measures described above, brief walk-over surveys of any prospective fire camp sites shall be conducted unless otherwise approved as described in paragraph (4)(c) above; such surveys shall continue until a suitable fire camp location is found.

(5) Education. All fire crews will receive a briefing on listed species in the area. This should include information on the goals of the MBHCP and conservation measures relevant to fire management in the MBHCP.

(6) Invasive Species. All equipment and vehicles used in fire management activities will be cleaned, dried, and/or sterilized to avoid the introduction and spread of non-native invasive weeds and amphibian chytrid fungus. Also, avoid the movement or dropping of water from one surface water source near or into another aquatic site. Use ground water when available.

(B) Aquatic Species.

The primary risk to the aquatic species assemblage (seven fish, two frogs, one snake, and one plant) stemming from fire management is an indirect one, consisting of the potential for post-fire, downstream effects within any given watershed to degrade aquatic habitats potentially present at the base of the watershed and potentially inhabited by covered aquatic species. The primary agents of such degradation, should it occur, would be sediment and ash mobilized from burn areas and washed downstream and into such habitats by post-fire rainfall. The nature of the degradation would be resulting sedimentation of stream substrates, suspension of sediments in the water columns of affected streams, and changes in water quality and chemistry as a result of ash deposition. Such effects would be most likely to occur when fire events within the watersheds surrounding and upstream of aquatic habitats have been individually or cumulatively extensive (leading to a commensurately high concentration of downstream effects), when the extent of high-severity fire in the watersheds has been relatively great, and when rainfall events following fire events in the watersheds are frequent or intensive.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of fire planning and management under the MBHCP.

(1) Implementation of all measures identified above for all species; including burn/fire limits, Post-fire Grazing Rest, Fire Intensity Management, and Fire Camp Locations as described in Section 5.5.2.1(A).

(2) Occupied Locations. Information on occupied locations will be provided to Incident Command Teams or Burn Crews to avoid water being used or dumped into occupied aquatic

sites. It will also inform Incident Command Teams of areas to avoid the use of fire retardant chemicals and possible contamination of aquatic communities.

(C) Riparian Species.

Activities contemplated under MBG's proposed fire management program are not likely to affect, adversely or otherwise, the MBHCP's two covered riparian species (the yellow-billed cuckoo and western red bat). The three aquatic species (Chiricahua leopard frogs, lowland leopard frogs, and northern Mexican gartersnakes) also occur in riparian habitats, and are also not likely to be affected by the MBG fire management program. Because relatively few significant riparian corridors or habitats occur in the Malpai Borderlands and no fire management activities are planned within riparian areas, fire in these areas will be carefully avoided in the course of planning and management of fire in the Malpai Borderlands.

However, there exists the possibility that a managed fire being undertaken near or adjacent to any given riparian area in the Malpai Borderlands might escape into such an area. If this should occur, depending on the circumstances, damage or destruction of riparian vegetation could be significant and take of covered riparian species, leopard frogs, and Mexican gartersnakes could result.

Riparian Fire as a Changed Circumstance. Although not planned, escape of prescribed fire into riparian habitat could occur; therefore, we propose to treat it as follows:

- Fire management is treated as a covered activity in the MBHCP with respect to covered riparian species.

- However, unlike most of the other covered activities, inadvertent escape of managed fire into riparian species habitat would be unplanned, and it is therefore treated under the MBHCP as a changed circumstance. Thus, adverse effects of fire management on scarce riparian biotic communities in the Malpai Borderlands (and on covered riparian species) would be expected only in the event a managed fire escapes into such a community.

To minimize this potential, the measures shown in paragraph (1) below shall be implemented in the course of the fire program, and with respect to the areas described in paragraph (2) below.

(1) Implementation of all measures identified above for all species; including burn/fire limits, Post-fire Grazing Rest, Fire Intensity Management, and Fire Camp Locations as described in Section 5.5.2.1(A).

(2) Protection of Riparian Communities. In the course of fire planning in the Malpai Borderlands, MBG, and other HCP participants and cooperators, as applicable, shall give due attention to and be vigilant with respect to the location of riparian biotic communities in relation to the locations of any fire(s) being planned. In addition, fire planners shall ensure that appropriate measures to protect and avoid riparian communities in the course of fire are

fully incorporated into burn and fire plans. These include, but are not limited to, establishment of buffer distances between burn and riparian areas, employing landscape features to buffer or protect such areas, and establishment of fire lines, where necessary. Similarly, in the course of managing or suppressing fire in the vicinity of riparian areas in the Malpai Borderlands, fire officers shall undertake all reasonable precautions to protect such areas from the direct, indirect, and inadvertent effects of prescribed burns, wildland fire, and wildfire. This should not only include effects of fire in the vicinity of the burn, but also downstream effects, post fire (e.g. ash and debris flows).

(D) Montane Species.

The primary risks to the montane species assemblage (New Mexico ridge-nosed rattlesnake and Mexican spotted owl) from fire and fire management includes direct mortality of individuals from heat or smoke, loss of nests and nestlings (owl); harm and harassment related to loss of species habitats, reduction in prey species populations, and increased sediment movement into talus slopes (rattlesnake). These effects are most notable when fire behavior is extreme and the fire effects severe, resulting in loss of forest canopy cover and species habitat.

Fire management in the montane biotic communities covered by the MBHCP is limited to the private and state trust lands in the Animas Mountains, above 5,000 ft. Fire in the montane community of the Animas Mountains has been managed primarily to reestablish a natural fire regime. This has been accomplished through fire use of wildland fires over the past 16 years. Fire management of these wildland fires has included measures to protect sensitive resources, such as the back burns to protect New Mexico ridge-nosed rattlesnake habitat during the Adobe Fire (Sam Smith, pers. comm. 2006). Primarily due to the mixed effectiveness of implemented back burns and the modification and loss of New Mexico ridge-nosed rattlesnake habitat, a more proactive approach to protecting montane species habitats and watersheds has been included as an option in the MBHCP.

Therefore, fire management in the montane community under the MBHCP will include: wildland fire and prescribed fire. Wildland fire would include fire use and full suppression of wildfires and prescribed burns that may escape planned boundaries, although the latter will be treated as a changed circumstance under the MBHCP (Section 8.3.1). Prescribed fire in the montane community may be used as an option to reduce the potential and extent of catastrophic wildland fire effects. This could be done through the use of cool season prescribed burns to reduce fuel loads in the montane species habitats.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of fire planning and management under the HCP.

(1) Implementation of all measures identified above for all species; including burn/fire limits, Post-fire Grazing Rest, Fire Intensity Management, and Fire Camp Locations as described in Section 5.5.2.1(A).

(2) Wildland fire:

(a) Wildland Fire Management Process: The general management of these wildland fires has been to allow them to burn in a natural fashion, maintaining a natural fire regime and fuel loads. Suppression activities are only attempted if the fire behavior is extreme, and likely to result in severe fire effects that threaten resource values in the montane community. The decision to initiate fire suppression activities is that of the Incident Commander or FMO on the scene, in consultation with MBG, Animas Foundation, or their representatives. The MBG, and the Animas Foundation should they enroll in the MBHCP, will work with incident command teams to ensure that resource values, including those of the covered species, are included in the decision making process.

(b) Species Habitat Maps: Species habitat maps for the montane covered species have not been produced for either Mexican spotted owl or New Mexico ridge-nosed rattlesnake. A species habitat map should be created through GIS modeling for New Mexico ridge-nosed rattlesnake and Mexican spotted owl by either NMDGF, FWS, MBG, or their designee to assist Incident Commanders or FMO in making wildland fire use or suppression decisions.

(3) Prescribed fire:

(a) Seasonal Restrictions: Prescribed fires in the montane community would not be implemented inside the critical time periods for New Mexico ridge-nosed rattlesnake or Mexican spotted owl, as listed above in Section 5.5.1.3.

(b) Placement of Prescribe Fire: Placement of prescribe burns in the montane species habitat will be based upon high fuel accumulations that could lead to a catastrophic wildland fire, the potential to limit the size of potential catastrophic wildland fires, the fire history within the montane community, and known occurrences of covered montane species. If montane species habitat maps are developed as described above, the modeled habitat information on these maps will be incorporated into this decision process.

(c) Prescription Parameters: Prescription parameters for the implementation of prescribed fire in montane communities should promote ground fires that reduce fuels without loss of canopy cover. The following are the minimum/maximum values for prescribed burns in the montane community:

	Minimum Relative Humidity	Maximum Wind Speed	Maximum Ambient Temperature
Prescription Values	10%	25 mph	70°F

(3) Escaped prescribe burn:

In the course of fire planning in the Malpai Borderlands, MBG and other MBHCP participants and cooperators, as applicable, shall give due attention to and be vigilant with respect to the location of montane biotic communities in relation to the locations of any fire(s) being planned. In addition, fire planners shall ensure that appropriate measures to protect and avoid montane communities in the course of fire are fully incorporated into burn and fire plans. These include, but are not limited to, establishment of buffer distances between burn and montane areas, employing landscape features to buffer or protect such areas, and establishment of fire lines, where necessary. Similarly, in the course of managing or suppressing fire in the vicinity of montane areas in the Malpai Borderlands, fire officers shall undertake all reasonable precautions to protect such areas from the direct, indirect, and inadvertent effects of prescribed burns other than provided for above in subsection (2).

(E) Grassland Species.

The potential effects of MBHCP fire management activities on this species assemblage (consisting of the black-tailed prairie dog, western burrowing owl, northern aplomado falcon, and white-sided jackrabbit) differ from the potential effects on all other covered species in that fire management will routinely be undertaken in the species' habitat. Consequently, the primary potential adverse effects of fire management on grassland species tend to be direct (i.e., killing or injury) as a result of the possibility of fire moving through occupied habitat. However, several factors suggest that the potential effects of fire on these species in most cases will be minimal. First, fire in grassland communities, especially where native plants dominate (as on Diamond A Ranch) and in prairie dog towns (typified by bare ground and low-cropped vegetation), is normally slow-moving and of low intensity. Second, adults of all four species have effective capabilities for surviving such fires, either by taking refuge in deep burrow systems or by flying or running away. Third, the impacts of fire on grasslands are usually minor and transitory, and are generally followed by long-term beneficial effects. However, the nestlings, pups, and juveniles of all species are at risk in the event of fire in grassland communities occurring directly in their habitats. Indirect effects on these species could also result in possible loss of nest structures, in the case of northern aplomado falcons, or forage resources.

To minimize the potential for take of grassland species, especially young, the following measures shall be implemented in the course of fire planning and management under the MBHCP.

(1) Implementation of all measures identified above for all species; including Burn/Fire Limits, Post-fire Grazing Rest, Fire Intensity Management, and Fire Camp Locations as described in Section 5.5.2.1(A).

(2) *Avoidance of Known Species Locations*. The location of covered grassland species is determined through the process described in Section 5.4. Because the basic assumption is that the species is present, landscape level minimization measures shall be implemented in the form of the acreage caps in Section 5.5.2.1(A) above. Take minimization measures for specific grassland species shall be implemented in areas of known occurrence as described below. In the case of prescribed fire the following specific minimization measures shall be included in burn planning and implementation. However, because wildland fires are not planned, but managed after a natural ignition, implementation of these species specific minimization measures should be considered by the incident commander in relationship to ongoing containment and suppression activities. Considerations of firefighter safety and personal property shall naturally take priority in any species take minimization measures.

(3) *Fire Outside Critical Time Periods*. With respect to any prescribed burn or wildland fire, if the burn can be deferred to, or occurs at a time outside the critical time period for grassland species (Section 5.5.1.4), then impacts to covered grassland species would mostly be avoided and further take minimization measures for these species in the course of the burn are unnecessary, with the following exception:

(a) *Falcon Nest structures*. All known northern aplomado falcon nest sites should be protected from direct, fire-related impacts (i.e., from fire burning over or through such sites), impacts related to fire management (e.g., damage or destruction of nest structures as a result of on-ground fire management activities), and disturbance-related impacts (i.e., caused by commotion and noise).

(i) This should be accomplished by moving the burn perimeter so that affected nest sites are excluded from the burn unit, moving the entire burn area to exclude such sites, or the locations within the burn unit shall be protected through appropriate means (e.g., buffers, firelines, mowed buffers, blacklines, ground-soaking – without flooding nests); and
(ii) No direct impacts of the burn, direct impacts of fire management, or disturbance impacts should be permitted to occur closer than 250 feet from the nest structure(s) within the site.

(4) *Fire Inside Critical Time Periods*. If a prescribed burn cannot be implemented outside the critical time period for grassland species, the following additional take minimization measures shall be included in the burn planning and implementation:

(a) Ignition and burn patterns shall be planned to minimize the potential for extreme fire behavior and/or fires that result in high severity fire effects in the areas of known occurrence of covered grassland species.

(b) Aerial ignition patterns should not place parallel flame fronts closer than ¼ mile apart to reduce entrapment of individuals by multiple flame fronts, and provide adequate opportunity for white-sided jackrabbits, burrowing owls, and northern aplomado falcons to escape to unburned areas. This ignition pattern restriction may be modified to protect other important features, such as riparian vegetation communities and private property, and ensure fire fighter safety, at the discretion of the burn boss/incident commander.

(c) Ignitions, including aerial, shall avoid known locations of prairie dog colonies, western burrowing owl burrows, and white-sided jackrabbit denning areas. Ignitions, including aerial, should avoid known northern aplomado falcon nest sites.

(d) Known locations of prairie dog colonies, western burrowing owl burrows, and white-sided jackrabbit denning areas shall be protected. Northern aplomado falcon nest sites should be protected.

(i)This shall be accomplished by moving the burn perimeter so that affected locations are excluded from the burn unit, moving the entire burn area to exclude such locations, or locations within the burn unit shall be protected through appropriate means (e.g., buffers, firelines, mowed buffers, blacklines, ground-soaking – without flooding burrows).

(ii) No direct impacts of the burn, direct impacts of fire management, or disturbance impacts shall be permitted to occur closer than 250 feet from these locations.

(5) *Wildland Fire*. Wildland fires are not planned, but managed after a natural ignition, implementation of these grassland species take minimization measures should be considered by the incident commander in relationship to ongoing containment and suppression activities. Considerations of firefighter safety and personal property shall naturally take priority over any species take minimization measures.

(F) Implementation of MBHCP Measures.

Implementation of the fire management requirements of the MBHCP, as detailed in the preceding subsections 5.5.2.1 (A) to (E), is not simply a matter of carrying out the plan's measures, but also incorporating and integrating those measures into the fire management infrastructure in the Malpai Borderlands. This infrastructure involves many components and authorities, summarized in Table 5-3. In addition, each of these agencies has their own particular concerns, mandates, and decisions to make.

In light of this, the following procedures are established to define the role of the MBHCP in fire management, to identify roles and responsibilities in implementing its fire-related requirements, and to ensure that those requirements are fully incorporated into MBG's fire management program.

(1) Role of the MBHCP in Fire Management.

The MBHCP is one of a number of governing fire authorities in the Malpai Borderlands. Each of these consists of an agency, organization, or a written authority, which encompasses a particular jurisdiction; i.e., an activity or type of activity (e.g., commanding a prescribed fire), a particular technical or regulatory issue (e.g., the acceptability of burn conditions), or a particular area or type of land ownership (e.g., private lands).

The authority to carry out the MBHCP's fire management program, are derived from section 10(a)(1)(B) of the Act and apply to the conservation of species covered by the MBHCP (Section 3.3). Ultimately, however, it is not the fire management program to which the MBHCP and its associated ITP apply, but to the individual actions and decisions taken under that program, particularly actions involving the management and, where necessary, suppression of fire. The role of the MBHCP with respect to fire management can therefore be said to be threefold:

- to conserve federally listed species in the course of implementing fire management projects and actions;
- to authorize take of such species that may occur in the course of such projects and actions; and
- to provide for the preceding with respect to all projects and actions taken under the fire management program collectively and programmatically.

Table 5-3:
Management/Regulatory Authorities Involved in Fire Mgmt In the Malpai Borderlands

Authority	Type	Management/Regulatory Role
U.S. Forest Service/ U.S. Bureau of Land Mgmt./ FWS	Federal Agency	Have fire mgmt, fire suppression, and prescribed burn responsibilities on their respective lands. Also have responsibility for assisting in fire mgnt/suppression on non-Federal lands under mutual-aid agreements w/ state and local fire agencies/departments.
Arizona State Lands Dept.	State Agency	Has statutory responsibility for wildfire prevention/suppression on state trust lands and private lands outside incorporated municipalities in Arizona and authority, through the State Forester, for approving prescribed burns/prescribed natural fires affecting state trust lands.
N.M. Forestry & Resources Conservation Division.[1]	State Agency	Has statutory responsibility for fire suppression on all non-Federal, non-municipal, non-tribal, and non-pueblo lands in New Mexico and authority, through the State Forester, for approving prescribed burns and prescribed natural fires affecting state trust lands.
Arizona Dept. of Environmental Quality	State Agency	Has statutory responsibility for regulating the air quality impacts of smoke from prescribed fires on non-agricultural state & Federal lands and approving permits for such fires.
Rural/Local Fire Depts.	Local Agency	Local fire agencies typically have mutual-aid agreements with other fire agencies in a region and are often first responders to a wildland fire; consequently, may be first on the scene of a prospective prescribed natural fire and may assist in managing prescribed burns.
Bootheel Fire Mgmt Plan	Planning Document	Applies to private & state trust lands only. Establishes 15 Fire Mgmt Areas and wildfire response guidelines that consider mgmt objectives for specific sites/ownerships and proximity of structures/other assets; identifies 3 response options for wildfires (contain, confine, control[2]) and weather parameters for ignition of prescribed burns.
Malpai Borderlands Regional Fire Mgmt Map	Planning Document	Shows landowner preference, by ranch, w/ respect to three options for responding to naturally ignited fires (consult with owner/contain & control/suppress immediately). Applies to private & state trust lands
Malpai Borderlands Group	Organization	With respect to activities under its direct control, has responsibility for ensuring that requirements of the Malpai Borderlands HCP, including those addressing fire mgmt (see below), are implemented.
Malpai Borderlands HCP[2]	Planning Document	Establishes measures to protect federally and state listed and other covered species in the course of fire mgmt activities in the Malpai area; such measures include watershed burn limits and strategies to avoid damage or destruction of sensitive habitat types and the nests, burrows, colonies, etc. of the covered species.
Incident Commander(s)	Person	The individual(s) representing the agency on whose land(s) a prescribed fire occurs (or which is responsible for fire on private lands) who is in command of managing or suppressing the fire.

[1] Of the New Mexico Energy, Minerals, and Natural Resources Department.
[2] "Contain" means to restrict a wildland fire to a defined area using a combination of natural/constructed barriers that will stop the spread of a fire under prevailing and forecasted weather conditions until the fire is out. "Confine" means to restrict a fire within predetermined boundaries established either prior to or during the fire; these boundaries will confine the fire with no action taken to put the fire out. "Control" means to aggressively fight a wildfire through the skillful use of personnel, equipment, and aircraft to establish firelines around a fire to stop its spread and extinguish all hot spots until the fire is out.

Accordingly, the MBHCP represents a comprehensive plan with respect to the MBHCP's proposed fire management program and any and all requirements of the Act connected with that program. Furthermore, any individual action or set of actions undertaken in the Malpai Borderlands by MBHCP participants or MBHCP cooperators in the course of that program:

- on private or state trust lands; and
- that fully incorporate or are fully consistent with applicable requirements and measures of the MBHCP, including the take minimization measures detailed above in Section 5.5.2.1, shall be considered to be in full and complete compliance with the Act and with all associated regulatory requirements, when no Federal nexus exists.

(2) Responsible Parties/Roles and Responsibilities. To ensure proper implementation of the MBHCP's fire program requirements, the organizations and individuals responsible for implementation need to be identified and their roles and responsibilities clearly defined. These are as follows.

(a) *Malpai Borderlands Group*. MBG, as the permittee under the MBHCP has the primary responsibility under the plan for ensuring its implementation. This responsibility extends to all plan requirements with respect to which it exercises direct control, including those applying to fire management, and to both phases of the fire management process (burn/fire planning and burn/fire management). Meeting these responsibilities will involve the undertaking of a variety of activities, including but not limited to:

(i) Meeting with, briefing, and advising agencies, organizations, individuals, and officials involved in fire planning and management in the Malpai Borderlands concerning fire-related measures and requirements of the MBHCP, as requested or necessary, and, generally providing liaison to all such parties on behalf of the plan;

(ii) Assisting in preparation of burn plans and fire management plans for the Malpai Borderlands to ensure that the MBHCP's requirements are incorporated into such plans; as appropriate. This will include initiating and leading the preparation of such plans to the extent it is able, reviewing such plans and providing necessary input prior to their approval, and, where appropriate, approving such plans;

(iii) Whenever possible, being present during implementation of individual fire events for the purpose of observing fire activities as they are being carried out and advising fire officials and commanders, as applicable, concerning MBHCP requirements and measures;

(iv) Consulting and coordinating with affected Malpai Borderlands ranchers about burns or fires planned or approved on their lands, and securing their commitment to fire-related management requirements needed to encourage successful burn results;

(v) Preparing, maintaining, and regularly updating burn and fire records as required by the MBHCP and ensuring that individual burn maps and the watershed map are also prepared and maintained; and,

(vi) Provide Species Occurrence Maps to Incident Command Teams through the Resource Advisor to assist in avoiding impacts during suppression activities.

(b) *Fire Management Liaison*. MBG may, at its discretion, establish a "Fire Management Liaison" (FML) or similarly titled position, or assign FML-type responsibilities to a specified individual, for the purpose of assisting MBG in fulfilling the roles and responsibilities under the MBHCP's fire management program. The FML may be an officer, member, employee, or volunteer of MBG, or a paid agent or any other individual at MBG's sole discretion. The FML may also, if desired, be combined with the Authorized Designee position described in Section 3.2.2.1 of the plan. However, should an FML be hired or established in accordance with this paragraph who is not an MBG principal or employee, MBG understands that it is responsible for any and all actions undertaken by the FML and MBG remains solely responsible for ensuring that the responsibilities assigned to it under the MBHCP are carried out.

(c) *Malpai-area Ranchers/Lease-holders*. Because all managed fires undertaken in the course of the fire management program by definition will be undertaken on private and state trust lands, the owners of those lands, or the holders of grazing leases applying to those lands, respectively, shall be responsible for observing the grazing rest requirement described in Subsection 5.5.2.1(A)(2) above and for any other measures to which they have agreed pursuant to a COI.

(d) *Fire Control Officers/Incident Commanders*. With respect to each and every fire event carried out or occurring under the MBHCP, the official or officials in command of the fire, together with the agencies those officials represent and which have vested such authority with those officials, to the maximum extent practicable shall ensure that all conditions and requirements of the MBHCP as described or incorporated into any applicable burn plan or fire management plan are observed, obeyed, or otherwise carried out. Acceptance of this responsibility is recognized and agreed to by each applicable agency in accordance with either:

(i) their signature on, or approval of, any applicable burn plan or fire management plan; or
(ii) their signature on the MBHCP's associated IA (Section 3.7 and Appendix B).

(3) Maintenance of Burn Records. MBG will maintain detailed, written records about all prescribed burns, wildland fire use, and wildfires carried out or occurring under the Malpai Borderlands fire management program and MBHCP. In addition, MBG will maintain records for each Malpai Borderlands watershed within which one or more prescribed burns, managed fires, or wildfires have occurred. Such records shall include, at a minimum:

(a) Burn/Fire Records-Individual.

(i) A copy of the burn plan under which each prescribed burn is carried out;
(ii) a copy of any written plan or plans addressing management of wildland fire(s) generally or individually;
(iii) a number or similar identifier for each prescribed burn, wildland fire, and wildfire in planning, completed, or having occurred;
(iv) the date(s) each managed fire or wildfire occurred;
(v) the size (in acres) of each managed fire or wildfire;
(vi) a map, including GIS files, showing the perimeters or boundaries of each managed fire or wildfire, the area within those perimeters or boundaries, and pertinent features within those areas; fire prescription parameters and behavior recorded during the burn;
(vii) the particular watershed (see Figure 5-4) within which each managed fire and wildfire occurred; and
(viii) any occurrences where take minimization measures were not implemented and why, and any incidental take that occurred directly or indirectly as a result of the MBHCP fire management program.

(b) Burn/Fire Records—Watershed.

(ix) A map of the watershed showing the location within the watershed of each such burn or fire; and a written record of:
(x) each managed burn or fire that has occurred in the watershed;
(xi) the acreage of each such burn or fire;
(xii) the cumulative acreage of all managed burns or fires in the watershed;
(xiii) the cumulative acreage of all such burns and fires combined;
(xiv) the percentage of the watershed represented by that cumulative acreage; and
(xv) the percentage of the watershed represented by that cumulative acreage in relation to the one-year and five-year watershed burn caps described above.

(4) Emergency Situations. Notwithstanding the above, it is recognized that emergency situations may periodically arise in the course of a fire in which fire control officers or commanders may have to make rapid decisions and/or issue orders that result in incidental take of the covered species or damage to the habitat of such species in a fashion not otherwise in accordance with the preceding paragraphs (i.e., in which take minimization measures otherwise required by the plan could not be or were not implemented). Accordingly, any such action or actions shall not be considered a violation of the terms of the MBHCP or its associated ITP, provided that:

(a) *Conditions*:
(i) The action or actions in question were undertaken or carried out in exigent or emergency circumstances as defined below;
(ii) the action or actions were undertaken by or under the direct orders or supervision of an Incident Commander or similar fire control officer acting in the course of his or her official duties; and

(iii) the commander or officer involved, in consultation with MBG, prepares a brief, written account of the incident and submits that account to MBG and the FWS within five business days of the carrying out of such action or actions. This account shall include, at a minimum, a description of the circumstances surrounding the incident, the specific MBHCP requirements or measures that were not or could not be implemented in the course of the incident, and the results of the incident, if any and if known, in terms of take of the covered species or damage to the habitats of such species.

(b) *Definitions*. The term "emergency or exigent circumstances" is defined to mean any circumstances in which the action or actions in question had to be undertaken immediately and/or with little or no opportunity to consider or weigh alternatives in order to preserve human life or safety; or to prevent significant damage to significant public or private structural property (e.g., homes, barns, bridges, and the like).

5.5.2.2 Erosion Control

Generally, the potential for adverse impacts or take of the covered species as a result of construction or installation of erosion control activities will be either very minor or avoidable (Section 3.5.1.2). To the extent they might occur, however, they could consist of direct impacts (e.g., as a result of digging or excavation) to western burrowing owl burrows or nests, black-tailed prairie dog burrows or colonies, and leopard frog habitat (riparian or aquatic); disturbance impacts to burrowing owl, northern aplomado falcon, and yellow-billed cuckoo nests, and western red bat roosts; and direct or indirect impacts to aquatic species (as a result, respectively, of digging or excavation in, or degradation—through sedimentation—of their habitat). Of these, the grassland species would be most likely to be adversely affected by erosion control projects because most such projects will be undertaken in grassland or similar vegetation associations; and, of the grassland species, western burrowing owls would be most likely to be affected because they are by far the most widely distributed. Riparian and aquatic species would be affected by erosion control projects to the extent they would be undertaken within streambeds to combat stream channel erosion. Also, the juveniles and young of all species (except fish) are significantly more vulnerable than adults to adverse effects resulting from erosion control projects, because of their relative inability to escape.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of planning and constructing or installing erosion control structures.

(A) All species.

(1) Avoid Critical time periods (Section 5.5.1).

(2) Minimize Ground Surface Impacts. The area of impact (i.e., the area within which ground surfaces are disturbed in any way or by any means) resulting from construction or installation of any and all erosion control structures or projects undertaken under the MBHCP will be limited to the minimum necessary to meet project needs.

(3) Impacts Definitions. For purposes of this section, the terms "direct impacts" refers to the potential for direct killing or injury as a result of digging, excavation, or similar activities; "indirect impacts" refers to the potential for habitat degradation (e.g., sedimentation) associated with digging or excavation; and "disturbance impacts" refers to the potential for project-related disturbance of nest sites or roost sites and the possible results of such disturbance (e.g., flushing adults from nests resulting in death or injury to nestlings).

(4) Maintenance of Erosion Control Records. MBG will maintain detailed, written records about erosion control activities or projects carried out in the Malpai Borderlands annually with its assistance, cooperation, or under its sponsorship. Such records shall include, at a minimum:

(a) the date(s) each project was carried out;
(b) a map showing the location of projects;
(c) a brief description of the erosion control structure(s) installed or constructed and the type and severity of the erosion problem addressed;
(d) the cumulative number of erosion control projects carried out within the calendar year, both by calendar date and at the year's end; and
(e) at each year's end, the cumulative number of erosion control projects carried out since the effective date of the MBHCP.

(5) Education. All crews will receive a briefing on listed species in the area and conservation measures relevant to erosion control activities in the MBHCP.

(6) Invasive Species. All equipment and vehicles used in erosion control activities will be cleaned, dried, and/or sterilized to avoid the introduction and spread of non-native invasive weeds and amphibian chytrid fungus.

(B) Aquatic Species.

(1) Minimizing Direct/Indirect Impacts—Fish and Huachuca Water Umbel. Erosion control projects or structures, if any, planned or needed within the stream channel and/or involving the stream bed of any waterway actually or potentially hydrologically connected to any pond or stream within SBNWR will be carried out either: (i) when the streambed is dry; or (ii) at a minimum, at times when hydrologic conditions ensure that covered fish are likely not present.

(2) Minimizing Direct/Indirect Impacts—Leopard Frogs/Mexican gartersnakes. Erosion control structures, if any, planned or needed in aquatic areas in which Chiricahua leopard frogs, lowland leopard frogs, and/or northern Mexican gartersnakes are known or assumed to occur shall be constructed or installed either;

(a) when the streambed is dry, or,

(b) at a minimum, at times when hydrologic conditions ensure that leopard frogs and Mexican gartersnakes are likely not present; or outside leopard frog non-breeding seasons and Mexican gartersnake active periods (Section 5.5.1.1).

However, if pre-activity surveys have been conducted and no leopard frogs or Mexican gartersnakes have been found, construction or installation may proceed without restriction with respect to these species.

(C) Riparian Species.

(1) Minimizing Disturbance Impacts—Yellow-billed Cuckoos/Western Red Bats. Erosion control structures, if any, planned or needed in riparian vegetation communities in which yellow-billed cuckoos are known or assumed to occur shall be constructed or installed either:

(a) outside the yellow-billed cuckoo's breeding season, (Section 5.5.1.2); or

(b) a minimum of 250 feet from any known active yellow-billed cuckoo nest (as determined through reference to the species habitat or species occurrence maps and/or through pre-activity surveys).

However; if pre-activity surveys have been conducted and no yellow-billed cuckoo nests have been found, such construction or installation can proceed without restriction with respect to yellow-billed cuckoos. As for western red bats, because this species may be present in riparian vegetation at any time of the day or year and individual bats are difficult to detect:

(c) where erosion control activities must be undertaken in riparian vegetation communities, such activities shall, with respect to western red bats, be carried out:

(d) outside the western red bat's pupping season, (Section 5.5.1.2); and

(e) at all other times of year, employing the least noisy and disturbing methods and over the shortest time period possible.

(D) Grassland Species.

(1) Minimizing Direct Impacts—Owls/Prairie Dogs/Jackrabbits. Erosion control structures planned or needed in grassland vegetation associations in which active western burrowing owl, black-tailed prairie dog, or white-sided jackrabbit nests or colonies, as applicable, are known to occur within the project vicinity shall be constructed or installed either:

(a) outside burrowing owl's or white-sided jackrabbit's breeding seasons (Section 5.5.1.4); or

(b) a minimum of 250 feet from any known active burrowing owl, black-tailed prairie dog, or white-sided jackrabbit nest or colony, as applicable.

(2) Exceptions/Alternatives. In some cases, technical considerations dictating where an erosion control structure must be placed may complicate observance of the 250-foot buffer described in measure (1)(b) above or even prevent avoidance of an affected nest or colony itself. In such cases:

(a) the buffer may be waived or reduced as necessary to carry out the project, provided that the nests or colonies themselves are not disturbed and that it can reasonably be

concluded, based on adequate observation by a qualified individual, that the sites involved are not active nests; or

(b) in the rare event that the nest or colony cannot be avoided as a result of the same considerations, the project can nevertheless be undertaken, provided that it can reasonably be concluded, based on adequate observation by a qualified individual, that the nests are not active or the colony has no pups.

(3) Minimizing Disturbance Impacts—Falcons. Erosion control structures planned or needed in grassland vegetation associations in which northern aplomado falcons are known or assumed to occur within the project vicinity should be constructed or installed either:

(a) outside the northern aplomado falcon critical time period as defined in Section 5.5.1.4; or

(b) a minimum of 250 feet from any known active northern aplomado falcon nest (as determined through reference to the species habitat or species occurrence maps and/or through pre-activity surveys).

5.5.2.3 Mechanical Brush Control

Mechanical brush control activities could affect the covered species either directly or indirectly, depending on the species assemblage involved. Aquatic species would be affected only indirectly, since brush control activities of the type planned under the MBHCP (i.e., control of woody brush in grassland and shrubland vegetation associations) would not occur directly within aquatic habitats. However, mechanical brush control activities in upland areas surrounding perennial streams could, as with fire management, result in downstream mobilization of sediments that ultimately find their way into these aquatic habitats. In the case of the covered fish and Huachuca water umbel, such effects would be confined to brush control activities in the San Bernardino Valley immediately upstream of SBNWR (where most of these fish occur), although in the case of leopard frogs they could occur in other locations as well. Such effects would also be more likely to occur if brush control activities in any such areas were extensive.

Because mechanical brush control activities by definition employ relatively heavy equipment (e.g., bulldozers and “roller-choppers”), the potential effects of such activities would include direct, ground-disturbing impacts, and disturbance impacts from noise. Ground disturbance would be most likely to affect the grassland species, because such activities will occur primarily in grassland vegetation where northern aplomado falcon, western burrowing owls, black-tailed prairie dogs, and white-sided jackrabbits live on or below the ground. These effects to grassland species could include trapping individuals in collapsed burrows, resulting in direct take of individual white-sided jackrabbits, burrowing owls or black-tailed prairie dogs, although mechanical brush control would not likely be implemented on a prairie dog town as shrub component of black-tailed prairie dog habitat would not necessitate such control efforts. It would likely move individuals out of the area and force the excavation of new burrows, resulting in harassment of all these species. These activities would not be expected to directly affect the riparian species because brush control will not be done in riparian areas. The noise-related disturbance impacts would be most likely to affect western red bats, but unlikely to affect yellow-billed cuckoos, western burrowing owls, or northern aplomado falcons. This is because

mechanical brush control is carried out early in the year prior to the growing season and before the nesting cycles of all three of these birds. Red bats, however, can be found in their riparian habitats and thus subject to such disturbances year-round.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of planning and carrying out mechanical brush control activities.

(A) All Species.

(1) Critical time periods will be avoided (Section 5.5.1).

(2) Annual Acreage Cap. To minimize the potential adverse effects of mechanical brush control generally, especially with respect to indirect effects on aquatic habitats, and to promote the "distribution" of brush control activities across space and time, the HCP establishes annual acreage "caps" which limit the area, in acres, that may be mechanically treated for brush in the Malpai Borderlands each year. Specifically, mechanical brush control activities carried out under this HCP in the Malpai Borderlands will not be permitted to cumulatively exceed more than 2,000 acres per calendar year.

(3) Maintenance of Brush Control Records. MBG will maintain detailed, written records about mechanical brush control activities or projects carried out in the Malpai Borderlands annually with its assistance, cooperation, or under its sponsorship. Such records shall include, at a minimum:

(a) the date(s) each such project was carried out;
(b) the size, in acres, of the project;
(c) a map showing the location and perimeters or boundaries of the project, the area within those perimeters or boundaries, and pertinent features, if any, within that area;
(d) the cumulative acreage of all mechanical brush control projects carried out within each calendar year, both at the time of any given project and at the year's end; and
(e) the cumulative acreage, at the time of any given project, of all mechanical brush control projects carried out since the effective date of the MBHCP.

(4) Education. All crews will receive a briefing on listed species in the area and conservation measures relevant to erosion control activities in the MBHCP.

(5) Invasive Species. All equipment and vehicles used in brush control activities will be cleaned, dried, and/or sterilized to avoid the introduction and spread of non-native invasive weeds and amphibian chytrid fungus.

(B) Aquatic Species.

Take minimization with respect to mechanical brush control activities and aquatic species is related only to prevention of increased sedimentation into aquatic species habitats. Direct loss of leopard frogs and Mexican gartersnakes is not likely to occur as these activities would not occur

in their habitat. Therefore, such activities undertaken upstream or adjacent to aquatic species habitats shall be carried out by either:

(1) Buffering drainages by keeping ground disturbance more than 250 feet from the edge of such aquatic or riparian species habitats and washes; or
(2) Reducing ground disturbance through use of hand tools or, where that is impracticable, employing the least disturbing methods over the shortest time period possible.

(C) Riparian Species.

(1) Minimizing Disturbance Impacts. Mechanical brush control activities might be undertaken in grassland vegetation associations adjacent to riparian, but typically will occur prior to the mesquite and shrub growing season. This is prior to the yellow-billed cuckoo and western red bat breeding periods and, therefore, avoidance of the critical periods for these species is part of the proposed activity. However, because western red bats may be present in such areas at all other times of year, such activities undertaken near or adjacent to riparian vegetation may disturb roosting bats. Therefore, such activities shall be carried out by either:

(a) Buffering drainages by keeping ground disturbance more than 250 feet from the edge of such aquatic or riparian species habitats and washes; or
(b) Reducing ground disturbance through use of hand tools or, where that is impracticable, employing the least disturbing methods over the shortest time period possible.

(D) Grassland Species.

(1) Minimizing Direct Impacts. Take minimization with respect to mechanical brush control activities and active western burrowing owl, northern aplomado falcon, or white-sided jackrabbit breeding sites is not needed because such activities are always undertaken during the non-growing season which is outside the breeding periods of these species. However, take minimization during these activities may be needed with respect to northern aplomado falcon nest structures and black-tailed prairie dog colonies. Consequently, mechanical brush control activities planned in grassland vegetation associations in which northern aplomado falcon nest structures or black-tailed prairie dog colonies are known to occur in or in the vicinity of the project (as determined through reference to the species habitat or species occurrence maps and/or through pre-activity surveys):

(a) shall be undertaken a minimum of 250 feet from the edge of any such prairie dog colony; and
(b) should not commence until all northern aplomado falcon nest structures present, if any, have been protected through installation of temporary fencing around the base of the trees of a minimum 15-foot radius (to protect the trees from direct, brush control-related impacts).

However; if pre-activity surveys have been conducted and no northern aplomado falcon nest structures or black-tailed prairie dog colonies have been found, brush control activities may proceed without restriction with respect to these species.

