ENVIRONMENTAL ASSESSMENT
SHEEP GRAZING AUTHORIZATION
CA-680-07-18
Allotment Name: Shadow Mountain

BARSTOW FIELD OFFICE
MARCH 2007

TABLE OF CONTENTS

G. Flood Plains
H. Vegetation / Invasive, Non-native Species
I. Recreation
J. Social and Economic Values
K. Soils
L. Waste, Hazardous or Solid
M. Water Quality, Surface and Ground Water
N. Wetland / Riparian Zones
O. Wild and Scenic Rivers
P. Wilderness
Q. Wild Horses and Burros
R. Wildlife

Chapter 4. Cumulative Impacts

a. Summary of West Mojave Plan Cumulative Analysis
b. Past, Present, and Reasonably Foreseeable Actions Affecting the Shadow Mountain Grazing Allotment
c. Resource-Specific Cumulative Assessment

Chapter 5. Consultation and Coordination

Map 1 - Entire Shadow Mountain Grazing Allotment
Map 2 - Entire Allotment; Grazed and Ungrazed Portions
Map 3 – Enlarged Grazed Portion
Map 4 - Vegetation Map

Attachment 1 – The Supplemental Programmatic Agreement Between the Bureau of Land Management and the California State Historic Preservation Office, 2004 Grazing Amendment, Supplemental Procedures for Livestock Grazing Permit/Lease Renewal

CHAPTER 1: INTRODUCTION

A. Summary

The Bureau of Land Management (BLM) proposes to issue a 10-year lease to authorize ephemeral sheep grazing on the Shadow Mountain Allotment in accordance with laws and policy described in the Purpose and Need section below. The Shadow Mountain ephemeral sheep allotment is located approximately 25 miles southwest of Barstow, California, west of SR395. The following is a summary of the current authorization:

Public land acres in allotment: 51,474
Kind of livestock: sheep
Ephemeral or perennial: ephemeral
Plan Area: West Mojave
Current authorized use: not applicable for ephemeral allotments
Acres of *DWMA: 3,323
Identified for Voluntary Relinquishment: Yes
Request for Grazing Lease Renewal Received: Yes

* Desert Wildlife Management Area(s) (DWMA) are Areas of Critical Environmental Concern (ACEC) designated in the West Mojave Plan Amendment for the conservation of the desert tortoise, and generally correspond to critical habitat boundaries.

B. Background

The grazing lease for the Shadow Mountain Allotment (see Map 1) expired at the end of the 1999 grazing year (February 29, 2000). On November, 29, 1999, Congress included language in the 2000 Appropriations legislation (P.L 106-113, Sec. 123) authorizing grazing to continue on expiring leases with their same terms and conditions, under the auspices of the Administrative Procedures Act (APA).

On January 29, 2001 the BLM and a consortium of environmental groups entered into a stipulated agreement effective immediately, herein known as the "Settlement Agreement" for the management of livestock grazing. The Settlement Agreement prescribed areas in the Shadow Mountain Allotment to be excluded from sheep grazing (see Map 2). As amended April 25, 2002, the Settlement Agreement stipulations remained in effect until the Record of Decision (ROD) for the West Mojave Plan Amendment (WMP) to the CDCA Plan was signed (March 13, 2006).

Subsequently on November 10, 2003, Congress included language in the 2004 Appropriations legislation (P.L. 108-108, Sec 325) to renew grazing leases under the auspices of the Taylor Grazing Act with the terms and conditions of expired leases through FY 2008 or until leases are processed, whichever comes first. Public Law 108-108 requires compliance with all applicable laws and regulations, which include the National Environmental Policy Act of 1969 (NEPA), and the Endangered Species Act of 1973, as

amended (ESA). Upon completion of processing, the permit may be cancelled, suspended, or modified, in whole or in part to meet the requirements of applicable laws and regulations.

C. Tiering to Existing Land Use Plan/EIS

This environmental assessment (EA) is tiered to the approved West Mojave Plan (WMP) of March 2006 and final environmental impact statement (FEIS) of January 2005, and provides site-specific analysis at the allotment level. Tiering helps focus the EA more sharply on the important issues related to grazing on the allotment while relying on WMP analysis for background. Analysis of environmental issues considered and addressed in WMP is incorporated by reference. The site-specific issues analyzed for this allotment, as well as the issues that are incorporated by reference but will not be analyzed in detail, are identified in Chapter 3 of the EA. A summary of the WMP analysis tiered in this EA is as follows:

1. WMP is an amendment to the California Desert Conservation Area (CDCA) Plan of 1980. The WMP was developed expressly to address special status plant and animal species and to establish conservation strategies for those species within the multiple use context required for the CDCA by section 601 of the Federal Land Policy and Management Act of 1976 (FLPMA).

   As part of the WMP conservation strategy, BLM determined which public lands would be available or unavailable for livestock grazing and any additional terms and conditions for continued grazing. These measures include the following (WMP, pp. 2-130 to 2-136):
   - eliminated ephemeral allotments located entirely within desert tortoise DWMA;
   - modified allotment boundaries to reflect elimination of most DWMA acreage (LG-27);
   - established programmatic management prescriptions including regional land health standards and guidelines for grazing management;
   - identified restrictions on sheep grazing within high quality habitat of the federally threatened desert tortoise outside of DWMA;
   - modified monitoring requirements for allotments in Mohave Ground Squirrel habitat;
   - established specific management prescriptions for perennial and perennial/ephemeral grazing allotments located within Desert Wildlife Management Areas (DWMAs) or in Mohave Ground Squirrel habitat, such as an ephemeral forage production threshold of 350 pounds per acre;

   One of these modifications eliminated sheep grazing in approximately 33,803 acres of DWMA on the Shadow Mountain allotment. All of these measures were adopted in March, 2006, when the WMP Record of Decision was signed. This EA analyzes the specific application of the conservation strategy adopted by the WMP and considers alternative means to achieve the purpose and need on this allotment.