5.5.3 Ranch Management Activities

5.5.3.1 Livestock Management

"Livestock management" refers to the presence or movement of livestock into, through, or within habitats in the Malpai Borderlands actually or potentially inhabited by the MBHCP's covered species. Based on this definition, the most likely circumstances in which take of the covered species might occur as a result of livestock management would result from the presence of livestock within riparian corridors and/or streambeds for the purpose of watering (in which case take of fish or leopard frogs might occur), and within pastures that might contain northern aplomado falcon nests (in which case damage to falcon nest structures might occur). In the following subsections, specific examples of circumstances in which covered aquatic, riparian, and grassland species might be taken as a result of livestock management and measures to minimize the likelihood of such take are described.

(A) <u>All Species</u>.

No minimization measures for livestock management are consistent between all species associations. Therefore refer to the following sections for specific minimization measures by species associations.

(B) <u>Aquatic Species</u>.

The fish species and Huachuca water umbel are confined almost exclusively to the SBNWR, which is managed principally on their behalf and on which no livestock or grazing is permitted. Therefore, there are no effects to Huachuca water umbel anticipated from livestock management. However, in high-rainfall years, some of the SBNWR's resident fish may move upstream to Astin Spring, a small, partially fenced riparian enclave within a 160-acre pasture on the nearby Malpai Ranch. The Malpai Ranch does graze this pasture and cattle occasionally have access to the spring for water (Wendy Glenn, pers. comm.). However, actual contact between livestock and fish at Astin Spring will likely be infrequent and of short duration.

The presence of livestock in aquatic areas could, if leopard frogs are present, result in trampling-related death or injury to frogs (especially in the case of eggs, metamorphs, and juveniles), and, possibly, water quality impacts (e.g., increased sedimentation). If Mexican gartersnakes are present the impacts could include trampling-related death or injury and indirect impacts on prey base of fish and frogs from water quality. However, the severity of such effects would depend on the intensity, duration, and timing of livestock use and would tend to be highly localized.

(1) <u>Take Minimization.</u> In high-rainfall events or periods, or otherwise whenever hydrological connection is established between the SBNWR and Astin Spring, SBNWR and MBG personnel will work cooperatively and as necessary to:

(a) obtain permission from the Malpai Ranch for SBNWR personnel to access Astin Spring for the purpose of monitoring fish presence and use of the spring, and, as necessary, common livestock use;
(b) work with the owners of Malpai Ranch, if they are willing, to temporarily resolve conflicts or problems with respect to joint fish and livestock presence or use of the spring in accordance with Section 5.3.2 of the plan, to temporarily resolve the conflict in a mutually satisfactory manner. Also:
(c) work with the owners of Malpai Ranch, if they are willing, to find a long-term solution or a modification of livestock management in Astin Spring when fish are present, in accordance with Section 5.3.2.

If leopard frogs and/or Mexican gartersnakes are present in an aquatic system, MBG and the enrolled landowner will discuss ways to reduce the effects of livestock presence on riparian vegetation and associated aquatic sites during critical time periods for these species. In addition, MBG and the enrolled landowner will determine where appropriate riparian vegetation protection and improvement projects shall be pursued, when funding and other assistance is available.

This may include, but is not limited to: limiting livestock access to portions of the aquatic system, limiting livestock numbers or duration of access during critical periods for these species, creating "water gaps" (i.e., closure of riparian and associated aquatic areas to livestock via fencing except for sections or "gaps" in the habitats deliberately left open for livestock access), avoid transferring water from one surface source to another, when transferring livestock from one location to another allow time for them to dry before allowing them access to water, and/or enhancing underwater cover & substrate for egg mass deposition.

(C) Riparian Species.

It is assumed that some, perhaps all, Malpai ranchers from time to time water their livestock in aquatic and associated riparian biotic communities. This would not result in mortality of yellow-billed cuckoos or western red bats since both species use the riparian canopy for their activities, which is outside the range of direct livestock impacts. However, some disturbance effects could occur depending on the intensity, duration, and timing of livestock use; although, any such effects would tend to be highly localized.

(1) Take Minimization. In light of the above, MBG shall work with Malpai landowners in accordance with Section 5.3.2 of the plan to protect and improve riparian vegetation communities on their lands by:

(a) increasing or improving the availability of artificial stocktanks;
(b) where riparian watering cannot be avoided, encouraging watering regimes that minimize the effects of livestock presence in riparian and associated aquatic areas during critical time periods (Section 5.5.1.2); and

(c) supporting riparian vegetation protection and improvement work through funding and other assistance as appropriate.

(D) Grassland Species.

Species that live in burrows routinely co-exist with livestock in the Malpai Borderlands, and prior to the advent of livestock, routinely co-existed with naturally occurring large ungulates (e.g., antelope and bison). Therefore, western burrowing owls and black-tailed prairie dogs are unlikely to be significantly affected by livestock grazing. . Northern aplomado falcons could be affected if a nest structure (typically consisting of small trees or large yuccas) is damaged through direct physical contact with the tree (e.g., by rubbing against it). This has evidently been observed (BLM 2002) and possible consequences include destabilization of a nest structure to the extent that the tree might eventually be lost and if it occurs during active nesting, disturbance of the nest may cause nestling care to be interrupted or compromised.

(1) Take Minimization. Northern aplomado falcons do not currently nest in the Malpai Borderlands, but future such nesting is likely (Section 4.2.1). In light of this, the FWS, AGFD, NMDGF, and MBG working jointly and cooperatively:

(a) will monitor known northern aplomado falcon nesting within the U.S. portion of the species' range generally and within the Malpai Borderlands specifically;
(b) will work with applicable Malpai ranchers to determine if the nesting structure is at risk from livestock management; if an northern aplomado falcon nest or nests have been established in the Malpai Borderlands, especially if any such nest occurs in an area where high numbers of livestock congregate and pose not only a potential, but a likely risk to the nest structure; and
(d) will work with applicable Malpai ranchers in accordance with Section 5.3 of the plan to protect the nest structure from livestock related disturbance before the next breeding season, defined in Section 5.5.1.4.

However, since in most cases northern aplomado falcon nests would not be discovered until nesting has been initiated, protection of any such falcon nest structure should be accomplished before the next nesting season, provided any applicable Malpai rancher has entered into a COI in accordance with Section 5.3:

(e) via construction of permanent fencing (e.g., of posts and smooth wire) around the nest structure at a distance of not less than a 15-foot radius around the base of the structure, if determined to be necessary by the FWS, and NMDGF or AGFD, as applicable;
(f) the fence shall be constructed after termination of the first northern aplomado falcon nesting season following discovery of the nest and before commencement of the second nesting season following that discovery, in accordance with the breeding season identified below. In the meantime:
(g) livestock already pastured or scheduled to be pastured in the vicinity of the nest at the time of nest discovery may remain in or be placed in the pasture as scheduled,

unless a reasonable alternative to such pasturing is available or feasible, in which case livestock shall be removed from the pasture as soon as possible after the nest is discovered or not placed into the pasture, as applicable.

5.5.3.2 Linear Facility Construction/Maintenance

The effects of linear facility construction and maintenance on the covered species could consist of direct impacts (to ground-dwelling species), disturbance-related impacts (e.g., at nest sites), or indirect impacts (in aquatic habitats). Direct, ground-disturbing impacts would be most likely to affect the grassland species (especially western burrowing owls, black-tailed prairie dogs, and white-sided jackrabbits) and could occur if grading or trenching is carried out in the vicinity of the active nests and/or colonies of these animals. Disturbance-related impacts would be most likely to affect the covered bird species and western red bats, if grading, trenching, or mowing is carried out in the vicinity of the active nests of northern aplomado falcons, western burrowing owls, or yellow-billed cuckoos, or the roost sites of western red bats. Finally, indirect impacts to the covered fish are theoretically possible, but would occur only if a fence, waterline, road, or utility line is routed directly through Black Draw in SBNWR or adjacent to the Refuge when fish are present in the stream (all of which are relatively unlikely). However, the routing of any of these facilities through perennial stream corridors could affect the two leopard frogs, directly or indirectly, in a number of locations.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of carrying out linear facility construction and maintenance activities under the MBHCP.

(A) All Species.

(1) In the course of planning and carrying out of linear facility projects, MBG and/or individual Malpai Ranchers, as applicable, will exercise due caution to avoid destruction of, significant damage to, or disturbance of the habitats of the covered species. Specifically:

(a) Avoid Critical time periods for species in the covered Area (Section 5.5.1).

(b) To the maximum extent practicable and consistent with topography, logistics, and other technical considerations, alignments for planned construction of fencelines, waterlines, roads, and utility lines will be routed so as to avoid specific areas known to be occupied by the covered species and specifically known habitat features of the covered species such as burrows and nests; and,

(c) Where ground preparation (e.g., clearing of vegetation) is determined to be necessary during planned construction or maintenance of a linear facility, the corridor cleared, otherwise prepared, or maintained will not exceed 35 feet in width and will not exceed four acres a year, on average, of new disturbance.

(2) Linear Facility Construction Records. Any Malpai area rancher who undertakes construction of a linear facility under the terms of a COI with MBG in accordance with Section 5.3.2 of the plan shall, within 30 days of completion of the facility, submit to MBG a brief written summary of the project which includes, at a minimum:

(a) the date(s) the project was carried out;
(b) a map showing the location of the project; and
(c) a brief description of the facility, including its length and total area.

MBG, in turn, will compile and maintain detailed written records about all such linear facility projects for which written summaries are submitted. Such records are to include, at a minimum:

(d) the information described in measures (a)-(c) above;
(e) the cumulative number of all such projects, by project type, carried out within a given calendar year and their cumulative length; and
(f) at each year's end, the cumulative number of all such projects and their length, by project type, carried out since the effective date of the MBHCP.

(3) Education. The enrolled rancher and contractor will receive a briefing on listed species in the area and conservation measures relevant to the particular project under the certificate of inclusion.

(4) Invasive Species. All equipment and vehicles brought into the area for used in construction or maintenance of linear facilities will be cleaned, dried, and/or sterilized to avoid the introduction and spread of non-native invasive weeds and amphibian chytrid fungus.

(B) Aquatic Species.

(1) Minimizing Direct/Indirect Impacts—Fish and Huachuca Water Umbel. Linear facility projects or structures, if any, planned or needing maintenance within the stream channel and/or involving the stream bed of any waterway actually or potentially hydrologically connected to any pond or stream within SBNWR shall be constructed or maintained either:

(a) when the streambed is dry; or
(b) at a minimum, at times when hydrologic conditions ensure that covered fish are likely not present.

(2) Minimizing Direct/Indirect Impacts—Leopard Frogs/Mexican gartersnakes. Linear facility projects or structures, if any, planned or needing maintenance in aquatic areas and riparian vegetation in which Chiricahua leopard frogs, lowland leopard frogs, and/or northern Mexican gartersnakes are known or assumed to occur shall be constructed or maintained either:

(a) when the streambed is dry, or, at a minimum, at times when hydrologic conditions ensure that leopard frogs and Mexican gartersnakes are likely not present; or
(b) outside the critical periods of the leopard frogs and the Mexican gartersnake as defined in Section 5.5.1.1.

(C) Riparian Species.

(1) General Measures. To protect riparian biotic communities generally, the sensitive aquatic areas typically associated with them, and the covered species actually or potentially inhabiting them in the course of linear facility construction, such facilities will, if possible:

(a) be routed outside the edge of any riparian areas within the vicinity of the lines, or,
(b) if they must be routed through such areas, will follow the shortest distance possible consistent with the facility's purpose. In addition,
(c) maintenance of such facilities involving the use of heavy equipment (e.g., bulldozers) shall not be conducted in riparian areas except as necessary to maintain existing roads.

(2) Minimizing Disturbance Impacts—Yellow-billed Cuckoos. Linear facility projects or structures, if any, planned or needing maintenance in riparian vegetation communities in which yellow-billed cuckoos are known or assumed to occur shall be constructed or maintained either:

(a) outside the yellow-billed cuckoo's breeding season (Section 5.5.1.2); or
(b) a minimum of 250 feet from any known active yellow-billed cuckoo nest (as determined through reference to the species habitat or species occurrence maps and/or through pre-activity surveys). However:
(c) if pre-activity surveys have been conducted and no yellow-billed cuckoo nests have been found, such construction or installation can proceed without restriction with respect to yellow-billed cuckoos.

(3) Minimizing Disturbance Impacts – Western Red Bats. As for western red bats, because this species may be present in riparian vegetation at any time of the day or year and individual bats are difficult to detect, where linear facility construction or maintenance activities must be undertaken in riparian vegetation communities, such activities shall, with respect to red bats, be carried out:

(a) outside the species' pupping season (Section 5.5.1.2); and
(b) at all other times of year, employing the least noisy and disturbing methods and over the shortest time period possible.

(D) Grassland Species.

(1) Minimizing Direct/Disturbance Impacts—Owls, Falcons, Prairie Dogs, Jackrabbits. Linear facility projects or structures, if any, planned or needing maintenance in grassland

vegetation communities in which active western burrowing owl, northern aplomado falcon, black-tailed prairie dog, or white-sided jackrabbit nests or colonies, as applicable, are known to occur in the vicinity of the planned project shall be carried out either:

(a) outside covered species' critical time periods (Section 5.5.1.4); or
(b) a minimum of 250 feet from any known active covered species' nest or colony as applicable, whether or not bulldozers, trenching machines, or similar equipment is used.

5.5.3.3 Stocktank Maintenance/Use/Repair

This applies primarily to earthen stockponds, although above-ground tanks may also require occasional maintenance or repair. Stockponds must be maintained on a relatively scheduled basis (once every 5 to 10 years) and may also periodically need repair. Stockpond maintenance typically consists of dredging out and removing accumulated sediment from the pond, which typically requires the use of heavy equipment and can have significant impacts on (including take of) leopard frogs and Mexican gartersnakes inhabiting ponds at the time of maintenance. However, stockpond maintenance and repair activities are undertaken exclusively by individual Malpai-area ranchers, not by MBG, and are therefore outside the scope of the MBHCP—unless such ranchers enter into a COI with MBG which addresses those activities in accordance with Section 5.3 of the plan.

Stocktanks by definition are used and frequented by livestock. In the Malpai Borderlands they are also likely to be inhabited by three of the MBHCP's covered species: Chiricahua leopard frogs, lowland leopard frogs, and Mexican gartersnakes. As a result of this overlapping use, three routine activities associated with stocktanks may result in "take" of leopard frogs and are therefore potentially relevant issues for the plan: first, use of the tanks by livestock which could result in the potential for trampling-related take discussed under livestock management; second, stocktank maintenance, especially in the case of stockponds which must be dredged out every 5 to 10 years; and third, emergency stocktank repair which may be needed in the case of flood damage.

This picture is complicated by the fact that two existing mechanisms of authority in the Malpai Borderlands already addressing many, but not all, of the activities associated with stocktanks that can affect leopard frogs, and the fact that the effective term (or "lifespan") of one of these cannot reliably be determined. These complications were confronted in the course of MBHCP development during selection of the plan's covered species/covered activities lists (see Technical Workgroup meeting notes; December 14, 2004). To some extent, they return here, specifically in determining what regulatory coverage, and associated take minimization measures might be needed in the future under the MBHCP, if currently existing authorities should change. These various coverages, or lack thereof, are summarized in Table 5-4 and addressed in the following subsections.

(A) Special 4(d) rule and Safe Harbor Agreement.

As summarized in Table 5-4, two Act authorities with respect to stocktank activities in the Malpai Borderlands currently exist: (a) a special 4(d) rule promulgated by the FWS with

Table 5-4:
Stocktank Activities Covered/Uncovered (C/U) Currently/In the Future w/ Respect to Leopard Frogs by Various Act Authorities

Activity	4(d) Rule[1]				SHA[1]				MBHCP			
	Current[2]		Future[2]		Current[2]		Future[2]		Current[2]		Future[2]	
	Clf	Llf	Clf	Llf	Clf	Llf	Clf	Llf	Clf	Llf	Clf	Llf
Stocktank Maintenance	C	U	U	U	C[3]	U	C[3]	U	U[5]	U[6]	C[5]	C[6]
Stocktank Repair	C	U	U	U	C[3]	U	C[3]	U	U[5]	U[6]	C[5]	C[6]
Use by Livestock	C	U	U	U	C[3]	U	C[3]	U	U[5]	U[6]	C[5]	C[6]
Return to Baseline[4]	U	U	U	U	C[3]	U	C[3]	U	U	U	U	U

[1] The 4(d) rule is described in 67 FR 40790, the Safe Harbor Agreement at Lehman (2004).
[2] With respect to the Chiricahua leopard frog, the term "Current" refers to the time period during which the 4(d) rule is in effect and "Future" refers to the time period after the rule has been revoked, if such a time occurs. The SHA, it is assumed, will remain in effect for 50 years.
[3] The SHA covers Chiricahua leopard frog populations that are above the "baseline" only—e.g., those inhabiting stocktanks into which they have been voluntarily introduced under the SHA.
[4] The term "return to baseline" means returning Ch. leopard frog populations to pre-enrollment levels for sites enrolled under the SHA (i.e., returning stocktanks to an uninhabited condition).
[5] Regulatory coverage for the Chiricahua leopard frog under the HCP would become effective only upon lapse or termination of the 4(d) rule but not before.
[6] In these columns, the term "Current" refers to the time period prior to the effective date of the HCP; the term "Future" refers to the time period after that date.

respect to the Chiricahua leopard frog at the time the frog was listed in June 2002 (67 FR 40790); and (b) a Safe Harbor Agreement (SHA) and its associated permit for the Chiricahua leopard frog approved and issued to MBG in March 2004 (Lehman 2004). These mechanisms exist independently of the MBHCP, and:

(1) Section 4(d) Rule: exempts from the Act's take prohibition, incidental take of Chiricahua leopard frogs in the course of livestock use of and maintenance activities at all existing and future stocktanks located on private, state, or tribal lands within the species' range; and

(2) MBG SHA: with respect to stocktanks enrolled in the SHA to which Chiricahua leopard frogs have been voluntarily introduced (or have dispersed into, after enrollment), authorize take as a result of maintenance, repair, conservation activities, and livestock use at such tanks, and as a result of returning such tanks to their pre-agreement "baseline conditions."

Thus, take coverage under the Act for Chiricahua leopard frogs currently exists, independently of the MBHCP, with respect to maintenance and livestock use of stocktanks on non-Federal lands throughout the range of the species (via the 4d rule), and with respect to these activities and others within SHA-covered stocktanks, which do not have existing populations of frogs at the time of enrollment. However, should either of these authorities lapse for any reason, the associated coverage would also lapse. Take coverage under the Act does not currently exist for

lowland leopard frogs or Mexican gartersnakes with respect to either stocktank activity. Stocktank activities are therefore covered by the MBHCP with respect to lowland leopard frogs and Mexican gartersnakes, but are not covered by the MBHCP with respect to Chiricahua leopard frogs, except as noted below. However, should the FWS's 4(d) rule with respect to Chiricahua leopard frogs lapse or significantly change at any time in the future (at least within the term of the plan), it is intended that the MBHCP would "step in" and take over that coverage, and would do so without any lapse in coverage.

To minimize the potential for these types of effects, the following measures shall be implemented in the course of stocktank use and maintenance activities under the MBHCP.

(B) Chiricahua Leopard Frog, Lowland Leopard Frog, and Mexican Gartersnake.

(1) Stockpond Maintenance/Repair. MBG will encourage Malpai ranchers to agree to enroll in the MBHCP to cover their livestock use and maintenance/repair activities of stocktanks. The following measures will be included in the COIs; however, such agreement is voluntary and the measures below are therefore compulsory on the part of any given rancher only in the event that a COI has been entered into.

(a) *Forty-five Day Notice*. Within 45 calendar days of planned maintenance of any stockpond, the Malpai rancher operating the stockpond shall provide notice to MBG, verbally or in writing, of his or her intention to commence such maintenance. Within 10 calendar days of receipt of such notice, MBG shall forward the notice, in writing, to the FWS with a copy to AGFD or NMDGF, as applicable. The purpose of the notice is to provide the FWS (and/or AGFD or NMDGF) with the opportunity to salvage (i.e., capture and move or hold) any resident frogs and/or Mexican gartersnakes during maintenance activities. Salvage of resident frogs does not mean that all frogs are captured, but enough to repopulate the site after maintenance is completed. If the FWS (and/or AGFD or NMDGF) elect(s) to undertake survey/salvage efforts, it will do so in accordance with paragraph (b) below. Maintenance operations may then proceed, as applicable:

(i) immediately upon surveys concluding the stockpond is not likely occupied or after the salvage of resident frogs, as discussed above;
(ii) immediately upon receipt by MBG or the rancher of notification from the FWS that it declines salvage; or
(iii) if the FWS does not respond to the notice, immediately upon the end of the 45-day notice period; and consistent with the measure below.

Stocktank maintenance and repair activities subject to this notice shall include any that result in a necessity to dry out a stockpond and/or to significantly disturb the substrate, embankments, or vegetation in and around that portion of the pond that normally holds water and supports an aquatic environment. Forty-five day notice for other maintenance activities, not likely to result in take, is not required. However, in the course of routine use of any stockpond, the owners and/or operators of the pond will

notify MBG immediately upon observing that frogs or gartersnakes of any species inhabit the tank. MBG, upon receiving such notice will immediately undertake efforts necessary to ensure accurate determination of the species of leopard frog or gartersnake in the tank, and, if they are Chiricahua leopard frogs, lowland leopard frogs, or Mexican gartersnake, will record this information on the species occurrence maps as described in Section 5.4.1.

(b) *Access and Salvage/Disposition of Leopard Frogs and Gartersnakes*. In the event the FWS (and/or AGFD or NMDGF) elect(s) to carry out leopard frog or gartersnake salvage, it will so inform the affected Malpai rancher within 15 days of receipt of the 45-day notice and will arrange a suitable time to enter the ranch to carry out the salvage with the rancher. The Malpai rancher will permit such entry at a time and under such conditions as he or she may specify. Leopard frogs and gartersnakes removed from a stockpond pursuant to this subsection may, at the FWS's sole discretion, be returned to the tank at the conclusion of maintenance activities or be transported to another location, except that such leopard frogs and gartersnakes may not be introduced into any Malpai Borderlands ranch location not at that time already supporting either Chiricahua leopard frogs, lowland leopard frogs and/or Mexican gartersnakes unless the affected landowner (if on private land), ASLD, or NMLO, as applicable, and the affected lessee (if on state trust land) consent to such introduction.

(c) *Carrying Out Maintenance Activities*. Maintenance activities at all stockponds known to support Chiricahua leopard frogs, lowland leopard frogs, and Mexican gartersnakes shall, to the maximum extent practicable, be undertaken outside the critical time periods for these species (Section 5.5.1); and, to the maximum extent practicable, in the course of such maintenance, the vegetation in a small portion of the stockpond bank shall be left undisturbed as a refugium for frogs present in the pond that were not salvaged, if any.

(d) *Emergency Maintenance*. Notwithstanding the above, the 45-day notice of stockpond maintenance activities may be waived in emergency situations and corrective actions in such situations may be undertaken as needed and without delay. However, any Malpai rancher carrying out such emergency action will report the circumstances to MBG within 72 hours after the situation triggering the action has ended or been controlled, and MBG will include a brief description of those circumstances in its annual report to the FWS. An emergency situation is defined as any in which, in the sole judgment of the Malpai rancher, a stocktank is in imminent danger of destruction or significant damage as a result of fire, flood, potential breech, or similar circumstances.

(e) Education. The enrolled rancher and contractor will receive a briefing on listed species in the area and conservation measures relevant to the particular project under the certificate of inclusion.

(f) Invasive Species. All equipment and vehicles brought into the area for used in

stocktank maintenance will be cleaned, dried, and/or sterilized to avoid the introduction and spread of non-native invasive weeds and amphibian chytrid fungus.

(g) *Stocktank Maintenance Records*. Any Malpai area rancher who undertakes maintenance of a stockpond under the terms of a COI with MBG shall, within 30 days of completion of the maintenance, notify MBG verbally or in writing of the outcome of the maintenance. Such notification will include, at a minimum:

(i) the date(s) maintenance was carried out;
(ii) an identifying name or number of the stockpond involved, if any, and a map showing its location;
(iii) whether or not frogs were salvaged from the pond;
(iv) if frogs were salvaged, their approximate number and the location to which they were taken temporarily, if applicable, and/or permanently; and
(v) the number of frogs directly impacted or taken during the maintenance activities, if known.

MBG, in turn, will compile and maintain detailed written records about all stockpond maintenance activities on covered lands and, the outcome of the maintenance performed. Such records will include, at a minimum:

(vi) the information described in measures (a)-(e) above;
(vii) the cumulative number of all such stockpond maintenance projects carried out within the subject calendar year and the number of frogs affected, if any and if known;
(viii) at each year's end, the cumulative number of all such stockpond maintenance projects carried out since the effective date of the MBHCP; and
(ix) all information described in measures (i)-(v) above, as applicable, with respect to any emergency stockpond maintenance undertaken in accordance with paragraph (iv) above.

(2) Livestock Use of Stocktanks. The MBHCP provides no specific take minimization measures with respect to livestock use of stocktanks for the following reasons: this approach is consistent with the FWS's 4(d) rule applying to Chiricahua leopard frogs, which likewise imposes no such measures; and because the biological rationale underlying the 4(d) rule, that the long-term benefits that stocktanks provide to leopard frogs, in terms of the availability of reliable aquatic habitat, far outweigh the relatively minor effects to the species that may result from occasional livestock-related take. However, with that said, there are certain actions that can be taken to reduce impacts to leopard frogs and Mexican gartersnakes and assist in recovery of these species. These are listed in Section 2.5.4 and 2.5.5 of the MBG SHA (Lehmann 2004). MBG should encourage ranchers interested in enrolling in the MBHCP to implement these activities in their stockponds, if not just enrolling in the SHA. These same conservation measures would provide benefits for lowland leopard frogs and Mexican gartersnakes.

(3) Notification of Revision/Termination. Under the terms of this subsection, the FWS, should it undertake action at any future time either to revise, rescind, or terminate its current 4(d) rule with respect to Chiricahua leopard frogs, agrees to provide notice to MBG in writing. Such notice shall be provided at a minimum at the time of any proposed or final action with respect to the 4(d) rule is announced in the *Federal Register*.

5.6 Mitigation Measures

Section 10(a)(2)(A) of the Act requires, among other things, that an HCP describe the steps that will be taken to minimize and mitigate for the effects of the taking authorized by the proposed ITP. Unlike incidental take minimization measures, which are designed to reduce the amount of take, mitigation measures are designed to offset or compensate for the actual effects of incidental take that occurs under the MBHCP; and mitigation for such incidental take typically includes compensating for the loss of individuals and habitat through long-term protection of intact habitats of the affected species. This mitigation should also be commensurate with the effects of the incidental take, as discussed above.

The MBHCP is unusual among HCPs in that the activities covered by the plan are themselves conservation oriented, as are the majority of activities and programs undertaken by MBG. The purpose of both types of activities are to maintain, and where necessary improve, ecological conditions in the Malpai Borderlands; to maintain the area in a natural, undeveloped condition; and to return periodic fire to the Malpai Borderlands as a functioning component of the ecology of the area.

The MBHCP may result in incidental take of covered species as discussed in Section 5.5 and 7.1. This incidental take may be in the form of direct mortality, harm, and harassment. It is anticipated that through the implementation of the MBHCP minimization measures the level of incidental take would be minimal and limited in time and scope. Adverse effects are not expected to affect the covered species at a population level, although some individuals will be lost. Long-term beneficial effects of the MBHCP are also expected, as discussed below.

The MBHCP addresses four habitat-related issues connected with the plan: those involving the limited amount of species habitat that might be temporarily adversely affected by erosion control, livestock management, and stockpond use and maintenance activities; those involving the more extensive, but still temporary, adverse habitat effects of managed fire and mechanical brush control; those involving the potentially more significant, but unlikely and unplanned, adverse effects of fire on riparian and montane species' habitats should managed fire inadvertently escape into such areas; and the limited, but potential permanent loss of habitat related to the construction and maintenance of some linear facilities and fire control lines. Of these effects, those resulting from the covered erosion control, livestock management, and stockpond use and maintenance activities would be so minor as to be negligible (Section 7.2); those resulting from the covered fire management and mechanical brush control activities would be transitory (Section 7.2); those resulting from inadvertent escape of fire into riparian and montane areas would be addressed if they do occur as Changed Circumstances (Section 8.3); and

the potentially long-term loss of habitat from linear facilities and fire control lines would involve so small an area over the life of the plan as to be negligible (Section 5.5.3).

On the other side of the equation are the likely or expected habitat benefits of the MBHCP specifically and of MBG programs generally. In particular, the effects of the MBHCP's proposed grassland improvement activities on the covered species and their habitats, while potentially adverse in the short-term, are expected to be beneficial over the long-term by correcting processes, such as erosion and brush encroachment that are detrimental to those habitats. The construction and maintenance of linear facilities include fences, water development, and the roads needed to maintain those facilities which are typically related to improvements in livestock management, specifically better distribution over a pasture and livestock rotation practices should also improve conditions on a landscape level for the habitat of covered species. In addition, the MBG conservation easement program is producing immediate and dramatic conservation benefits for the covered species by protecting large portions of the Malpai Borderlands from development, approximately 75,000 acres to date. While this program is being undertaken independently of the HCP, it nevertheless, in association with the grassland improvement activities, which are dependent on the HCP, illustrates the significant conservation orientation and potential of MBG programs overall with respect to virtually all aspects of the ecology and landscape of the Malpai Borderlands.

Therefore, it is anticipated that the landscape level benefits (i.e. reduced erosion, restoration of grasslands, and improves to the watershed) identified in the MBHCP over the 30-year period of the ITP, should mitigate for the temporal and small-scale effects of the incidental take of the proposed covered species from the covered activities identified within the MBHCP.

5.7 Monitoring

Two types of monitoring are provided for under the MBHCP: compliance (or implementation) monitoring; and biological effectiveness monitoring (or, simply, biological monitoring). The purpose of compliance monitoring is to ensure that the minimization and mitigation measures established by the MBHCP to meet the requirements of the Act are fully and appropriately carried out (i.e., to track and verify implementation of the plan's regulatory requirements). This is accomplished under the plan primarily through coordination, documentation, and reporting (Section 5.7.1). Biological monitoring involves monitoring of the covered species, including take as a result of the covered activities, the biological effectiveness of the MBHCP , the MBHCP's ability to meet the species conservation objectives, and, in light of the preceding, the Adaptive Management program (Sections 5.7.2.1, 5.7.2.2, and 5.8).

5.7.1 Compliance Monitoring

Ensuring compliance with the MBHCP will be accomplished under the plan through: monitoring the implementation of minimization measures, record keeping, and reporting efforts by MBG; compliance monitoring by the FWS; reporting provided by Malpai-area ranchers and other MBHCP participants; and the functioning of the Technical Advisory Committee. Each of these is detailed as follows.

5.7.1.1 Monitoring and Record Keeping by MBG.

As the Permittee of the proposed ITP and associated MBHCP, MBG is the entity primarily responsible for ensuring day-to-day compliance with the plan, for itself, other MBHCP participants, and cooperators acting under MBG's authority or direction. Three such responsibilities are relevant here—the responsibility to carry out its own assigned obligations and tasks under the plan; to monitor compliance with the plan by participating Malpai-area ranchers; and to monitor such compliance by certain MBHCP cooperators (e.g., fire control officials working on managed fires in the Malpai Borderlands, personnel undertaking biological monitoring activities). MBG therefore agrees to exercise due diligence in carrying out measures under the plan that are its direct responsibility and to ensure that measures that are the responsibility of others are also carried out. Measures currently specified by the plan to fulfill the latter obligation include those described below (concerning the annual report and TAC, respectively). In addition to these measures, MBG will also:

- make reasonable efforts to be present at and help direct and coordinate significant grassland improvement activities and undertakings;
- will maintain regular communication with participating Malpai-area ranchers to promote and ensure compliance with active COIs; and
- at its discretion, will establish and undertake other compliance monitoring activities or procedures as necessary and appropriate.

In addition, MBG (and, to some extent, participating Malpai-area ranchers) will ensure compliance with the MBHCP in part through the mechanisms of project planning and record-keeping. The planning phase for covered projects and activities, for example (especially large-scale projects such as prescribed burns), will help accomplish plan compliance because it is at this point that many MBHCP measures (e.g., pre-activity surveys and take minimization measures) will be incorporated into project plans and thence into the projects themselves. Record-keeping required by the MBHCP is also an important component of compliance as it preserves information relevant to limits on these activities established by the plan and to the plan's annual report.

MBG's annual report to the FWS (Section 5.10) will document their compliance with the MBHCP. It provides detailed information concerning activities carried out under the plan in the previous year and represents MBG's certification to the FWS annually that its obligations (and those, if any, of participating Malpai ranchers) are being satisfied. Preparation of the annual report also occasions a period of time each year devoted to review and summary of activities both carried out and not carried out under the plan, thus providing an opportunity for tasks that might have been overlooked to be discovered and rectified. As seen in Section 5.10.1, 5.10.2, and 5.10.3, annual reporting also includes elements requiring reporting about the carrying out of certain activities by, respectively, participating Malpai ranchers to MBG, and SBNWR to the FWS and MBG.

5.7.1.2 Compliance Monitoring by the FWS.

The FWS has ultimate regulatory authority over the plan and its associated ITP; certain responsibilities for authority to approve the plan and issue the ITP, or suspend or revoke the ITP (e.g., in the event of non-compliance with the plan), responsibility to monitor and ensure regulatory compliance with the ITP and MBHCP by MBG and all other MBHCP participants. To do this, the FWS must have access to sufficient information concerning such compliance including a detailed annual report (see below and Section 5.10). In addition, to further facilitate compliance monitoring under the MBHCP, MBG and the FWS jointly agree:

(A) Request for Records. That MBG will, upon FWS request, make available to the agency any and all data or pertinent records maintained in MBG files relative to:

(1) the carrying out, method of carrying out, or time of carrying out, as applicable, of any covered activity either by itself, by any participating Malpai-area rancher, or any other MBHCP participant or cooperator, as applicable;
(2) habitat or vegetation conditions of any area in the Malpai Borderlands of interest to the agency;
(3) numbers, raw data, or other information, if any, pertinent to measures (1) and (2) above; and
(4) records of correspondence or other communication between MBG and MBHCP participants or cooperators as applicable and of interest to the agency; and,

(B) Procedural/Privacy Considerations. That any such request must be made in writing and allow MBG a minimum of 30 days to compile and deliver the records; and the handling and release of all such records or information by the FWS will be in compliance with the Federal Freedom of Information Act (FOIA) as related to public availability of such records and information. However, MBG has the option to request that FWS examine the records at MBG's offices or at a similar location specified by MBG, rather than provide copies of the records and information to the possession of FWS. This does not apply to the records or information required in the ITP and MBHCP annual reports.

(C) Reports Provided by Malpai-area Ranchers and other MBHCP Participants. Other MBHCP participants, and, in some cases, MBHCP cooperators, also have compliance obligations under the MBHCP. These are, specifically:

(1) in the case of Malpai-area ranchers, to report on the obligations they have voluntarily accepted under active or applicable COIs;
(2) in the case of other MBHCP participants (e.g., AGFD, NMDGF, and NRCS), the obligations they have accepted under the plan's associated IA; and
(3) in the case of certain MBHCP cooperators (e.g., fire control officers), the obligations they, or their agencies, have accepted through their signature on burn or fire management plans or other written agreements with MBG.

Thus, each of these entities has the responsibility to implement applicable requirements of the MBHCP as a result of these associated plan authorities and report on the implementation of MBHCP activities.

(D) Technical Advisory Committee. The MBHCP's TAC is a forum for communication and coordination among the MBHCP's principal participants, for reviewing conservation needs and directing conservation activities under the plan, and, in effect, for ensuring that the MBHCP's conservation measures and programs are effectively carried out.

5.7.2 Biological Monitoring

Biological monitoring is a crucial HCP component, as it is the basis upon which it is determined whether the plan's biological objectives and goals are being met, whether its conservation program is effective, and whether adjustments to that program are needed through its Adaptive Management procedures.

Biological monitoring under the plan is designed to determine the effectiveness of the MBHCP to meet its grassland conservation objectives and its species conservation objectives.

5.7.2.1 Grassland Conservation Monitoring

(A) Discretionary Measures.

Pursuant to the responsibility assignments described in Section 5.7.3.1 below, or subject to its own discretion, as applicable, MBG, with the assistance of other MBHCP participants and cooperators, will undertake both discretionary measures and non-discretionary measures to monitor the success of the MBHCP in meeting the grassland conservation objectives specified in Section 5.1.2.1. At MBG's option, discretionary measures may include, but are not limited to:

(1) Erosion Control. Periodic monitoring and evaluation of the effectiveness and success of MBG's, and Malpai-area ranchers' efforts, to correct and repair acute erosion in the Malpai Borderlands will occur. Monitoring measures that can be employed with respect to this objective include, but are not limited to: maintenance and evaluation of vegetation transects as described in subsection (B)(2) below; and periodic visits of erosion control project sites, qualitative visual assessment (e.g., gully elimination, floodplain restoration, re-colonization by grasses and forbs), and photo points established at such sites.

(2) Brush Control/Grassland Restoration. Periodic monitoring and evaluation of the effectiveness and success of MBG's and Malpai-area ranchers' efforts to control or reduce woody brush species, maintain and promote restoration of grassland habitats, and maintain and re-establish the productivity of native grasses and forbs in the Malpai Borderlands. Monitoring measures that can be employed with respect to this objective include, but are not limited to: maintenance and evaluation of vegetation transects as described in subsection (B)(2) below; at appropriate intervals (e.g., every 5 to 10 years), and subject to available funding, comprehensive evaluation of range conditions (e.g., soil stability, biotic integrity,

and watershed function) throughout the Malpai Borderlands; and evaluation of the range and extent of key vegetative indicators (e.g., mesquite as a negative indicator, native grasses as a positive indicator).

(3) Reporting Monitoring Results. In addition to the above, MBG shall briefly summarize the results of any monitoring carried out in each annual report it submits to the FWS.

(B) Non-discretionary Measures.

In contrast to the discretionary measures described above, the non-discretionary measures described below are requirements of the plan and must be carried out. Two things should be noted with respect to these measures—first, that they represent existing MBG programs already being carried out at the time of the MBHCP's development (and which the MBHCP has therefore incorporated as plan requirements); and, second, that the non-discretionary measures below in effect implement some of the suggested discretionary measures above. MBG shall therefore implement the following non-discretionary grassland conservation monitoring measures, with the assistance of other MBHCP participants and cooperators, as appropriate:

(1) Animas/MBG/RMRS Permanent Monitoring Plots. The monitoring program that the Malpai Group has developed over the last ten years is directed at measuring long-term ecological changes in the plant community. The basic methodology consists of a grid of point-intercept line transects which are used to document species composition and ground cover of the perennial plant community. This method is well documented in the scientific literature, and has been shown to have a high level of statistical power under a variety of conditions (Bonham 1989, Brady et al. 1995). In addition to point-intercept transect measurements, photographs are taken at all monitoring sites and frequency plots are sampled at sites selected for higher intensity monitoring. High-intensity monitoring is conducted annually at 20 to 25 plots which are selected to represent the major landform/vegetation types found throughout the Malpai region. Another 110 to 120 plots have been established at various sites in the region to document the outcome of a variety of land management practices such as fire, brush control, and grazing rest. These are sampled on a 3 to five year return cycle. In addition to these quantitative monitoring plots, repeat photography has been conducted at another 120 to 125 sites throughout the area to document broad-scale ecological changes.

(2) NRCS Vegetation Transects. A number of Malpai-area ranchers are parties to Cooperator Agreements or CRMPs with NRCS (Section 2.2.1.3), and included in those agreements in some cases are vegetation transects established and periodically monitored to determine rangeland conditions and trends. Accordingly, Malpai-area ranchers participating in the MBHCP shall, where such transects occur on their lands, continue to maintain, and in cooperation with NRCS evaluate these transects (currently totaling 16 transects on 4 ranches) as a requirement of the MBHCP so long as NRCS continues to be willing to assist Malpai ranchers in maintaining and evaluating these transects, and funding is available. In addition, in the event that any Malpai-area ranchers wishing to become MBHCP participants

have not previously entered into such agreements or plans with NRCS, and established such transects, they should be encouraged to do so as part of participating in the plan.

(3) Reporting Monitoring Results. In addition to the above, MBG shall briefly summarize the results of monitoring of the 200 permanent monitoring plots described in paragraph (B)(1) above in each annual report it submits to the FWS; and Malpai-area ranchers participating in the MBHCP who have vegetation transects as described in paragraph (B)(2) above on their lands shall, by February 15 of each calendar year, prepare and submit to MBG a brief summary of the results of vegetation transect evaluations, if any, conducted in the previous calendar year, and of how those results compare to the results of previous years' evaluations. MBG, in turn, shall incorporate the information contained in transect summaries submitted to it by participating Malpai ranchers into each annual report submitted to the FWS, as appropriate.

5.7.2.2 Species Conservation Monitoring

Pursuant to the responsibility assignments described below and in Section 5.7.2.1, MBG and the FWS, with the assistance of other MBHCP participants and cooperators, as appropriate, will cooperate in undertaking measures to monitor the MBHCP's effectiveness and success in meeting the species conservation objectives concerning minimizing take of the covered species, minimizing habitat modification for these species, and contributing to the recovery of the species. Such measures shall consist of the following:

(A) Monitoring for Aquatic Species.

(1) Water Quality Monitoring on SBNWR. The SBNWR monitors the water quality and the downstream effects of activities that occur in the watershed above the SBNWR. This monitoring is ongoing and is based upon funding and staffing availability. This monitoring by SBNWR is not part of the MBG conservation plan. However, MBG will incorporate all monitoring results provided by the SBNWR on water quality and incidental take of species on the SBNWR that may be reported to them. This additional information provided by the SBNWR will then be incorporated in to their AM process and will be reported in their annual reports to FWS. The specific details of such monitoring are left to the discretion of the SBNWR, but may include changes in the rate of sediment deposition, suspended solids, dissolved oxygen, water pH levels, and other appropriate indicators of water chemistry and quality in such habitats.

(2) Monitoring/Reporting Take. In addition, SBNWR may, concurrently with water quality monitoring as described above and in the course of day-to-day refuge management: monitor aquatic habitats on the refuge and remain alert to any indications that aquatic species are being killed, injured, or harmed as a result of water quality issues connected with the MBHCP's covered activities; and if any such specimens or indications are observed, will promptly report this in writing to the FWS, Ecological Services Division in Tucson, Arizona and to MBG.

Similarly (i.e., opportunistically in the course of livestock management, ranch management activities, HCP survey activities), other MBHCP participants and cooperators, as applicable, will monitor non-refuge aquatic habitats in the Malpai Borderlands (e.g., perennial streams) and remain alert to such indications with respect to the two leopard frogs and the northern Mexican gartersnake. If any such specimens or indications are observed, participants and/or cooperators will promptly report this to MBG and the FWS. Regardless of the source of the observations, Malpai will incorporate this information into its annual report and through its AM procedures determine if modifications to its minimization measures are appropriate.

(3) Reporting Monitoring Results. In addition to reporting take as described in subsection (A)(2) above, SBNWR shall, as applicable (i.e., in any year in which such monitoring was undertaken), annually report the results of water quality monitoring as described in subsection (A)(1) above directly to the FWS and to MBG in accordance with Section 5.10.3 of the plan.

(B) Monitoring for Non-aquatic Species.

(1) Monitoring habitats of Non-aquatic Species. Efforts similar to those described above (for aquatic species) will also be needed to monitor the effects of the covered activities on habitats of the non-aquatic covered species. This will be accomplished in several ways with respect to all covered activities, through the monitoring plots and vegetation transects described above; with respect to managed fire events, through monitoring and evaluation efforts that will typically follow such events; in the unlikely event a managed fire should accidentally escape into riparian or montane habitats, through the monitoring and evaluation procedures described in Section 8.3.1; and through other measures, if any, that MBG and/or the TAC may from time to time specify.

(2) Monitoring/Reporting Take. In addition, MBG, Malpai-area ranchers, and other MBHCP participants and cooperators, as applicable, will also, concurrently with the monitoring activities described above and with other activities during which monitoring can be opportunistically conducted (e.g., in the course of evaluating the results of managed fire, undertaking routine ranch operations), will monitor non-aquatic habitats (primarily grasslands) and remain alert to the presence of dead, sick, or injured specimens of the covered species or indications that such species are being or have been killed, injured, or significantly disturbed or harassed as a result of the covered activities; and if any such specimens or indications are observed, participants and/or cooperators will promptly report this to MBG and the FWS. Regardless of the source of the observations, Malpai will incorporate this information into its annual report and through its AM procedures determine if modifications to its minimization measures are appropriate.

(3) Reporting Monitoring Results. MBG shall briefly summarize the results of any and all monitoring carried out in each annual report it submits to the FWS.

(C) Monitoring Personnel/Reporting to the TAC/Recovery Contributions.

(1) Monitoring Personnel. All monitoring activities described in Subsections (A) and (B) above, except those undertaken opportunistically (i.e., in the course of other activities), shall be conducted by, under the direction of, or with the direct assistance of, qualified botanists, fisheries biologists, or wildlife biologists, as applicable; appropriate FWS, AGFD, or NMDGF personnel, as appropriate; or other qualified individuals.

(2) Reporting Monitoring Results to the TAC/Adaptive Management. At each TAC annual meeting, the SBNWR and MBG will briefly summarize the results of monitoring activities, including the results of monitoring generally and of monitoring of take. The TAC will consider those results to determine the extent to which the habitat conditions and take levels they reflect are indicative of satisfactory or unsatisfactory circumstances with regard to the effects of the covered activities on the covered species, and the effectiveness of the MBHCP's conservation measures in protecting the covered species. If it is determined to be unsatisfactory, the TAC will also consider the need for corrective modification or revision of the conservation measures involved in accordance with the Adaptive Management procedures described in Section 5.9 of the plan.

5.7.3 Biological Monitoring Responsibilities

Biological monitoring under the MBHCP is regarded as a shared responsibility and effort by MBG and participating Malpai-area ranchers (the MBHCP's permittee and COI holders); by all other MBHCP participants (the FWS, AGFD, NMDGF, ASLD, NMSLO, and NRCS); and, in some cases, by MBHCP cooperators working under agreement or in cooperation with MBG. Actual monitoring tasks will be undertaken subject to the availability of necessary funding; however, the permittees and MBHCP participants will work together, through the TAC and otherwise as appropriate, to secure funding for the monitoring program and to carry out all monitoring program tasks and elements.

5.7.3.1 Responsibilities of the Parties

Specific roles and responsibilities of MBG, participating Malpai ranchers, and other MBHCP participants and cooperators under the MBHCP's biological monitoring program are as follows:

(A) MBG. Will carry out the grassland conservation monitoring responsibilities specified in Section 5.7.2.1 and the reporting responsibilities specified in Sections 5.7.2.1 and 5.10, and pursue funding to continue and augment various monitoring efforts.

(B) Participating Malpai Ranchers. Will carry out, with assistance from MBG, the grassland conservation monitoring responsibilities described in Section 5.7.2.1, consisting of monitoring NRCS vegetation transects, and will permit access to their privately owned ranchlands for monitoring purposes as specified in Section 5.7.2.2 below.

(C) ASLD/NMSLO. Will permit access to state trust lands as specified in Section 5.7.3.2 below.

(D) NRCS. Subject to funding availability, will assist participating Malpai ranchers in evaluating vegetation transects as described in Section 5.7.2.1, Subsection (B)(2) above, and will provide other assistance in the support of biological monitoring to the extent specified by the MBHCP through the TAC and to which it agrees.

(E) FWS (Ecological Services & SBNWR)/AGFD/NMDGF. Subject to funding availability FWS, AGFD and NMDGF may contribute to MBG's MBHCP programs to enhance the conservation activities above and beyond the requirements of the ITP and IA.

5.7.3.2 Access for Monitoring Purposes

(A) State Trust Lands. ASLD and NMSLO will grant access to the state trust lands within their respective jurisdictions to MBG, other MBHCP participants (i.e., FWS, AGFD, NMDGF, and NRCS), or the duly designated agents or contractors of these entities:

(1)*Purposes*. For the purpose of conducting: any and all monitoring activities specified by the MBHCP and any legitimate scientific research, surveys for the covered species, and similar activities not specified by the MBHCP but pertinent to it. However, all such activities to be conducted on state trust lands must have the endorsement of the FWS and MBG.

(2) *Right of Entry (Arizona)*. The MBHCP shall serve as the Right of Entry to Arizona state trust lands by MBG, MBHCP participants, or duly designated agents or contractors of MBG or MBHCP participants conducting monitoring activities, research, and similar activities, provided that such activities are specified by the MBHCP and/or have the endorsement of the FWS and MBG.

(B) Privately owned Lands. Malpai-area ranchers participating in the MBHCP will grant access to their privately owned ranchlands by MBG, other MBHCP participants (i.e., the FWS, AGFD, NMDGF, and NRCS), or their duly designated agents or contractors for the purposes described in paragraph (A) (1) above and as discussed elsewhere in this document, provided that: written or verbal request has been provided to affected landowners a minimum of 10 calendar days prior to such entry or as otherwise provided in the MBHCP and affected landowners have granted such permission under circumstances or conditions they may specify. Access to enrolled ranchlands must be related to implementation of the MBHCP.

5.7.3.3 Information Sharing.

Any and all information gathered on privately owned or state trust lands under the terms of this section will be made available by the party or parties collecting the information to ASLD, NMSLO, or the participating rancher, as applicable, and upon request.

5.7.4 Monitoring Coordination/Priorities

Coordination of the monitoring program is assigned to the MBHCP's TAC (Section 5.9). Within that forum, all MBHCP parties will work together to marshal the resources necessary to fund and support monitoring under the plan, will seek and solicit the assistance of other MBHCP cooperators, as necessary, and will coordinate the carrying out of specific monitoring program activities. Given that monitoring funds and resources may be limited, however, first priority under the program will be given to monitoring the MBHCP's species conservation objectives and second priority to monitoring the MBHCP's range conservation objectives.

5.8 Adaptive Management

Adaptive Management (AM) is a process that allows the specific terms of an HCP's conservation program to be revised and adjusted through time to ensure that the plan's objectives are being met and that the most up-to-date scientific information available is utilized by the program. In the case of the MBHCP, AM is needed in part because there is much about the relationship between the covered species and the covered activities that is currently unclear or unknown. Such uncertainties include what effects, specifically, the plan's covered activities may have on the covered species; where and to what extent these activities may be carried out over the life of the plan; and where, in what numbers, and in what relation to the covered activities the covered species may occur in the future. The MBHCP's AM provisions enable the plan to respond to new information relevant to such questions, and where appropriate to incorporate such information into the MBHCP in a planned, structured fashion. Without this, the MBHCP would be a static, inflexible document.

5.8.1 Adaptive Management Framework

While it must be flexible and dynamic, AM must also have a structural framework within which to function and with respect to which the parties to AM can carry out its procedures. This is referred to as an AM framework. In the case of the MBHCP, the components and procedures of that framework are as follows.

(A) Detection. The starting point for Adaptive Management is the detection of new circumstances or the availability of new information that suggests that an AM response or revision may be needed. Such circumstances or information may be detected or derived from two sources—the MBHCP's biological monitoring program (Section 5.7.2), or any other relevant source (e.g., other monitoring efforts, scientific literature, or species experts). The MBHCP's own monitoring program is particularly important in this respect as it is designed to address its specific objectives, while information from other sources would likely become available on a more-or-less opportunistic basis.

(B) AM triggers. The circumstances and information described above that initiate the AM process are referred to in the MBHCP as "AM triggers". AM triggers are defined as specific conditions, events, or information which, if reached or tripped; indicate an AM response or revision may be needed. AM triggers that might initiate AM under the MBHCP include, but are not necessarily limited to, the 14 specific triggers shown in Table 5-5.

(C) Notification. When an AM trigger is detected, all MBHCP participants will need to be informed and appropriate action initiated. Accordingly, any MBHCP participant who observes or otherwise learns or believes that an AM trigger has been tripped will report this to all other participants (unless the participant is a Malpai rancher, in which case the rancher will notify MBG and MBG will notify other participants). The means of notification to some extent will depend on the AM trigger involved, will be provided within a time period appropriate to any such trigger involved (Table 5-5) and may be delivered via written correspondence, in MBG's annual report, or verbally at any TAC meeting at which a quorum is present.

(D) Evaluation. Once the AM process has been triggered, the next step consists of evaluating the circumstances involved to determine whether an AM response is warranted. This may or may not be the case because the factors triggering AM can vary widely (in terms of type, importance, effects on the covered species, etc.). AM triggers under the MBHCP might consist of specific events, particular conditions, or new information, for example, and any of these might be of trivial, moderate, or major relevance or significance depending on the trigger itself, the issue (or issues) represented by the trigger, and the type, status, distribution, and abundance of the species involved. It is therefore important to understand clearly the standards with respect to which AM under the plan—and this evaluation component of the process—function.

The standard guiding AM is the MBHCP's goals and objectives (Section 5.1), in conjunction with the requirements of the ITP. These goals and objectives are segregated into three categories—the grassland conservation objectives, species conservation objectives, and business objectives. The objectives, in turn, embody three broad types of standards, which, respectively, can be characterized as ecological, biological, and economic. With respect to the question at hand—whether an AM response is warranted (or not warranted) in the event of the tripping of any given AM trigger—this must be judged against these three standards. In addition, where an AM response or revision is determined to be warranted, any such response provided for or developed under the AM process must balance the three standards (i.e., must be consistent with each one).

Procedurally, two outcomes to the AM evaluation process are possible:

- determination that an AM response or revision with respect to a particular situation is warranted and the response process would advance to the next step (see following subsection); or
- determination that an AM response or revision is not warranted and the process would terminate upon that finding.

Table 5-5:
AM Program Triggers/Responses[1]

Category	AM Trigger	Resp. Type	Notice[1]	AM Response/Revision[2]
Fire Management	1-year/5-year watershed or grassland burn/fire limits exceeded as a result of wildfire.	Prescribed	*In writing w/i 30 days*	*Discontinue managed fire in affected area until beginning of new 1-yr/5-yr/ annual tracking period; subtract acreage of habitat burned in excess of burn limits in previous period from acre allowance in following period.*
	The occurrence of high-severity fire during any managed fire in excess of 10% of the burn area.	Prescribed	*In writing w/i 30 days*	*For each acre affected by high-severity fire apply 3 acres toward the 1-year/5-year watershed and annual grassland burn/fire limits; also for such areas, extend the 5-year burn frequency limit to 10 years.*
	Inadvertent escape of managed fire into riparian or montane areas.	Collaborative	*In writing w/i 30 days*	*Undertake assessment of fire-related damage and implement corrective measures in accordance with Section 8.3.1.*
	Availability of new information concerning optimal fire management practices in reducing spread, abundance, or distribution of woody shrub species.	Collaborative	*Next TAC meeting*	*As appropriate, adjust/revise burn plans/practices to incorporate methodologies that promote maintenance/restoration of native grasses and/or discourage occurrence/spread of woody brush.*
	Availability of relevant new information concerning optimal fire management practices in promoting productivity/ abundance/distribution of native grasses.	Collaborative	*Next TAC meeting*	*As appropriate, adjust/revise burn plans/practices to incorporate methodologies that promote maintenance/restoration of native grasses and/or discourage establishment/occurrence of non-native grasses.*
Grassland Improvement	Availability of relevant new information concerning optimal combinations of/interactions between fire, brush control, and grazing in improving grasslands.	Collaborative	*Next TAC meeting*	*As appropriate, adjust/revise managed fire/brush control/grazing practices to incorporate methodologies that promote native grass productivity, discourage brush encroachment, and optimize grassland health.*
Livestock Management	Determination (e.g., through plan monitoring) that riparian and aquatic habitats have been or are being significantly degraded as result of livestock management by participating rancher.	Collaborative	*Next annual report and TAC mtg*	*Recommend one or more corrective measures as appropriate, such as: (1) fencing; (2) increased rest period between grazing cycles; (3) reduction in livestock numbers;(4) development of off-channel watering sources.*
All Activities	Determination that any avoidance zone specified in Section 5.5 is either insufficient or greater than needed in protecting covered species from disturbance impacts.	Prescribed/ Collaborative	*Next annual report and TAC mtg*	*In consultation with TAC, review circumstances involved and relevant scientific information, if available, and revise avoidance zones upward or downward as appropriate.*
Goals/ Objectives	Determination or availability of reliable information suggesting that take of a covered species is excessive.	Collaborative	*In writing w/i 30 days*	*In consultation with TAC, review circumstances involved and available scientific information, if available, and revise or adjust take minimization measures and/or how covered activities are undertaken as appropriate.*
	Complaint by MBG/ranchers/other cooperators that MBHCP business goals are not being met.	Collaborative	*Next TAC meeting*	*In consultation with TAC, review circumstances triggering the complaint and develop AM response or revision as appropriate.*
Other	Lapse of FWS's Chiricahua leopard frog 4(d) rule.	Prescribed	*As needed*	*Measures described in Section 5.5.3.3 will take effect, per Section 8.3.6.*
	Events/circumstances not covered by an AM trigger suggesting that MBHCP revision is warranted.	Optional	*As needed/ appropriate*	*Refer explanation of events/circumstances to TAC for consideration and, if appropriate, develop A.M revision.*
	Request/proposal by any MBHCP participant for HCP revision not initiated by an AM trigger.	Optional	*At discretion of requestor*	*Refer request to TAC for consideration and, if appropriate, development of A.M revision.*
	Determination that events/ circumstances tripping an AM trigger do not warrant an AM response.	Optional	*As needed/ appropriate*	*In consultation with TAC, review AM triggers in question and revise as appropriate.*

[1] Table shows most, but not necessarily all, events or circumstances potentially triggering the AM process.
[2] Notice column shows the time by which any MBHCP participant who has learned, observed, or believes that an AM trigger has been tripped must report this to all other MBHCP participants.
[3] All collaborative and optional AM responses and revisions will be developed and approved by the TAC.

As indicated above, there are many reasons that the latter determination might be made are many (e.g., triviality of the circumstances, or because the generally good status of a species does not warrant a response). The benefits of the evaluation process are therefore twofold—it prevents the MBHCP participants from being "locked in" to responding to AM triggers where there is little justification, and helps ensure that AM responses generally under the MBHCP remain commensurate with need. The AM evaluation process, like its response process, will be undertaken by the MBHCP's TAC in accordance with procedures described in Section 5.9 of the plan.

(E) Response. Once an AM response is determined to be warranted, the next step is to determine the appropriate response. Three types of AM responses may be implemented under the MBHCP: prescribed AM responses; collaborative AM responses; and optional AM revisions.

(1) Prescribed AM Response. A prescribed AM response is one that is already determined by the MBHCP or is dictated by other scientific or commonly accepted standards, and for which a deliberative process for determining a response is therefore not needed. In such circumstances, the response dictated by the MBHCP or the applicable standard will be implemented, unless the TAC elects to evaluate the response and determines that another course of action is appropriate.

(2) Collaborative AM Response. A collaborative AM response is one for which no pre-determined response is available, either in the MBHCP, the scientific literature, or other sources, and for which a deliberative process by the MBHCP's participants (through the TAC) must therefore be employed to determine a response that is biologically effective and consistent with the plan's regulatory assurances. Collaborative AM responses will be determined by the TAC in accordance with Section 5.9.2.4.

(3) Optional Adaptive Management Revision. An optional AM revision is any adjustment to the MBHCP's conservation program determined to be desirable by the TAC independently of the type of specific new information that typically triggers AM responses. This is therefore a general AM response category that allows the MBHCP participants to act, within the context of AM, solely on their own collective judgment. Like collaborative AM responses, optional AM revisions will be determined by the TAC in accordance with Section 5.9.2.4.

(F) Implementation. Once a specific AM response or revision has been crafted and agreed to, that response/revision must be documented in the MBHCP's administrative record, announced to all MBHCP participants, and implemented by the participants affected. Documentation of AM responses/revisions may consist of pertinent TAC meeting records, written correspondence, or any other form acceptable to all plan participants, but must include, at a minimum, a description of:

(1) the specific previous MBHCP measure(s) affected or changed by the AM response/revision, if any;
(2) the specific new measure(s) required by the MBHCP as a result of the AM response/revision; and
(3) which MBHCP participants must implement the response/revision or how MBHCP participants are otherwise affected by the new measure(s).

Such documentation will be distributed to all MBHCP participants (meaning all signatories to the plan's IA) plus all participating Malpai-area ranchers within 30 calendar days following the effective date of the TAC's decision on the matter. It will also be maintained in the respective administrative files of these entities and be maintained as an attachment to or component of each rancher's COI, where applicable (see following section).

(G) Permit Amendments Associated with AM Responses/Revisions. In some cases, AM responses or revisions may occasion the need for an amendment of the MBHCP's associated ITP in accordance with Section 9.1 of the plan. Whether or not such an amendment is needed will be the sole decision of the FWS.

Once an AM response has been duly enacted in accordance with the procedures described above and in Section 5.9.2.4, any change to the MBHCP's conservation measures resulting from the response thereafter will represent a change to the legal requirements of the MBHCP and will need to be implemented by all affected MBHCP participants (i.e., all parties that carry out covered activities or are responsible for minimization measures and are affected by the change).

5.9 Technical Advisory Committee

Implementing the MBHCP's conservation program from time to time will involve a variety of technical issues and considerations (e.g., the adequacy of a particular conservation measure or what specific monitoring methods to use). Such questions will often be outside the expertise of MBG, Malpai-area ranchers, and other MBHCP cooperators, who, nevertheless will have an important stake in such questions and their outcome. MBG will establish a TAC for the MBHCP to assist MBG in carrying out the conservation program specified by the MBHCP.

The TAC will play a critical role in the MBHCP as it will function as the plan's technical and scientific advisory body, its primary decision-making arm, and a cooperative forum for airing and considering important MBHCP issues that may arise in the future.

The purpose and responsibilities of the TAC are to:

- Advise and assist MBG and Malpai-area ranchers on all technical issues arising as a result of or in the course of implementation of the MBHCP;

- Function as the primary coordinator and clearinghouse for the MBHCP's monitoring program by overseeing implementation of the monitoring activities specified by the MBHCP and tracking monitoring and research activities taking place within the Malpai

Borderlands pertinent to the MBHCP that are carried out independently or by non-HCP participants;

- Provide a forum for discussing and evaluating conditions, events, or information triggering the possible need for an AM response or revision to the MBHCP; and where necessary or appropriate, determining the specifics of any such response or revision;

- Provide a forum in which new monitoring or scientific information pertinent to MBHCP implementation can be introduced and discussed, and funding to support monitoring activities (Section 6.0) can be coordinated and administered; and,

- Undertake other tasks or duties that arise during the course of MBHCP implementation or which may be delegated to the TAC.

5.9.1 TAC Membership

5.9.1.1 TAC Core Membership

At a minimum, the TAC will be comprised of one representative each from: the MBHCP permittee (MBG or MBG's authorized designee); the MBHCP's permitting agency (FWS); SBNWR; AGFD, NMDGF, and NRCS; as well as ASLD and NMSLO, if they so choose. These representatives constitute the TAC's core membership or core members. MBG will be considered to represent participating Malpai-area ranchers on the TAC. However, any participating rancher may, if he or she chooses, observe TAC meetings.

5.9.1.2 Other TAC Members.

Additional individuals may be included in the TAC, or invited to attend TAC meetings, as determined to be necessary or appropriate by its core members. Such individuals include, but are not necessarily limited to, legal advisors; recognized experts on any of the MBHCP's covered species; experts in range management or improvement, fire management, wildlife monitoring, or other pertinent disciplines; and individuals conducting specific monitoring, research, or other projects or activities within the Malpai Borderlands. Although not considered core members, the function of this group of TAC members or attendees, is to provide technical expertise on issues pertinent to MBHCP implementation.

5.9.2 TAC Procedures/Protocol

5.9.2.1 Annual Meeting

The TAC will meet, at a minimum, once annually at a time specified in accordance with the TAC protocol described below.

5.9.2.2 TAC Chair

The MBG core member will function as the TAC Chair and will preside at all TAC meetings. Additional responsibilities of the TAC Chair, unless otherwise specified by the TAC protocol, are to announce the time and location of the annual meeting a minimum of 21 calendar days in advance of the meeting, announce the time and location of other regularly scheduled meetings, arrange and announce non-regularly scheduled meetings as appropriate, and maintain a written record of TAC meetings.

5.9.2.3 TAC Protocol

Within 120 calendar days of the effective date of the MBHCP, the TAC's core members will meet for the purpose of developing a written protocol for TAC operations and procedures. The protocol will specify:

- a schedule for the TAC annual meeting;
- schedules for other regularly scheduled meetings, as needed;
- the duties of the TAC Chair if different than those specified in above measures (ii)-(iv);
- the duties, if any, of other TAC core members and non-core members in carrying out TAC business;
- the duties and responsibilities of the TAC generally, if different than those specified in this Section;
- what constitutes a quorum for holding TAC meetings and conducting TAC business;
- procedures for receiving and responding to requests for technical and other assistance from the TAC by participating Malpai-area ranchers; and
- such other TAC operations or procedures as the TAC core members may determine to be necessary or desirable.

The TAC protocol described above shall be completed and approved by the mutual consent of TAC core members no later than 180 calendar days following the effective date of the MBHCP. The protocol may thereafter be amended from time to time and as necessary by the mutual consent of the TAC core members.

5.9.2.4 TAC Decision-making Procedures

Three types of decisions from time to time will need to be made by the TAC: decisions concerning the operation and procedures of the TAC; technical decisions concerning the timing, scope, location, and means of implementation of the MBHCP's species conservation and monitoring activities; and decisions concerning AM responses or revisions under the MBHCP's AM program. Decisions concerning TAC operations will be made in accordance with subsection 5.9.2.3, above. All other decisions will be made as follows.

(A) <u>Technical Decisions</u> Whenever, in the course of MBHCP implementation, a technical question requiring a specific decision arises, the TAC Chair will ensure that opportunity for discussion of the circumstances involved among a quorum of its members is provided, and that all interested parties present in that quorum have an opportunity to be heard. Subsequent to discussion, TAC core members will make every reasonable effort to reach a decision with respect to the question by mutual consent. If and when mutual consent is achieved, the decision

so determined will be implemented. If, however, mutual consent is not or cannot be achieved, the decision will be made in accordance with Section (B) (2) below.

(B) Adaptive Management Decisions From time to time, decisions concerning AM responses or revisions will need to be made (Section 5.8). AM responses and revisions can be major or minor, and they can constitute changes to the MBHCP's legal requirements. These can significantly affect the biological interests of the covered species, the biological functioning of the MBHCP, and the economic interests of MBG and participating Malpai ranchers. AM decisions are therefore crucially important and will be made as follows.

(1) Decision by TAC Consent Whenever an AM decision is brought before the TAC, the TAC Chair will ensure that opportunity for discussion of the circumstances involved among a quorum of its members is provided, and that all interested parties present in that quorum have an opportunity to be heard. Any such discussion will include, as a requirement of the MBHCP, consideration of both the covered species conservation objectives and its business objectives (Section 5.1.2), as well as, the requirements of the ITP. Subsequent to this discussion, TAC core members will make every reasonable effort to reach a decision by mutual consent. If, and when mutual consent is achieved, the decision so determined will be implemented in accordance with Section 5.8.1(F).

(2) Decision by MBG/FWS Consent If, however, mutual consent by all TAC core members is not or cannot be achieved, as determined by the TAC Chair, the decision will be made by the mutual consent of the MBG core member and the FWS core member only. Under this process, all TAC members or attendees (core or non-core) shall be allowed to present their points of view with respect to the decision being made. In addition, MBG and participating Malpai ranchers may consult as necessary among themselves to reach their own consensus and will be allowed sufficient time to do this. Ultimately, however, under the process described in this paragraph, the decision will be made by MBG and the FWS alone, and, if and when MBG/FWS consensus is achieved, the decision so determined will be implemented. In the event, however, that MBG and the FWS are also unable to reach a decision by consent, the decision at issue will be submitted to dispute resolution as described in subsection (E) below.

(C) Administrative Records MBG and the FWS will maintain a written record of the results of all AM decisions made pursuant to this subsection .

(D) Adaptive Management Responses/Revisions are Binding All AM responses or revisions made in accordance with this section represent legally binding changes to the MBHCP's requirements and must be implemented by affected participant(s), as applicable.

(E) Dispute Resolution Procedures Notwithstanding the above, the MBHCP participants recognize that disputes or disagreements concerning MBHCP implementation—especially with respect to AM responses and revisions, and balancing the MBHCP species conservation objectives with its business objectives—may, from time to time, arise. The MBHCP provides for dispute resolution procedures which may be implemented where: MBG and the FWS, despite

good faith efforts, are unable to reach agreement on a particular AM response or revision in accordance with subsection (B) above; or any other dispute or disagreement among the MBHCP participants with respect to its implementation or requirements that have not otherwise been resolved under the normal procedures described in subsection (B) above. These dispute resolution procedures are set forth in detail in Section 12.5 of the MBHCP's IA (see Appendix B).

5.10 Reporting

5.10.1 Reporting by MBG.

At the beginning of each calendar year, MBG, as the permittee, will submit to the FWS a written report describing the grassland improvement activities, ranch management activities, monitoring activities, and other conservation measures or activities, as applicable, that were conducted or carried out under the MBHCP in the previous calendar year. This report will be due, with respect to the previous calendar year, by March 15 of each year throughout the MBHCP's 30-year term, except that if the MBHCP is approved after July 1st of its first calendar year, activities implemented in that year may be reported in the following year's report. Each annual report submitted by MBG will include, with respect to the preceding calendar year, a summary of:

- All records maintained concerning prescribed burns, prescribed natural fires, and wildfires that occurred in the year, by watershed, as described in Section 5.5.2.1 of the plan;

- All records maintained concerning erosion control activities or projects that occurred in the year as described in Section 5.5.2.2 of the plan;

- All records maintained concerning mechanical brush control activities or projects that occurred in the year as described in Section 5.5.2.3 of the plan;

- All pertinent information concerning actions, if any, undertaken by MBG or Malpai-area ranchers in the year in accordance with Section 5.5.3.1 (in the latter case, under the terms of COIs) to protect riparian, streambed areas, and covered species on lands owned or leased by the rancher undertaking the measures, such information to include, at a minimum, a brief description of the measures that were carried out; the specific areas affected by such measures; and the date(s) such measures were carried out;

- All records maintained by Malpai-area ranchers as described in Section 5.5.3.2 of the plan and reported to MBG as described below concerning linear facilities construction projects undertaken by such ranchers under the terms of COIs that occurred in the year;

- All records maintained by Malpai-area ranchers as described in Section 5.5.3.3, of the plan and reported to MBG as described below concerning stocktank maintenance

activities undertaken by such ranchers under the terms of COIs that occurred in the year;

- Activities, if any, covered by the plan and carried out by MBG, MBG cooperators, or Malpai-area ranchers not addressed above;

- A list of the names and addresses of Malpai-area ranchers who, during the subject year, entered into COIs with MBG with respect to activities specified by the ranchers, together with: the effective dates of any such COIs and the termination dates; the activities to which the agreements apply; a list of all such ranchers who, during the subject year, terminated their agreements in accordance with Section 9.2.2 of the MBHCP; and a list, as of the end of each calendar year, of all Malpai–area ranchers then participating in the MBHCP;

- All discretionary grassland improvement monitoring, non-discretionary grassland improvement monitoring, and species conservation monitoring activities as described in Sections 5.7;

- TAC meetings that occurred in the year, together with any changes to TAC membership, operating protocols, or responsibilities that were implemented in accordance with Section 5.9 in the year; in addition, all written records of the year's TAC meetings will be attached to the annual report;

- Any significant issue addressed or decision made by the TAC during the year, including: any conditions or events that triggered an AM response or revision in that year; what the AM response or revision consisted of, if any or if determined; and all pertinent information pertaining to any such issue or issues;

- Occurrence(s) in the year of incidental take of individual specimens of the covered species, if any and if known as a result of monitoring activities described in Section 5.7.2.2 (B), and, with respect to each such taking: the date(s) the taking occurred; the species involved; the number of specimens taken, if known, and the activity or activities being conducted or carried out when the taking occurred; and, in addition, the number of acres, to the extent determinable or known, affected by each of the plan's six sets of covered activities;

- Any relevant new information known to MBG or reported to MBG by Malpai-area ranchers or other MBHCP participants or cooperators concerning the occurrence, location, distribution, nesting, etc., as applicable, of the covered species within the Malpai Borderlands; and,

- Any other pertinent, available, or important information concerning the carrying out of the MBHCP's covered activities and conservation program activities, the status of the covered species in the Malpai Borderlands, range or habitat conditions in the Malpai Borderlands, or other relevant information.

5.10.2 Reporting by Malpai-area Ranchers.

The MBHCP also assigns certain reporting requirements to individual Malpai-area ranchers who have become participants in accordance with Section 5.7 of the plan. Such ranchers will report the information for which they are responsible to MBG, and MBG, in turn, will incorporate that information into its annual report to the FWS as described above. Accordingly, by February 15 of the year following any year in which they were MBHCP participants under the terms of a COI, participating Malpai-area ranchers will summarize the following information in writing and submit it to MBG:

- All linear facility construction projects undertaken by such ranchers in the year as described in Section 5.5.3.2 of the plan;
- All stocktank maintenance activities undertaken by such ranchers in the year as described in Section 5.5.3.3 of the plan;
- The results of transect evaluations undertaken in the year (or over a two-year period, as applicable) and of how those results compare to the results of previous years' evaluations, as described in Section 5.7.2.1(B)(2);
- The results of monitoring of take, if any, as described in Section 5.7.2.2(B)(2); and,
- All livestock management activities related to minimization measures undertaken by such ranchers in the year as described in Section 5.5.3.1 of the plan. This should include any areas where take may occur, what may have been done to reduce the level of take (if any), and any take that actually occurred.

5.10.3 Reporting by SBNWR.

Finally, as described in Section 5.7.2.2(A)(3), SBNWR will submit an annual report directly to the FWS-ESO, as well as , a brief written report to MBG summarizing any water quality monitoring measures conducted or carried out on the refuge in the year in accordance with Section 5.7.2.2(A)(1), and the results, if any, of monitoring of take in accordance with Section 5.7.2.2(A)(2). This report will be due by March 15 of each year throughout the MBHCP's 30-year term, except that if the MBHCP is approved after July 1st of its first calendar year, activities implemented in that year may be reported in the following year's report. These activities are above and beyond the requirements of the ITP.

6.0 Funding

Section 10(a)(2)(B) of the Act requires that an HCP proposal ensure that adequate funding to implement all conservation commitments and measures established by the HCP will be provided. Accordingly, in this section, the activities under the MBHCP that require funding are summarized, the means of the principal participants responsible for funding the activities is described, and a range of actual and potential additional funding sources is identified.

6.1 Activities Requiring Funding.

Generally, the components and measures of the MBHCP that require funding, and the MBHCP participants who carry them out, are:

6.1.1 Plan Administration

The primary party responsible for administering the MBHCP is MBG. Administrative-type tasks MBG will carry out under the plan include: coordination with Malpai-area ranchers about the MBHCP's requirements, programs, and options for participation; where ranchers elect to participate in the plan, preparation and execution of COIs; preparation and/or maintenance of project records, annual reports, and species occurrence maps; and chairing and serving on the MBHCP's TAC. In addition, a few administrative-type responsibilities (e.g., submitting project summaries to MBG) will fall to Malpai-area ranchers participating in the MBHCP and some MBHCP cooperators.

6.1.2 Implementation of Conservation Measures.

As used here, the term "conservation measures" refers to the MBHCP's take minimization measures (Section 5.5) and grassland improvement activities (Section 3.5.1). Activities included within each of these categories, and responsibility for those activities, are as follows.

6.1.2.1 Take Minimization Measures

Minimization measures are designed to minimize take of the covered species in the course of carrying out the covered activities. Take minimization activities include identification of covered species habitats within project areas, avoidance of critical time periods for species, project acreage caps, potential pre-activity surveys of proposed project sites or areas, formulating or revising project plans so as to avoid impacts to covered species inhabiting project areas, and carrying out the projects accordingly. Responsibility for implementing take minimization measures lies with those who undertake the grassland improvement and ranch management activities covered under the plan—generally, MBG and Malpai-area ranchers, and is shared between MBG and state and Federal fire planners and managers, as appropriate with respect to fire management activities.

6.1.2.2 Grassland Improvement Measures

Activities undertaken will include planning and carrying out or managing prescribed burns and wildland fires, and planning and carrying out erosion control projects and mechanical brush control projects. Responsibility for carrying out the grassland improvement activities is as described in Section 6.1.2.1.

6.1.2.3 Funding Grassland Improvement Measures

Grassland improvement measures will be implemented periodically throughout the 30-year term of the proposed ITP. The funding for these measures will include funds for all planning, implementing, minimization, monitoring, and mitigation as described above. The grassland improvement measures will not be implemented unless funding for all the components of a grassland improvement project is secured prior to initiating the project. Therefore, no impacts or effects will occur until funding is secured for an individual project. So while funding may not be secure before the ITP is issued, no activities will be implemented that are covered under the ITP unless all funding has been secured to monitor, minimize and mitigate the effects of the covered grassland activities.

6.1.3 Implementation of Biological Monitoring

Biological monitoring under the MBHCP includes grassland conservation monitoring measures and species conservation monitoring measures. Activities include, but are not necessarily limited to: grassland conservation, monitoring of 200 permanent plots, 16 NRCS vegetation transects, and various discretionary, but unspecified measures to monitor the results of fire management, erosion control, and mechanical brush control activities; and with respect to species conservation, monitoring of water quality on SBNWR, monitoring of the same 200 permanent plots described above, and monitoring of take levels occurring in the course of carrying out the plan's covered activities. Monitoring under the MBHCP will be permitted (i.e., through grants of access by landowners) and implemented from time to time by all or most participants and some cooperators.