2. WMP also considered a range of alternatives for the public land livestock grazing program on the approximately 3.2 million acres of public lands in the WMP planning area. This EA analyzes a range of alternatives for grazing on the Shadow Mountain

allotment including an alternative consistent with WMP—the proposed action, as well as an alternative that is a continuation of current management ("no action" alternative). A no grazing alternative addresses elimination of grazing, through (a) regulations; or (b) voluntary relinquishment, and subsequent designation of the allotment as unavailable for grazing.

3. Impacts of livestock grazing are addressed at a regional level in WMP. Analysis addressed the impacts of livestock grazing on a wide range of resource topics, including impacts to air quality, soil, vegetation, wildlife, cultural resources, wilderness, socio-economic, and cumulative impacts. The regional analysis is incorporated by reference (WMP FEIS pages 4-4 thru 4-282); general discussion of these impacts is repeated, as appropriate. This tiered EA analysis focuses on the specific environmental issues associated with the Shadow Mountain allotment and the areas where sheep congregate on the allotment, as well as habitat of special status species within the allotment. Discussion of the specific topics analyzed in this EA, as well as other resource topics addressed regionally (but excluded from further analysis in the EA) is contained in Chapter 3.

4. WMP balances conservation with public use, occupancy, and development on a regional level, consistent with FLPMA (1976). For example, Areas of Critical Environmental Concern (ACECs) and DWMAs are established or modified; routes of travel on public lands designated as open, closed or limited, and other management prescriptions are provided to guide multiple use management. In the WMP, BLM proposes specific lease terms and conditions to ensure that an appropriate multiple use balance is maintained on this allotment, while providing for resource conservation within the context of the CDCA Plan as amended by WMP and the scope of the Biological Opinion for the California Desert Conservation Area (West Mojave Plan) (1-8-03-F-58, January 9, 2006).

D. Purpose and Need

The purpose of the EA is to complete a site-specific analysis of grazing alternatives on the Shadow Mountain Allotment which provides information as required by the Bureau of Land Management implementing regulations for the National Environmental Policy Act, Taylor Grazing Act, Public Rangelands Improvement Act, Federal Land Policy and Management Act, and Public Law 106-113 section 325 in order to determine whether to authorize grazing within this allotment and determine whether changes are necessary to current management of the allotment to assist in the maintenance or improvement of resource conditions including rangeland health.

In addition, BLM may use its authority to close areas of the allotment to grazing use or take other measures to protect resources as needed. Therefore, issuance of a "fully processed" grazing lease with such applicable terms and conditions, is necessary to manage the public's use, occupancy and development of the public lands and prevent unnecessary or undue degradation of the lands (per 43 USC 1732[b]).

The need for the EA is to process an application requesting renewal of the Shadow Mountain sheep allotment grazing lease. A renewal of grazing under this lease must be in compliance

with CDCA Plan, and specifically in compliance with the actions prescribed in the West Mojave Plan, dated March 13, 2006, the associated Biological Opinion of the California Desert Conservation Area (West Mojave Plan), dated January 9, 2006, and the newly proposed Regional Rangeland Health Standards.

E. Plan Conformance

The proposed action is subject to the California Desert Conservation Area Plan (CDCA Plan), as amended. The decisions of the CDCA plan that specifically pertain to this proposed action include the CDCA Plan Grazing Element as Amended by the West Mojave (WMP). The decisions of the WMP plan that specifically pertain to this proposed action include:

> *BLM will continue to administer existing authorizations and uses and will consider future requests consistent with this ROD. Any new authorizations or use of public land within the West Mojave Desert area must be in conformance with the West Mojave Plan and subject to site-specific analysis. Such authorization and use would be subject to administrative review at the time of issuance of a final BLM decision regarding the authorization or use.*
>
> *This ROD approves the Regional Public Land Health Standards and Guidelines to be consistent with the other regional amendments of the CDCA Plan and provide uniform management with respect to grazing, protection of riparian areas, fragile soils and water quality. The regional standards must be submitted to the Secretary of Interior for final approval.*

F. Voluntary Relinquishment

The WMP identified the Shadow Mountain Allotment for voluntarily relinquishment. Voluntary relinquishment of the grazing lease for this allotment, in combination with designation of the public lands as unavailable for livestock grazing, is a method for achieving conservation goals for special status species adopted by the WMP. BLM's decision to identify this allotment for voluntary relinquishment in WMP and subsequent designation of the public lands as not available for grazing was based on criteria set forth in the BLM land use planning handbook, H-1601-1, Appendix C.

Voluntary relinquishment and designation of public lands as unavailable for grazing would only occur if BLM determines that the action will result in direct conservation benefits for special status species as provided in the WMP. A grazing decision on the voluntary relinquishment request, if and when received, will be issued based on the site-specific analysis within this EA and other required procedures of BLM's 4160 regulations. Upon issuance of the final grazing decision, BLM will, without further analysis or notice: not reissue the lease; remove the allotment designation; assume any and all private interest in range improvements located on public lands; and designate the land within the allotment as unavailable for livestock grazing. A separate plan amendment or revision would not be required.