6.2 Funding by MBG/Participating Ranchers.

6.2.1 Funding by MBG

MBG is a non-profit organization supported by tax-exempt contributions from individuals and organizations and grants from public agencies and private foundations. MBG already undertakes and funds all administrative functions required by state law and its own By Laws. MBG has funded and undertaken numerous programs and activities related to its objectives and goals and those of its members (Section 1.2). Furthermore, most conservation activities proposed in the MBHCP are not new, but represent a continuation or expansion of existing programs (e.g., fire management, erosion control, monitoring of the existing 200 permanent monitoring plots). In addition, as an organization MBG has attracted numerous funding partners that to date have

helped support and maintain these programs, as well as partners and cooperators who are often supported by their own funding (RMRS, for example).

Thus, MBG already has substantial funding mechanisms supporting it, and, while its responsibilities under the MBHCP will increase to some extent:

- Activities proposed by the plan (e.g., prescribed burns) will not be undertaken unless funding to support them has been secured in advance.
- Secured funding for a project includes all necessary funds for implementation of the action, incidental take monitoring, minimization measures, and mitigation measures.
- Therefore, no covered activities will be undertaken until adequate funding is secured for implementation of the action, incidental take monitoring, minimization measures, and mitigation measures.

This will ensure that adequate funding for the MBHCP is secured prior to implementation of an activity covered by the ITP. In addition, the increases in funding needed to implement the monitoring, minimization measures, and mitigation measures will likely be relatively modest, since most programs proposed by the plan are already underway and can be absorbed within currently available funding mechanisms. The MBG's existing landscape-level monitoring program, for example, has been voluntary and adequately supported for 12 years. The inclusion of the MBG monitoring program in the MBHCP makes it a requirement for the duration of the ITP.

Also, if MBG fails to secure adequate funding to implement the associated monitoring, minimization, and mitigation measures required for a covered activity, the coverage of the activity by the ITP will be invalidated and the ITP may be suspended or revoked.

6.2.2 Funding by Participating Ranchers

As with MBG, Malpai ranchers electing to participate in the MBHCP will incur some additional costs as a result of that participation. Malpai-area ranchers who participate in the MBHCP understand therefore:

- that upon enrollment in the MBHCP, they are responsible for the costs of implementing measures they have voluntarily accepted that are not satisfied by other funding mechanisms; and
- that any failure to meet such obligations as a result of inadequate funding or other factors reasonably within their control would be grounds for suspension or revocation by MBG (or the FWS) of their COIs.

The costs of implementing MBHCP measures required of participating ranchers are expected to be relatively minor—consisting primarily of take minimization (e.g., pre-project surveys), notification and reporting requirements, and in some cases measures they would likely undertake irrespective of the MBHCP (e.g., installing waterlines in roadbeds where feasible), and it is assumed that the costs of such measures can be absorbed within ranchers' current operational

and financial resources. Some of these costs may also be offset by external funding sources. Alternatively, Malpai ranchers also have the option of not participating in the plan if they prefer not to take on these responsibilities.

6.3 Funding Sources for MBHCP Activities.

Examples of activities for which additional funding may be sought are certain components of the monitoring program (e.g., monitoring of the 200 permanent plots) and large-scale prescribed burns. A number of funding programs administered by state and Federal agencies are available that support activities of these types and may therefore represent potential sources of MBHCP funding, and some of these are administered by the state and Federal MBHCP participants. This section lists such programs with respect to each of these two sets of activities.

6.3.1 Additional Potential Funding Sources

Ecological monitoring has been a core component of MBG's overall programs for 12 years (Section 5.7.2.1), supported by privately raised funds. MBG also has an endowment to assist in general operations and has a financial policy that the principle remains intact, to the best of their abilities. The following sources of funding and other assistance will be pursued to augment the available funding to enhance MBHCP programs above and beyond the requirements of the ITP, as appropriate.

6.3.1.1 FWS Partners for Fish and Wildlife

Funds may be available through the FWS which may be used for a variety of purposes, including development and implementation of projects similar to those addressed by the MBHCP. However, an intra-service section 7 consultation and NEPA compliance analysis will be required of FWS for use of these funds to augment the MBHCP programs.

6.3.1.2 AGFD/NMDGF Funding Programs and Assistance

AGFD and NMDGF administer several funding programs for rare, threatened, and endangered species; including AGFD's Habitat Stewardship Program and NMDGF's Share with Wildlife Program. In addition, both agencies conduct a number of non-game wildlife monitoring programs that will contribute to MBHCP monitoring needs, the results of which will be made available to MBG as described in Section 8.4, Subsection (2) of the MBHCP's IA.

6.3.1.3 Cooperation with Universities

Universities often sponsor wildlife studies by both students (e.g., Master's Degree and PhD candidates) and faculty, which are typically funded by grants, scholarships, etc. Some university studies have already been conducted or are underway in the Malpai Borderlands (Section 1.2.3.2), and future studies, especially those concerning the MBHCP's covered species, will be accommodated and encouraged whenever possible.

6.3.1.4 Water Protection Fund (WPF) Grants.

Administered by the Arizona Department of Water Resources, WPF grants provide funding assistance for projects that protect or improve riparian areas. The Altar Valley Conservation Alliance, a rancher coalition near Tucson, Arizona, has utilized WPF grants for two projects to date—a fairly large-scale mapping project, and a report documenting historic livestock grazing and range improvement practices in the Altar Valley (R. Humphreys, pers. comm.). Various MBG projects, including monitoring and/or grassland improvement activities, may be similarly eligible for WPF grants.

6.3.2 Funding Grassland Improvement Measures

Grassland improvement measures contemplated under the MBHCP by MBG, Malpai-area ranchers, and MBHCP cooperators range from relatively simple, inexpensive activities (e.g., installation of erosion control structures), to moderately expensive activities (e.g., brush control projects), to relatively complicated and expensive undertakings (e.g., prescribed burns). The funding for implementation of all grassland improvement measures includes the cost of the covered activity, including incidental take monitoring, minimization, and mitigation measures required by the ITP. Implementation of grassland improvement measures will require funding assistance at varying levels. Some of the funding sources that may be available to support such measures include the following:

6.3.2.1 Environmental Quality Incentives Program (EQIP)

Administered by NRCS under the Farm Bill, EQIP funds are available on a competitive, cost-share basis and can cover up to 50 percent of eligible projects with a limit of $450,000 per producer during the five years of the current Farm Bill. Construction of stocktanks, fence lines, waterlines, and wells, shrub control, prescribed fire, and other rangeland conservation practices could potentially qualify for EQIP funding.

6.3.2.2 Water Quality Improvement Grants

Funded by the Environmental Protection Agency (EPA) under section 319(h) of the Clean Water Act, and administered by the Arizona Department of Environmental Quality, Water Quality Improvement grants are intended to help implement EPA-approved state non-point source pollution management programs. Grants are available on a competitive, cost-share basis and could be used to help fund erosion and mesquite control measures.

6.3.2.3 Farm Services Agency Cost-Share Programs

Administered by the Farm Services Agency with technical assistance from NRCS, these programs provide cost-sharing to individuals and groups for emergency conservation projects, such as those designed to mitigate the effects of fire, flood, and drought. Programs include Long-term Agreements, which provide cost-share funding and require commitments by landowners from 3 to 10 years (depending on the project), and Pooling Agreements, which are

used to fund efforts by groups of farmers or ranchers who join together to address land or water use problems of mutual concern.

6.3.2.4 Water Protection Fund (WPF) Grants

See Section 6.3.1.4 above.

6.3.2.5 NRCS Assistance

NRCS has played an important role in range monitoring and improvements in the Malpai Borderlands through the EQIP program it administers (see above) and by providing technical assistance to ranchers through Cooperative Agreements and CRMPs (Section 2.2.1.3). Such assistance will continue to play a role in meeting the MBHCP's grassland improvement and monitoring objectives—e.g., through ongoing administration of Cooperative Agreements and monitoring of NRCS vegetation transects established under those agreements (Section 5.7.2.1). NRCS technical assistance is supported by two funding programs—the Conservation Operations Program and Grazing Lands Conservation Initiative—which, although they do not fund landowner projects directly, provide the funding for much of NRCS's technical assistance activities.

6.3.2.6 Private Foundations/Non-profit Conservation Organizations

Many foundations and non-profits have funding programs for conservation projects. MBG has pursued these periodically to date, and will continue to do so under the MBHCP.

7.0 Effects of the Take

7.1 Types/Sources of Take

The MBHCP's covered species might be taken under the plan in four ways:

- they might be directly harmed or killed as a result of the covered activities;
- they might be indirectly harmed as a result of habitat-related effects;
- they might be indirectly harassed as a result of disturbance effects; and
- they might be directly harmed or killed or indirectly harassed during trapping or capture (e.g., in the case of leopard frogs being salvaged from a stocktank undergoing maintenance).

MBG's ITP would authorize the first three of these types of take, while the fourth, depending on who actually undertook such trapping or capture, would be authorized by the FWS's, and AGFD's, or NMDGF's direct regulatory authorities, or by research and recovery permits issued pursuant to section 10(a)(1)(A) of the Act and held by other individuals undertaking such activities.

The section 9 prohibitions against take in the Act do not cover plants, and the following discussion of effects of covered activities to Huachuca water umbel is analogous to the discussion of the effects of take on the listed animal species. The following discussion also includes Chiricahua leopard frog and northern aplomado falcon, which are exempt from the section 9 prohibitions in the Act through the section 4(d) rules promulgated in the final rule listing the Chiricahua leopard frog (67 FR 40790) and in the final rule establishing the section 10(j) non-essential, experimental population in New Mexico and Arizona for the northern aplomado falcon (71 FR 42298). This is done for completeness and in the case the section 4(d) rule for either of these species is invalidated or removed.

Potential sources of the first three types of take are discussed below.

7.1.1 Fire Management Activities.

7.1.1.1 Aquatic Species

The primary risk to the aquatic species assemblage resulting from fire management is indirect, consisting of the potential for post-fire, downstream effects within a given watershed to degrade aquatic habitats present in the watershed. Such degradation could occur during post-fire rainfall events if sediment and ash from burn areas washes downstream into such habitats. This could result in sedimentation of stream substrates, suspension of sediments in the water columns of affected streams, and changes in water quality and chemistry as a result of ash deposition. Such effects would most likely occur when fire events within the watersheds surrounding and upstream of aquatic habitats have been individually or cumulatively extensive, when the extent of high-severity fire in the watersheds has been relatively great, and when rainfall events following fire events in the watersheds are frequent or intensive. In addition to the indirect

sources of take, direct mortality or injury of leopard frogs and Mexican gartersnakes are possible if a fire enters the surrounding vegetation as described below, and individuals are trapped on land within the fire.

7.1.1.2 Riparian Species

Managed fire is not planned in riparian areas under the MBHCP; therefore, take of riparian species would occur only if a prescribed burn (or a wildland fire) inadvertently escaped into riparian habitat. Should this occur, however, the effects to both the species and their habitat could be locally significant. Because of the vegetative structure of riparian areas (i.e., relatively dense vegetation and large trees), fire in such areas would likely carry forcefully, burn hot, and possibly crown. Such a fire would likely be stand replacing within the affected area, although this would depend on the density of understory vegetation, the presence of ladder fuels, and fuel moistures. If a fairly severe fire were to occur, the effects on the covered species could be significant and might include: possible harm or harassment of adult yellow-billed cuckoos and roosting western red bats present at the time of the fire (e.g., as a result of displacement effects) and direct mortality to yellow-billed cuckoo eggs or nestlings if active nests are present at the time of the fire (and if the fire should crown).

7.1.1.3 Montane Species

Managed fire is only planned for in the montane areas under the MBHCP during the inactive season of the New Mexico ridge-nosed rattlesnake and outside the breeding season of the Mexican spotted owl. The effects of cool season application of managed fire to montane species should be limited to: possible harm or harassment of adult Mexican spotted owls present at the time of the fire, as a result of displacement effects; possible harassment of New Mexico ridge-nosed rattlesnakes active on the surface during this time period, as a result of displacement; and a remote possibility of direct mortality to any New Mexico ridge-nosed rattlesnakes present at the time of the fire, as a result of burning if caught on the ground surface. In addition, if an escaped prescribed fire (or wildland fire) enters the montane community, as with riparian species, it could affect the covered montane species, especially if the fire behavior is extreme and the burn severity is high resulting in catastrophic loss of species habitat. The effects of this on the covered montane species would likely be similar to those described above for the riparian species and might include: possible harm or harassment of adult Mexican spotted owls present at the time of the fire, as a result of displacement effects; direct mortality to Mexican spotted owl eggs or nestlings if active owl nests are present at the time of the fire and if the fire should crown); harm to New Mexico ridge-nosed rattlesnakes as a result of starvation, predation, or exposure stemming from the destruction of vegetative cover; and direct mortality to any New Mexico ridge-nosed rattlesnakes present at the time of the fire as a result of suffocation in their burrows if the fire is severe, or burning if caught on the ground surface.

7.1.1.4 Grassland Species

The potential effects of fire management activities on the covered grassland species will result from managed fire activities under the MBHCP that will be undertaken within the species'

habitat. Consequently, the primary potential effects on these species will be direct harm or mortality as a result of fire moving through their grassland habitats. However, where native plants dominate (as on Diamond A Ranch) and in prairie dog towns (typified by bare ground and low-cropped vegetation), fire is typically slow-moving and of low severity; such fires typically burn in a mosaic pattern (i.e., do not affect the entire burn unit). Adults of all four grassland species also have effective capabilities for surviving such fires (e.g., by taking refuge in deep burrow systems or by flying or running away), and the habitat impacts of fire on grasslands are usually minor and transitory with generally beneficial effects overall. However, the nestlings, pups, and juveniles of all species would be at risk in the event of fire occurring directly in their habitats and, in the case of northern aplomado falcons, nest structure damage or damage to foraging habitat is possible.

7.1.2 Erosion Control Activities

Erosion control projects under the MBHCP will involve impacts not worse than minor ground surface disturbances associated with materials procurement and site preparation and use of hand tools, wheel barrows, pick-up trucks, and four-wheel ATVs; and the potential for adverse impacts or take of the covered species as a result of these activities therefore will generally be either minor or avoidable.

7.1.2.1 Aquatic Species

Aquatic species would be affected by erosion control activities relatively rarely for the reason that such activities will not ordinarily be undertaken in aquatic habitats or, if they are, would typically be undertaken when conditions are dry. Possible exceptions are projects to control downcutting in streambeds, which could result in indirect impacts as a result of digging and excavation in stream substrates and subsequent downstream sedimentation effects when water flow returns to an affected stream (possibly affecting fish, leopard frogs, Mexican gartersnakes, and their eggs or young). However, such effects would be temporary, and the end result of such efforts ordinarily would be a reduction in sediment mobilization in affected streams. Potential for take of leopard frogs and Mexican gartersnakes also exists due to the possibility of their being run over by vehicles during these activities.

7.1.2.2 Riparian Species

Because relatively few erosion problems occur in riparian communities (a possible exception being downcutting in stream channels; see above), and because the covered riparian species occupy the canopies of riparian vegetation (i.e., well above areas of ground disturbance), erosion control activities would affect these species relatively rarely and only indirectly as a result of disturbance. Such disturbance would also be minor (consisting of the noise made by work crews, vehicle use, etc.); however, if undertaken close enough to yellow-billed cuckoo nests or western red bat roosts, such activities could flush adult yellow-billed cuckoos from their nests (resulting in interruption in the care of eggs or nestlings) or western red bats from their roosts (resulting in possible displacement effects).

7.1.2.3 Montane Species

Because erosion control activities will not be undertaken within or near montane biotic communities under the MBHCP, mortality, harm, or harassment of the species in this assemblage are not likely to occur as a result of such activities.

7.1.2.4 Grassland Species

Erosion control activities would be most likely to affect the grassland species (because most such activities will be undertaken in grassland or similar vegetation associations), and could affect such species both directly (as a result of digging or excavation) and indirectly (as a result of noise and activity). Direct impacts would consist primarily of possible damage or destruction of western burrowing owl burrows or nests and black-tailed prairie dog burrows or colonies (if erosion control activities are undertaken in their immediate vicinity); while disturbance-related impacts could affect burrowing owl and northern aplomado falcon nests (i.e., by flushing adult owls or falcons from their nests). Of the grassland species, the western burrowing owl would be most likely to be affected by erosion control activities because it is by far the most widely distributed. Also, the juveniles and young of all grassland species are significantly more vulnerable than adults to the potential impacts of erosion control because of their relative inability to escape such impacts by flying or running away.

7.1.3 Mechanical Brush Control Activities

7.1.3.1 Aquatic Species

Mechanical brush control activities would only affect aquatic species indirectly, since brush control activities of the type planned under the MBHCP (i.e., control of woody brush in grassland vegetation associations) would not occur directly within aquatic areas. However, mechanical brush control activities in upland areas surrounding perennial streams could, as with fire management, result in downstream mobilization of sediments that ultimately find their way into such areas. In the case of the covered fish, such effects would be confined to brush control activities in the San Bernardino Valley immediately upstream of SBNWR (where most of these fish occur), although in the case of leopard frogs they could occur in other locations as well. Such effects would also be more likely to occur if brush control activities in any such areas were extensive.

7.1.3.2 Riparian Species

Because mechanical brush control activities will not be undertaken within riparian biotic communities, direct harm or mortality of the species in this assemblage is unlikely. Furthermore, because mechanical brush control is carried out early in the year prior to the growing season (and before the yellow-billed cuckoo nesting cycle), the potential for disturbance impacts (e.g., as a result of noise) would be limited to western red bats, which can be found in the Malpai Borderlands area year-round.

7.1.3.3 Montane Species

Because mechanical brush control activities will not be undertaken within or near montane biotic communities under the MBHCP, mortality, harm, or harassment of the species in this assemblage are not likely to occur as a result of such activities.

7.1.3.4 Grassland Species

Because mechanical brush control employs relatively heavy equipment (e.g., bulldozers or "roller-choppers"), the covered grassland species would be affected by the activity primarily through direct, ground-disturbing impacts and indirect disturbance impacts (e.g., as a result of noise). The former would be most likely to affect three of the grassland species—the western burrowing owl (as a result of the potential for damage to owl burrows), white-sided jackrabbit (as a result of the potential for direct harm to jackrabbit nestlings), and northern aplomado falcon (as a result of the potential for damage to nest structures). Black-tailed prairie dogs are unlikely to be directly affected by mechanical brush control because the activity is unlikely to be undertaken in prairie dog colonies. Because mechanical brush control is carried out prior to the breeding cycles of the grassland species (see above), the potential for disturbance-related impacts as a result of this activity would be unlikely.

7.1.4 Livestock Management Activities

7.1.4.1 Aquatic species

Covered aquatic species of fish and Huachuca water umbel are confined almost exclusively to the SBNWR, which is managed principally on their behalf and on which no livestock or grazing is permitted. However, in high-rainfall years, some of its resident fish may move upstream to Astin Spring, a small, partially fenced riparian enclave within a 160-acre pasture on the nearby Malpai Ranch. Malpai Ranch does graze this pasture and cattle occasionally have access to the spring to water (Wendy Glenn, pers. comm.). As a result, if Malpai Ranch were to become a participant under the MBHCP, effects to fish, if present, could include: direct mortality or harm as result of trampling effects; and possible harm, also due to trampling, as a result of sedimentation effects. If leopard frogs and Mexican gartersnakes are present in any aquatic habitat in the Malpai covered area, effects to these species could include: direct trampling-related mortality or harm to leopard frogs (especially in the case of eggs, metamorphs, and juveniles) and Mexican gartersnakes; possible indirect trampling-related water quality impacts (e.g., increased sedimentation).

7.1.4.2 Riparian Species

With respect to these species, it is assumed that some, perhaps all, Malpai ranchers from time to time water their livestock in aquatic and associated riparian areas. This would be unlikely to affect yellow-billed cuckoos or western red bats since both species use the riparian canopy for their activities (nesting and roosting, respectively), which is outside the range of direct livestock impacts. However, the presence of livestock in riparian areas and associated streambeds could

result in: possible indirect harm (over the long-term) if such use is sufficient to inhibit growth and replacement of riparian vegetation. However, the occurrence and severity of all such effects would depend on the intensity, duration, and timing of livestock use and would tend to be highly localized.

7.1.4.3 Montane Species

Because livestock management activities will not be undertaken within or near montane biotic communities under the MBHCP, mortality, harm, or harassment of the species in this assemblage are not likely to occur as a result of such activities.

7.1.4.4 Grassland Species

Two of the grassland species (the western burrowing owl and black-tailed prairie dog) utilize underground burrows for reproduction and shelter, which, theoretically, could be subject to damage as a result of livestock trampling. However, these species routinely co-exist with livestock in the Malpai Borderlands, and prior to the advent of livestock in the American west routinely co-existed with naturally occurring large ungulates (e.g., antelope and bison) (Fritcher et al. 2004, Hoogland 1996, Murray 2005, and Uresk et al. 1981); consequently, livestock management (i.e., the presence of livestock; see Section 3.6) in conjunction with the presence of western burrowing owls and black-tailed prairie dogs is unlikely to result in population level effects to either of these species. However, some individuals may be incidentally taken through the occasional destruction of burrows. The effects of livestock management on white-sided jackrabbits are also likely to be minor, resulting at most in flushing jackrabbits from diurnal shelters from time to time. White-sided jackrabbits flushed from diurnal shelters run very short distances (i.e. usually 5-10 yards) before dropping into another shelter. This could conceivably result in increasing the predation risk for an individual, but only minimally. Northern aplomado falcons, on the other hand, could be affected by livestock if an active nest is disturbed through direct physical contact by livestock with the nest structure (e.g., by rubbing against it). This has been observed (BLM 2002) and could result in destabilization of a nest structure to the extent that the tree might eventually be lost, and, if it occurs during active nesting, disturbance of the nest to the extent that nestling care by adults might be interrupted or compromised.

7.1.5 Linear Facility Construction/Maintenance

7.1.5.1 Aquatic Species

Linear facility construction would be most likely to affect the aquatic species through indirect impacts (e.g., downstream sedimentation effects), which might occur if new fences, waterlines, roads, or utility lines were routed directly through perennial stream corridors. This would affect the covered fish only in the unlikely event that such facilities were routed directly through Black Draw in SBNWR or adjacent to the Refuge when fish are present in the stream; however, the two leopard frogs and Mexican gartersnakes could be affected if such facilities were routed through any perennial stream corridor in the Malpai Borderlands area. Linear facility maintenance would be most likely to affect the aquatic species if heavy equipment (e.g., bulldozers) were used on

such facilities already present within perennial stream corridors, which could also result in downstream sedimentation effects.

7.1.5.2 Riparian Species

Because the covered riparian species occupy the canopies of riparian vegetation, well above the area of direct ground-related disturbance, linear facility construction and maintenance would affect these species primarily as a result of disturbance-related impacts. These could occur if grading or trenching is carried out in the vicinity of the riparian nest sites of yellow-billed cuckoos (which might flush adults from their nests and interrupt the care of eggs or nestlings), or in the vicinity of western red bat roosts (which might flush adult and juvenile bats from their roosts and result in displacement effects). The loss of riparian species habitat could also occur from the construction and maintenance of linear facilities. Permanent loss of habitat is only expected when new ranch roads are constructed. This would be localized and would be minimized to the maximum extent practicable. The maximum width of the linear disturbance would be limited to no greater than 35 feet.

7.1.5.3 Montane Species

Because linear facility construction and maintenance activities will not be undertaken within or near montane biotic communities under the MBHCP, mortality, harm, or harass of the species in this assemblage are not likely to occur as a result of such activities.

7.1.5.4 Grassland Species

The grassland species could be affected by linear facility construction and maintenance through direct ground-disturbing impacts and disturbance-related impacts. The former would most likely affect the grassland species, especially western burrowing owls, black-tailed prairie dogs, and white-sided jackrabbits, and could occur if grading or trenching is carried out in the vicinity of the burrows and/or colonies of these animals. Similarly, the latter could affect burrowing owl and northern aplomado falcon nests (e.g., as a result of noise) if grading or trenching is carried out in the vicinity of the nest sites of these species (possibly resulting in interruptions in the care of eggs or nestlings). The loss of grassland species habitat could also occur from the construction and maintenance of linear facilities. Permanent loss of habitat is only expected when new ranch roads are constructed. This would be localized and would be limited to less than four acres of new disturbance a year, on average, in linear strips no wider than 35 feet across.

7.1.6 Stocktank Maintenance and Use

7.1.6.1 Leopard Frogs/Mexican Gartersnakes

Stocktank maintenance and use are likely to affect three of the covered species only (the Chiricahua leopard frog, lowland leopard frog, and northern Mexican gartersnake) because only these species routinely use or inhabit stocktanks. The potential effects of these activities on

leopard frogs and Mexican gartersnakes are threefold: direct mortality or harm as result of trampling effects; harm through water quality degradation as a result of trampling; direct mortality, harm and harassment from emptying/drying a stocktank for maintenance; and direct mortality or harm as a result of heavy equipment use in the course of stocktank maintenance.

7.1.6.2 Other Covered Species

Because stocktank maintenance and use will not be undertaken directly within natural aquatic areas or riparian, montane, or grassland biotic communities, mortality, harm, or harass of the species in this assemblage are not likely to occur as a result of such activities.

7.2 Effects of the Take

This section describes the anticipated effects on the covered species from take authorized through the ITP. These effects will depend on several factors, including the biological status of each of the affected species, the types of take that occurs and its relative amount, and the balancing or offsetting effects of the MBHCP's conservation program.

In most cases, take from direct mortality or injury is expected to be minimal, and to consist primarily of relatively rare events (e.g., should a prescribed fire accidentally kill newborn white-sided jackrabbit pups or inadvertently burn into riparian or montane vegetation). This is because many of the covered species (i.e., all the fish, yellow-billed cuckoos, western red bats, northern aplomado falcons, and the leopard frogs) and many of the covered activities (e.g., ranch management, erosion control, and fence and waterline construction) occur or will occur in the covered area in a highly localized fashion, and, therefore, can be expected to come into conflict with each other relatively rarely. It is also due to the take minimization measures that will be implemented under the plan (Section 5.5). The only exception is stocktank maintenance, which may come into conflict with the two leopard frogs and the northern Mexican gartersnake more frequently than in most other cases. However, the frog species are r-selected species with life histories that maximize reproductive effort (e.g. female frogs lay hundreds to thousands of eggs per reproductive effort) to offset relatively high natural mortality. So the effects of the loss of these individuals is anticipated to be minor in comparison with natural mortality and be more than compensated on a population level by these species reproductive potential. Northern Mexican gartersnakes are not clumped in distribution and direct take is likely to be only a few individuals at any one location. This is not likely to significantly impact the population in light of the overall conservation program.

Take from harm or harassment has the potential to be more significant. This is because several of the covered activities (i.e., fire management and mechanical brush control) have the potential to result in adverse effects on the habitat of the covered species and are sufficiently widespread to result in potential inadvertent harassment of some species (e.g., western burrowing owls, northern aplomado falcons, yellow-billed cuckoos at their nest sites and western red bats at their roost sites). However, the actual effects of these activities are likely to be minimal because most habitat-related effects of the covered activities will be transitory, and will be largely controlled through the MBHCP's conservation program (see below).

An important consideration in evaluating the effects of the covered activities on the covered species is the relation between short-term and long-term effects (especially in the case of the grassland improvement activities). All the covered activities will potentially result in some level of adverse effect on the habitats in which they occur. These effects include, primarily, temporary removal or reduction of vegetation as a result of prescribed fire, erosion control, and mechanical brush control activities, and ground surface disturbance as a result of mechanical brush and erosion control activities. However, the ultimate goal of the grassland improvement activities under the MBHCP is to correct and ameliorate ecological problems currently existing in the Malpai Borderlands (Section 2.2.2) and to improve overall ecological conditions in the area. Thus, the MBHCP's grassland improvement activities represent a trade-off between short-term adverse effects and long-term beneficial effects, with the balance being in favor of the long-term benefits, and this is true for both grassland conditions generally and the habitats of the covered species specifically.

Among the likely long-term benefits to the covered species of the grassland improvement activities are the following:

- reductions, through properly managed fire and brush control, in fuel loads and, consequently, in fire intensities overall, resulting in preservation of habitats that might otherwise be severely damaged by more destructive fires, and in brush encroachment and densities in the area's grasslands, which favors all the covered grassland species;
- promotion, through properly managed fire and brush control, of regeneration and restoration of grasses and forbs (especially those that are native) which favors the grassland species as well as the aquatic species by reducing sheet erosion and its potential for downstream sedimentation of aquatic habitats; and
- reductions, through erosion control, in downstream sedimentation of aquatic habitats resulting from stream channel and gully erosion.

Two benefits to the covered species will also result from the MBHCP's covered ranch management activities. One of these is the ability of Malpai-area ranchers to better manage livestock—and the range—as a result of fence and waterline construction (fencing by increasing rest-rotation grazing capabilities, waterline construction by increasing livestock watering locations). The other consists of the benefit to Chiricahua leopard frogs, lowland leopard frogs, and northern Mexican gartersnakes resulting from the maintenance and use of stocktanks in the Malpai Borderlands, which are an important habitat resource for these species.

Additional benefits of the MBHCP include the guidance provided by its goals and objectives; the capability for adjustment to the plan's conservation program under its monitoring, AM, and TAC provisions; and the fact that the vast majority of species habitats in the Malpai Borderlands will remain under the MBHCP either unchanged or will be improved.

Such benefits notwithstanding, it is recognized that fire management under the MBHCP has the potential to benefit ecological conditions in the Malpai Borderlands (and in its habitats) but also to seriously damage those conditions (and habitats). Such damage could result from inadvertent

escape of managed fire into riparian and montane habitats (Section 5.5.2.1); the possibility of managed fire burning with unanticipated severity or effect (Section 8.3.2); and the possibility of mortality and harm to the covered species as a result of fire (e.g., through damage to habitats and nests, killing of vulnerable juveniles and young). However, the potential for such problems are addressed by the plan—in take minimization measures, including the acreage caps, it establishes to protect the covered species (and their habitats) in the course of fire; and in the contingency strategies it establishes (through its AM and changed circumstances measures) to address unanticipated or unplanned effects of fire. The MBHCP seeks generally to balance the benefits of fire with its potential risks, and, specifically, to maximize those benefits while minimizing its potential for adverse effects on the covered species.

Therefore, MBG concludes the following:

- that take of the covered species in the course of the MBHCP's covered activities (both as a result of direct mortality and injury and as a result of harm and harassment) will, in most cases, be minimal;
- that, where the likelihood of take is possible, it will be appropriately minimized through the MBHCP's take minimization measures and strategies;
- that all of the MBHCP's covered grassland improvement activities will result in appreciable and in some cases significant long-term conservation benefits to the covered species;
- that two of its covered ranch management activities will also result in modest benefits to the covered species; and
- that the long-term benefits of the MBHCP on the covered species, in general, will far outweigh its short-term adverse effects.

MBG further concludes, based on the above, that the MBHCP fully meets the statutory requirements of section 10(a)(2)(B) of the Act and that approval and implementation of the MBHCP is not likely to appreciably reduce the likelihood of survival and recovery of the covered species in the wild.

7.3 Alternatives to Take

Section 10(a)(2)(A) of the Act requires an HCP to specify the alternatives to the taking that the HCP applicant considered and the reasons why such alternatives were not utilized. The MBHCP is not a typical HCP in that it is intended to improve and perpetuate the vegetative communities on a landscape level. These vegetative communities support the habitat of several listed species, and the implementation of the MBHCP should improve the habitat quality and quantity for these species. Incidental take anticipated in the MBHCP is a result of the short-term impacts of the covered activities to reach the long-term landscape level goals.

7.3.1 Grassland Improvement Activities

The alternative to the incidental take anticipated as a result of the covered grassland improvement activities is to not implement these activities, have individuals implement them on

a ranch by ranch basis, or the MBG could implement them outside of an HCP. The sources of take would be similar to having these activities implemented under the MBHCP, but without the coordinated program of MBHCP, the level of take is likely to be increased and the long-term benefits of these activities to vegetative communities and beneficial effects to the covered species are less likely to be realized.

Fire management activities would be similar to those implemented today in the Malpai Borderlands. Prescribed fire would be limited to the Diamond A Ranch and those ranches bordering the CNF. Wildland fire outside the CNF would primarily be managed through suppression and not wildland fire use, except on the Diamond A Ranch. Fuels would accumulate in areas not burned regularly and present a risk for catastrophic wildland fire effects. The protection of riparian and montane vegetative communities would be more difficult to accomplish in the face of wildland fire suppression. So while fires would be less frequent, the potential for high-severity fire effects to occur would increase. These effects include the loss of ground cover, increased erosion and downstream sedimentation, and stand replacing fires in riparian and montane communities. This could result in a higher probability of severe fire effects and the areas they potentially cover would also likely increase. The lack of acreage caps, limits on return frequencies, and buffers would likely result in increased sedimentation downstream, less control as to timing and location of fires, and higher landscape adverse effects to covered species and their habitats. Ranchers implementing burns independently are not likely to be able to afford the cost of fire management to implement them at a frequency that will have any long-term effect on the vegetative communities. The exception to this is on the Diamond A Ranch, but with the continuation of their fire management plan and the improvements seen in the grasslands, the probability of conflicts with covered species are likely to increase. The MBHCP provides limits to the effects of incidental take on a landscape level that would not be present without the MBHCP.

Mechanical shrub control is an expensive activity that is only occasionally practiced in the Malpai Borderlands. It provides short-term improvements in the grasslands treated, but without a regular fire program these improvements would be lost in several years. The MBHCP provides a complete program by which the long-term benefits could be realized for this vegetation type and the species habitats within. Outside the MBHCP this activity would result in similar short-term effects, but not have the long-term benefits for the species. Also, the lack of a programmatic approach to grassland improvements could result in increases in effects to listed species because the awareness of these species may not be emphasized as they would for the landowners under the MBHCP.

Erosion control in the Malpai borderlands has been an ongoing activity on several ranches. This is likely to continue without the MBHCP on those ranches. It is not likely to move onto other ranches without the programmatic approach of the MBHCP. The potential for take of species related to this activity is relatively low because of how it is implemented in most cases on Malpai Borderland ranches. However, awareness of listed species is not necessarily part of these activities currently, and conflict is likely to occur in the future. The MBHCP identifies critical time period for covered species where take is most likely to occur and thus reduces the likelihood of take occurring related to this activity. In the absence of the MBHCP, the landscape level

implementation of these techniques is less likely to occur. The potential for increased shrub invasion and potential for catastrophic wildland fire effects to occur is likely to increase the need for erosion control structures. Therefore, the potential for take increases with the need for erosion control structures. It is also likely that larger, more traditional erosion control structures, like Gabions, will be needed and the level of take is likely to increase with the use of heavy equipment techniques.

7.3.2 Ranch Management Activities

The alternative to incidental take anticipated as a result of the covered ranch management activities is to not implement these activities under the MBHCP. These are ongoing activities in the Malpai Borderlands, and the potential for take with these is typically low, but some potential does occur. These activities include construction and maintenance of linear facilities (fences and pipelines), livestock management (excluding herbivory), and the construction and management of livestock ponds. Construction activities in specific areas discussed in the MBHCP has more potential for incidental take than do livestock management or the normal use of livestock tanks. These construction activities are sometimes conducted as part of projects funded through various programs administered by NRCS, and take is usually covered through a section 7 consultation. In addition, the section 4(d) rule in the final listing for Chiricahua leopard frog exempts the normal use and maintenance of livestock ponds from the section 9 prohibition of take; although this does not cover lowland leopard frogs or Mexican gartersnakes if they become listed during the duration of the ITP.

The potential for take from the construction and maintenance of linear facilities is discussed earlier in the document. In the absence of the MBHCP, the level of take is likely to be higher and with no minimization measures coordinated through a program like the MBHCP. In addition, the level of awareness of Act issues will vary from project to project based upon landowner awareness and Federal participation. This could result in incidental take at similar levels or increased levels. The effects of this on these species would be locally more severe to approximately the same.

The potential for take from livestock management would be approximately the same as that which currently exists in the Malpai Borderlands. There would be no formal process or program in place to make landowner/ranchers aware of what species are present on their property or ways to minimize impacts on these species and potential take related to their livestock operations.

The potential for take from the construction, maintenance, and normal use of livestock tanks would be the same as that which currently exists in the Malpai Borderlands. Through the MBHCP, this potential could be reduced, and conservation measures on participating ranches could result in improvements in the status of the covered species. This would further reduce the impact of the incidental take that may occur in the MBHCP over the impacts of incidental take that could occur without the MBHCP.

8.0 Changed and Unforeseen Circumstances

8.1 Unforeseen Circumstances/"No Surprises"

Under the MBHCP, and consistent with the FWS's "No Surprises" regulations (50 CFR 17.22(b)(5) and 17.32(b)(5)), the FWS provides MBG and other parties to the plan (e.g., participating Malpai-area ranchers) with specific regulatory assurances addressing the occurrence of "unforeseen circumstances" within the Malpai Borderlands over the plan's 30-year term. "Unforeseen circumstances" are defined by Federal regulation (50 CFR 17.3) to mean, "changes in circumstances affecting a species or geographic area covered by a conservation plan in this case, the MBHCP, that could not reasonably have been anticipated by plan developers and the FWS at the time of the plan's negotiation and development, and that result in substantial and adverse changes in the status of the covered species." The "No Surprises" assurances essentially mean that, in the face of such circumstances, the FWS will not require additional conservation measures by MBG, any participating Malpai-area rancher, or any other MBHCP participant or cooperator in addition to those specified by the plan without MBG's (or that participant's or cooperator's) consent, and, therefore, that all plan parties are protected throughout the ITP term against the imposition of conservation measures to which they did not agree in the MBHCP at the time it was approved. There is, however, an exception to this assurance, which is described below.

The specific terms of the "No Surprises" regulations are as follows:

> In negotiating unforeseen circumstances, the FWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the conservation plan without the consent of the permittee.
>
> If, however, additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the FWS may require additional measures of the permittee where the conservation plan is being properly implemented, but only if such measures are limited to modifications within conserved habitat areas, if any, or to the conservation plan's operating conservation program for the affected species, and maintain the original terms of the conservation plan to the maximum extent possible. Additional conservation and mitigation measures will not involve the commitment of additional land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of the permittee.
>
> The FWS will have the burden of demonstrating that unforeseen circumstances exist, using the best scientific and commercial data available. These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species. The FWS will consider, but not be limited to, the following factors:
>
> - Size of the current range of the affected species;

- Percentage of the range adversely affected by the conservation plan;
- Percentage of the range conserved by the conservation plan;
- Ecological significance of that portion of the range affected by the conservation plan;
- Level of knowledge about the affected species and the degree of specificity of the species' conservation program under the conservation plan; and,
- Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

Nothing in the "No Surprises" rule will be construed to limit or constrain the FWS, any Federal, state, local, or tribal government agency, or a private entity, from taking additional actions at its own expense to protect or conserve a species included in a conservation plan.

The term "operating conservation program" is defined by Federal regulation (50 CFR 17.3) to mean, "those conservation management activities which are expressly agreed upon and described in a conservation plan or its Implementing Agreement, if any, and which are to be undertaken for the affected species when implementing an approved conservation plan, including measures to respond to changed circumstances." Operating conservation programs typically involve take minimization measures, buffer or avoidance zones, seasonal restrictions, etc. This permits FWS to impose changes to these types of measures—notwithstanding the assurances otherwise provided by the "No Surprises" regulations—if unforeseen circumstances are determined by the agency to have occurred. However, this also limits permissible changes to these "operating conservation" measures and does not extend them to the typically more costly type of conservation measures.

MBG and the FWS, therefore, understand and agree that, while some changes to the MBHCP's operating conservation program not otherwise provided for in the MBHCP might be necessary in the future to address unforeseen circumstances, such changes will maintain the original terms of the MBHCP (or, under AM, the MBHCP's adjusted terms) to the maximum extent possible, and will not involve the removal of private or state trust rangelands or related areas from ranching uses beyond the level established by the MBHCP without the consent of MBG and/or any affected Malpai-area rancher. MBG and the FWS further understand and agree that, should any change to the MBHCP's operating conservation program beyond that provided for by the plan be needed due to unforeseen circumstances, any such changes would, to the maximum extent possible, be developed jointly and collaboratively by the MBHCP's TAC.

8.2 Changed Circumstances

Federal regulation (50 CFR 17.3) defines the term "changed circumstances" to mean "changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated by plan developers and the FWS and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events") (50 CFR 17.3). The specific terms of the "No Surprises" regulations with respect to changed circumstances are as follows:

Changed Circumstances Provided for in the Plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and were provided for in the MBHCP's operating conservation program, the Permittee will implement the measures specified in the plan.

Changed Circumstances not Provided for in the Plan. If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the MBHCP's operating conservation program, the FWS will not require any conservation and mitigation measures in addition to those provided for in the plan without the consent of the Permittee, provided the plan is being properly implemented.

These two paragraphs simply mean that any changed circumstances (as distinct from unforeseen circumstances) that may occur over the life of an HCP, and that have been provided for in the HCP, will be addressed as specified in the HCP. However, any changed circumstances that may occur that were not provided for in the HCP would be addressed (i.e., additional conservation and mitigation measures would be imposed) only with the consent of the Permittee. Thus, the exception provided for under the "No Surprises" regulations with respect to unforeseen circumstances (Section 8.1) does not apply to changed circumstances.

8.3 Changed Circumstances Provided for in the MBHCP

The MBHCP provides for nine situations involving the possibility of changed circumstances: Escape of managed fire into riparian vegetation communities; occurrence of high-severity managed fire and occurrence of large-acreage wildfire; drought; occurrence of significant flooding; termination of the FWS's 4(d) rule for Chiricahua leopard frogs; inability of MBG to fund monitoring; new listing of an uncovered species; and new critical habitat designation. Each of these is addressed, respectively, in the following subsections.

8.3.1 Escape of Managed Fire: Riparian and Montane Communities

The MBHCP recognizes the possibility that managed fire (i.e., a prescribed burn or wildland fire) could at some point over the life of the MBHCP inadvertently burn into a riparian or montane area (Section 5.5.2.1) and cause significant habitat damage. The following measures will be implemented, should this occur:

8.3.1.1 Assessment Phase

Within 90 calendar days of the occurrence of such an event, an assessment of the fire will be undertaken and completed to determine: how or why the fire occurred; the damage that resulted from the fire, including habitat damage and take of covered species that may have occurred, if any; and what steps to correct that damage and restore the habitat, if any, are needed. This assessment will be undertaken by or under the supervision of the MBHCP's TAC (Section 5.9) and will involve site visits, evaluation, and the enlistment of outside technical help as needed. In addition, within 45 calendar days of completion of the assessment, MBG, with the assistance of

the TAC, will prepare a brief, written report summarizing the results of the assessment and will submit the report to the FWS, AGFD, and/or NMDGF, as well as ASLD and/or NMSLO if the fire or any portion thereof occurred on the lands of these agencies.

The first of the above determinations will help prevent future occurrences of the same type (e.g., through recommendations for future burn plans and prescriptions), and will be undertaken in consultation with the fire officials in charge of the fire at the time it escaped. The second determination will characterize damage to the affected habitat in terms of soil damage, vegetation damage, and extent and severity. The third determination will evaluate and describe the steps needed to correct the damage and facilitate recovery of the habitat. In addition, the potential to impact aquatic and riparian species downstream through ash and debris flows, and increased sediment transport needs to be identified and mitigating steps taken to prevent further affects to aquatic and riparian covered species. These might involve, among other things, erosion control measures and monitoring.

8.3.1.2 Correction Phase

Once the assessment phase described above has been completed, correction of fire-related damage can begin. However, how and by whom this is accomplished may vary depending on the extent and severity of the damage, the scope of work needed, and funding needed. Generally, therefore, implementation of the correction phase in the event of such changed circumstances will be carried out by or under the supervision of the TAC; and, unless correction needs are relatively minor – such as the adjustment of acreage caps, funding of this phase will be regarded under the MBHCP as the joint and collaborative responsibility of all non-Federal MBHCP participants whose regulatory or resource management interests have been affected by the circumstances.

8.3.2 Occurrence of High-Severity Managed Fire

While the escape of managed fire into off-site habitats is one concern under the MBHCP (see above), another is the possibility of adverse on-site fire-related effects (i.e., effects to habitats inside targeted burn areas that were not anticipated or planned). This type of changed circumstance might occur, for example, if the severity of a fire should be greater than planned within its targeted boundaries; if particular on-site areas should be inadvertently damaged as a result of fire; or if the reason for such damage was the failure of particular take minimization measures established by the plan to protect covered species and habitats from the adverse effects of fire. These types of occurrences would typically become known or be determined either immediately (i.e., in the course of a fire) or soon thereafter (through post-fire monitoring).

The response to this changed circumstance will consist of three elements: evaluation of effects; correction of fire-related damage, as necessary; and prevention of future similar circumstances. The first two of these will be undertaken under the same terms as described, respectively, in Section 8.2 above with respect to escaped fire; while the third will involve modification of inadequate or ineffective measures or procedures, as necessary, through the MBHCP's AM procedures (Section 5.8). All will be undertaken by or under the supervision of the TAC and,

unless evaluation and correction needs are minor, funding for the response will be regarded as the joint responsibility of all MBHCP participants whose regulatory or resource management interests have been affected by the circumstance.

8.3.3 Occurrence of Large-acreage Wildfire

Another changed circumstance possible under the MBHCP is the occurrence of relatively extensive wildfires in the Malpai Borderlands—which, if large enough, could negate or significantly reduce the effectiveness of the same burn/fire limits described above. For this reason, the plan measures establishing these limits require wildfire to be included (along with prescribed fire and wildland fire) in the cumulative acreage totals applicable to the limits. Thus, in the event that a wildfire large enough to cause any of these limits to be exceeded occurs in the Malpai Borderlands: managed fire in the particular watershed(s) affected by the wildfire (and/or in grasslands, as applicable) will cease for the remainder of the time period applicable to any such limit (i.e., for the remaining part of the year, or the remaining years in a given five-year period, as applicable); and acreage burned as a result of the wildfire in excess of an applicable annual, 1-year, or 5-year limit, if any, will be applied toward the limit for the following annual, 1-year, or 5-year time period.

8.3.4 Drought

Drought is a periodic, natural occurrence in the Malpai Borderlands and at times can continue for years. Particularly severe droughts are known to have occurred in the area from 1891-1893, 1898-1904, and the mid 1950s; in addition, some of the ecological problems currently present in the Malpai Borderlands may have commenced (or been augmented) as a result of the combination of drought and other factors (Section 2.2.2). This suggests that some activities otherwise normally carried out under the MBHCP may need to be curtailed or discontinued in drought periods—both to avoid adverse ecological effects, and because conditions during such periods may not be conducive to the success of the activities. The following measures will therefore be implemented should significant drought occur in the Malpai Borderlands over the life of the MBHCP.

8.3.4.1 Deferral of Activities

Normally, managed fire and mechanical brush control projects should not be undertaken in the midst of drought periods because both activities require productive growing seasons (i.e., adequate rainfall) subsequent to a project if optimal results are to be achieved. Consequently, MBG, participating Malpai ranchers, and other MBHCP cooperators, as applicable: will defer the carrying out of managed fire and mechanical brush control activities and projects during drought periods (i.e., until after the first rains following a drought); unless it is determined through consultation with applicable experts, authorities, or other knowledgeable individuals (e.g., the TAC) that a given project can be undertaken with a reasonable expectation of success, and without an expectation that significant adverse biological or ecological effects would result.

Whether or not drought exists at the time a managed fire or mechanical brush control project is being considered will be determined based on NOAA's Palmer Drought Index, which can be accessed at NOAA's Internet website (www.noaa.gov).

8.3.5 Occurrence of Significant Flooding

Floods are also a natural occurrence in the Malpai Borderlands and, depending on their magnitude, can result in significant adverse effects. These include initiation or worsening of gully erosion; high levels of sheet erosion; high levels of sediment movement in all these locations; and, in stream channels, damage to streambanks, streambeds, aquatic vegetation, and associated riparian vegetation. Flood severity can vary widely and, with respect to any particular flood event, is usually expressed as the frequency with which floods of similar magnitudes occur (e.g., a 50-year flood would be equal in magnitude to those occurring, on average, once every fifty years). Flood events severe enough to cause significant damage to the habitats of the covered species, particularly aquatic species and their habitats which are susceptible to both the direct impacts of flooding (e.g., instream flood flows) and its indirect impacts (e.g., potentially, sedimentation effects from throughout an entire watershed) are of interest to the MBHCP. It is estimated that flooding of this magnitude in the Malpai Borderlands might occur approximately once every one hundred years. Thus, flooding considered to constitute a changed circumstance under the MBHCP is specifically defined as the occurrence of a 100-year flood; and,

The response to such a flood will: be undertaken by or under the supervision of the TAC; and consist of an assessment phase to evaluate damage and a correction phase to repair flood damage, where feasible. In addition, correction would focus on repairing adverse erosion effects, particularly the most severe of those effects; and, unless evaluation and correction needs are relatively minor, would be regarded as the joint responsibility of all MBHCP participants whose regulatory or resource management interests have been affected by the circumstance.

8.3.6 Termination of FWS's 4(d) Rule for Chiricahua Leopard Frogs

This changed circumstance concerns possible future lapse of the FWS's special rule, under 50 CFR 17.43(b), for Chiricahua leopard frogs and stocktank maintenance and use, in which case the regulatory coverage provided by the rule would also lapse. All measures needed to fully and adequately address this changed circumstance are in Section 5.5.3.3.

8.3.7 Termination of the FWS's Special Rule for Northern Aplomado Falcons

This changed circumstance concerns possible future lapse of the FWS's section 10(j) and associated special rule, under 50 CFR 17.84, for northern aplomado falcons in New Mexico and Arizona. If this were to occur, the exemption from the Act's section 9 prohibition of take would no longer be in affect. Therefore, all conservation measures that are listed for northern aplomado falcons in Section 5.5.2 and 5.5.3 will become required minimization measures, in place of recommended minimization measures. Areas that currently read as "should" would be amended to read as "shall".

8.3.8 Inability of MBG to fund Monitoring

This changed circumstance concerns the possible future reduction in funding for the landscape level monitoring discussed in Section 5.7. MBG has funded this landscape-level biological monitoring for a number of years on a regular schedule. If this occurs the TAC and MBHCP cooperators will work to find additional funding to continue existing monitoring schedule. If this is not possible, MBG will work with the TAC to develop a reduced monitoring schedule and seek an amendment to their ITP to reflect this change. If this occurs after the first 15 years of the MBHCP and the monitoring shows a consistent trend of landscape level improvements, the MBG and the TAC should develop a relaxed monitoring schedule that can be financed for the remainder of the ITP duration. If trends reverse or an area within the Malpai Borderlands shows a reverse in the improved trend, monitoring on the initial schedule should be reestablished in those areas that show a downward trend until the degradation can be reversed.

8.3.9 New Listing of an Uncovered Species

This changed circumstance concerns possible future listing of a species not covered by the MBHCP. If this occurred, the TAC would need to determine if there was a possibility that take of the newly listed species may occur as a result of any of the covered activities. If there is the potential for take, discussions with the FWS should occur to determine take avoidance measures that could be implemented. MBG may consider amending the MBHCP and ITP; but it is not required.

8.3.10 New Critical Habitat Designation

This changed circumstance would consist of future designation under the Act of critical habitat with respect to currently listed species for which critical habitat is not designated, or currently unlisted species which might become listed in the future and for which critical habitat might be designated at that time. No response to this circumstance under the MBHCP would be required because the MBHCP is already focused on conservation of the covered species habitat. However, MBG may wish to review the covered activities to determine if further conservation for the newly designated critical habitat is warranted and desirable. If an amendment to the MBHCP and the associated ITP is desirable, the MBG, TAC, and the FWS will work cooperatively to process any desired amendments.

8.3.11 Development or Subdivision of Ranches in the Covered Area

This changed circumstance concerns the potential development into residential use of some portion of the Malpai Borderlands ranches through the sale and development of private or state trust lands. The MBHCP is habitat based, and MBG will need to determine if the implementation of their covered actions and conservation is still feasible. The covered activities are themselves the primary conservation of the covered species, and if the covered activities are no longer feasible, then the conservation measures are no longer viable.

9.0 Permit Administration

MBG, or Malpai-area ranchers participating in the MBHCP, may from time to time find it necessary or desirable to amend the MBHCP, its associated ITP, or COIs under the ITP, or to terminate their commitments under the MBHCP or its associated COIs. In addition, although not necessarily anticipated, procedures may occasionally be needed to address periodic failures (by one party or another) to implement all the MBHCP's requirements, or to transfer the rights and obligations of the ITP from MBG to another entity. This section addresses these and other procedural issues.

9.1 Amendments

9.1.1 Amendment of the MBHCP and Permit.

The MBHCP may occasionally require an amendment to: add or remove a species to or from its covered species list; revise the MBHCP's covered area or list of covered activities; extend the ITP term; or otherwise revise the MBHCP in a manner that is significantly beyond its scope as originally written and approved, and that is therefore beyond the assumptions about the effects on federally and state listed species upon which the original plan was based. Any MBHCP amendment of this type—i.e., which affects key or substantive MBHCP provisions or results in new or significantly different effects on the covered species—would also require amendment of its associated ITP. The MBHCP and ITP may therefore be amended for any such reason in accordance with the regulatory requirements applicable or in force at the time of any such amendment.

Under current FWS regulations (50 CFR Parts 13 and 17), amendment of an ITP is treated in much the same manner as a permit application, and requires, at a minimum: a revised HCP or HCP addendum incorporating the desired changes and analyzing their effects on the covered species, or, at a minimum, a written description of the amendment, an explanation of why it is needed, and an analysis of its effects on the covered species; publication of a *Federal Register* notice announcing the proposed HCP and ITP amendment; and a 30-day public comment period. Whether or not a proposed ITP amendment would also require a new or revised National Environmental Policy Act (NEPA) document would be at the discretion of the FWS.

9.1.2 Amendment of the MBHCP Only.

Amendment of the MBHCP may in certain circumstances be accomplished without amending its associated ITP. Many amendments to the MBHCP's conservation program, for example, may be effected without ITP amendment under the MBHCP's AM provisions (Section 5.8). In addition, amendments of a minor or technical nature not described in the MBHCP's AM provisions may also be effected without a ITP amendment, provided that: any such amendment is not expected to result in effects on the covered species or the environment, or in changes to the MBHCP's operating conservation program, that are significantly different from those analyzed in the original MBHCP and NEPA document; MBG submits to the FWS a written description of the proposed amendment, an explanation of why it is needed, and an explanation of why the

amendment is not expected to result in such significantly different effects; and the FWS concurs with any such finding in writing.

9.2 Permit/Agreement Termination

9.2.1 Voluntary Termination of the Permit

MBG may terminate its obligations under the MBHCP and its associated ITP at any time if, in its view and/or the views of its membership, the MBHCP is no longer necessary, desirable, or applicable. MBG may terminate the ITP by providing to the FWS and all other MBHCP participants written notice with a written explanation a minimum of 90 calendar days prior to the proposed effective date of termination. Upon such notification, any MBHCP participant may request a meeting of all MBHCP participants to discuss pertinent or final issues that may be raised by the termination announcement, and each MBHCP participant will honor any such request within the 90-day notification period. The MBHCP and its associated ITP will then be considered terminated as of the end of the 90-day period, provided that all obligations under the plan have been satisfied as described in Section 9.2.3 (e.g., mitigation for any take that has already occurred must be completed prior to MBG terminating the ITP). In addition, MBG will, in writing and within 60 days of the effective date of ITP termination, notify all Malpai-area ranchers who at the time are party to active COIs that the ITP is to be terminated and that all COIs will be considered terminated as of the effective date of ITP termination.

9.2.2 Early Termination of COIs

The MBHCP participants recognize that Malpai-area ranchers participating in the MBHCP may occasionally wish to terminate a COI prior to its specified expiration date. This might occur for a number of reasons, including but not limited to, emergency or exigent circumstances. Consequently, any participating Malpai rancher who wishes to terminate a COI prior to its specified expiration date may do so by giving MBG written notice of such termination, together with a written explanation of the reason for termination, a minimum of 60 calendar days prior to the effective date of the termination. Upon such notification, the COI with respect to that rancher will be considered terminated as of the end of the 60-day period, provided that the conditions described in Section 9.2.3 are satisfied. Furthermore, no such early termination of a COI will require FWS approval, also provided that the conditions described in Section 9.2.3 are satisfied. However, MBG will inform FWS of all such early terminations occurring in a given year in its annual report (Section 5.10).

9.2.3 Requirements for Voluntary/Early Termination

Voluntary or early termination of the ITP by MBG or a COI by a cooperating rancher under that ITP is allowable only if all obligations and measures required by the MBHCP have been fully implemented or satisfied. MBG, or any Malpai rancher requesting early termination of a COI, also understands that the benefits provided by the MBHCP and its associate ITP, regulatory or otherwise, also cease as of the effective date of termination of the ITP or COI, as applicable.

9.3 COI/Permit Suspension/Revocation

A Malpai-area rancher's COI may be suspended or revoked for cause by either MBG or the FWS, acting jointly or separately, if: the rancher has failed to satisfy any specific responsibility or condition required by the MBHCP and COI; MBG and/or the FWS have made reasonable, good faith efforts to cooperatively work with the rancher to correct the deficiency; the deficiency remains uncorrected, even after MBG's and/or the FWS's good faith efforts; and written notice has been provided to the affected rancher alerting the rancher of the pending suspension or revocation a minimum of 30 days prior to the effective date of the suspension or revocation. Similarly, the FWS may suspend or revoke MBG's ITP for cause in accordance with Federal regulations applicable or in force at the time of the suspension or revocation (such regulations are currently codified at 50 CFR Parts 13 and 17). However, no such suspension or revocation of MBG's ITP by the FWS may be inconsistent with or in violation of the regulatory assurances described in Section 8.1 of the MBHCP.

9.4 Participant Severability

Each COI issued by MBG or its authorized designee to a Malpai-area rancher is severable with respect to MBG's ITP, and with respect to COIs issued by MBG or its authorized designee to other Malpai-area ranchers. Thus, failure by one rancher to comply with the requirements of a COI, potentially invalidating that rancher's ITP coverage, does not affect the rights and obligations of other ranchers under their respective COIs, or MBG's rights or obligations under its ITP, provided that MBG or other such ranchers are themselves in compliance with the requirements of the MBHCP, the ITP, or their COIs, as applicable.

9.5 Permit Transfer/Succession

Although not anticipated, in the event that MBG should cease operations or otherwise be unable to carry out its responsibilities as Permittee under the MBHCP, MBG's ITP may be transferred to another entity in accordance with Federal or state regulations applicable or in force at the time of the transfer (such regulations are currently codified at 50 CFR 13.24 and 13.25). An appropriate successor in the event of a transfer would generally include a suitable state agency or conservation organization.

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The Appendices

Introduction: Summary of the Appendices

Appendix A: Treatment of Species Listed under the WCA. Appendix A addresses issues arising in connection with the New Mexico Wildlife Conservation Act (WCA). Species are listed under the WCA as threatened or endangered and all species that are WCA-listed species and occur or may occur in the Malpai Borderlands are included as covered species under the MBHCP. Appendix A therefore describes, for purposes of the WCA, how the plan benefits the conservation interests of such WCA-listed species and how the requirements of the WCA with respect to such species are otherwise addressed; it has, however, no direct effect on the MBHCP itself.

Appendix B: Implementing Agreement. Appendix B consists of the MBHCP's Implementing Agreement (IA), a regulatory document prepared under the authorities of section 10(a)(2)(B) of the Act and signed by all parties to the MBHCP except individual Malpai-area ranches. The IA is essentially a supplement to the MBHCP and its associated ITP which, among other things, extends the authorities of the plan to non-permittees and formalizes and makes binding agreements under the plan that are not regulated by the ITP itself. The IA is described in Section 3.7 of the plan.

Appendix C: COI Template. Appendix C consists of a "template" Certificate of Inclusion which effects the enrollment of individual Malpai-area ranchers as participating parties in the MBHCP. The template can be completed with respect to individual cases by simply inserting the case-specific information involved. The COI is signed by two parties, the enrolling rancher and MBG, and participation in the plan by the rancher commences from the date of that signature. Rancher participation in the MBHCP and the COI process are described in the MBHCP in Sections 5.3 and 5.3.2, respectively.

Appendix D: Annual Reporting Templates. Appendix D consists of three annual reporting templates. The first is the MBG Annual Report Template. This Template is set up to meet the annual reporting requirements MBG will take on under the MBHCP. This Template may need to be modified to include all information or to make the annual reporting by MBG more efficient. The other two templates are the Participating Rancher template and the SBNWR reporting template. These templates may be modified to present information in a more logical manner or to include additional information, such as those needed for reporting to ASLD, NMSLO, AGFD, and NMDGF. (Templates will be added before public review.)

Appendix A

MALPAI BORDERLANDS GROUP HABITAT CONSERVATION PLAN: STATE LISTED WILDLIFE AND SPECIES OF CONCERN IN NEW MEXICO

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1.0. INTRODUCTION

This appendix to the Malpai Borderlands Habitat Conservation Plan (HCP) has been developed to address wildlife species that are currently protected or in the foreseeable future may be protected under the New Mexico Wildlife Conservation Act and that are known or are likely to occur in the New Mexico portion of the Malpai Borderlands Group (MBG) study area addressed in the HCP. The purpose of this document is to identify these species and their status in the area, review possible threats to their persistence, and present recommendations on how to avoid or minimize impacts to these species by MBG activities covered in the HCP. The intent is to provide guidance to the MBG to ensure that implementation of the HCP complies with New Mexico state law governing protected wildlife and to provide recommendations that may serve to benefit wildlife species listed under the WCA or that potentially could be listed.

2.0. OVERVIEW OF THE WILDLIFE CONSERVATION ACT

The New Mexico Wildlife Conservation Act (WCA; New Mexico Statutes Annotated [NMSA] 17-2-37 through 17-2-46, 1978) was passed in 1974 and revised in 1995 to provide legal authority to the New Mexico Game Commission and the New Mexico Department of Game and Fish (NMDGF) to manage, protect, and conduct research on native wildlife species at risk of extirpation in the state. Wildlife, as defined in the WCA, includes any non-domestic species of mammal, bird, reptile, amphibian, fish, mollusk, or crustacean, including any part, egg, or offspring of a live or dead example of any such species.

In the 1995 revision of the WCA, the following listing categories were established:

An **Endangered** species is one "whose prospects of survival or recruitment within the state are in jeopardy due to any of the following factors: (1) the present or threatened destruction, modification or curtailment of its habitat; (2) over utilization for scientific, commercial or sporting purposes; (3) the effect of disease or predation; (4) other natural or man-made factors affecting its prospects of survival or recruitment within the state; or (5) any combination of the foregoing factors. The term may also include any species of fish or wildlife appearing on the United States list of endangered native and foreign fish and wildlife as set forth in Section 4 of the Endangered Species Act of 1973 as endangered species, provided that the commission adopts those lists in whole or in part."

A **Threatened** species is one "that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range in New Mexico; the term may also include any species of fish or wildlife appearing on the United States list of endangered native and foreign fish and wildlife as set forth in Section 4 of the Endangered Species Act of 1973 as threatened species, provided that the commission adopts the list in whole or in part…."

A third category, **Restricted**, applies to species that are regulated under the Convention on International Trade in Endangered Species (CITES). In New Mexico, this category includes seven species of cats, only one of which (Jaguar) has occurred in New Mexico and has any relevance to the HCP planning process.

Habitat and Take under the WCA

The WCA bears some similarity to the federal Endangered Species Act (Act) in scope and language, but differs in some important respects. The WCA does not include any provisions for protection of habitat occupied by an Endangered or Threatened species, such as the Act's "critical habitat" designation. It does provide protection for species listed as Endangered under the Act:

> *Except as otherwise provided in the Wildlife Conservation Act [17-2-37 to 17-2-46 NMSA 1978], it is unlawful for any person to take, possess, transport, export, process, sell or offer for sale or ship any species of wildlife appearing on any of the following lists: (1) the list of wildlife indigenous to the state determined to be endangered within the state as set forth by regulations of the commission; and (2) the United States lists of endangered native and foreign fish and wildlife as set forth in Section 4 of the Endangered Species Act of 1973 as endangered or threatened species, but only to the extent that those lists are adopted for this purpose by regulations of the commission; provided that any species of wildlife appearing on any of the lists set forth in this subsection, transported into the state from another state or from a point outside the territorial limits of the United States and which is destined for a point beyond the state, may be transported across the state without restriction in accordance with the terms of any federal permit or permit issued under the laws or regulations of another state or otherwise in accordance with the laws of another state.*

"Take" or "taking" as defined under the WCA, is " to harass, hunt, capture or kill any wildlife or attempt to do so" [17-2-38 L]. No provision exists for "incidental take" as in the Act. Take, use, and transport of species listed as Endangered and Threatened under the WCA is authorized as follows:

> *The director may authorize by permit the taking, possession, transportation, exportation or shipment of species or subspecies which have been deemed by the commission to be in need of management as provided in the Wildlife Conservation Act, so long as such use is for scientific, zoological or educational purposes, for propagation in captivity of such wildlife or to protect private property.* [17-2-42 C]

> *Endangered species may be removed, captured or destroyed where necessary to alleviate or prevent damage to property or to protect human health. Such removal, capture or destruction may be carried out only by prior authorization by permit from the director, unless otherwise provided by law; provided, that endangered species may be removed, captured or destroyed without permit by any person in emergency situations involving an immediate threat to human life or private property. [17-2-42 D]*

Therefore, the demonstration of a "scientific, zoological, or educational purpose" is vital in establishing justification for take of state-listed wildlife. A "scientific or zoological purpose" could be considered as one that results in an overall benefit to the species in New Mexico.

Possible Conflicts between Act and WCA Authorizations

As stated above, the WCA does not provide for protection of habitat of listed species and therefore does not prohibit land management activities, such as those proposed by the MBG, that may impact listed species. However, one potential area of legal conflict is where a species is both listed under the Act (as Endangered or Threatened) and listed under the WCA as Endangered. This potential conflict is especially relevant to land management activities such as would be covered under the HCP. In the event that an incidental take permit were to be issued for a federally listed species that was also listed as Endangered by the State, the possibility of take under New Mexico law could be triggered. Whereas NMDGF would not normally pursue law enforcement against persons and activities that result in "take" of state Endangered species as a result of habitat modification activities, establishment of a written, Federal take statement provides documentation that may make the acting party (or parties) increasingly vulnerable to consequences for possible violation of the WCA. (NMDGF could also be legally vulnerable for not acting on a potential violation of the WCA under these circumstances.)

Authorization for permitting take under the WCA does not include land management activities, therefore no legal mechanism exists under NMDGF's permitting authority to allow incidental take that is permissible under the Act. In such situations, NMDGF would likely recommend avoidance of the potential take rather than issuances of a Federal incidental take permit.

A different legal mechanism may exist that could prevent conflict between Act and WCA authority. The WCA authorizes the use of agreements with other entities, including private landowners, that facilitate management of Endangered species:

> *In carrying out programs authorized by the Wildlife Conservation Act [17- 2-37 to 17-2-46 NMSA 1978], the director may enter into agreements with federal agencies, political subdivisions of the state or with private persons for administration and management of any program established under this section or utilized for management of endangered species. [17-2-42 B]*

The provision for "agreements" is further defined in NMDGF rule 19 NMAC 36.2, approved by the New Mexico State Game Commission under authority of the WCA. The rule allows for the identification of "designated cooperators," such as private landowners, that are exempted from permitting otherwise required under the Act, provided that the activities in question are for "scientific purposes" including research and management of Endangered species.

The use of the "designated cooperator" rule has potential use in working with the MBG in the management of WCA-listed species in Hidalgo County, although to date it has not been legally tested as a means to avoid conflict with WCA authority and would likely require a Memorandum of Understanding or other formal agreement to establish cooperator status.

Species Covered under the MBHCP and/or Listed under Both the Act and WCA

The following wildlife species identified in Table A-1 (and discussed in more detail in Section 3.0 below) are listed as Endangered or Threatened under the Act (or are otherwise covered in the HCP as those that may be federally listed in the foreseeable future) and are also listed as Endangered or Threatened under the WCA (or are likely to be listed under the WCA in the near future). Although species listed as Threatened under the WCA are not subject to the same protections as Endangered, the possibility exists that they may be uplisted to Endangered in the foreseeable future based on new information or changes in their status. These wildlife species are identified as those for which potential conflict between Act and WCA authority could occur in the context of MBG activities.

Table A-1
Southern (=Lesser) Long-nosed Bat
Mexican Long-nosed Bat
Mexican Gray Wolf
White-sided Jackrabbit
Aplomado Falcon
New Mexico Ridge-nosed Rattlesnake
Chiricahua Leopard Frog
Lowland Leopard Frog

3.0 ANNOTATED LIST OF SPECIES

The following annotated list of species identified in Table A-1 provides information on those state listed wildlife species and species of concern that occur in the New Mexico portion of the HCP study area. Information is derived in part from NMDGF (2004). Abbreviations: USFS = U.S. Forest Service sensitive species list; SoC = NMDGF list or Fish and Wildlife Service list of Species of Concern. Almost all species are also informally listed as Species of Greatest Conservation Need as identified by NMDGF (2005) for habitat management purposes in the New Mexico Comprehensive Wildlife Conservation Strategy. Species flagged with an asterisk (*) in this section are also covered in the HCP proper.

3.1. MAMMALS

Arizona Shrew (*Sorex arizonae*)

Conservation Status: State of NM – Endangered.
Distribution: In New Mexico, known only from higher elevations in the Animas Mountains.
Habitat: Mesic woodlands of Douglas fir, quaking aspen, and netleaf oak and in proximity to springs. Areas with downed woody debris are preferred.
Times of Occurrence: Year round.
Recommendations: Protection of spring sites and riparian areas with live understory vegetation and downed woody debris is important for the conservation of this species. Drying of spring sites and destruction of overstory and understory vegetation, such as by fire, are the greatest threats to persistence of this species in the Animas Mountains.

Mexican Long-tongued Bat (*Choeronycteris mexicana*)

Conservation Status: Federal –USFS; State of NM – SoC.
Distribution: In New Mexico, primarily southern Hidalgo County.
Habitat: Mixed oak-conifer woodlands, riparian forests, Chihuahuan Desert shrublands, and canyons. Caves, mines, and similar rock shelters, as well as buildings are used as roosts. Night-blooming plants, primarily agaves, are an important food source and a critical requirement for the bat's presence in the HCP area.
Times of Occurrence: Early or mid July to mid September, but may vary somewhat depending on food availability in the HCP area and elsewhere; greatest numbers are usually present from early August to mid September (M. Bogan, pers. comm.).
Recommendations: Protection of agave plants from destruction and the prevention of disturbance at roost sites are the primary conservation concerns.

Southern (=Lesser) Long-nosed Bat (*Leptonycteris curasoae*)

Conservation Status: Federal – Endangered; State of NM – Threatened.
Distribution: In New Mexico, known only from southern Hidalgo County where it has been confirmed in the Animas, Peloncillo, and Big Hatchet mountains, Guadalupe Canyon, and in the Animas and Playas valleys.

Habitat: Canyons and nearby areas in desert grasslands and shrublands, including the lower edges of oak, oak-pine, and juniper woodlands.
Times of Occurrence: Early July to early October, but may vary somewhat depending on food availability in the HCP area and elsewhere; greatest numbers are present from early August to mid September (M. Bogan, pers. comm.).
Recommendations: Avoidance of large-scale destruction of food plants, mainly agaves in flower, is critical to protecting summer populations of long-nosed bats in the HCP area. Protection of established agave stands from disturbance is recommended. Caves and mines that provide day roosts for this and other bat species should be protected from human disturbance and closure. The abandoned building identified as an important night roost for this and the following species of long-nosed bat (Hoyt et al. 1994) should be protected and maintained.

Mexican Long-nosed Bat (*Leptonycteris nivalis*)

Conservation Status: Federal – Endangered; State of NM – Endangered.
Distribution: In New Mexico, known only from southern Hidalgo County where it has been confirmed in the Animas, Peloncillo, and Big Hatchet mountains, Guadalupe Canyon, and in the Animas and Playas valleys.
Habitat: Canyons and nearby areas in desert grasslands and shrublands, including the lower edges of oak woodlands.
Times of Occurrence: Early July to early October, but may vary somewhat depending on food availability in the HCP area and elsewhere; greatest numbers are present from early August to mid September (M. Bogan, pers. comm.).
Recommendations: Same as those for Southern Long-nosed Bat (see above).

***Western Red Bat (*Lasiurus blossevillii*)**

Conservation Status: Federal – SoC, USFS; State of NM – SoC.
Distribution: In New Mexico, primarily the southwestern counties of the state. Known from the vicinity of the Animas and Peloncillo Mountains.
Habitat: Riparian forests of cottonwood and sycamore; also oak woodlands in or near riparian zones.
Times of Occurrence: Mainly May through August.
Recommendations: Protection of riparian zones and gallery forests as roost and forage areas, as well as perennial ponds as watering sites, will benefit this bat. Additional surveys for this little-known species in Hidalgo County are needed.

Western Yellow Bat (*Lasiurus xanthinus*)

Conservation Status: State of NM – Threatened.
Distribution: In New Mexico, confirmed from Guadalupe Canyon and the Animas Mountains, Hidalgo County. Based on recent records in Texas, may occur elsewhere in southern New Mexico.

Habitat: Riparian zones with cottonwood, sycamore and Arizona white oak. Known to use palm trees and occasionally yucca as roosts elsewhere in range.
Times of Occurrence: Primarily May-September; not known to winter in New Mexico.
Recommendations: Same as for Western Red Bat (above).

Mexican Gray Wolf (*Canis lupus baileyi*)

Conservation Status: Federal – Endangered; State of NM – Endangered.
Distribution: In New Mexico, introduced wolves are currently present primarily in the recovery area within Grant, Catron, and Sierra counties, north of the HCP area. Dispersing individuals and pairs have ranged outside of this area.
Habitat: Occurs in a variety of forested and woodland habitats including pine-oak, pinyon-juniper, and ponderosa pine stands, and in grasslands interspersed in wooded areas; generally above 1372 m (4500 feet).
Times of Occurrence: Year round; presently only a potential transient in the HCP area.
Recommendations: At present, the experimental population occurs north of the HCP area. Monitoring of the New Mexico population to assess status and dispersal is an ongoing effort by NMDGF, Fish and Wildlife Service, and other cooperators.

Jaguar (*Panthera onca*)

Conservation Status: Federal – Endangered; State of NM – Restricted.
Distribution: In New Mexico, this species is of marginal occurrence. Recent records are from southern Hidalgo County in or near the HCP area.
Habitat: May occur in a wide range of habitats including riparian areas and densely vegetated desert-scrub habitat.
Times of Occurrence: Year round, although individuals in the New Mexico portion of study area may be transient animals.
Recommendations: Predator control activities, including snares for mountain lions, pose a potential threat to jaguars. Maintenance of water sources and dense riparian areas is probably beneficial to the few individuals that may enter the study area.

Desert Bighorn Sheep (*Ovis canadensis mexicana*)

Conservation Status: Federal – USFS; State of NM – Endangered.
Distribution: In New Mexico portion of the HCP area, extant populations are in the Peloncillo Mountains, primarily north of the MBG properties but individuals and small herds may wander long distances. Has occurred in the Animas Mountains in recent years but no established population there.
Habitat: In New Mexico, primarily in dry, rocky areas with steep gradients and cliffs and with limited shrub and tree cover.
Times of Occurrence: Year round as a transient.
Recommendations: Desert bighorns are of marginal occurrence in the MBG area. Any activity that reduces shrub cover in rocky, upland areas could potentially provide suitable habitat for this animal but most suitable habitat lies north and east of the HCP area.

Southern Pocket Gopher (*Thomomys umbrinus*)

Conservation Status: State of NM – Threatened.
Distribution: In New Mexico, known only from the Animas Mountains. The subspecies *T. u. emotus* is endemic to this range.
Habitat: In New Mexico, found mainly at the higher elevations of the Animas in canyons and clearings with friable soils and suitable forage plants. May follow canyons downslope into foothills of the range.
Times of Occurrence: Year round.
Recommendations: At present the Animas population is likely secure from threats, although localized extripation from wildfire is possible. Additional survey efforts to assess population size and distribution are warranted.

Yellow-nosed Cotton Rat (*Sigmodon ochrognathus*)

Conservation Status: Federal – SoC; State of NM -- SoC.
Distribution: In New Mexico, in and near the Animas and Peloncillo mountains.
Habitat: Grassy slopes in or adjacent to pine-oak woodlands from foothills, where it may be found with Chihuahuan Desert shrub species, to upper elevations of mountains.
Times of Occurrence: Year round. Population density likely peaks in the fall.
Recommendations: Maintenance of dense grass cover in uplands and on bajadas is necessary for the persistence of this species. Livestock management, erosion protection projects, and possibly prescribed burns that serve to maintain grass cover in pine-oak habitat are beneficial. Additional study of this species, including as an indicator of healthy range conditions on slopes, is warranted.

***White-sided Jackrabbit (*Lepus callotis*)**

Conservation Status: Federal -- USFS; State of NM – Threatened.
Distribution: Animas Valley and, at least formerly, the southern Playas Valley in Hidalgo County.
Habitat: Plains vegetated with tobosagrass, buffalograss, and grama and largely free of shrubs and forbs. As shrub cover increases, presence by this species declines.
Times of Occurrence: Year round.
Recommendations: White-sided jackrabbits would likely benefit from range management activities, such as prescribed fire, that would reduce shrub density and improve native grass cover. However, avoidance of burning in suitable habitat during breeding season (mid April to mid August) is recommended. Pre-burn surveys to determine presence-absence of the species should be conducted.