G. Consultation, Cooperation, and Coordination

In May 2003, a draft of WMP was made available for review and comment to all lessees and interested publics, including Native American tribal governments.

On September 30, 2004 BFO issued Proposed Grazing Decisions to the grazing lessees and all interested publics. Action on final decisions was deferred until after release of the WMP and FEIS. These decisions were never finalized and will be vacated as part of this grazing lease renewal action.

In January 2005 the FEIS for WMP was issued to all lessees and interested publics for their review and comment.

On July 12, 2006 BFO issued a letter to the lessee informing him of the status of the EA and anticipated timeline for completion of the EA decision record, issuance of the proposed and final decision, and a 10-year grazing lease, if approved.

H. Relationship to Statutes, Regulations, and Plans

A site-specific evaluation of the proposed grazing lease renewal is required by BLM implementing regulations for NEPA, FLPMA, grazing regulations found at 43 CFR 4100 et seq. and the WMP ROD. Various other environmental laws are pertinent to analysis of critical elements of the human environment as defined in Council on Environmental Quality and Department of Interior regulations and policies, and are addressed within this EA in the context of the analysis of specific elements.

1. State Historic Preservation Office Protocol Amendment for Renewal of Grazing Leases

In August 2004, the State Director, California Bureau of Land Management, and the California State Historic Preservation Officer (SHPO) addressed the issue of the National Historic Preservation Act of 1966, as amended (NHPA) Section 106 compliance procedures for processing grazing permit lease renewals for livestock as defined in 43 CFR 4100.0-5. The State Director and the SHPO amended the 2004 State Protocol Agreement between California Bureau of Land Management and the California SHPO with the 2004 Grazing Amendment, Supplemental Procedures for Livestock Grazing Permit/Lease Renewal. This amendment allows for the renewal of existing grazing permits prior to completing all NHPA compliance needs as long as the 2004 State Protocol direction, the BLM 8100 Series Manual Guidelines, and specific amendment direction for planning, inventory methodology, tribal and interested party consultation, evaluation, effect, treatment, and monitoring stipulations are followed (see Attachment 1).

The lessee would comply with any future standard protective measures that may be developed for the protection of cultural resources upon further allotment inventory, based on site evaluation and the determination of significance.

2. USFWS Biological Opinions on the California Desert Conservation Area Plan

BLM would ensure compliance with the incidental take statement of the 2006 biological opinion on the WMP. BLM would immediately report to the U.S. Fish and Wildlife Service (USFWS) Ventura Fish and Wildlife Office any injuries or mortality to desert tortoises as a result of grazing. The BLM and USFWS would review the circumstances to determine if any additional protective measures are required. The BLM would compile any instances of take of the desert tortoise due to grazing activities and report annually to the USFWS. If the annual level of take reaches 5 desert tortoises for all the allotments in the WMP area, BLM would meet with USFWS to determine if re-initiation of consultation is necessary on the grazing aspect of the plan.

3. Grazing Prescriptions Contained in the WMP Addressed to BLM

a. If the allotment is not voluntarily relinquished within 24 months of adoption of the plan (i.e., not later than March 2008), it would be scheduled for public land health assessment within 18 months (i.e., not later than September 2009).

b. Within 12 months after completing the health assessment for the grazed portion of the allotment, BLM would use field and office information to make a health determination, which would serve as baseline information to develop corrective management strategies. Where a determination indicates that standards are not being achieved, changes in grazing management would be implemented that may result in new terms and conditions to achieve standards and conform to guidelines. Although not reiterated below, this same regulatory process would be required following specified time-frames given for the health assessments that follow.

c. Per livestock grazing prescription 27 (pages 2-132 and 2-133 of WMP) boundaries of the allotment within the Fremont-Kramer DWMA would be modified to reflect the portions of the DWMA that would no longer be available to sheep grazing. Consistent with the Biological Opinion for Ephemeral Sheep Grazing in the California Desert District (1-8-94-F-16, March 15, 1994), the portion of the DWMA within the allotment west of State Highway 395 and south of Shadow Mountain Road would remain available for sheep grazing (see Map 3).

d. Additionally, turnout of sheep on the remaining DWMA portion of the allotment would not occur until 350 pounds (air dry) per acre of ephemeral forage is available; final day of sheep use would be June 1; and loading and watering would only be allowed in previously disturbed areas. For the grazed portion of the allotment outside the DWMA, turnout of sheep would not occur until 230 pounds per acre of ephemeral forage is available.

e. Finally, a portion of the Shadow Mountain Allotment within the DWMA that is still available for grazing has been identified as containing suitable habitat for the Mohave ground squirrel. This area is within the Mohave Ground Squirrel Conservation Area (MGSCA) created under WMP. Accordingly, grazing prescriptions contained in WMP

for ephemeral grazing in the MGSCA would be implemented on this portion of the allotment, as follows (from pages 2-131 and 2-132 of WMP, livestock grazing prescription 24):

> *To avoid competition between sheep and the Mohave ground squirrel once the ephemeral forage is no longer available and both species rely on perennial forage, all sheep would be removed from the Mohave Ground Squirrel Conservation Area when ephemeral plants are no longer the primary forage being utilized by sheep.*

Based on research conducted by Dr. Phil Leitner in the Coso region of the West Mojave, key species have been identified as important to the foraging ecology of the Mohave ground squirrel. These are listed in Table 1 that follows.