3.2. BIRDS

Gould's Wild Turkey (*Meleagris gallopavo mexicana)*

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: The Gould's subspecies of the Wild Turkey, typical of Mexico's Sierra Madre, occurs naturally in the United States only in the Peloncillo and Animas ranges and the intervening Animas Valley in southern Hidalgo County, New Mexico. It occurs in all major canyons and adjacent foothills areas in the Peloncillo Mountains, from Guadalupe Canyon north primarily to the Skeleton Canyon area but with smaller numbers farther north, and throughout and in the middle Animas Valley.

Habitat: Occurs primarily in pine-oak forested canyons and adjacent slopes, and in cottonwood-sycamore riparian situations. Important habitat components include water and tall trees for roosting. Nests are placed on ground in low vegetation, often next to downed logs or at the base of a shrub or tree. Elevations of occurrences in southern Hidalgo County range from about 4400 ft to 7500 ft or higher.

Seasonal Occurrence: Year round resident, breeding from March/April to July/August; most hatching occurs in June.

Conservation Concerns: Threats to this taxon in Hidalgo County include habitat loss from removal of vegetation, wildfire, competition with livestock (cattle, hogs), lack of water sources, hybridization with non-native turkeys, and human killing and disturbance.

Recommendations: Monitor population to identify distribution and trends. Identify and protect (from fire, cutting) roost trees. Avoid livestock grazing in riparian areas. The local population appears well-adapted to local conditions, hence, augmentation with stock from elsewhere (e.g., Mexico) is not recommended.

Northern Goshawk (*Accipiter gentilis*)

Conservation Status: Federal – USFS; State of NM – SoC.

Distribution: Breeding birds found primarily at middle and higher elevations in the Peloncillo and Animas mountains, with reports from most major canyons in both ranges; migrants and wintering birds found more widely. The local breeding birds are usually separated as *A. g. apache* ("Apache" Goshawk); birds in migration and winter likely include the widespread *A. g. atricapillus*.

Habitat: In the Peloncillo and Animas mountains, breeds primarily in forested canyon bottoms in the pine-oak zone, with most nests in large Chuhiahua pines and placed 30-60 ft above ground. Most reported breeding territories are above 5400 ft; migrant and wintering individuals found lower.

Seasonal Occurrence: Presumably resident in the Peloncillo and Animas mountains, but relatively few winter reports. Breeding occurs from April through July, with most active nests in the Peloncillos reported from early May to mid-July.

Conservation Concerns: The small breeding population is threatened by habitat loss or alteration, especially loss of large pines. Disturbance to nesting birds is a concern, as is illegal take for falconry.

Recommendations: Traditional nesting territories should be protected from habitat loss and from human disturbance. The ban on take of nestlings for falconry in the Peloncillo and Animas ranges should be continued.

Common Black-Hawk (*Buteogallus anthracinus*)

Conservation Status: Federal – USFS; State of NM –Threatened.
Distribution: In southern Hidalgo County, this neotropical raptor has been recorded occasionally in Guadalupe Canyon; in the Animas Valley in the vicinity of Clanton Cienega and along Animas Creek; and in the southern Animas Mountains.
Habitat: A riparian-obligate species, breeding birds require mature broadleaf forest stands (cottonwood, sycamore) located near permanent streams where the principal prey (fish, amphibians, reptiles) is available. Nests are placed in large cottonwoods or sycamores near water. Migrants and wandering individuals found in similar habitats, with most occurrences in southern Hidalgo County associated with surface water (including flowing streams) in wet years.
Seasonal Occurrence: A neotropical migrant, present in southwestern New Mexico only during the warm season, arriving in mid-March and departing by October. To date, known only as a transient in southern Hidalgo County, with no breeding records.
Conservation Concerns: Lack of suitable permanent water in southern Hidalgo County largely precludes breeding.
Recommendations: Clanton Cienega and other well-watered riparian areas in the Animas Valley offer the best opportunities for breeding birds to become established. Management decisions that maintain high water tables and hence surface water and large trees in such areas are encouraged.

***Aplomado Falcon (*Falco femoralis*)**

Conservation Status: Federal – Nonessential Experimental; State of NM – Endangered.
Distribution: In southern Hidalgo County, historically occurred in open grasslands in the Animas, Playas, and Hachita valleys. Last specimen was taken in the Animas Valley in 1939; last reported nest was on the international border west of Antelope Wells in 1952. Reports in recent years primarily from the Animas Valley.
Habitat: Open desert grasslands with high grass cover and low shrub density. Nests in old stick nests (hawk, raven), most commonly in tall yuccas.
Seasonal Occurrence: Historically, was resident where found. Breeding in southern New Mexico occurs March-July.
Conservation Concerns: Alteration or degradation of grassland habitat, primarily through reduction of grass cover and increase in woody vegetation, this resulting from excessive livestock grazing. Loss of yuccas, also resulting from livestock impacts, reduces available nest sites.
Recommendations: Manage grasslands to provide for suitable habitat in order to encourage natural recolonization to proceed in Hidalgo County and elsewhere in southern New Mexico.

Peregrine Falcon (*Falco peregrinus*)

Conservation Status: Federal – USFS; State of NM – Threatened.
Distribution: In southern Hidalgo County, breeds in middle and higher elevation canyons in the Peloncillo and Animas mountains, typically in areas with high habitat diversity. Migrant and

wandering individuals have been reported widely in the area (e.g., Animas Valley) but are often associated with tanks or other water areas where prey species (birds) concentrate.

Habitat: Breeds on cliffs in mountain canyons. As an aerial hunter, it forages widely for avian prey.

Seasonal Occurrence: In southern Hidalgo County, breeding territories are occupied from early March into July or August.

Conservation Concerns: Disturbance to breeding birds is the principal concern in southern Hidalgo County. Illegal take of nestlings for falconry is likewise an important concern.

Recommendations: Suitable habitat should continue to be identified and protected from disturbance. Potentially disruptive activities (prescribed fires; road/trail maintenance, etc.) should be scheduled during the non-breeding September-February season. Maintain strict confidentially regarding location of breeding territories, this to avoid disturbance by the curious and illegal take by falconers. The current Department monitoring program should continue.

Mountain Plover (*Charadrius montanus*)

Conservation Status: State of NM – SoC.

Distribution: Historically, nested in the Animas Valley, with several reports through the 1920s but with the last documented breeding in 1933.

Habitat: A species of open, flat to rolling, shortgrass plains and mesas, often associated with prairie dog activity or other forms of surface disturbance (cattle concentrations) that provide some bare ground. Elevations of occurrence in southern Hidalgo County are about 5000 ft.

Seasonal Occurrence: Migrates through southern Hidalgo County, to and from wintering areas to the west and south, in early spring (March) and again in fall (September-November). Historically, local breeders present April-July, with young reported by early May. Although the species winters (at lower elevations) not far to the west and south of the Animas Valley, it is not known to winter in Hidalgo County.

Conservation Concerns: Loss of local breeding population by the 1930s possibly related to local elimination of prairie dogs.

Recommendations: Allowing prairie dogs to thrive in McKinney Flats and elsewhere in southern Hidalgo County (e.g., Animas Valley) should benefit Mountain Plovers.

Common Ground-Dove (*Columbina passerina*)

Conservation Status: Federal – USFS; State of NM – Endangered.

Distribution: In southern Hidalgo County, found most frequently in Guadalupe Canyon, and in the Animas Valley near the north and the south ends of the Animas Mountains. Also found north in the Peloncillo Mountains to Post Office Canyon and the vicinity of Rodeo.

Habitat: Prefers brushy, well-watered valleys, frequenting riparian woodlands and shrublands, especially mesquite thickets along streams and canyon bottoms, foraging in adjacent fields, farms, and ranch yards. Typically associated with semi-open habitats containing low brush and grasses. Nests are placed low in shrubs or small trees, rarely more than 10-15 ft above ground. This is a species of low elevations, generally found below 5000 ft in southern Hidalgo County.

Seasonal Occurrence: Primarily a warm season resident in southern Hidalgo County, with most reports from April into September. Less regular in fall and early winter, but perhaps overlooked at those seasons. Territorial singing heard from April through August, with peak of breeding activity May-June.

Conservation Concerns: Loss of native shrublands in lowland riparian areas, through clearing, excessive livestock grazing, or watertable lowering, is the chief concern. No documented breeding records from Hidalgo County for many years.

Recommendations: Protection and enhancement of shrubby riparian habitats, and provision of surface water in such areas, would be beneficial. Department survey and monitoring programs in Guadalupe Canyon, the Animas Valley, and the Animas Mountains should be continued.

Whiskered Screech-Owl (*Megascops trichopsis*)

Conservation Status: State of NM – Threatened.

Distribution: In New Mexico, occurs only in Hidalgo County, where found regularly in several Peloncillo Mountain canyons (e.g., Skeleton, Whitmire, Cottonwood, Clanton) and occasionally in the Animas Mountains.

Habitat: A species of dense pine-oak woodlands, and dense oak woodlands just below the pine-oak zone, especially favoring oak riparian situations in mountain canyons and dense woodlands on adjacent north facing slopes. Nests in cavities in snags or dead portions of living trees. Resident in the Peloncillo Mountains from about 4800 ft up to 5700 ft; found up to 6300 ft (and occasionally higher) in the Animas Mountains.

Seasonal Occurrence: Permanent resident in the Peloncillo Mountains; possibly resident in the Animas Mountains. Breeding season generally February/March into July.

Conservation Concerns: Loss of pine-oak and oak woodlands in the Peloncillo and Animas mountains, especially in canyon bottom situations, through vegetation removal or fire (natural or prescribed) is the principal concern. Cavity trees (snags, etc.) are especially vulnerable to fire and woodcutting.

Recommendations: Continue to survey for and monitor the limited New Mexico population. Encourage public and private land managers to protect pine-oak and oak woodlands, especially in canyon riparian situations.

***Mexican Spotted Owl (*Strix occidentalis lucida*)**

Conservation Status: Federal – Threatened; State of NM – SoC.

Distribution: In southern Hidalgo County, resident only the highest reaches of the Animas Mountains, including upper Indian Creek Canyon, Aspen Spring, and adjacent forested slopes and high canyons. Occasional transient in the Peloncillo Mountains.

Habitat: In the Animas Mountains, resident in cool, relatively moist canyons and adjacent slopes characterized by dense, mature mixed conifer forests of Douglas-fir/ponderosa pine with Gambel's oak understory, typically above 7000 ft. A shrubby, grassy understory with much dead and down woody debris is necessary for supporting small mammal prey base. Nests situated in large trees, especially in mistletoe clumps, old stick nests, or tree cavities; will also nest on cliff ledges and in caves.

Seasonal Occurrence: Year round resident in higher portions of Animas Mountains. Generally, courtship begins in March, egg laying is in April, young are in nests May-June, and dependant fledglings are seen in July.

Conservation Concerns: Loss of very limited mixed conifer habitat in higher Animas Mountains canyons is the principal concern. Human disturbance of this small population, especially during the nesting season, is likewise a concern.

Recommendations: Maintain available habitat in the higher Animas Mountains. Burning in these canyon habitats is not recommended. To promote understory for prey species, areas should be protected from grazing. Human disturbance should be minimized.

Buff-collared Nightjar (*Caprimulgus ridgwayi*)

Conservation Status: Federal – USFS; State of NM – Endangered.

Distribution: First discovered in the United States in 1958 in the New Mexico portion of Guadalupe Canyon, where apparently breeding at the time.

Habitat: Rocky desert canyons characterized by thickets of mesquite, acacia, hackberry, and other brush, with scattered junipers on adjacent slopes. Nest is a scrape on the ground. Elevations of occurrence in upper Guadalupe Canyon about 4500 ft.

Seasonal Occurrence: Apparently only a warm season resident, reported April-August; breeding primarily during May and June.

Conservation Concerns: Not found in New Mexico's Guadalupe Canyon since 1985, and possibly extirpated there.

Recommendations: Habitat protection to allow for nesting and roosting cover and to provide for adequate prey base would be a first step. Such protection may include prevention of fires, protection from grazing, and a moratorium of vegetation clearing.

Broad-billed Hummingbird (*Cynanthus latirostris*)

Conservation Status: Federal – USFS; State of NM -- Threatened.

Distribution: In Hidalgo County, summers regularly in Guadalupe Canyon and immediately adjacent side canyons. Also occurs farther north in the Peloncillo Mountains, most regularly in Skeleton and Post Office canyons and occasionally in Clanton and Cottonwood canyons. Also reported in the northern Animas Mountains.

Habitat: Prefers arid to semiarid habitats in higher desert canyons and washes, riparian woodlands, and foothills, especially groves of sycamores and cottonwoods with dense thickets of small trees and shrubs, including hackberry, juniper, algerita, and mesquite. Nest in small tree or shrub (e.g., hackberry), placed quite low, usually 3-4 ft above ground. Most occurrences in the 4400-5600 ft range.

Seasonal Occurrence: A neotropical migrant, present during the warm season only. An early arriving species, typically present from mid-March into September**;** extremes are 8 March and 3 October. Extended breeding season, lasting from late March into early September.

Conservation Concerns: The principal concern is loss of riparian woodlands in Guadalupe Canyon and similar canyons, from clearing (brush removal, tree cutting), burning, or other impacts (lowered watertable; excessive livestock grazing).

Recommendations: Preservation and enhancement of riparian woodlands and adjacent xeric habitats in Guadalupe Canyon and other canyons in southern Hidalgo County.

White-eared Hummingbird (*Hylocharis leucotis*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In southern Hidalgo County, occurs primarily in the higher reaches of the Animas Mountains. Occasionally reported in the Peloncillo Mountains (upper Clanton Canyon, Post Office Canyon) but no evidence of regular occurrence there.

Habitat: Prefers relatively moist montane forests and forested canyons; in the Animas Mountains, found most commonly in mixed conifer, pine, and pine-oak zones. Nests are placed low in shrubs or small trees. Elevations of most Hidalgo County occurrences are above 6000 ft.

Seasonal Occurrence: A neotropical migrant, found from mid-May to early October, with most reports from June-July. Breeding season is mid-summer (July into August) and is likely linked to the summer rainy season.

Conservation Concerns: As a species restricted to moist mountain canyons and adjacent forested slopes, this hummingbird is vulnerable to loss of that limited habitat from actions or events including fires, mining, and excessive livestock grazing; acid rain from regional smelters likewise may impact these high mountain forests.

Recommendations: Protection of forested canyon habitats in the higher reaches of the Animas Mountains. Department surveys of potential habitat in the Animas Mountains should continue.

Violet-crowned Hummingbird (*Amazilia violiceps*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In Hidalgo County, found regularly only in Guadalupe Canyon. Rarely found north in the Peloncillo Mountains to Clanton and Skeleton canyons, and to the northern Animas Mountains.

Habitat: In Guadalupe Canyon, broadleaf riparian woodlands of sycamore, cottonwood, hackberry, and oak, especially clumps of mature sycamores. Occupied habitats are characterized by much herbaceous ground cover. Agaves are important food plants. This species often visits pools of water, if available. Nests in tall deciduous trees, almost always in tall sycamores; nests placed relatively high, averaging over 20 ft above ground, up to over 40 ft.

Seasonal Occurrence: A neotropical migrant, present during the warm season only. A late arriving species, typically present from early June to mid-September, nesting from mid-June through August.

Conservation Concerns: Threatened by loss of low elevation broadleaf riparian and adjacent xeric habitats, such losses occurring from fire, clearing, overgrazing, and lowering watertables. Fire poses a significant threat if scarce large-tree riparian habitats are burned or food sources such as agaves are destroyed by fire. Grazing in canyon bottoms may remove necessary dense understory vegetation and impede regeneration of riparian trees.

Recommendations: Maintain suitable riparian woodland and adjacent xeric habitats in Guadalupe Canyon. Annual Department monitoring in Guadalupe Canyon should continue.

Lucifer Hummingbird (*Calothorax lucifer*)

Conservation Status: Federal – USFS; State of NM –Threatened.
Distribution: In Hidalgo County, occurs regularly only in several mid-elevation canyons in the Peloncillo Mountains, most regularly Post Office, Skeleton, Cottonwood, and Clanton canyons; occasionally in Guadalupe Canyon.
Habitat: Prefers rugged canyons and slopes in dry mountain ranges, especially rocky hillsides, talus slopes, and dry washes vegetated with desert scrub, such as shrubby trees (juniper, pinyon, oak), cactus, yucca, ocotillo, and agave. Most nests are in cane cholla, ocotillo, or agave, typically about 5 ft above ground. Ranges up to about 5700 ft.
Seasonal Occurrence: Early arriving neotropical migrant, typically present from late March until late September or early October. Nesting can occur both early and late during this season.
Conservation Concerns: Loss of native dry canyon/hillside habitats, including loss or reduction of native food plants from burning or overgrazing.
Recommendations: Protection of native vegetation in preferred dry canyon/hillside habitats. Effects of fire (prescribed or otherwise) on nectar resources, particularly on plants such as agaves, require serious study.

Costa's Hummingbird (*Calypte costae*)

Conservation Status: Federal – USFS; State of NM – Threatened.
Distribution: In Hidalgo County, found most regularly in Guadalupe Canyon but also occurs farther north in the Peloncillo Mountains in Clanton, Skeleton, and Post Office canyons; rarely north to Granite Gap and in the Animas Valley.
Habitat: An arid-land species favoring hot, dry desert scrub. In Guadalupe Canyon, nests in dry washes adjacent to the main canyon, in areas of southern exposure, and characterized by xeric shrubs such as mesquite, sumac, and acacia and an absence of large trees. Nests in open situations with good visibility. Nests in weeds, shrubs (algarita), and small trees (hackberry, small oaks). Nests are placed low, typically only 3-7 ft above ground.
Seasonal Occurrence: A very early arriving neotropical migrant, present from March into September or later. Breeding in New Mexico is primarily from late March into early June, with most activity in April and May. Many summer and early fall records likely represent post-breeding migrants from farther west.
Conservation Concerns: Loss of native xeric hillside vegetation and adjacent canyon bottom riparian habitats, through burning, clearing, or excessive livestock grazing.
Recommendations: Protection of canyon bottom habitats and associated xeric hillsides in Guadalupe Canyon and similar canyons in the Peloncillo Mountains.

Elegant Trogon (*Trogon elegans*)

Conservation Status: Federal – USFS; State of NM – Endangered.
Distribution: In Hidalgo County, summers regularly, and breeds, only in Skeleton Canyon, Peloncillo Mountains. Occurs irregularly in the Animas Mountains. There are single records for Guadalupe Canyon and the Big Hatchet Mountains.
Habitat: Prefers oak or pine-oak forested mountain canyons with sycamore, cottonwood, walnut, oak and/or juniper along canyon bottoms. Forages for insects and small fruits and berries on slopes as well as along canyon bottoms. Nests in natural cavities or old woodpecker holes, either in live or dead tree; most nests in sycamore, fewer in oaks. Breeds at about 5000 ft in the Peloncillo Mountains and occurs at about 6000 ft in the Animas Mountains.
Seasonal Occurrence: A neotropical migrant present from mid-April until mid-September; extremes are 9 April and 4 October. Nesting in the Peloncillos primarily May-July.
Conservation Concerns: Small breeding population (one-two pairs annually) threatened by loss of limited breeding habitat (including large trees with suitable cavities) and foraging habitat (including fruiting shrubs) from wood-cutting, fire, excessive livestock grazing, reduced water table, road construction and other developments. Human disturbance during the nesting season can be a serious limiting factor.
Recommendations: Preservation and enhancement of mid-elevation montane riparian habitats in the Peloncillo and Animas mountains is necessary, including maintaining water tables in canyons sufficient to support sycamores. Protection of breeding territories and nesting birds from human disturbance is another priority. Annual Department monitoring of breeding population should continue.

Gila Woodpecker (*Melanerpes uropygialis*)

Conservation Status: Federal – USFS; State of NM – Threatened.
Distribution: Resident in southern Hidalgo County in Guadalupe Canyon, in the Animas Valley, and in the Animas Mountains; occasionally found north in the Peloncillo Mountains to Skeleton Canyon.
Habitat: In southern Hidalgo County, generally restricted to well-developed broadleaf riparian woodlands characterized by extensive groves of mature cottonwoods and sycamores. Nests in cavities excavated in dead wood in large trees, including dead snags. Elevations of occurrence generally 4400-5400 ft.
Seasonal Occurrence: Permanent resident. Nesting begins by April and continues into July; most young leave the nest during June.
Conservation Concerns: Habitat loss, especially cutting or burning mature cottonwood/sycamore stands and including progressive fragmentation of remaining habitat patches.
Recommendations: Preservation and restoration of extensive riparian woodlands, particularly mature groves of cottonwoods and sycamores. Livestock grazing practices that preclude regeneration of such stands should be avoided. Fires, prescribed or otherwise, that may kill large trees should be excluded from riparian woodlands. Annual Department survey and monitoring programs should continue in Guadalupe Canyon and elsewhere.

Northern Beardless-Tyrannulet (*Camptostoma imberbe*)

Conservation Status: Federal – USFS; State of NM – Endangered.
Distribution: In Hidalgo County, summers regularly, and breeds, only in Guadalupe Canyon. Occasionally reported elsewhere in the Peloncillo Mountains (Skeleton Canyon, Post Office Canyon) and the Animas Mountains, but no evidence of breeding in those areas.
Habitat: A low-elevation riparian species that prefers dense thickets of mesquite, acacia, hackberry, and similar vegetation, typically along stream courses. Nests in outer branches of trees or large shrubs, often in mistletoe clump if available.
Seasonal Occurrence: A neotropical migrant, present from March to mid-August; extremes are 27 February and 18 October; nesting typically from late April or May into July.
Conservation Concerns: The very small and localized Guadalupe Canyon population is vulnerable to loss of required riparian habitat from burning, clearing, reduced water table, and (if allowed) excessive livestock grazing.
Recommendations: Preservation and enhancement of native riparian and associated habitats in Guadalupe Canyon. Annual Department monitoring of Guadalupe Canyon population should continue.

Thick-billed Kingbird (*Tyrannus crassirostris*)

Conservation Status: Federal – USFS; State of NM – Endangered.
Distribution: In Hidalgo County, occurs regularly, and breeds, only in Guadalupe Canyon. Occasionally reported along Animas Creek (vicinity of Dunagan's), and in the Animas Mountains. Vagrant elsewhere, with single records in the Alamo Mountains and the Dog Mountains northeast of Antelope Wells.
Habitat: Requires well-developed broadleaf riparian woodlands characterized by mature cottonwoods and sycamores. Nests in upper branches of tall trees; all New Mexico nests placed in sycamores, 30-65 ft above ground.
Seasonal Occurrence: A neotropical migrant that is typically present May-August, rarely late April and early September; nesting primarily from late May to early August.
Conservation Concerns: Loss of mature broadleaf riparian woodlands, especially large cottonwoods and sycamores, from fire (prescribed or otherwise), cutting, reduced water table, and grazing that suppresses regeneration. The small Guadalupe Canyon population has declined in recent years.
Recommendations: Public and private land managers should protect and enhance broadleaf riparian habitats in Guadalupe Canyon and elsewhere. In particular, fires in riparian areas that kill large trees should be avoided. Annual Department monitoring of Guadalupe Canyon population should continue.

Bell's Vireo (*Vireo bellii*)

Conservation Status: Federal – USFS; State of NM – Threatened.
Distribution: In southern Hidalgo County, summers regularly in Guadalupe Canyon. Also occurs in the foothills of the Animas Mountains. Elsewhere in southern Hidalgo County,

recorded in the Alamo Hueco Mountains, Little Hatchet Mountains, and the southern Hachita Valley.

Habitat: Dense, brushy, low streamside or canyon bottom thickets of mesquite, acacia, hackberry, willow, seepwillow, or other shrubby plants, including saltcedar. Although surface water is not a requirement, the water table must be sufficiently high to support adequate plant growth. Nests placed in shrub or low tree, usually 2-5 ft above ground. New Mexico breeding populations typically found below 5000 ft.

Seasonal Occurrence: A neotropical migrant, present in New Mexico only during the warmer months. Typically arrives by mid-April and departs by mid-September. Some nests initiated by late April but most nesting occurs in May and early June, with re-nesting efforts continuing into July.

Conservation Concerns: Loss of dense, shrubby and woody riparian habitats from clearing, grazing, firewood cutting, and water table lowering, plus high rates of brood parasitism by cowbirds (leading to reduced productivity), are the principal threats.

Recommendations: Encourage public and private land managers to preserve and restore riparian and adjacent shrubby habitats along lowland streams. Cowbird control may be useful in localized areas (e.g., Guadalupe Canyon), but it should be recognized that cowbird parasitism is only a symptom of larger habitat problems. Annual Department monitoring of Guadalupe Canyon population should continue.

Gray Vireo (*Vireo vicinior*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In southern Hidalgo County, occurs most regularly, and breeds, in Guadalupe Canyon and on adjacent slopes. Also found north in the Peloncillo Mountains in Skeleton Canyon, and in the Animas Mountains. Formerly found in the Big Hatchet Mountains, but no recent records there.

Habitat: Most often found in arid juniper woodlands at the bases of foothills and mesas, these sometimes associated with oaks and pinyons and often with a well-developed grass component. Nests placed in thorny or twiggy shrub or tree (mature juniper, shrubby oak); placed low, usually only 2-8 ft above ground.

Seasonal Occurrence: A neotropical migrant, present only during the April-September period. Nest initiation occurs from late April into mid-July, with young in nests into August.

Conservation Concerns: Loss of quality juniper savannah habitat, including through burning, clearing, wood-cutting, or overgrazing, is the principal concern. Nest parasitism by cowbirds can severely impact local populations by suppressing productivity.

Recommendations: Identify and maintain quality juniper savannah and other occupied habitats. Land management activities aimed at eliminating junipers should be discouraged, and all such activities should be scheduled outside the April-August breeding season. Expanded early breeding season (April-June) surveys are needed, especially in Animas Mountains foothills (e.g., just north of San Luis Pass).

Botteri's Sparrow (*Aimophila botterii*)

Conservation Status: State of NM – SoC.

Distribution: New Mexico's only significant population breeds in the floodplain of the middle Animas Valley (vicinity of XT Camp to vicinity of 44-Well/Middle Well). The only additional locality with more-or-less regular occurrence is along lower Deer Creek in the vicinity of Granite Gap. Occasional individuals noted elsewhere in southern Hidalgo County (McKinney Flats, Clanton Cienega), but with no evidence of breeding.

Habitat: A tall-grass specialist. In Hidalgo County, essentially restricted to dense, tall (6 ft) senescent stands of giant sacaton with scattered shrubs and small trees. Nests placed on the ground, either under or deep inside tall, thick grass clumps with much overhanging canopy and dead thatch.

Seasonal Occurrence: A late-arriving neotropical migrant, typically returning in May and departing by mid-September; extremes are 1 May and 28 September. Territorial singing begins by late May and nesting is underway by mid/late June and continues through July to mid-August; adults with fledglings are present into early September.

Conservation Concerns: The small local population is severely limited by available giant sacaton habitat, and so is vulnerable to loss or alteration of this special habitat. Fire and grazing are the principal concerns. Available data suggest that 3-4 years is required for re-occupancy following fire, and full re-occupancy may not occur for 6 or more years following fire. However, that does not hold true when burned areas receive moderate to heavy grazing following fire, as that reduces necessary vegetative structure, resulting in reduced occupancy.

Recommendations: Prescribed burning of sacaton stands may be desirable, to reduce the potential for large wildfires. Such burns should be staggered over many years, with no more than one-sixth of available habitat treated in any one year; livestock should be excluded from burned areas for at least a year following treatment. Burning should not occur during the May-August breeding season. Given the uniqueness of the giant sacaton stands in the middle Animas Valley, permanent exclusion of livestock there would enhance both the sacaton bottoms and adjacent riparian woodlands. Annual Department monitoring of the breeding population should continue.

Arizona Grasshopper Sparrow (*Ammodramus savannarum ammolegus*)

Conservation Status: State of NM – Endangered (uplisted from Threatened in 2006).

Distribution: In New Mexico, this unique subspecies breeds only in southern Hidalgo County in the southern Animas Valley and the western Playas Valley (McKinney Flats area).

Habitat: Requires extensive, well-developed desert grasslands characterized by grama and other bunchgrasses and generally lacking woody vegetation. Abundant thatch and dry grasses are needed for cover. Nests are built into the bases of grass clumps and depend on dense, dead grasses for concealment. Occupied grasslands in southern Hidalgo County are at about 5000 ft.

Seasonal Occurrence: The *ammolegus* subspecies is present from late spring (April or May) into early autumn (September or October). Males begin singing by late May, with breeding occurring in June-July and into August. Apparently, it withdraws from the area in winter,

and is replaced by wintering Grasshopper Sparrows of other subspecies, although some *ammolegus* may over-winter locally. Migrants of other subspecies arrive by August.

Conservation Concerns: The main threat to this taxon's continued survival in southern Hidalgo County is loss, degradation, and fragmentation of its native grassland habitat, primarily from excessive livestock grazing leading to reduced grass cover and increased brush encroachment. Ill-timed fires (especially those occurring late spring-early summer) may severely depress recruitment. Since 1992, both the Animas and Playas populations have experienced steep, persistent declines; the once sizable Playas (McKinney Flats) population is nearing extirpation.

Recommendations: Employ livestock grazing practices and burning programs that perpetuate suitable grassland habitat for this unique subspecies. In particular, consideration should be given to reducing stocking rates in times of drought. The two populations should continue to be monitored each June, and surveys for additional populations (e.g., southwest of Cloverdale) should be conducted.

Baird's Sparrow (*Ammodramus bairdii*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In southwest New Mexico, occurs most regularly in southern Animas Valley grasslands, and should be expected in similar grasslands elsewhere.

Habitat: A grassland specialist, in southwest New Mexico requiring dense, expansive desert grasslands characterized by grama and other bunch grasses with little or no shrub component. Typically found at around 5000 ft in the Animas Valley, but occurs even higher in grassy openings and meadows in the Animas and Peloncillo mountains.

Seasonal Occurrence: Strictly a migrant and occasional wintering species in New Mexico. In southwest New Mexico, fall migrants arrive as early as mid-August, and continue to pass through from September through November. A few winter December-January if suitable grassland habitat exists. Spring migrants occur from late February into early April.

Conservation Concerns: Progressive loss and degradation of dense grassland habitat, this due to excessive livestock grazing leading to loss of grass cover (and increased bare ground), reduction in available seed crop, invasion of forbs, and shrub encroachment.

Recommendations: Any program that protects grasslands in southwest New Mexico will preserve Baird's Sparrow habitat. Managers should promote grazing practices that perpetuate suitable grassland habitat, including allowing for production of grass seeds that would be available through fall and winter.

Yellow-eyed Junco (*Junco phaeonotus*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In Hidalgo County, resident only in the higher reaches of the Animas Mountains, primarily Cistern Saddle, upper Bear Canyon, upper Indian Creek Canyon, and immediately adjacent areas. Individuals occasionally wander to the nearby Peloncillo and Big Hatchet mountains, but no evidence of breeding in those areas.

Habitat: Largely confined in the breeding season to the limited mixed conifer forests of Douglas-fir/ponderosa pine with relatively open understory of oaks, with grassy openings for

ground foraging, typically above 7000 ft in the Animas Mountains. Nests are placed in a depression on the ground, with overhead protection provided by grass clump, shrub, or log.

Seasonal Occurrence: Year round resident in the Animas Mountains. Breeding in the Animas Mountains extends from April into August, with peak activity from May to mid-July.

Conservation Concerns: The very small and restricted Animas Mountains population is vulnerable to loss or degradation of its limited habitat. This junco is especially sensitive to livestock grazing, which has been found to reduce nesting success by reducing vegetative cover over nests. In addition, recruitment may suffer in years when dry conditions suppress breeding.

Recommendations: Land managers should protect this junco's limited habitat in the Animas Mountains, including restricting livestock grazing from the higher reaches of that range. The current Department monitoring program should be continued.

Varied Bunting (*Passerina versicolor*)

Conservation Status: Federal – USFS; State of NM – Threatened.

Distribution: In southern Hidalgo County, summers regularly only in Guadalupe Canyon.

Habitat: An arid-land bunting that requires a combination of low, dense thorny brush and hilly terrain as found in foothills canyons and washes. In Guadalupe Canyon, prefers low mesquite thickets with a scattering of taller trees nearby; elevations of occurrences there generally below 4500 ft. Nests built in thorny shrub, tangle of vines, or low tree, rarely more than 5 ft above ground.

Seasonal Occurrence: A neotropical migrant, present in the warm season only. A few arrive as early as mid-April, but species typically not in evidence until mid-May, departing by early September; extremes are 12 April and 3 October. Breeding in Guadalupe Canyon occurs from early June into August.

Conservation Concerns: Loss of brushy habitats, through clearing, burning, or overgrazing, are the principal threats. The small, relatively isolated Guadalupe Canyon breeding population is vulnerable to cowbird parasitism.

Recommendations: Preserving or restoring dense shrubby (e.g., mesquite) thickets in Guadalupe Canyon and similar desert canyons is key to maintaining this species in Hidalgo County. Annual Department monitoring of the Guadalupe Canyon population should continue.

3.3. REPTILES

Slevin's Bunchgrass Lizard (*Sceloporus slevini*)

Conservation Status: Federal - USFS; State of NM – Threatened.

Distribution: Within New Mexico, this species is confined to grasslands in the lower Animas Valley. Populations extend to just north of Geronimo Trail.

Habitat: In New Mexico, this species is restricted to the intermountain grasslands between the Animas and Peloncillo mountains.

Times of Occurrence: Year round.

Recommendations: Maintenance of high quality grasslands will help conserve this species in New Mexico. Widespread overgrazing and summer (= hot/dry season) fires (wildfire or management ignited) could significantly impact populations of this lizard.

Canyon Spotted Whiptail (*Aspidoscelis burti*)

Conservation Status: Federal - USFS; State of NM – Threatened.
Distribution: Within the New Mexico portion of the HCP area, this species is known only from Guadalupe Canyon.
Habitat: This species is known only from riparian areas dominated by sycamore, cottonwood, ash and various grasses and forbs. It is found in shaded areas among rocks, logs, and leaf litter in the vicinity of streams. Open areas of bunch grass within these areas are also occupied.
Times of Occurrence: Year round.
Recommendations: Additional surveys of similar habitat within the NM HCP area should be conducted. Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact this localized population.

Mountain Skink (*Eumeces callicephalus*)

Conservation Status: Federal - USFS; State of NM – Threatened.
Distribution: Within the New Mexico portion of the HCP area, this species is known only from Guadalupe Canyon and in the Peloncillo Mountains along the upper elevations of Geronimo Trail.
Habitat: Individuals are usually found in sheltered, mesic areas in leaf litter or under rocks and logs. Habitat is characterized by loose rocky soils with numerous tree species including sycamore, walnut, various oaks and mesquite.
Times of Occurrence: Year round.
Recommendations: Additional surveys of similar habitat within the HCP area should be conducted. Removal of shrub cover by any method (mechanical, prescribed fire) could impact this localized population.

Gila Monster (*Heloderma suspectum*)

Conservation Status: Federal - USFS; State of NM – Endangered.
Distribution: The Gila Monster is widespread throughout the New Mexico portion of the HCP area. Areas where the species is known to be locally common include Granite Gap and Guadalupe Canyon. Individuals are occasionally encountered throughout the lower elevations of the Peloncillo Mts.
Habitat: Individuals are most often found in desert shrub, although often seen in woodland and grassland habitat associated with rocky regions of mountain foothills and canyons. They have also been observed in agricultural areas near Silver City and Cotton City. Sometimes encountered in the lower fringes of pinyon-juniper and oak woodlands. Generally prefers SE facing slopes during the Spring and SW-facing slopes during the Fall and Winter.
Times of Occurrence: Year round.

Recommendations: Additional surveys of similar habitat within the NM HCP area should be conducted. Removal of shrub cover by any method (mechanical, prescribed fire) could impact this localized population. Species should be strictly protected against overcollecting.

Green Ratsnake (*Senticolis triaspis*)

Conservation Status: Federal - USFS; State of NM – Threatened.
Distribution: Within the New Mexico portion of the HCP area, this species is known only from Guadalupe Canyon and Post Office Canyon. The species has been observed in the Peloncillo Mountains along the upper elevations of Geronimo Trail, although these observations have not been verified by museum specimens.
Habitat: Individuals are usually found in sheltered, mesic areas. Habitat is characterized by loose rocky soils with numerous tree species including sycamore, walnut, various oaks and mesquite.
Times of Occurrence: Year round.
Recommendations: Additional surveys of similar habitat within the HCP area should be conducted. Removal of shrub cover by any method (mechanical, prescribed fire) could impact this localized population. Species should be strictly protected against overcollecting.

Yaqui Blackhead Snake (*Tantilla yaquia*)

Conservation Status: State of NM – SoC.
Distribution: Within New Mexico this species is known only from Guadalupe Canyon and Antelope Pass, ca. 8 mi W of Animas. The species is expected to occur in the Peloncillo Mountains although expected low population numbers and its secretive nature makes detection difficult.
Habitat: Little is know about the habitat of this secretive species in New Mexico. Habitats where individuals have been found include areas characterized by loose rocky soils with numerous tree species including sycamore, walnut, mesquite, and various oaks. A single individual was collected dead on the road in rocky desert shrub dominated by creosotebush and mesquite.
Times of Occurrence: Year round.
Recommendations: Additional surveys of similar habitat within the NM HCP area should be conducted. Removal of shrub cover by any method (mechanical, prescribed fire) may impact this localized population.

***New Mexico Ridge-nosed Rattlesnake (*Crotalus willardi obscurus*)**

Conservation Status: Federal - Threatened; State of NM – Endangered.
Distribution: Within New Mexico this species is known only from higher elevations of the Animas and Peloncillo mountains. It is expected to occur in the New Mexico portion of the Sierra San Luis although its occurrence there has not been documented by museum specimens or verified observations.

Habitat: Within its range this species is a habitat generalist, ranging from mesic canyon bottoms to montane talus slopes. Habitat includes various tree species including Apache and Chihuahua pine, alligator bark juniper, Arizona madrone, manzanita, and various oaks.
Times of Occurrence: Year round. Inactive during colder months.
Recommendations: Ongoing ecological studies and population monitoring in the Animas Mountains should continue. Development of improved census techniques, especially in areas of low population density (e.g., Peloncillo Mts.) should receive research priority. Removal of shrub cover, especially in canyon bottoms by any method (mechanical, prescribed fire) could impact this localized population. The species should be strictly protected against overcollecting.

Desert Massasauga (*Sistrurus catenatus*)

Conservation Status: Federal - USFS; State of NM – SoC.
Distribution: Within the New Mexico portion of the HCP study area, this species is known only from a single specimen collected near Rodeo. It is expected to occur in lower elevation grassland habitats in the Animas Valley.
Habitat: Desert grasslands or shortgrass prairie.
Times of Occurrence: Year round.
Recommendations: Additional surveys of similar habitat within the NM HCP area should be conducted. Overgrazing of grasslands could impact this localized population. Species should be strictly protected against overcollecting.

3.4 AMPHIBIANS

Sonoran Desert Toad (*Bufo alvarius*)

Conservation Status: Federal – USFS, SoC; State of NM – Threatened.
Distribution: An uncommon species that occurs along Stateline Road, in the vicinity of Rodeo, and at scattered localities in the Animas, Peloncillo, and Guadalupe mountains, along Geronimo Trail, and Guadalupe Canyon.
Habitat*:* Species has been encountered in desert shrub characterized by broad, flat expanses of creosote bush and mesquite, in rocky riparian zones grown to cottonwood and sycamore, in ponds with abundant aquatic vegetation, and in muddy stock ponds.
Times of Occurrence: Year round.
Recommendations: Presence-absence surveys are recommended in low-elevation foothill regions of the MBG area. Removal of deciduous shrub cover by any method (mechanical, prescribed fire), or draining of stock tanks could impact localized populations. Species should be protected from unauthorized take.

***Chiricahua Leopard Frog (*Rana chiricahuensis*)**

Conservation Status: Federal - Threatened; State of NM - SoC.
Distribution: Within the New Mexico portion of the HCP study area, this species is known as natural populations only from Cloverdale Creek and perhaps Guadalupe Canyon, although

persistence at the latter site is unlikely since specimens have not been encountered there since 1985. Semi-captive populations recently occur(ed) at High Lonesome Tank and Lard Tank on the Diamond A Ranch, although natural ingress and egress into these populations is not possible.

Habitat: A rapidly declining species found in a variety of aquatic habitats, including intermittent creeks and stock tanks.

Times of Occurrence: Year round.

Recommendations: Maintenance of stock tanks and spring-fed wetlands would help prevent decline of this species. Historic habitat should be restored by providing permanent flow to wetlands and providing permanent water sources during drought years. Removal of deciduous shrub cover within riparian areas by any method (mechanical, prescribed fire) could impact this localized population.

***Lowland Leopard Frog (*Rana yavapaiensis*)**

Conservation Status: Federal - USFS; State of NM – Endangered.

Distribution: Within the New Mexico portion of the HCP area, this species is known only from Guadalupe Canyon, although specimens have not been encountered there since August 2000. The species is believed to be extirpated from historic sites at Double Adobe Creek and elsewhere in the NM HCP area. The species is abundant along stretches of Cajon Bonito in Sonora.

Habitat: A rapidly declining species found in a variety of aquatic habitats, including intermittent creeks and stock tanks.

Times of Occurrence: Year round.

Recommendations: Maintenance of stock tanks and spring-fed wetlands would help prevent decline of this species. Historic habitat should be restored by providing permanent flow to wetlands and providing permanent water sources during drought years. Removal of deciduous shrub cover within riparian areas by any method (mechanical, prescribed fire) could impact this localized population.

3.5. INVERTEBRATES

Shortneck Snaggletooth (*Gastrocopta dalliana dalliana*)

State Conservation Status: Threatened (downlisted from Endangered in 2006).

Distribution*: Animas Mountains:* Indian Creek Canyon, 5900 ft.; east slope of Animas Peak, 5790-5830 ft. *San Luis Mountains:* Lang Canyon, 5890 ft. *Guadalupe Mountains:* Guadalupe Canyon, ca. 0.9 mile downstream of Spring of Contention, 4660 ft. (A. Metcalf, unpub. data).

Habitat*:* Species occurs in deciduous leaf litter and soil mold over a broad range of low-elevation habitats from mesic wooded riparian corridors of Indian Creek Canyon and Guadalupe Canyon to xeric slopes dominated by grassland/mixed shrub-succulent savanna.

Times of Occurrence: Year round.

Recommendations: The species may be more widespread than previously thought. Presence-absence surveys are recommended in low-elevation foothill regions of the MBG area.

Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact localized populations.

Animas Mountains Tubeshell (*Holospira animasensis*)

State Conservation Status: SoC.
Distribution: North end of Animas Mountains, 11 air km SE of Animas, NM; T28S, R18W, section 7 center; north slope at base of limestone cliff; 5742 ft. (see Gilbertson and Worthington 2003).
Habitat: An endemic calciphile species apparently restricted to a limestone outcrop in the upper quarter of the NE side of a NW-SE trending hill. Vegetation consists of xeric-adapted grasses, woody monocots, mixed shrubs, and cacti.
Times of Occurrence: Year round.
Recommendations: Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact this localized population. Any mining activity in and immediately adjacent to the limestone outcrop could adversely impact this species

Animas Peak Woodlandsnail (*Ashmunella animasensis*)

State Conservation Status: SoC.
Distribution: North slope of Animas Peak extending south ca. 2.5 miles to "Mearns Peak", from 6600 ft. to highest elevations within the range (Metcalf and Smartt 1997, Lang 2000).
Habitat: This endemic species occurs most commonly in igneous talus sprawls densely wooded with deciduous shrubs, especially *Quercus* spp.
Times of Occurrence: Year round.
Recommendations: Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact localized populations.

Unnamed Talussnail (*Sonorella hachitana peloncillensis*)

State Conservation Status: SoC.
Distribution: This species is known only from Skull Canyon, Peloncillo Mountains. The type locality was vaguely described as "Skull Canyon." Miller (1968) reported collecting numerous empty shells "about 1.5 miles up from the mouth of the canyon." A live specimen and 4 empty shells were collected from a site located in T30S, R21W, Section 17 center, 5410 ft. (Brian Lang and Lance Gilbertson, unpub. data).
Habitat: An endemic species restricted to igneous talus sprawls with sparsely vegetated margins consisting of *Pinus edulus*, *Quercus arizonica*, *Garrya*, and *Rhus choriophylla*.
Times of Occurrence: Year round.
Recommendations: In general, the distribution of *Sonorella* in the Peloncillo Mountains is poorly known. Recommend field surveys in Skull Canyon and canyons north and south thereof. Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact localized populations.

Lang Canyon Talussnail (*Sonorella* n. sp.)

State Conservation Status: SoC.
Distribution: Known only from the highest elevations on the south-facing slope of northeastern recesses of Lang Canyon, San Luis Mountains, 6380 ft.
Habitat: Igneous talus sprawls on xeric slopes sparsely vegetated with grasses, woody monocots, mixed shrubs, and cacti.
Times of Occurrence: Year round.
Recommendations: Recommend surveys in canyons of San Luis Mountains located north of Lang Canyon. Removal of deciduous shrub cover by any method (mechanical, prescribed fire) could impact localized populations.

"Guadalupe Canyon Talussnail" (*Sonorella* n. sp.)

State Conservation Status: SoC.
Distribution: South canyon wall of Guadalupe Canyon, ca. 0.9 mile south of Spring of Contention, 4660 ft.
Habitat: Found under igneous talus scattered over loose soil along riparian corridor of Guadalupe Creek.
Times of Occurrence: Year round.
Recommendations: An undescribed species that merits collection of additional voucher material to complete taxonomic study (L. Gilbertson, pers. com.). Geographic range of taxon in Guadalupe Canyon is unknown. Recommend additional survey work in this general area. Removal of riparian vegetation by any method (mechanical, prescribed fire) could impact localized population(s).

4.0 GENERAL RECOMMENDATIONS

The NMDGF recognizes that actions being proposed by the MBG (and discussed in detail in the HCP proper), including use of prescribed fire, are designed to manage and improve ecological conditions on the MBG properties that will benefit wildlife in addition to sustaining long-range agricultural activities. The following general recommendations are provided here with the focus on wildlife species listed under the WCA or of state concern in the New Mexico portion of the HCP area. Many are in agreement with existing MBG practices and/or with guidelines presented in the HCP. Additional recommendations for specific species are provided in the species accounts in Section 3.0.

Grasslands

1. Avoidance, where possible, of prescribed burning during April-August in extensive areas of grassland and shrubland areas where listed or sensitive bird species are known to nest.

Foothills and Canyons

1. Avoidance, where possible, of prescribed burning during summer monsoon season in extensive areas of lower montane and canyon habitats when surface activity by terrestrial wildlife is greatest.

2. Maintenance of existing oak, pine-oak, and Chihuahuan Desert shrub communities and their associated herbaceous plant communities.

Riparian and Aquatic Areas

1. Protection and enhancement of intermittent stream channels through use of check dams and similar structures that enhance water retention, reduce erosion, and encourage wetland development.

2. Protection and enhancement of riparian woodlands through livestock management, streambank protection structures (where needed), and sediment traps to foster woody plant recruitment.

3. Maintenance of existing earthen and metal stock tanks that provide important watering and breeding areas for wildlife.

Surveys and Monitoring

1. Solicit informal consultation with species recovery/advisory teams and other researchers prior to major rangeland improvement projects, including prescribed burning. Pre-burn surveys and/or assessments for selected wildlife species are recommended to identify important wildlife areas, such as nest sites and population centers, within proposed burn areas that potentially can be avoided.

2. Continue to allow survey and monitoring efforts by NMDGF and other biologists and cooperators to improve current information on WCA listed and sensitive wildlife species within the HCP area. Some particular survey and research needs are identified in the species accounts in Section 3.0.

Compliance

1. MBG (or individual participants) should seek permitting from NMDGF for any actions that could result in direct take of state Endangered wildlife (e.g., Arizona Shrew, Mexican long-nosed bat, desert bighorn sheep, aplomado falcon, common ground-dove, buff-collared nightjar, elegant trogon, northern beardless-tyrannulet, thick-billed kingbird, Arizona grasshopper sparrow, Gila monster, New Mexico ridge-nosed rattlesnake, lowland leopard frog). Any permits authorized should be for scientific or zoological purposes, by demonstration that the overall management for the affected species and its habitat results in a net biological benefit.

5.0. LITERATURE CITED

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Appendix B

Implementing Agreement

9/11/2008
Implementing Agreement

By and Among

the Malpai Borderlands Group, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, Arizona Game and Fish Commission, New Mexico Department of Game and Fish, Arizona State Land Department, and New Mexico State Land Office

TO ESTABLISH A CONSERVATION PROGRAM FOR FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES INHABITING PRIVATE AND STATE TRUST RANGELANDS IN THE MALPAI BORDERLANDS OF COCHISE COUNTY, SOUTHEASTERN ARIZONA AND HIDALGO COUNTY, SOUTHWESTERN NEW MEXICO PURSUANT TO THE MALPAI BORDERLANDS HABITAT CONSERVATION PLAN.

This Implementing Agreement (hereinafter, IA or Agreement), made and entered into as of the ___ day of _____, 2008, by and among the Malpai Borderlands Group (hereinafter, MBG) and the U.S. Fish And Wildlife Service (hereinafter, FWS), Natural Resources Conservation Service (hereinafter, NRCS), Arizona Game And Fish Commission (hereinafter, AGFC), New Mexico Department of Game And Fish (hereinafter, NMDGF), Arizona State Land Department (hereinafter, ASLD), and New Mexico State Land Office (hereinafter, NMSLO), hereinafter collectively called the "Parties," defines certain roles and responsibilities of the Parties and provides a common understanding of actions that will be undertaken under the Malpai Borderlands Habitat Conservation Plan (hereinafter, MBHCP) prepared pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (hereinafter, Act) to protect and conserve the federally listed endangered and threatened species and other species covered by the MBHCP in the course of carrying out the activities covered by the MBHCP.

1.0 RECITALS

This Agreement is entered into with regard to the following facts and considerations:

WHEREAS, the Malpai Borderlands, an area defined in Section 3.4 and illustrated in Figure 2-1 of the MBHCP, of southern Arizona and New Mexico has been determined through consultation with the FWS, AGFC, and NMDGF, and after appropriate environmental review, to be habitat for at least 19 federally listed, state-listed, or rare or declining species of fish, wildlife, and plants; and,

WHEREAS, the MBG, with technical assistance from the FWS, AGFC, NMDGF, NRCS, and The Nature Conservancy (TNC), has developed a program of measures, described in the MBHCP, which it proposes to implement to protect and conserve the above-referenced covered species and their associated habitats in the course of carrying out certain grassland improvement and ranch management activities also covered by the MBHCP; and,

WHEREAS, the MBHCP also includes certain measures which the FWS, AGFC, NMDGF, NRCS, ASLD, and NMSLO have agreed to implement in furtherance of the purposes of the MBHCP;

NOW, THEREFORE, the Parties hereto do hereby understand and agree as follows:

2.0 DEFINITIONS

The following terms as used in this Agreement shall have the meanings set forth below:

2.1 Terms used in the Agreement and specifically defined in the Act or in applicable implementing regulations of the Act have the same meaning as in the Act or those regulations, unless the Agreement expressly provides otherwise.

2.2 The term “MBHCP” means the Malpai Borderlands Habitat Conservation Plan prepared by MBG in cooperation with the FWS and the other Parties.

2.3 The term "Permittee" or “MBG” means the Malpai Borderlands Group.

2.4 The term "Permit" or “ITP” means the Incidental Take Permit issued by the FWS to MBG pursuant to Section 10(a)(1)(B) of the Act for take of the MBHCP’s Covered Species incidental to the carrying out of its Covered Activities.

2.5 The term "Permit Area" within the Agreement has the same meaning as the term “covered area” in the MBHCP and means the geographic area to which the MBHCP and its associated ITP applies, consisting specifically of all private and state trust lands within the Malpai Borderlands as depicted in Figure 2-1 and defined in Section 3.4 of the MBHCP.

2.6 The term "Covered Species” means the 19 federally listed and unlisted species to which the coverage of the MBHCP’s associated ITP applies as identified in Table 3-2 of the MBHCP, each of which the MBHCP addresses in a manner sufficient to meet all criteria for issuing an ITP pursuant to section 10(a)(1)(B) of the Act.

2.7 The term "Covered Activities” means the grassland improvement activities and ranch management activities proposed by MBG and Malpai-area ranchers as described in Section 3.5 of the MBHCP to which the coverage of the MBHCP’s associated ITP apply.

2.8 The term "Listed Species” means a species (including a subspecies and distinct population segment of a vertebrate species) that is listed as endangered or threatened under the Act.

2.9 The term "Unlisted Species,” for purposes of the MBHCP and this Agreement, means a species that is not currently listed under the Act but may become so listed over the life of the MBHCP.

2.10 The term "Take," for purposes of the MBHCP and this Agreement, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any listed or unlisted animal species covered by the MBHCP or to attempt to engage in any such conduct. The term "harm" in this definition means an act that causes significant habitat modification or degradation where it actually kills or injures such species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. The term "harass" in this definition means "an intentional or negligent act or omission which creates the likelihood of injury to such wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering.

2.11 The term "Parties" means the seven signatories to the Agreement (MBG, FWS, NRCS, AGFC, NMDGF, ASLD, and NMSLO) collectively, and has the same meaning as the term "HCP participants" in the MBHCP, as defined in Sections 3.2.1.2 and 3.2.1.3 of the MBHCP, except that Malpai-area ranchers who elect to participate in the MBHCP are included among the HCP participants but are not Parties to this Agreement.

2.12 The terms "Department" and "Director" shall mean the Arizona Game and Fish Department and its Director acting as administrative agents for the Commission.

2.13 The term "Unforeseen Circumstances," for purposes of the MBHCP and this Agreement, means changes in circumstances affecting the covered species or the Malpai Borderlands that could not reasonably have been anticipated by MBG, the FWS, or the other Parties at the time of the MBHCP's negotiation and development, and that result in substantial and adverse changes in the status of the covered species.

2.14 The term "Changed Circumstances," for purposes of the MBHCP and this Agreement, means changes in circumstances affecting the covered species or the Malpai Borderlands that could reasonably be anticipated by MBG, the FWS, or the other Parties at the time of the MBHCP's development, and that have therefore been planned for, as described in Section 8.2 of the MBHCP.

3.0 INCORPORATION OF HCP

Pursuant to the provisions of section 10(a)(1)(B) of the Act, MBG has prepared the MBHCP and submitted it to the FWS with a request that the agency issue an ITP to allow the Covered Species to be incidentally taken in the course of carrying out the Covered Activities within the Permit Area. The MBHCP proposes a conservation program for the Covered Species and their habitats that is fully consistent with the Act's requirements for HCPs as described in section 10(a)(2)(A) of the Act. The MBHCP and each of its provisions are intended to be, and by this reference are, incorporated herein. However, in the event: (1) of any direct contradiction between specific terms appearing in this Agreement and in the MBHCP, the terms of the Agreement shall control; (2) that specific terms appear in this Agreement but not in the MBHCP, the terms of the Agreement shall control; and (3) that specific terms appear in the MBHCP but not this

Agreement, the terms of the MBHCP control. Otherwise, the terms of this Agreement and the terms of the MBHCP shall be interpreted to be supplementary to each other. In any event of contradiction among documents, the ITP shall ultimately control.

4.0 LEGAL REQUIREMENTS

In order to fulfill the requirements that will allow the FWS to issue the ITP, the MBHCP sets forth measures that are incorporated in the ITP and are intended to ensure that any take occurring within the Permit Area will be incidental; that the impacts of the take will, to the maximum extent practicable, be minimized and mitigated to the maximum extent practicable; that procedures to deal with unforeseen circumstances will be provided; that adequate funding for the MBHCP will be provided; and that the take will not appreciably reduce the likelihood of the survival and recovery of the Covered Species in the wild. It also includes measures that have been suggested by the FWS, AGFC, NMDGF, and NRCS as being necessary or appropriate for purposes of the MBHCP.

5.0 COOPERATIVE EFFORT

Each of the Parties has agreed to undertake certain specific activities and tasks as set forth in the MBHCP and, with respect to many such activities, must work together to ensure the proper functioning of the MBHCP. The MBHCP thus describes a cooperative program by MBG and state and Federal agencies to provide for the long-term conservation of the Covered Species and their habitats in the Malpai Borderlands. ASLD and NMSLO have no set tasks or specific activities to accomplish or participate in under the MBHCP and with respect to any such activities, except as set forth in section 8.5 of this IA.

6.0 PURPOSES

The purposes of this Agreement are:

6.1 To define the Parties' roles and responsibilities and provide a common understanding of actions that will be undertaken to avoid, minimize, and mitigate the impacts of the proposed action)

6.2 To ensure implementation of each of the terms of the MBHCP and define the respective rights and obligations of the Parties with respect to such implementation;

7.0 TERM

This Agreement shall become effective on the date the FWS issues to MBG the ITP requested in the MBHCP and shall remain in full force and effect for a period of 30 years or until termination of the Permit, whichever occurs sooner.

8.0 OBLIGATIONS OF THE PARTIES

All Parties to this Agreement have specifically defined tasks and responsibilities under the MBHCP which derive either from the obligations of the ITP (in the case of MBG and the FWS) or because they were voluntarily agreed to in the interests of furthering the purposes of the MBHCP (in the case of the other Parties, and FWS where such tasks exceed its regulatory permit responsibilities). This section therefore summarizes the obligations of each of the eight signatory Parties to the Agreement deriving from both the Permit and the Agreement.

8.1 MBG. The Malpai Borderlands Group, as Permittee under the MBHCP, is the Party primarily responsible for implementing and administering the MBHCP and ensuring that its requirements are fully carried out. Specific obligations, in part, are to:

(1) Fire Management. Coordinate integration of the proposed fire management program with requirements of the MBHCP applicable to that program (Section 5.5.2.1 of the MBHCP) by, among other things:

(a) Coordinating regularly with fire management agencies and officials in the Malpai Borderlands concerning those requirements;

(b) Coordinating similarly with Malpai-area ranchers on whose lands fire management activities are carried out;

(c) Ensuring that that applicable take minimization measures are incorporated into burn and fire planning and planning documents;

(d) Ensuring that the 1-year/5-year burn/fire limits, the annual grassland burn limit, and the burn frequency limit described in the MBHCP are observed; and,

(e) Maintaining records of fire management activities in the Malpai Borderlands as specified by the MBHCP;

(2) Erosion and Brush Control. Coordinate and, as appropriate, assist in the carrying out and funding of the MBHCP's erosion control and mechanical brush control activities (Sections 5.5.2.2 and 5.5.2.3 of the MBHCP, respectively) by, among other things:

(a) Ensuring that pre-activity surveys of planned work sites and areas are undertaken as needed and that applicable take minimization measures are implemented in the course of carrying out those activities;

(b) Ensuring that applicable brush control limits are observed; and,

(c) Maintaining records of erosion and brush control activities as specified by the MBHCP;

(3) Coordination with Ranchers. Coordinate with individual Malpai-area ranchers to, among other things:

(a) Educate and inform them about the MBHCP and its obligations and protections (Section 3.2.2.2 of the MBHCP);

(b) Encourage their participation in the MBHCP (particularly with respect to fire management, mechanical brush control, and livestock management activities (Sections 5.5.2.1, 5.5.2.3, and 5.5.3.1 of the MBHCP, respectively);

(c) Where ranchers wish to voluntarily participate in the MBHCP, effect such participation by developing and executing Certificates of Inclusion (COIs) with such ranchers in accordance with Section 5.3 of the MBHCP; and,

(d) Monitor and enforce compliance with the MBHCP by Malpai-area ranchers participating in the MBHCP (Section 5.7.1 of the MBHCP).

(4) Species Occurrence Maps. Prepare, maintain, and as necessary distribute and make available the MBHCP's species occurrence maps (Section 5.4.1 of the MBHCP);

(5) Technical Advisory Committee. Coordinate establishment of the MBHCP's Technical Advisory Committee (hereinafter, the TAC) and undertake all applicable responsibilities thereto (Section 5.9 of the MBHCP), which include:

(a) Acting as the TAC Chair;

(b) Undertaking all administrative and leadership functions assigned to the Chair including, but not limited to, coordinating preparation of the TAC operations protocol, announcing and presiding at TAC meetings; and,

(c) Promoting and taking part in collaborative decision-making by the TAC with respect to technical and Adaptive Management issues that arise in the course of implementing the MBHCP;

(6) Monitoring.

(a) Complete non-discretionary grassland conservation monitoring measures and activities specified in 5.7.2.1 (B);

(b) Subject to available funding and as applicable, undertake and assist in the undertaking of, and/or assist in the funding of discretionary grassland conservation monitoring measures and activities specified in Section 5.7.2.1(A); and,

(b) Complete species conservation monitoring measures and activities specified in Section 5.7.2.2, of the MBHCP, as applicable.

(7) Reporting. Prepare and submit to the FWS:

(a) By March 15 each year, the annual report specified in Section 5.10 of the MBHCP;

(b) Any report or other information requested by the FWS in accordance with Section 5.7 and 5.10 of the MBHCP; and,

(c) The reports described in this Agreement.

(8) Certification of Reports. Each report described in Paragraph (7) above will include the following certification from a senior MBG official(s) who prepared or supervised or directed preparation of the report or is otherwise responsible for the report:

Under penalty of law I certify, to the best of my knowledge and after appropriate inquiries of all relevant persons involved in the preparation of this report, that the information contained in the report is true, accurate, and complete.

8.2 FWS. Three separate organizational divisions of the FWS are relevant to the MBHCP: (1) the Regional Office for the agency's Southwest Region (Region 2) located in Albuquerque, New Mexico (responsible for all agency activities in the states of Arizona, New Mexico, Oklahoma, and Texas); (2) the Ecological Services Division (responsible for administering the Act); and (3) the Refuges Division (responsible for managing the nation's National Wildlife Refuge System). The organizational units under those divisions involved in the MBHCP are, respectively: (1) the Ecological Services Division in the agency's Regional Office in Albuquerque, New Mexico (responsible for processing MBG's permit application); (2) the Fish and Wildlife Offices in the cities of Tucson and Phoenix, Arizona, and Albuquerque, New Mexico (involved in both development and implementation of the MBHCP); and (3) San Bernardino National Wildlife Refuge (SBNWR) located in the Malpai Borderlands (and responsible for managing most remaining populations of the MBHCP's covered fish species). Under the MBHCP, the FWS (and its particular organizational unit) will:

(1) Issue and Monitor the Permit. Upon an affirmative finding that the MBHCP is adequate and complete:

(a) The FWS Regional Office will issue to MBG the requested ITP; and,

(b) Upon issuance thereof, the FWS Regional Office and above-referenced Fish and Wildlife Offices will monitor and, if necessary and in accordance with

applicable Federal regulation, enforce compliance with the MBHCP and the Permit.

(2) Serve on the TAC. The above-referenced Fish and Wildlife Offices, collectively, and SBNWR:

(a) Division of Refuges and Ecological Services will each have a representative participating on the MBHCP's TAC; in addition,

(b) Each such appointee will carry out the TAC activities and tasks designated to it by Section 5.9 of the MBHCP and any operating protocols enacted by the TAC in accordance with that section.

(3) Monitoring/Adaptive Management. The FWS Regional Office and above-referenced Fish and Wildlife Offices will, to the maximum extent feasible and consistent with available funding:

(a) Assist MBG in obtaining funding from funding programs administered by the agency and from other programs, as appropriate, to support species conservation monitoring specified in Section 5.7.2 of the MBHCP; and,

(b) Provide in-kind services (e.g., staff time, technical assistance, species experts, etc.) to assist in the carrying out of applicable monitoring and AM program elements;

(4) Water Quality Monitoring/Take Monitoring/Reporting. Subject to available funding and in accordance with Section 5.7.2.2, and Section 5.10.3 of the MBHCP, SBNWR may:

(a) Conduct water quality monitoring of aquatic areas on the Refuge to determine the effects, if any, of fire management, mechanical brush control, and other covered activities on those areas;

(b) Monitor such areas for indications (e.g., above-normal numbers of dead or dying fish) that aquatic species are being killed, injured, or harmed as a result of water quality impacts connected with these activities; and,

(c) Report the results of such monitoring to the FWS and/or MBG as applicable.

(5) Leopard Frog Salvage. Upon receipt of notification from MBG that a participating Malpai rancher plans to conduct periodic maintenance activities at any stockpond within the Permit Area, the above-referenced Fish and Wildlife Office, as applicable (depending on the state in which the maintenance is to occur) will at its discretion:

(a) Determine whether it wishes to salvage lowland leopard frogs and/or Chiricahua leopard frogs in accordance with Section 5.5.3.3 (B) the MBHCP of that section;

(b) If so, inform the affected Malpai rancher of this and either: (i) undertake the salvage itself; (ii) undertake the salvage in cooperation with AGFC or NMDGF, as applicable; or (iii) request AGFC or NMDGF to undertake the salvage and return any salvaged frogs to the original site as applicable.

8.3 NRCS. The NRCS assists Malpai-area ranchers in maintaining healthy rangeland conditions on their ranches through voluntary Cooperator Agreements and Coordinated Resource Management Plans, and assists ranchers in assessing rangeland conditions over time through establishment and monitoring of vegetation transects on ranches subject to such agreements. Accordingly, under the MBHCP, NRCS will:

(1) Serve on the TAC. Serve on the MBHCP's TAC and carry out the TAC activities and tasks designated to it by Section 5.9 of the MBHCP and by any operating protocols enacted by the TAC in accordance with that section; and,

(2) Monitoring/Adaptive Management. To the maximum extent feasible and subject to continuing NRCS commitment to its rancher assistance programs and available funding:

(a) Assist MBG in obtaining funding from funding programs administered by NRCS and from other programs, as appropriate, to support grassland conservation monitoring specified in Section 6.0 of the MBHCP;

(b) In accordance with Section 5.7, maintain and continue monitoring currently existing NRCS vegetation transects on Malpai-area ranches and establish new such transects when the opportunity arises; and,

(c) Provide in-kind services (e.g., staff time, technical assistance, etc.) to assist in carrying out such monitoring.

(3) Assist in complying with National Historic Preservation Act. NRCS will provide cultural resources support for Malpai Borderlands operations on private lands in accordance with the procedures agreed to between the Arizona State Historic Preservation Officer (SHPO) and the NRCS in the 2002 state-level Cultural Resources Programmatic Agreement and implementing Handbook, as amended.

8.4 AGFC and NMDGF. The AGFC is authorized under A.R.S. § 17-231(A)(2) to establish programs for the management, preservation, and harvest of wildlife, and is authorized under A.R.S. § 17-231(B)(7) to enter into this Agreement. AGFC and NMDGF are each responsible for managing and conserving fish and wildlife populations generally in their respective states and for managing and conserving non-game species, in some cases

under specific or special legislation. NMDGF, for example, administers the New Mexico Wildlife Conservation Act (a statute that protects rare and declining species; see Appendix A of the MBHCP), and AGFC administers the Heritage Database Management System (which tracks the status and distribution of such species). Both agencies have therefore played key roles in development of the MBHCP and have continuing interests and responsibilities in implementing the MBHCP. Under the terms of the MBHCP, AGFC and/or NMDGF, as applicable:

(1) Serve on the TAC. Will serve on the MBHCP's TAC and carry out the TAC activities and tasks designated to it by Section 5.9 of the MBHCP and by any operating protocols enacted by the TAC in accordance with that section;

(2) Monitoring/Adaptive Management. Will, to the extent practicable and subject to available funding:

(a) Assist MBG in obtaining funding from funding programs administered by each agency and from other programs, as appropriate, to enhance species conservation monitoring specified in Section 6.0 of the MBHCP; and,

(b) Provide in-kind services (e.g., staff time, technical assistance, species experts, etc.) to assist in the carrying out of applicable monitoring and AM program elements;

(3) Leopard Frog Salvage. Upon receipt of notification from the FWS that a participating Malpai rancher plans to conduct periodic maintenance activities at any stockpond within the Permit Area and if requested, AGFC or NMDGF, as applicable (depending on the state in which the maintenance is to occur), will:

(a) Determine whether it wishes to salvage lowland leopard frogs and/or Chiricahua leopard frogs in accordance with Section 5.5.3.3 (B) the MBHCP of that section; and,

(b) If so, will either: (i) assist the FWS in undertaking the salvage; or (ii) undertake the salvage on behalf of the FWS.

(4) NMDGF will assist MBG with appropriate permitting under Wildlife Conservation Act. NMDGF will process an application and issue a permit to the MBG, if appropriate, pursuant to the Wildlife Conservation Act (WCA: New Mexico Statutes Annotated [NMSA] 17-2-37 through 17-2-46). Any permit issued will describe the necessary conditions under which assessment of prospective take of listed species will be accomplished with respect to habitat-altering activities. In cases where direct take of a WCA-listed species is anticipated, the permit will cover responsibilities of MBG to assist and report to NMDGF. The duration of any permit issued will be for 3 years with provision for renewal based on past assessments.

8.5 ASLD/NMSLO. ASLD and NMSLO administer state trust lands in the Malpai Borderlands (on the Arizona side and New Mexico side, respectively; Section 2.1.1.2 of the MBHCP) under their own statutory authorities. ASLD is authorized to enter into this Agreement by A.R.S. §. 37-102. As a result of such authorities, both agencies have agreed to allow access to state trust lands for fire management/monitoring (see following paragraph) and are not otherwise constrained or obligated by the MBHCP in any manner.

ASLD

(1) ASLD hereby grants access to the MBG, FWS, NRCS, and AGFC or their duly designated agents or contractors to conduct monitoritng activities as described in paragraph 5.7.2 of the MBHCP on Arizona state trust lands, provided that: (a) The Arizona state trust lands in question are currently under lease to a grazing leasee who has executed a Certificate of Inclusion under the MBHCP and who specifically consents to such monitoring activities; and (b) all monitoring activities on Arizona state trust lands have the endorsement of the FWS and MBG; and (c) all results of such monitoring activities conducted on Arizona state trust lands are available to the ASLD upon written request of MBG, FWS, NRCS, and AZGFD. ASLD may withdraw this grant of access at any time, by providing written notice to the other parties in the manner provided in paragraph 14.3.

(2) ASLD hereby grants access to the MBG, FWS, NRCS, and AGFC or their duly designated agents or contractors to plan and undertake fire management activities (including prescribed burns and wildland fires) on Arizona state trust lands, provided that: (a) the Arizona state trust lands in question are currently under lease to a grazing leasee who has executed a Certificate of Inclusion under the MBHCP and who specifically consents to such fire management activities; and (b) all fire management activities that are to be conducted on Arizona state trust lands are undertaken pursuant to site-specific burn plans or area-specific fire management plans approved by ASLD; and (c) all requirements imposed by ASLD to conduct such fire management activities have been satisfactorily completed. ASLD may withdraw this grant of access at any time, by providing written notice to the other parties in the manner provided in paragraph 14.3.

(3) Notwithstanding any other portion of this Agreement or the MBHCP, ASLD reserves its rights to contest the status and appropriate conservation methods for any Covered, Listed, or Unlisted species which may or may not be present on Arizona state trust lands.

NMSLO

(1) In accordance with Section 5.7.3.2 of the MBHCP, NMSLO will grant access to the lands in the Malpai Borderlands under their respective jurisdictions to MBG personnel, the FWS, NRCS, AGFC, NMDGF, any duly designated agents or

contractors of these entities, and fire management officers and personnel of local, state, and Federal agencies for the purpose of: (a) conducting monitoring activities and studies specified by the MBHCP (as well as research and similar activities not specified by the MBHCP but pertinent to it); and (b) planning and undertaking fire management activities (including prescribed burns and wildland fires); however (c) all such monitoring activities and studies, research, or similar activities to be conducted on state trust lands must have the endorsement of the FWS and MBG; and (d) all fire management activities to be conducted on state trust lands must be undertaken pursuant to site-specific burn plans or area-specific fire management plans approved by NMSLO, as applicable.

(2) In accordance with the above, the MBHCP and this Agreement, an authorized party to the MBHCP shall apply for a Right of Entry permit to NMSLO lands by submitting all applicable forms and paying the associated fees as determined by the New Mexico Commissioner of Public Lands. Such Right of Entry to NMSLO lands shall permit entry by applicable agencies or duly designated agents or contractors conducting monitoring activities as well as fire management agencies and personnel conducting fire management activities, provided that all such activities are carried out with the endorsements specified in measure (1)(c) above or under the MBHCP specified in measure (1)(d) above, respectively.

9.0 ADAPTIVE MANAGEMENT

9.1 TAC-initiated Adaptive Management. MBG, through and in cooperation with the TAC:

(1) Will implement the AM provisions described in Section 5.8 of the MBHCP when revision or modification of the MBHCP's conservation program is necessary to achieve its species conservation objectives or to respond to the results of monitoring or new scientific information.

(2) In addition, MBG and the TAC may enact and implement AM revisions or modifications to the conservation program they deem necessary in accordance with Section 5.9.2.4(A) and (B), of the MBHCP without prior review and approval by the FWS; however,

(3) MBG will include a summary of all AM actions taken in a given calendar year, if any, in its annual report for the year in accordance with Section 5.10 of the MBHCP.

9.2 FWS-initiated Adaptive Management. If the FWS determines that one or more of the AM triggers described in Section 5.8.1 and Table 5-5 of the MBHCP have been reached, and that MBG and the TAC have not responded in accordance with that section, the FWS will so notify MBG in writing. Within sixty (60) calendar days of receiving such notice, MBG and the TAC will develop an appropriate AM response to the conditions or circumstances involved and report this decision to the FWS in writing.

9.3 No Increase in Take. The MBHCP's AM provisions do not authorize any modification to the MBHCP that would result in the amount and nature or increase the impacts of take of the Covered Species beyond that analyzed under the original MBHCP and any amendments thereto. Any such modification would therefore have to be enacted under a permit amendment under Section 13.3 of the Agreement and Section 9.1 of the HCP.

10.0 CHANGED CIRCUMSTANCES

10.1 MBG-initiated Response to Changed Circumstances. MBG, or MBG through and in cooperation with the TAC, as applicable:

(1) Will respond to the Changed Circumstances described in Section 8.3 of the MBHCP whenever such circumstances are determined to have occurred within the Permit Area: (a) by giving notice to the FWS in writing within fourteen (14) calendar days after learning of such a Changed Circumstance; and (b) as soon as practicable thereafter but not later than the timeframes if specified in Section 8.3, by modifying its activities or taking action in accordance with that section as necessary to correct or mitigate the effects of the Changed Circumstance on the Covered Species;

(2) May respond to the Changed Circumstances without prior review and approval by the FWS; but, will report to the FWS in writing the decision made or action taken within thirty (30) calendar days of the making of such a decision or the taking of such action.

10.2 FWS-initiated Response to Changed Circumstances. If the FWS:

(1) Plans or intends to terminate its section 4(d) rule for Chiricahua leopard frog as described in Section 8.3.6 of the MBHCP, to terminate its section 4(d) rule for northern aplomado falcons as described in Section 8.3.7, or to designate new critical habitat as described in Section 8.3.10, it will notify MBG of this intention in writing as specified in each of these subsections respectively;

(2) Plans or intends to list a species not listed under the Act as of the time of the issuance of the permit and not covered by the MBHCP as described in Section 8.3.9, it will: (a) notify MBG of this intention in writing as specified in that Section; (b) work with MBG to determine whether the MBHCP's covered activities are likely to result in take of the species and, if so, whether the existing conservation measures are sufficient to minimize the effects of that take; and (c) if existing conservation measures are not sufficient, will specify the "no-take/no-jeopardy" measures (i.e., measures to avoid take of or jeopardy to the Covered Species in the course of such activities) it identifies as being necessary; in addition (d) MBG will implement such no-take/no jeopardy measures unless or until it applies for an amendment to the MBHCP and ITP to

incorporate the species and the FWS approves any such amendment or unless or until FWS otherwise notifies MBG that such measures are no longer necessary; or,

(3) Determines that one or more of the Changed Circumstances described in Section 8.3 of the MBHCP have occurred, and that MBG and the TAC have not responded in accordance with this section, it will so notify MBG in writing. As soon as practicable thereafter but not later than the timeframes specified in this section, MBG and the TAC will develop an appropriate response to the conditions or circumstances involved and report this decision to the FWS in writing.

11.0 FUNDING

11.1 By the Permittee. MBG warrants that its funding mechanisms and sources are sufficient to fulfill its obligations under the MBHCP, and, to demonstrate this, will provide the FWS with a copy of its annual financial report in each year that the MBHCP and ITP are in effect. Each such report will be submitted as an attachment to MBG's annual HCP report. Alternately and in lieu of a financial report, MBG may submit to the FWS annually any other reasonably available financial information that it and the FWS mutually agree will provide adequate evidence of MBG's ability to fulfill its obligations under the MBHCP. MBG also warrants that it will vigorously and in good faith pursue such additional funding as may from time to time or on a periodic basis be available in the funding programs it administers or employs to support the MBHCP's species conservation monitoring activities and programs as described in Section 8.0 of the Agreement and Section 5.5 of the MBHCP; and that, if necessary, it will promptly notify the FWS of any material change in its financial circumstances that might negatively affect its ability to meet these obligations.

11.2 By the Other Parties. The other Parties also warrant, within the limitations described in Section 14.9 of the Agreement, that they will undertake every effort reasonable and necessary to ensure that funding and staff necessary to discharge their obligations and commitments under the MBHCP and this Agreement will be available; and, as applicable, that they will vigorously and in good faith pursue such additional funding as may from time to time or on a periodic basis be available in the funding programs they administer to support the MBHCP's species conservation monitoring activities and programs as described in Section 8.0 of the Agreement and Section 5.0 of the MBHCP.