Table 1. Key Perennial Plant Species Important To Mohave Ground Squirrel

COMMON NAME	*SCIENTIFIC NAME*
Winterfat	*Krascheninnikovia lanata*
Spiny Hopsage	*Grayia spinosa*
Saltbush	*Atriplex spp.*

Sheep grazing would be removed from those portions of the Mohave Ground Squirrel Conservation Area when the species-specific, maximum utilization levels set forth in Table 2 are met. The third column contains the percentage of the year's perennial growth that may be consumed before sheep would be removed from the allotment or portions thereof.

Table 2. Maximum Utilization Levels For Sheep Grazing In The Mohave Ground Squirrel Conservation Area

COMMON NAME	*SCIENTIFIC NAME*	*MAXIMUM UTILIZATION LEVELS*
Winterfat	*Krascheninnikovia lanata*	*30%*
Spiny hopsage	*Grayia spinosa*	*25%*
Four-winged saltbush	*Atriplex canescens*	*25%*
Shadscale	*Atriplex confertifolia*	*25%*
Allscale	*Atriplex polycarpa*	*25%*

To facilitate adaptive management, if future research shows that key species different from those listed above are important to the Mohave ground squirrel, those additional species would be added to the monitoring program. Similarly, if a key species identified above is not considered important to the Mohave ground squirrel in another part of its range (i.e. outside the Coso region), that species may be dropped from the list.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

This chapter discusses three alternatives including the proposed action, no action and no grazing. Monitoring requirements, mitigation measures, and grazing terms and conditions developed in the resolution of issues are incorporated into the proposed action to minimize potential impacts to resources while continuing to provide forage for livestock grazing on portions of the allotment not eliminated by the WMP.

A. Proposed Action –West Mojave Plan

The proposed action is issuance of a 10-year fully processed lease in conformance with the CDCA Plan and WMP as described in parts 1-7 of this section. The intent of the proposed action is to combine environmental protection with continued use of the allotment for ephemeral sheep grazing.

1. Public Lands Available to Sheep Grazing

The proposed action would authorize sheep grazing on approximately 16,461 acres of public land remaining in the revised Shadow Mountain allotment (Map 2). This is the portion of the original allotment located south of Shadow Mountain Road, of which 3,323 acres are within the Fremont-Kramer DWMA, and were specifically authorized for sheep grazing by the WMP.

This alternative eliminates grazing on approximately 35,013 public land acres in the Shadow Mountain allotment north of Shadow Mountain Road, including 33,803 acres within the Fremont-Kramer DWMA, consistent with the conservation strategy adopted by the WMP (2.2.5.7 (LG-27)). An additional 1,210 acres of public land would be eliminated that is adjacent to but outside of the Fremont-Kramer DWMA and east of US 395 (Map 2).

This eliminated 1,210-acre area outside of DWMA that is not proposed for grazing is geographically separated from the remaining areas of potential grazing use in the allotment and has not been used by the operator in the last 15 years. There would additional costs (e.g., fence construction and maintenance) associated with placing sheep there. Due to these reasons and the proximity of this area to Silver Lakes and the Mojave River, the lessee has indicated to BLM that he does not intend to place sheep there and concurred with BLM that this area is too small to be manageable for his purposes.

2. Livestock Numbers and Season of Use

Ephemeral sheep grazing leases managed under the BLM do not have specific "livestock numbers" attached to them. Yearly authorizations to graze may be issued, and the decision to permit grazing is based on the number of "bands" or flocks of sheep an operator wishes to graze and the ephemeral production calculated for that grazing year (ephemeral season).

In Barstow Field Office (BFO), a band of sheep is generally 500 to 1000 ewe-lamb pairs (800 ewe-lamb pairs on average). An AUM is an "animal unit month" and is calculated on

the amount of forage a sheep consumes in a month. Lambs are generally not counted as a separate AUM. Cattle set the standard at 1000 pounds of forage per month and sheep are calculated to consume approximately 200 pounds of forage per month. Therefore, there are five sheep per AUM. The season of use in the BFO has typically been from 3/15 to 5/31 in years when there is enough ephemeral forage production to sustain ephemeral sheep grazing. Table 3 gives an indication of the intensity of grazing use by sheep on the Shadow Mountain allotment over the course of 14 years:

Table 3. Stocking Rates for Shadow Mountain Ephemeral Sheep Allotment[1]

	No. of Years Used, 1991-2005	Range of No. of Bands, 1991-2005	Average No. of Bands/Yr. of Use	Range of No. of AUMs 1991-2005	Average No. of AUMs/Yrs of Use
Shadow Mountain	8	2 to 4	2	234 to 958	441

[1] These numbers are adjusted to reflect historic stocking rates only on the portions of the allotment that would still be available for grazing under this alternative.

3. Livestock Management

The lessee and BLM make visual estimates of forage conditions starting in late-January or early-February. If follow-up vegetation clippings by BLM confirm that adequate forage production is available and a grazing application has been received from the lessee, BLM would make a determination of stocking rates that would be allowed in the given ephemeral season. Adequate forage production under the proposed action would be 230 lbs air-dry per acre outside of the MGSCA, or 350 lbs per acre on the MGSCA portion of the allotment. In years that the Field Manager authorizes sheep grazing on the Shadow Mountain Allotment, the lessee makes arrangements to truck the sheep from the Bakersfield area.

On the first day of grazing, sheep would be trucked to the northern end of the authorized area of use, somewhere along Shadow Mountain Road (see Map 1). The exact location on Shadow Mountain Road will vary from year to year. Typically 4 large semi-trucks are used to transport each band. Bands are unloaded and are allowed to "settle down" for an hour or so at the unloading spot, prior to initiating grazing. During this period, trucked water is provided to the sheep if conditions warrant. Each band is controlled by a herder and his dog(s) at all times. The lessee would provide each herder with a small camp trailer that a camp tender moves periodically to be close to the herder and his band.

It is the job of each camp tender (who is typically the foreman overseeing multiple herders and their bands) to move the herder's camp, provide food and supplies for the herder and his dog, and drive the water truck later in the season, when supplemental water is needed by the sheep. The camp tender normally stays in a more permanent camp where the two vehicles are also staged. All vehicular travel is restricted to designated open or other authorized routes. Each of the camps displays a BLM permit and the herders carry a copy of the authorization with them as they attend to the sheep.

The herders guide the sheep through the area of designated use, ensuring the band stays together and under control. The sheep customarily graze in a meandering pattern through the use area and are always in a loosely aggregated flock of about 800 ewe-lamb pairs. While the sheep are grazing, the length of time the individual plant in each of the different plant communities is subjected to grazing is usually less than one hour, as the sheep move through the country.

Each area is not returned to during the remainder of that grazing year, ensuring forage is only grazed once per season (the "one-pass" rule, from BO 1-8-03-F-58), adopted in the West Mojave Plan (Appendix O, Terms and Conditions). Each night, the band (flock) is gathered in a tight group for bedding down. Towards the end of the season when the forage starts to dry up and the sheep can not acquire their water needs through the vegetation, the band (flock) is gathered in a tighter aggregation along routes for watering. All sheep grazing is subject to the grazing stipulations contained in the WMP (see Part 7).

At the end of each authorized season, the sheep operator submits a map to BLM showing loading, unloading, and movements of sheep bands throughout the allotment during the season. At that time, BLM calculates actual use and then bills the operator for his season's grazing.

To minimize potential conflicts between sheep and OHV activities in the El Mirage OHV Open Area, the herders limit grazing on the Open Area to the work week. On the weekends, the herder either moves his sheep out of the Open Area entirely, or grazes them high in the hills (Shadow Mountain, etc.), away from the more heavily used recreational areas closer to the dry lake bed.

To facilitate protection of DWMA and the MGS Conservation Area, and implement appropriate management measures for MGS dictated by forage availability, the boundary between portions of the revised allotment within these special areas and outside of them would be marked with flagging, as appropriate.

4. Range Improvements

There are no range improvements on this allotment. The sheep operator uses trucks to haul water, to transport mobile water troughs, and to set up and tear down temporary camps and collapsible corrals used to hold the sheep when they are sheared.

5. Monitoring

In years when there is enough winter moisture to consider spring grazing in the desert, ephemeral forage production studies would be completed. These ephemeral forage production studies are performed using the Comparative Yield Method (Interagency Technical Reference 1734-4, pp.116-122). Then weekly, for each active sheep operation, the bands would be checked for their location, and the forage production would be estimated to ensure minimum production thresholds are maintained.

Within the MGSCA, Mohave ground squirrel monitoring measures and sheep removal thresholds based on use of specific forage species (see Chapter 1, Part H.3.e) would be included.

6. Measures to Maintain or Achieve Standards

To date, achievement of Fallback Standards and Guidelines for Livestock Grazing has not been assessed for the Shadow Mountain ephemeral sheep grazing allotment. Although the Rangeland Health Assessment has not been completed for this allotment, the majority of the allotment that would be available for sheep grazing is located within the El Mirage Cooperative Management Area (OHV Open Area). The remaining portion available for ephemeral grazing is also subject to substantial OHV and related impacts from urban growth and the adjacent OHV Open area. If a future rangeland health determination concludes that a fallback standard is not being achieved, ephemeral sheep grazing would not be considered the primary causal reason, because of these other ongoing uses and because sheep grazing does not utilize natural water sources.

If the allotment is not voluntarily relinquished within 24 months of adoption of the plan (i.e., not later than March 2008), the allotment would be scheduled for public land health assessment within 18 months (not later than September 2009). BLM would assess the area south of Shadow Mountain Road in this timeframe since the proposed action eliminates sheep grazing from other portions of the allotment. Fallback Standards that apply to this allotment are as follows:

1. Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and landform; and
2. Healthy productive and diverse populations of native species exist and are maintained;

The assessment of indicators of rangeland health information is a qualitative/quantitative method. Data is gathered by an interdisciplinary team who take observations and direct measurements of various indicators to determine the health of rangelands and the achievement of fallback or regional standards of rangeland health. The assessment would be conducted following the procedures in the newly released "Interpreting Indicators of Rangeland Health (Tech Reference 1734-6), Version 4 (2005)" or latest update thereto.

The WMP did not change the guidelines for grazing management for this allotment, although subsequent assessments may result in additional guidelines. Under the WMP, the following measures would b implemented to protect rangeland health:

7. Proposed Grazing Stipulations

Per section 2.2.5.5.1 of the West Mojave Plan (WMP), the proposed action includes the terms and conditions for sheep grazing initially identified in the 1994 Biological Opinion (Ventura USFWS, 1-8-94-F-16) and incorporated into the 2006 Biological Opinion (BO) and associated Incidental Take Statement for the California Desert Conservation Area, West Mojave Plan (Ventura USFWS, 1-8-03-F-58) for conservation of desert tortoise. In addition,

the West Mojave Plan implements additional terms and conditions for sheep grazing in DWMA and in the Mojave Ground Squirrel Conservation Area (MGSCA). All of these would be made binding stipulations of the sheep operator's lease, and are listed below.

a. Terms and Conditions – WMP DWMA and MGSCA

Sheep grazing use would be authorized in DWMA portions of the Shadow Mountains Allotments under the following additional conditions in the WMP, (LG-27, p. 2-132) as well as general conditions in the WMP (see b):

1. Turnout of sheep would not occur until 350 pounds (air-dry-weight) per acre of ephemeral forage is available. The lessee would be required to remove sheep from an area of the allotment if ephemeral forage production falls below 350 pounds per acre.
2. The last day of sheep use would be June 1.
3. Watering and loading and unloading would occur at established previously disturbed sites.

Sheep grazing use would be authorized in MGSCA portions of the Shadow Mountains Allotments under the following additional conditions in the WMP, (LG-24, p. 2-131) as well as general conditions in the WMP (see b):

4. To avoid competition between sheep and the Mohave ground squirrel, once the ephemeral forage is no longer available and both species rely on perennial forage, all sheep would be removed from the Mohave Ground Squirrel Conservation Area when ephemeral plants are no longer the primary forage being utilized by sheep.

b. Other Terms and Conditions – WMP

5. Sites where sheep are bedded and watered shall be changed daily. Bedding or watering sites are to be at least ¼ mile from any previous site. Sheep are to be watered on or adjacent to existing dirt roads (within 25 feet) or in existing disturbed or open areas cleared of shrubs from past uses.
6. No grazing is authorized except as approved through grazing application. All herders shall have a copy of the current use authorization in their possession and a copy posted at the herder's camp site. When sheep are trailed outside of the allotment, all herders are required to have a copy of the trailing authorization in their possession.
7. When lambs are with ewes, a band of sheep is limited to no larger than 1,000 adult sheep with an approximately equal number of lambs.
8. Sheep are to be widely scattered or in a loose pattern when grazing through an area, and grazing sheep are to graze/move through an area only once during the grazing season.
9. Stopping and parking of vehicles, and vehicular camping along routes of travel, is limited to within 50 feet of all designated open or authorized routes, except in the OHV Open Area (El Mirage Cooperative Management Area, as identified in the CDCA Plan.

10. A herder's camp site or camp trailer shall not remain in the same location for more than seven days. Establishment of a camp shall be at least one mile from any previous camp location. To eliminate or reduce scavenging of trash by desert tortoise predators, trash and garbage shall be removed from each camp site each day and no trash or garbage shall be buried at the camp site. All sheep carcasses within 300 feet of a road shall be removed and disposed of in an appropriate manner as soon as discovered and/or livestock operator is notified. Cross-country vehicle travel to gather sheep carcasses must have prior approval from the BLM except in designated Open Areas for OHV use.
11. Within 15 days of the close of the authorized grazing period, the lessee shall submit to the BLM Barstow Field Office a BLM-supplied map to delineate areas of daily grazing use within the allotment.
12. Turnout of sheep in all allotments would not occur until 230 pounds (air-dry weight) per acre of ephemeral forage is available. The lessee would be required to remove sheep from the area or the entire allotment if production falls below 230 pounds per acre. This prescription is not applicable to those allotments that authorize sheep use of perennial forage (measure LG-20, p. 2-130).
13. Turnout of sheep in all allotments would not occur until 230 pounds (air-dry weight) per acre of ephemeral forage is available. The lessee would be required to remove sheep from the area or the entire allotment if production falls below 230 pounds per acre. This prescription is not applicable to those allotments that authorize sheep use of perennial forage (measure LG-20, p. 2-130).
14. Turnout of sheep in all allotments would not occur until 230 pounds (air-dry weight) per acre of ephemeral forage is available. The lessee would be required to remove sheep from the area or the entire allotment if production falls below 230 pounds per acre. This prescription is not applicable to those allotments that authorize sheep use of perennial forage (measure LG-20, p. 2-130).
15. Following the removal of lambs, when multiple sheep bands are typically combined, there would be no more than 1600 adult sheep in a combined herd (measure LG-21, p. 2-130).

c. Other Proposed Stipulations - BFO

16. Submission of actual use reports are to be received by the Barstow Field Office within 15 days after the end of the grazing authorization. Actual use reports are required to provide detailed location and number of livestock.
17. The terms and conditions of this lease would be modified if additional information derived from Rangeland Health Assessments indicates that revision is necessary to conform to 43 CFR 4180.2.
18. The payment of grazing fees shall be received within 15 days of the due date or the lessee will be charged a late fee assessment of $25 or 10% of the grazing bill, whichever is greater, not to exceed $250. Failure to make payment within 30 days of the due date may result in trespass action.

B. No Action Alternative (Current Management under the Interim Measures)

Under this alternative, BLM would also renew the allotment grazing lease for a period of 10 years and would permit grazing on the allotment under the existing terms and conditions of the stipulated agreement interim measures. The interim agreement implements the terms and conditions of the 1994 sheep grazing BO.

1. Public Lands Available to Sheep Grazing

As with the proposed action, grazing would be permitted on the 16,461 acres of public lands in the allotment south of Shadow Mountain Road (Map 2).

2. Livestock Numbers and Season of Use

Livestock numbers and season of use would be the same as the proposed action.

3. Livestock Management

Livestock management on a day-to-day basis would be similar to the proposed action. The differences would be twofold. Mohave ground squirrel monitoring measures and sheep removal thresholds based on use of specific forage species (see Chapter 1, Part H.3 (e)) would not be included under this alternative.

4. Range Improvements

There are no range improvements on this allotment.

5. Monitoring

Monitoring under the no action alternative would be the same as the proposed action.

6. Measures to Maintain or Achieve Standards

Under this alternative, measures to maintain or achieve standards would be the same as the proposed action. Rangeland health assessment of this allotment would be carried out on the same schedule as the proposed action and the same Fallback Standards would be enforced.

7. No Action Grazing Stipulations

Terms and conditions identified in the WMP for DWMA and MGSCA would not apply. Other terms and conditions of the WMP, taken from the 1994 sheep grazing BO, and those imposed by the BFO would be the same as the proposed action. They would be made binding stipulations of the sheep operator's lease.

1. The lessee shall comply with the grazing stipulations derived from the 1994 biological opinion (1-8-94-F-16) contained under A.7.b.

2. Submission of actual use reports are to be received by the Barstow Field Office within 15 days after the end of the grazing authorization. Actual use reports are required to provide detailed location and number of livestock.
3. The terms and conditions of this lease would be modified if additional information derived from Rangeland Health Assessments indicates that revision is necessary to conform to 43 CFR 4180.2.
4. The payment of grazing fees shall be received within 15 days of the due date or the lessee will be charged a late fee assessment of $25 or 10% of the grazing bill, whichever is greater, not to exceed $250. Failure to make payment within 30 days of the due date may result in trespass action.

C. No Grazing Alternative

This alternative would not authorize grazing on the Shadow Mountain sheep allotment.

D. Alternatives Considered and Dismissed from Further Analysis

Renewal of the operator's lease within the original allotment area in the CDCA Plan of 1980 and conditions approved in the 1994 Sheep BO was considered and dismissed from further analysis as not meeting the purpose and need. The West Mojave Plan FEIS evaluated a full range of alternatives and established substantial parameters on lease renewals for sheep grazing to protect listed species based on the analysis of those alternatives and the best available scientific data. Elimination of one of the most significant of those parameters by allowing grazing on 33,803 acres of critical habitat/DWMA prior to substantial change in condition of listed species would require substantial new information to support a new plan amendment.

Renewal of the lease as modified by the West Mojave Plan, without excluding 1,210 acres of non-DWMA acreage was considered and dismissed from analysis. The small benefits to the operator of having this small area available for use are more than offset by the additional costs to the operator that would be necessary to prevent impacts to adjacent DWMA and riparian lands.

CHAPTER 3: ENVIRONMENTAL ANALYSIS

This chapter addresses, by affected resource, the affected environment, environmental consequences, and consultation sections of the EA, including all critical elements (H-1790-1, Appendix 5, BLM NEPA Handbook). Analysis in this chapter focuses on the proposed grazing action and alternatives for the Shadow Mountain Grazing Allotment, and in particular on those areas where sheep turnout may be allowed, west of U.S. Highway 395 and south of Shadow Mountain Road, in rural San Bernardino County (see Maps 2 and 3).

Analysis also provides comparison between effects in the OHV Open Area and the public lands outside the Open Area that are grazed. The boundary of Desert Wildlife Management Areas (DWMA) for desert tortoise and Mohave Ground Squirrel (MGS) Conservation Area coincides closely within the Shadow Mountain Sheep Allotment that is still potentially available for use (since the designation of critical habitat in 1994). Depending on resource evaluated, DWMA and MGS Conservation Area may be referred to interchangeably.

Elements:

A. Livestock Grazing
B. Air Quality*
C. Areas of Critical Environmental Concern (ACEC)*
D. Cultural Resources/ Native American Concerns*
E. Environmental Justice*
F. Farmlands, Prime or Unique*
G. Floodplains*
H. Vegetation / Invasive, Non-native species*
I. Recreation
J. Social and Economic
K. Soils
L. Waste, Hazardous or Solid*
M. Water Quality, Surface and Ground*
N. Wetlands/Riparian Zones*
O. Wild and Scenic Rivers*
P. Wilderness*
Q. Wildlife
    Threatened or Endangered Species*
R. Wild Horses and Burros

* indicates Critical Elements of the Human Environment

A. LIVESTOCK GRAZING

1. Affected Environment

The Shadow Mountain Allotment (#8011) is an ephemeral sheep allotment with potential forage production to enable BLM to authorize an ephemeral forage allocation. The current lease (#6811) authorizes the operator to turn out sheep during years in which ephemeral forage production reaches 200 pounds per acre on the non-DWMA portions of the allotment and 350 pounds within the DWMA portions of the allotment upon which grazing is allowed. The total revised allotment area under the WMP is shown in Table 4, and includes 17,671 acres of public lands. Of the potential remaining available grazing area, 3,323 acres of public land is within the Fremont-Kramer DWMA.

See Table 4 for a comparison of areas within and outside of DWMA, including changes approved in the WMP. Remaining DWMA acres in Table 4 for the two action alternatives corresponds with remaining MGS Conservation Area acreage available for grazing in the allotment. Grazing on non-public lands are not directly affected by the alternatives, but may be indirectly affected because of intermingled private and public lands.

Table 4. Areas of Potential Sheep Grazing In The Shadow Mountain Allotment

Area	DWMA/Crit. Habitat Acres			NON-DWMA/Non-Crit. Habitat Acres			TOTAL Allotment		
	Public	Other	Total	Public	Other	Total	Public	Other	Total
Original Allotment	37,126	38,570	75,696	14,348	30,179	44,527	51,474	68,749	120,223
N. of Shadow Mtn.	33,803	32,829	66,632	1,210	2,013	3,223	35,013	34,842	69,855
Excluded by WMP	33,803	*0	33,803	0	0	0	33,803	32,829	66,632
No Action Alternative (S. of Shadow Mtn. Rd.)	3,323	n/a	9,064	13,138	n/a	41,304	16,461	n/a	50,368
Proposed Action	3,323	n/a	9,064	13,138	n/a	41,304	16,461	n/a	50,368

*Any HCP measures for grazing would be subject to adoption by the landowner or County.

The allotment is located in rural San Bernardino County, immediately northwest of Adelanto, adjacent to the east and southeastern boundaries of Edwards Air Force Base, and west and northwest of the community of Silver Lakes (Helendale).

There are no existing range improvements on the allotment.

2. Environmental Consequences

a. Impacts of the Proposed Action

Under the proposed action, the grazing lease for public lands in the revised allotment of 50,368 acres would be renewed for 10 years, subject to any additional terms and conditions that may result from a future Rangeland Health Assessment. Grazing would be subject to prescriptions (terms and conditions) contained in the WMP, as well as other terms and conditions deemed necessary by the BLM Field Manager. Many of these prescriptions

would have minimal effects on this allotment. Consistent with the terms of the WMP, this allotment is one of two sheep allotments that would still have DWMA acreage grazed in the West Mojave. The continued availability of this acreage would be a beneficial impact to the grazing operation by providing maximum flexibility to herders throughout the remaining allotment (south of Shadow Mountain Road), in years when ephemeral forage conditions are adequate. The elimination of ephemeral grazing on public lands north of Shadow Mountain Road would have no additional impacts to the lessee, as this area has not been grazed since 1991 (prior to the designation of critical habitat in 1994).

The terms and conditions contained in the new lease include current standard operating practices for sheep lessees, a small increase in the threshold before initial turnout on non-DWMA lands (from 200 to 230 lbs), imposition of a higher threshold before initial turnout on DWMA lands (from 200 to 350 lbs), and upper limits to sheep numbers in combined bands. These standard practices, thresholds for turnout, and sheep numbers have not been an issue in this area due to the high ephemeral production in historic years of turnout, and are not anticipated to substantially change current grazing practices. Therefore, they would not result in measurable impacts to Shadow Mountain sheep grazing or grazing operations.

The higher thresholds for forage production on specific species established to protect the Mohave ground squirrel is not anticipated to appreciably impact timing of sheep turnout or the current grazing operation. Over the course of the last two decades, the operator has not deemed it economically viable for his operation to turn out sheep on this allotment unless he estimates that ephemeral production will be least 500 pounds, well in excess of the thresholds for specific species established to protect MGS.

On the other hand, the requirement to remove sheep from the part of the allotment within the MGS Conservation Area at the point when sheep and MGS both start to rely on perennial forage and shrubs (rather than annuals) would potentially shorten the amount of time sheep are allowed to remain on the northern portion of the allotment. How much time, if any, that sheep turnout would be shortened would vary each year, and is highly unlikely to exceed a month; but whatever the time is, this requirement would take potential public land forage from the lessee at the end of the grazing cycle.

The removal of sheep early to protect perennial forage is not anticipated to have a substantial impact on grazing operations due to three factors: First, the operator turns out during years of better production in the first place to provide adequate forage from annuals throughout the forage season. Second, the operator has not historically stayed until the June 1 deadline, but instead pulls his bands off as the annual forage with better nutritional value is depleted by the late spring transition from maturity to old age and death. Third, production of lambs is not likely to be affected because they come off the allotment first.

Also, the lessee would have the option to rotate his sheep between the MGS Conservation Area and the rest of the allotment to eliminate or minimize the potential for exceedance of the production thresholds that would trigger early removal of his sheep from portions of the allotment. The value of this approach would depend on forage availability in the part of the allotment not in the Conservation Area at the end of the grazing season.

The elimination of 1,210 acres of public lands north of the community of Silver Lakes, and adjacent to the Fremont-Kramer DWMA is not likely to substantially affect grazing operations. The loss of this acreage results in a potential decrease in available of overall forage in the allotment by approximately seven percent. However, this area has not been utilized since desert tortoise listing, it is geographically separate from the rest of the allotment, and it would require additional range improvements, oversight by the operator, and vehicle movement of bands between this area and the rest of the allotment to make it a viable part of the allotment.

Finally, under the proposed action, the lessee would have the option to relinquish his lease, at which time sheep would no longer graze the allotment. The relinquishment would be voluntary on the part of the lessee; and is not anticipated to be the result of additional costs of doing business under the proposed action. Therefore, substantial hardship to the relinquishing lessee is not anticipated if this option is chosen.

To summarize, in some years, depending on the timing and amount of winter rainfall, sheep turnout could be shortened by as much as a month in portions of the allotment, but the likelihood or frequency of this occurring would be rare. Loss of approximately seven percent of other potential forage would also occur on a remote portion of the allotment. Other measures in the WMP and associated biological opinions to protect forage