12.0 REMEDIES, ENFORCEMENT, DISPUTE RESOLUTION

Except as set forth below, each Party shall have all remedies otherwise available to enforce the terms of this Agreement, the Permit, and the MBHCP, and to seek remedies for any breach hereof, subject to the following:

12.1 No Monetary Damages. No Party shall be liable in damages to any other Party or other person for any breach of this Agreement, any performance or failure to perform a mandatory or discretionary obligation imposed by this Agreement or any other cause of action arising from this Agreement. Notwithstanding the foregoing:

(1) Retain Liability. All Parties shall retain whatever liability they would possess for their present and future acts or failure to act without existence of this Agreement.

(2) Land Owner Liability. All Parties shall retain whatever liability they possess as an owner of interests in land.

12.2 Enforcement Authority of the United States. Nothing contained in this Agreement is intended to limit the authority of the U.S. government to seek civil or criminal penalties or otherwise fulfill its enforcement responsibilities under the Act or other applicable law.

12.3 Injunctive and Temporary Relief. The Parties acknowledge that the Covered Species are unique and that their loss as species would result in irreparable damage to the environment and that therefore injunctive and temporary relief may be appropriate to ensure compliance with the terms of this Agreement. However, in no instance shall injunctive or temporary relief be sought or granted against the Arizona State Land Department and AGFC, and nothing in this Agreement shall be interpreted to restrict the rights of the State of Arizona to assert any defense it may be entitled to by law.

12.4 Limitations on and Extent of Enforceability.

(1) No Surprises Policy. Subject to the availability of appropriated funds as provided in Section 14.8 hereof, and except as otherwise required by law, no further conservation measures for the effects of the Covered Activities upon the Covered Species may be required from MBG or any Malpai-area rancher who is an HCP Participant if MBG or any such rancher has otherwise abided by the terms of the MBHCP, except in the event of unforeseen circumstances; provided that any such additional mitigation may not require additional land use restrictions or financial compensation from MBG without its written consent or from a participating Malpai rancher without his or her written consent.

(2) Private Property Rights and Legal Authorities Unaffected. Nothing in this Agreement shall be deemed to restrict the rights of MBG, ASLD, NMSLO, or any Malpai-area rancher who is an HCP Participant to the use or development of their lands, or interests in their lands, within the Permit Area.

(4) Attorney's Fees. If any action at law or equity, including any action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, each party to the litigation shall bear its own attorney's fees and costs. However, attorney's fees and costs against the United States shall be governed by applicable law.

12.5 Dispute Resolution. The Parties recognize that disputes concerning implementation of, compliance with, or termination of this Agreement, the MBHCP, and the Permit may arise from time to time. The Parties therefore agree to work together in good faith to resolve such disputes, using the informal dispute resolution procedures set forth in this section, or

such other procedures upon which the Parties may later agree. However, if at any time any Party determines that circumstances so warrant, it may seek any available remedy without waiting to complete informal dispute resolution.

(1) Informal Dispute Resolution Process. Unless the Parties agree upon another dispute resolution process, or unless an aggrieved Party has initiated administrative proceedings or suit in Federal court as provided in this section, the Parties may use the following process to attempt to resolve disputes.

(a) The aggrieved Party will notify the other Parties of the provision that may have been violated or is in dispute, the basis for contending that a violation or significant disagreement has occurred, and the remedies it proposes to correct the alleged violation or disagreement.

(b) The Party or Parties alleged to be in violation or the subject of the dispute will have thirty (30) days, or such other time as may be agreed to, to respond. During this time such Party or Parties may seek clarification of the information provided in the initial notice. The aggrieved Party will use its best efforts to provide any information then available to it that may be responsive to such inquires.

(c) Within thirty (30) days after such response was provided or was due, the Parties, or representatives of the Parties having authority to resolve the dispute, will meet and negotiate in good faith toward a solution satisfactory to all Parties, or will establish a specific process and timetable to seek such a solution.

(2) Non-binding Mediation. If any issues cannot be resolved through such negotiations, the Parties will consider non-binding mediation and other alternative dispute resolution processes and, if a dispute resolution process is agreed upon, will make good faith efforts to resolve all remaining issues through that process.

13.0 AMENDMENTS/PERMIT ADMINISTRATION

13.1 Amendment of the Agreement. Except as otherwise set forth herein, this Agreement may be amended consistent with the Act and with the written consent of each of the Parties hereto. However, no such amendment should involve a significant change or modification to the MBHCP's conservation measures or program (or bring the Agreement into significant disaccord with those measures) unless the MBHCP and, if necessary, the Permit are also amended in accordance with Sections 13.2 and 13.3 below, respectively, to maintain consistency between the documents.

13.2 Minor Amendment of the MBHCP. Any Party may propose minor amendments to the MBHCP in accordance with paragraphs (1) and (2) below by providing notice to the FWS with a copy to all other Parties, such notice to include a statement describing the reason for the proposed amendment and a brief analysis of its environmental effects and effects on the Covered Species. Any such proposal will become effective upon written

notification to the Parties by the FWS that it concurs with the proposed amendment, such notification to be provided within 90 calendar days of receipt of the proposal.

(1) Impermissible Minor Amendments. However, the FWS will not approve any such amendment if: (i) it determines that the amendment would result in effects on the environment or the Covered Species that are significantly different than those identified in the original MBHCP and National Environmental Policy Act (NEPA) document or result in additional take not analyzed in the original MBHCP and NEPA document; or (ii) if any Party objects to the proposed amendment in writing. In either such case, the amendment would be processed as an amendment to the permit in accordance with Section 13.3 below.

(2) Permissible Minor Amendments. Permissible minor amendments to the MBHCP include, but are not limited to: (i) corrections of typographical, grammatical, or similar editing errors in the MBHCP that do not change its intended meaning; (ii) correction of maps, figures, tables, etc. in the MBHCP to correct errors or to reflect previously approved changes in the MBHCP or the Permit; and (iii) minor changes to survey, monitoring, or reporting protocols.

13.3 Amendment of the Permit/Major Amendment of the MBHCP. Amendment of the Permit, major amendment of the MBHCP (i.e., amendment in a fashion that significantly modifies its effects on the environment and/or the Covered Species), and, if necessary, joint amendment of both may be undertaken as follows: (a) first, such amendments must be processed and approved in accordance with procedures that are essentially equivalent to the original Permit application (i.e., all applicable Act, NEPA, and Federal regulatory requirements must be satisfied, including a public comment period); (b) second, any Party may propose such Permit and/or MBHCP amendments; (c) third, no such amendment, to the extent it would affect the Covered Species or the carrying out of the Covered Activities on privately owned lands, may be submitted to the FWS for formal processing without the consent of the Permittee; and (d) fourth, the proper forum for proposing, considering, and determining if a Permit and/or MBHCP amendment is necessary is the MBHCP's TAC as described in Section 5.9 of the MBHCP.

13.4 Permit Suspension/Revocation. The FWS may suspend or revoke the Permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation [currently codified at 50 CFR 13.28(a), 17.22(b)(8), and 17.32(b)(8)]. Such suspension or revocation may apply to the entire Permit Area and all Covered Species and Covered Activities, or only to specified Permit Areas, Covered Species, or Covered Activities. The Permittee's obligations under this Agreement and the MBHCP may continue beyond the suspension or revocation, however, if the FWS determines that any such obligations were outstanding or unsatisfied at the time of the suspension or revocation.

13.5 Voluntary Termination. Any party to the IA may terminate its obligation under the MBHCP and its associated ITP at any time if, in its view and/or the views of its membership, the MBHCP is no longer necessary, desirable, or applicable. Voluntary

termination of a party's participation in the IA must be through written notification to the FWS and all other MBHCP participants with a written explanation a minimum of 90 calendar days prior to the proposed effective date of termination. Upon such notification, any signatory to the IA or MBHCP participant may request a meeting of all signatories to the IA or MBHCP participants to discuss pertinent or final issues that may be raised by the termination announcement, and each signatory to the IA or MBHCP participant will honor any such request within the 90-day notification period. The Parties' participation in the IA will then be considered terminated as of the end of the 90-day period, provided that all obligations under the IA, MBHCP, and ITP have been met.

The FWS and MBG will need to consider if the voluntary termination of an IA signatory substantially changes the abilities of MBHCP participants to meet further obligations and objectives under the MBHCP and ITP. If so, FWS and MBG will work to modify or amend the MBHCP and ITP in a manner to meet further obligations and objectives under that MBHCP and ITP if possible, per Section 9.1 of the MBHCP. If this is not possible, FWS and MBG may proceed with the process to terminate the MBHCP and ITP, per Section 9.2.1 of the MBHCP.

In addition, MBG will, in writing and within 60 days of the effective date of change in IA signatories, notify all Malpai-area ranchers who at the time are party to active COIs that may be impacted by the termination of an IA signatory's participation in the MBHCP and ITP implementation.

13.6 Permit Extension. Upon agreement of the Parties and in compliance with all applicable laws, the Permit may be extended beyond its initial 30-year term under Federal regulations in force at the time of such extension. If the Permittee desires to extend the Permit, it will so notify the FWS at least 180 days before the then-current term is scheduled to expire. Extension of the Permit in effect constitutes extension of the MBHCP and this Agreement for the same amount of time as the Permit is extended subject to any modifications the FWS may require at the time of the extension.

13.7 Permit Severability. Violation of the Permit, or of this Agreement by any Party other than MBG with respect to any particular obligation(s) of the MBHCP, the Permit, and/or the Agreement, or to any one or more particular parcels of land or portions thereof owned, controlled or within the jurisdiction of any such Party shall not adversely affect or be attributed to, nor shall result in a loss or diminution of any right, privilege, or benefit hereunder, of the Permittee, or any other Party, so long as the Permittee and any such Party are themselves in compliance with the MBHCP, the Permit, and/or the Agreement.

13.8 Treatment of Unlisted Covered Species. All Covered Species currently not listed under the Act will for purposes of the MBHCP and this Agreement be treated as if they are listed. This means, on the one hand, that the conservation measures specified by the MBHCP that are applicable to such species must, under the terms of the MBHCP and the Agreement, be implemented in the course of carrying out the Covered Activities; but, on the other hand, that if such species should become listed under the Act in the future, no action

by the Permittee or the other Parties, and no amendment of the Permit or the MBHCP, will be needed to meet resulting Act requirements with respect to such species. The Permit will become effective with respect to such species automatically upon being listed under the Act.

14.0 MISCELLANEOUS PROVISIONS

14.1 No Partnership. Except as otherwise expressly set forth herein, neither this Agreement nor the MBHCP shall make or be deemed to make any Party to this Agreement the agent for or the partner of any other Party.

14.2 Successors and Assigns. This Agreement and each of its covenants and conditions shall be binding on and inure to the benefit of the Parties hereto and their respective successors and assigns.

14.3 Notice. Any notice permitted or required by this Agreement shall be delivered personally to the persons set forth below or shall be deemed given five (5) days after deposit in the U.S. mail, certified and postage prepaid, return receipt requested and addressed as follows or at such other address as any Party may from time to time specify to the other Parties in writing:

Executive Director
Malpai Borderlands Group
6226 Geronimo Trail Road
P.O. Box 3536
Douglas, Arizona 85608

Refuge Manager
San Bernardino National Wildlife Refuge
P.O. Box 3509
Douglas, Arizona 85608

Regional Assistant Chief
Natural Resources Conservation Service
1201 NE Lloyd Boulevard, Suite 1000
Portland, Oregon 97232

Commissioner
New Mexico Department Game and Fish
P.O. Box 25112
Santa Fe, New Mexico 87504

Commissioner of Public Lands
New Mexico State Land Office
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Deputy Regional Director
U.S. Fish and Wildlife Service
500 Gold Avenue SW
Alburquerque, New Mexico 87102

Field Supervisor
U.S. Fish and Wildlife Service
Arizona Ecological Services Office
2321 West Royal Palm Rd, Suite 103
Phoenix, Arizona 85021

Director
Arizona Game and Fish Department
5000 W. Carefree Highway
Phoenix, AZ 85086

Commissioner
Arizona State Land Department
1616 W. Adams Street
Phoenix, Arizona 85007

14.4 Entire Agreement. This Agreement, together with the MBHCP and the Permit, constitutes the entire Agreement between the Parties. It supersedes any and all other agreements, either oral or in writing among the Parties with respect to the subject matter hereof and contains all of the covenants and agreements among them with respect to said matters, and each Party acknowledges that no representation, inducement, promise or agreement, oral or otherwise, has been made by any other Party or anyone acting on behalf of any other Party that is not embodied herein.

14.5 Agreement Severability. In the event that any provision of this Agreement or portion thereof is held invalid, illegal, or unenforceable, such provision or portion thereof shall be severed from this Agreement and shall have no effect on the remaining provisions of this Agreement, which shall remain in full force and effect.

14.6 Captions. The headings of the various sections hereof are for convenience only and shall not affect the meaning of any provision of this Agreement.

14.7 Counterparts. This Agreement may be executed in multiple counterparts, all of which shall constitute but one and the same instrument.

14.8 Elected Officials Not to Benefit. No member of or delegate to Congress shall be entitled to any share or part of this Agreement, or to any benefit that may arise from it.

14.9 Availability of Funds. Implementation of this Agreement and the MBHCP by the FWS and NRCS are subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this Agreement will be construed by the Parties to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury. The Parties acknowledge that the FWS and NRCS will not be required under this Agreement to expend any Federal agency appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

14.10 Duplicate Originals. This Agreement may be executed in any number of duplicate originals. A complete original of this Agreement, together with all amendments thereto, shall be maintained in the official records of each of the Parties hereto.

14.11 Third Party Beneficiaries. Without limiting the applicability of the rights granted to the public pursuant to the provisions of 16 U.S.C. § 1540(g), this Agreement shall not create any right or interest in the public, or any member thereof, as a third party beneficiary hereof, nor shall it authorize anyone not a Party to this Agreement to maintain a suit for personal injuries or property damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing Federal or State law.

14.12 Relation to the Act and Other Authorities. The terms of this Agreement shall be governed by and construed in accordance with the Act and other applicable laws. In particular, nothing in this Agreement is intended to limit the authority of the FWS to seek penalties or otherwise fulfill its responsibilities under the Act. Moreover, nothing in this Agreement is intended to limit or diminish the legal obligations and responsibilities of the USFWS as an agency of the Federal government.

14.13 References to Regulations. Any reference in this Agreement, the MBHCP, or the Permit to any regulation or rule of the USFWS shall be deemed to be a reference to such regulation or rule in existence at the time an action is taken.

14.14 Applicable Laws. All activities undertaken pursuant to this Agreement, the MBHCP, or the Permit must be in compliance with all applicable State and Federal laws and regulations.

14.15 Records Retention/Audit. Pursuant to A.R.S. § 35-214, all books, accounts, reports, files, electronic data, and other records relating to this Agreement shall be subject at all reasonable times to inspection and audit by the State of Arizona for five (5) years after completion of this Agreement.

14.16 Termination for Conflict of Interest. This Agreement is subject to termination pursuant to A.R.S. § 38-511.

14.17 Estoppel Certificates. Within twenty (20) days after written request from any Party hereto, the other Parties shall execute and deliver to any person designated by the requesting party a written instrument: (a) identifying this Agreement and the MBHCP and any amendments or modifications thereto; (b) stating that all conditions under this Agreement and the MBHCP to be performed by the requesting party have been performed (stating exceptions, if any); and (c) stating such other information as the requesting party reasonably requires.

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Bill McDonald
Executive Director, Malpai Borderlands Group

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Deputy Regional Director, U.S. Fish and Wildlife Service

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
David L. McKay
State Conservationist, Arizona, Natural Resources Conservation Service

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Dennis L. Alexander
State Conservationist, New Mexico, Natural Resources Conservation Service

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Larry Voyles
Director, Arizona Game and Fish Department

_____
Secretary to the Commission Date

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Bruce Thompson
Director, New Mexico Department of Game and Fish

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Mark Winkleman
Commissioner, Arizona State Land Department

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Implementing Agreement as of the last date when Malpai Borderlands Group and U.S. Fish and Wildlife Service have signed below. All other signatories will be added to the Implementing Agreement when they have signed below and returned the signature page.

By_____ Date_____
Patrick H. Lyons
Commissioner, New Mexico State Land Office

Appendix C

Certificate of Inclusion

Template

Certificate of Inclusion

By and Between the Malpai Borderlands Group and [*insert name of subject Malpai-area Rancher*]

Pursuant to Section 5.6 of the Malpai Borderlands Habitat Conservation Plan

This Certificate of Inclusion (COI) is made and entered into by and between the Malpai Borderlands Group (hereinafter, MBG) and **[*insert name of subject Malpai-area rancher or ranchers*]** (hereinafter, **[*insert abbreviation or acronym, if applicable*]**), for the purpose of formalizing **[*the subject rancher's*]** decision to participate in and become a party to the Malpai Borderlands Habitat Conservation Plan (MBHCP), and for the purpose of identifying the particular scope of and commitments and obligations associated with that participation. This COI constitutes the entire legal mechanism by which **[*the subject rancher*]** becomes a participant in the MBHCP, agrees to discharge the obligations of such participation, and obtains the regulatory authorizations and protections associated with the MBHCP.

WITNESSETH

WHEREAS, the Malpai Borderlands Group has been issued Incidental Take Permit (ITP) No. **[*insert no.*]** by the U.S. Fish and Wildlife Service (FWS) in accordance with section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended [16 U.S.C. 15389(a)(1)(A)], and, in support of that permit, has prepared the Malpai Borderlands Habitat Conservation Plan, which has been approved by the FWS in association with the issuance of the permit and which specifies the conservation measures which are to be implemented in the course of carrying out certain grassland improvement and ranch management activities covered by the plan; and,

WHEREAS, the Malpai Borderlands Group, as the permittee under that ITP, has been assigned certain authorities and obligations under it, among which are authorization to take federally listed species in the course of the carrying out the above-referenced grassland improvement and ranch management activities and, in accordance with Sections 3.2.2 and 5.3 of the MBHCP, the authority and obligation to enroll in the MBHCP those Malpai-area ranchers electing to become parties to and participants in the plan, as those terms are defined in Sections 3.2.1 and 5.3 of the plan, respectively; and,

WHEREAS, Section 5.3 of the MBHCP establishes specific measures to accomplish such enrollment and participation by desirous Malpai-area ranchers, among which are execution of a Certificate of Inclusion between any such rancher and MBG which formalizes the rancher's decision to participate in the plan, identifies the obligations of that participation, renders those obligations legally enforceable, and extends to the rancher the regulatory authorizations and protections of MBG's ITP; and,

WHEREAS, **[*the subject rancher*]** has expressed to MBG the desire and intent to participate in the MBHCP and thereby to become a party to its obligations and benefits with respect to certain activities covered by the plan which **[*the subject rancher*]** wishes to undertake or carry out;

NOW, THEREFORE, the parties to this Agreement mutually agree and understand as follows:

I. Purpose

This COI serves the purposes described above, constitutes the entire legal basis upon which **[*the subject rancher*]** becomes a participant in the MBHCP and party to both the obligations and benefits of such participation, and renders the [***the subject rancher***], in effect, a sub-permittee to the ITP held by MBG in association with the MBHCP. The obligations of participation in the plan with respect to **[*the subject rancher*]** and this COI are described in Section III, Subsection B and Section IV, Subsection C below, and consist primarily of the conservation measures specified by the MBHCP that are applicable to the activities with respect to which **[*the subject rancher*]** is enrolling and participating in the HCP, the latter of which are described in Section IV, Subsection B below. The benefits of participation in the plan consist of the authorization to incidentally take federally listed species in the course of carrying out those activities, together with the regulatory assurances described in Section 8.1 of the plan.

II. Policies and Principles

Consistent with Section 5.6 of the MBHCP, this COI recognizes the following policies and principles:

A. Participation is Voluntary. Participation in the MBHCP by any Malpai-area rancher is entirely voluntary and subject to the sole discretion of the rancher; unless, as described in Section 5.3.1, of the plan, such a rancher accepts technical or financial assistance from MBG with respect to a particular activity or project or engages in an activity or project cooperatively with MBG, in which case receipt of such assistance or cooperation from MBG is contingent upon participation in the MBHCP by the affected rancher (referred to as "mandatory conditional" participation).

B. Availability/Scope of Participation. As described in Section 5.3.1, of the plan, participation in the HCP through this COI is available to both MBG-member ranchers and ranchers who are not MBG members, but are within the identified boundary of the covered area. In addition, any Malpai-area rancher may, except as otherwise specified in Paragraph C below, enroll and participate in the HCP: (a) with respect to all sets, any individual set, or any combination of sets of the covered grassland improvement or ranch management activities; (b) in the case of fire management, with respect to any activities that MBG carries out in cooperation or partnership with individual ranchers; or (c) with respect to any individual project or combination of projects; and (f) for any reasonable time period.

C. All Applicable HCP Measures Must be Included in the COI. As described in Section 5.3.2, of the plan, all conservation measures specified by the HCP that apply to any particular covered activity included in this COI must also be included in the agreement, including applicable monitoring and reporting measures. Thus, while it is permissible to include in the COI the conservation measures applying to one particular covered activity, but not other covered activities; it is not permissible to include in the COI some conservation measures that apply to a particular activity, but not others. In other words, a rancher cannot "pick and choose" which measures applying to a particular activity he or she will include in the COI, but must include all measures applying to the activity if the activity itself is included.

D. Amendment/Termination of the Agreement. This Agreement may be modified or amended upon written request of either party hereto and the subsequent written concurrence of the other party. It may also be terminated prior to fulfillment of the conservation term specified in Section IV, Subsection D below in accordance with Section 9.2.2 of the MBHCP.

III. Responsibilities of the Parties

The responsibilities of the parties to this Agreement are as follows.

A. Malpai Borderlands Group. MBG shall perform all obligations and implement all measures assigned to it under the MBHCP, including monitoring of rancher compliance with this Agreement as described in Section 5.7.1 of the plan, and shall perform the following additional obligations and measures, if any, assigned to it under the terms of this Agreement.

1. **[*Enter any additional MBG obligations or responsibilities; if none, enter "No additional obligations in addition to those specified by the MBHCP are established by the Agreement"*]**.

2. **[*Enter any additional MBG obligations or responsibilities*]**.

B. Participating Malpai-area Rancher. Consistent with Paragraph II.C above, **[*the subject rancher*]** shall implement all conservation measures specified by the MBHCP, including monitoring and reporting measures, that are applicable to the activities with respect to which **[*the subject rancher*]** has enrolled in and is participating in the MBHCP (Section IV, Subsection B), and shall perform the following additional obligations and measures, if any, assigned to it under the terms of this Agreement.

1. **[*Enter any additional rancher obligations or responsibilities; if none, enter "No additional obligations in addition to those specified by the MBHCP are established by the Agreement"*]**.

2. **[*Enter any additional rancher obligations or responsibilities*]**.

IV. Terms of the Agreement

As required by Section 5.3.2 of the MBG, the terms of this COI consist of four specific elements—the covered area, covered activities, required conservation measures (consisting of take minimization measures and other conservation measures), and the conservation term (or duration) of the COI. The specifics of each of these COI elements, except as otherwise specified in Paragraph II.C above, are ultimately the decision of the enrolling and participating rancher so long as they are not inconsistent with the purposes, goals, or requirements of the MBHCP. However, MBG will assist the rancher in determining COI terms that meet the rancher's goals and are generally consistent with the MBHCP. With respect to **[*the subject rancher*]** and this COI, these elements consist, specifically, of the following.

A. Covered Area. **[*Insert a description of the covered area. This may be, depending on the circumstances, the privately owned lands on a given ranch, the state trust lands on a ranch, both privately owned and state trust lands, or an area of a ranch determined by a specific project or activity. Include an estimate of the acreage .*]**

B. Covered Activities. **[*Insert a description of the activities with respect to which the subject rancher is enrolling in the MBHCP (i.e., the activities covered by the agreement). These, in accordance with Paragraph II.B above, can be virtually any set or combination of sets of the HCP's covered activities or an individual project or set of projects.*]**

C. Required Conservation Measures. The conservation measures required by this COI consist of two types of measures: (1) take minimization measures; and (2) other conservation measures; as follows.

1. Take Minimization Measures. **[*Insert a description of the take minimization measures required by the COI. These consist of the measures specified by Section 5.2 of the MBHCP that apply to the covered activities described in Subsection IV.B above, and may be expressed in terms of the section numbers and section numbers specified by the MBHCP that encompass the measures applicable to the covered activities. Thus, for example, if the activity enrolled in the HCP consists of a single fenceline project expected to traverse grassland habitat only, the take minimization measures required by the COI would consist of all measures specified in Section 5.5.3.2(A) and (D) of the HCP.*]**

2. Other Conservation Measures. Other conservation measures required by this COI consist of those HCP measures that are not take minimization measures and that are specified by the HCP as being applicable to Malpai-area ranchers. These are as follows.

a. Access for Monitoring Purposes. In accordance with Section 5.7.3.2 of the MBHCP and except as otherwise specified by that section, **[*the subject rancher*]** agrees to grant access to his or her lands by MBG personnel or personnel of the U.S. Fish and Wildlife Service, Arizona Game and Fish Department, New Mexico Game and Fish Department, Natural Resources Conservation Service, or any duly designated agents or contractors of these entities for the purpose of conducting: (i) any and all monitoring activities and studies specified by the MBHCP; (ii) any legitimate scientific research on the covered species; and (iii) any surveys for the covered species not otherwise specified by the MBHCP which those entities or agencies may wish to carry out and are explicitly endorsed or approved by MBG.

b. Monitoring/Reporting Requirements. Monitoring and reporting measures which **[*the subject rancher*]** must implement under this COI consist of the measures specified in **[*insert portions of Section 5.7 of the MBHCP that the subject rancher would be responsible for, as applicable; if none are applicable, enter "No monitoring or reporting measures specified by the MBHCP are applicable to this Agreement"*]**.

D. Conservation Term. **[*Insert the conservation term of the Agreement. The conservation term may be any period of time the subject rancher deems necessary or appropriate, except that no such term may be less that that minimally necessary to carry out the project or projects, or activity or activities, with respect to which the rancher is enrolling in the MBHCP, or more than the 30-year term of the plan. A suggested (but not required) conservation term for COIs that are not limited to single or individual projects is five (5) years, as such a term is sufficiently long to be effective and meaningful but sufficiently short to represent a comfortable commitment on the part of the affected rancher. Longer or shorter conservation terms are permissible, however, except as specified above.*]**

V. Signatures

This COI certifies that the signatory Malpai-area rancher(s) named below is included within the scope of Incidental Take Permit No. **[*insert no.*]**, issued by the U.S. Fish and Wildlife Service (FWS) on **[*insert date*]** to the Malpai Borderlands Group (MBG) under the authority of section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended [16 U.S.C. 15389(a)(1)(A)] and is a participant in and party to the Malpai Borderlands Habitat Conservation Plan (MBHCP) approved in association with that permit and currently in effect. This COI is issued pursuant to that permit and to Sections 3.2.2 and 5.3 of the MBHCP, and authorizes incidental take of one or more of the 19 covered fish and wildlife species specified in Section 3.3 of the MBHCP in the course of carrying out the grassland improvement and ranch

management activities as described generally in Section 3.5 of the plan and specifically in this COI by the Malpai-area rancher(s) named below. Also pursuant to that permit and this COI, the below-named Malpai-area rancher(s) shall enjoy the regulatory assurances described in Section 5.3 of the MBHCP. Such authorization and assurances, however, are subject to: (a) the carrying out of all conservation measures specified by the MBHCP and applicable to the activities described in the above-referenced COI; (b) observance of the incidental take described in Section 7.0 of the plan; and observance of the incidental take limits of the ITP. Provided that all terms and conditions of the MBHCP as described in (a), (b), and (c) above are satisfied, this COI and the authorizations and assurances thereto shall remain valid and in full force and effect for a period of **[*xxxx*]** years from the COI's effective date, and, upon its expiration, may be renewed at the request of the below-named rancher(s).

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Certificate of Inclusion to be in effect as of the date last signed below.

BY_____ Date_____
[Insert name]
Executive Director, Malpai Borderlands Group; or,

BY_____ Date_____
[Insert name]
MBG Authorized Designee

BY_____ Date_____
[**Insert name**]
Participating Malpai-area Rancher

Appendix D

Proposed Annual Report Format

MALPAI BORDERLAND GROUP
HCP ANNUAL REPORT
[*insert year*]

[*This is a proposed reporting format. Changes in report format are expected, as long as information required by the MBHCP is included in the report*]

The following is a summary of the activities conducted under the Malpai Borderland Groups Habitat Conservation Plan for the time period January 1 through December 31, [*insert year*]. This report is separated into three sections: Landscape monitoring, Covered Activities, Covered Species, and AM Issues. This report is meant to meet the reporting obligations under the Habitat Conservation Plan and its associated Incidental Take Permit.

I. Landscape Monitoring (Section 5.7.2.1):

Animas/MBG/RMRS Permanent Monitoring Plots:
[Provide a summary of the existing baseline condition of vegetation types that are within these monitoring plots and the existing trend. Include information about precipitation, climate, influences of conservation activities, and land use that would assist in interpreting the information provided. Discuss any areas where the trend is not stable or improving, potential causes, and possible ways to improve the current trend in these areas.]

NRCS Vegetation Transects:
[Provide a summary of the existing baseline condition of vegetation types that are covered by these transects and the existing trend. Include information about precipitation, climate, influences of conservation activities, and land use that would assist in interpreting the information provided. Discuss any areas where the trend is not stable or improving, potential causes, and possible ways to improve the current trend in these areas.]

Project Related Monitoring:
[Provide a summary of the existing baseline condition of vegetation types that are covered by any project related monitoring by the particular project (fire, erosion control, mechanical brush control, livestock management, fencing, water placement, etc. Include information about precipitation, climate, influences of conservation activities, and land use that would assist in interpreting the information provided. Discuss any areas where the trend is not stable or improving, potential causes, and possible ways to improve the current trend in these areas.]

II. Species Conservation Monitoring (Section 5.7.2.2):

SBNWR Monitoring:
[SBNWR will provide a summary of the water quality monitoring occurring on the Refuge. This might include information on substrate sediment levels, suspended solids, dissolved oxygen, water pH levels, and other water quality indicators. The SBNWR will report on any effects to aquatic or riparian habitats, species die-offs, or increases in the incidence of any diseases

observed on the SBNWR. The date and time of all occurrences will be reported to assist in evaluating the source of these occurrences and if they are related to MBHCP covered activities.]

MBG Monitoring:
[*For each covered species, any effects (positive and negative) to a species habitat. This should include where, when, what type of effects and their extent as it relates to covered activities. Also, any improvement in habitat from the covered activities should also be reported. In addition, any take of covered species that is observed should be reported in this section and referenced to the cover activity. Any scientific research or specific species monitoring should also be reported in this section. Issues with covered activities, conservation measures, and other issues for adaptive management should be referenced to other sections of the report where they are discussed in detail. Include any revisions of habitat or species occurrence maps in this section.*]

1. Grassland species group
   - Black-tail prairie dog
   - Burrowing owl
   - Northern aplomado falcon
   - White-sided jackrabbit

2. Aquatic species group
   - Yaqui chub
   - Yaqui topminnow
   - Yaqui catfish
   - Yaqui sucker
   - Mexican longfin dace
   - Mexican stoneroller
   - Beautiful shiner
   - Chiricahua leopard frog
   - Lowland Leopard frog
   - Northern Mexican gartersnake
   - Huachuca water umbel

3. Riparian species group
   - Western yellow-billed cuckoo
   - Western red bat

4. Montane species group
   - New Mexico ridge-nosed rattlesnake
   - Mexican spotted owl

[*AGFD and NMDGF have separate reporting requirements and this report may suffice the requirements of each state. If not attach their reports as an appendix to this report and just reference the appendix in the sections above.*]

Compliance Monitoring (Section 5.7.1)

[*For each covered activity, a brief summary of activities conducted, if any, including location and acreage of the activity, and possible impacts on covered species, including observed adverse effects. If project summaries already exist, then just list by name, date and reference project summary. Attach all project summaries to this report*.]

A. Grassland Improvement Activities:

1. Fire Management:
Summary of Acres:

	Acreage Treated		
Fire Management actions	Grassland	Riparian	Montane
Prescribed Fire			
Wildland Fire Use			
Wild Fire Suppression			

Aquatic communities are not burnable and acreage is not counted

Summary by Watershed:

	Acreage Burned					
Watershed Name	[*current year*]	[*current year -1*]	[*current year -2*]	[*current year -3*]	[*current year -4*]	5-year Total
San Simon Creek						
Silver Creek						
Black Draw						
Astin Spring						
Guadalupe Canyon						
Clanton Draw						
Cloverdale Canyon						
Animas Creek						
Playas Creek						

Fire Narratives – (include descriptions of each fire management activity that occurred or refer to attachments by date and fire name. A fire map for each action should be attached and referenced. A suggested format for each narrative is below.)

[*insert date of ignition*] – [*insert name of fire*]:
Describe the fire management actions related to each fire that occurred, include:

- Fire Management Officer and affiliation.
- Type of fire management - prescribed burn, wildland fire use, or suppression
- Vegetation types affected – based upon the HCP division,
- Total fire acreage and within each vegetation type,

- Information on acreage by watershed and burn intensity and severity.
- Prescription parameters, actual weather, and
- information on fire behavior.

A second paragraph should be included to discuss any issues with possible effects to covered species including:

- observed take,
- New locations, and
- any movement within or out of the fire.

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be taken to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

2. Erosion Control

Summary of Erosion Control Structures:

	Number of structures		Linear distance or acreage protected	
Watershed Name	[*current year*]	Cumulative Total	[*current year*]	Cumulative Total
San Simon Creek				
Silver Creek				
Black Draw				
Astin Spring				
Guadalupe Canyon				
Clanton Draw				
Cloverdale Canyon				
Animas Creek				
Playas Creek				

[Description of Erosion Control activities, if any: Location, acreage, habitats affected, and possible covered species affected, including observed take.]

Erosion Control Narratives – [include descriptions of each Erosion control project that occurred or refer to attachments by date and project name. A map for each project should be attached and referenced. A suggested format for each narrative is below.)

[*insert project name or ranch name*]: [*insert dates of treatment*].
Describe the erosion control project implemented by ranch or by funded project. Include a brief description of the erosion control structures installed or constructed. Include:

- the type and severity of the erosion problem address
- a general map of the area treated, but detailed maps of structures should be on file in the MBG's office,

- contractors name and affiliation.

A second paragraph should briefly address any issues with possible effects to covered species include:

- observed take,
- concerns, and
- new observations of covered species.

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. Also, MBG may wish to discuss any problem erosion areas or structures that need to be reevaluated for future work. A more complete discussion of these issues should be provided in section III of this report.

3. Mechanical Brush Control

Summary of Acres by Watershed:

	Acreage Treated					
Watershed Name		[*current year -1*]	[*current year -2*]	[*current year -3*]	[*current year -4*]	5-year Total
San Simon Creek						
Silver Creek						
Black Draw						
Astin Spring						
Guadalupe Canyon						
Clanton Draw						
Cloverdale Canyon						
Animas Creek						
Playas Creek						

Project Narratives – (include descriptions of each mechanical brush control projects that occurred or refer to attachments by date and project name. A project map for each action should be attached and referenced. A suggested format for each narrative is below.)

[*insert date*] – [*insert project name*]:

Describe the mechanical brush control projects that occurred, include:

- the name of the ranch,
- name and affiliation of any contractors,
- vegetation types affected by project, and
- acreage by watershed.

A second paragraph should be included to discuss any issues with possible affects to covered species including:

- observed take,
- movements out of or within treatment area, and
- any new locations for covered species

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

B. Ranch Management Activities

4. Linear Facilities

Project Narratives: – (include descriptions of each road, fence, pipeline or other linear projects that occurred under a COI or refer to attachments by date and project name. A project map for each action should be attached and referenced. A suggested format for each narrative is below.)

[*insert date*] – [*insert project name*]:
Describe the linear projects that occurred, include:

- the name of the ranch,
- name and affiliation of any contractors,
- type of facility constructed
- location
- vegetation types affected by project,
- acreage impacted by habitat type, and
- if impacts were temporary or permanent.

A second paragraph should be included to discuss any issues with possible affects to covered species including:

- survey results,
- observed take,
- movements out of or within construction area, and
- any new locations for covered species

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

5. Stock Tank Maintenance

Project Narratives: – (include descriptions of each road, fence, pipeline or other linear projects that occurred under a COI or refer to attachments by date and project name. A project map for each action should be attached and referenced. A suggested format for each narrative is below.)

[*insert date*] – [*insert project name*]:
Describe the linear projects that occurred, include:

- the name of the ranch,
- name and affiliation of any contractors,
- type of facility constructed

- location
- vegetation types affected by project,
- acreage impacted by habitat type, and
- if impacts were temporary or permanent.

A second paragraph should be included to discuss any issues with possible affects to covered species including:

- survey results,
- observed take,
- movements out of or within construction area, and
- any new locations for covered species

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

Stocktank Narratives – (include descriptions of each enrolled stocktank for which management or facilities were altered for conservation, any projects that were associated with improvements in water quantity or persistence that impacts covered species, and any stocktank maintenance projects under a COI or refer to attachments by date and project name. A project map for each action should be attached and referenced. A suggested format for each narrative is below.)

[*insert date*] – [*insert project name*]:
Describe the livestock tank project that occurred, include:

- the name of the ranch,
- name and affiliation of any contractors,
- type of activity
- location
- vegetation types affected by project,
- acreage impacted by habitat type, and
- if impacts were temporary or permanent.

A second paragraph should be included to discuss any issues with possible affects to covered species including:

- survey results,
- observed take,
- movements out of or within construction area, and
- any new locations for covered species

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

6. Livestock Management

Management Narratives – (include descriptions of the livestock management and the acres involved. Briefly describe the management proposed and implemented. Discuss any deviation and the results of these deviations on listed species. A suggested format for each narrative is below.)

[*insert date*] – [*insert project name*]:
Describe the livestock tank project that occurred, include:

- the name of the ranch,
- management proposed,
- deviation form proposed management,
- acres included in the COI, and
- results of actual management on cover species or vegetation types on the ranch.

A second paragraph should be included to discuss any issues with possible affects to covered species including:

- survey results,
- observed take,
- movements out of or within construction area, and
- any new locations for covered species

A third paragraph should be included to briefly discuss any issues that resulted in HCP terms and conditions not being met, discussion of why, and what future actions can be to avoid such situations. A more complete discussion of these issues should be provided in section III of this report.

III. Potential Adaptive Management Issues

[A brief discussion of any issues that may have come up in the course of implementing covered activities that may warrant discussion among the Technical Review Team for Adaptive Management decision. This would include any recommendations from the Technical Advisory Committee, if any issues are raised and discussed.]

A. Covered Activities:

B. Conservation Activities:

C. Covered Species:

D. Recommendations: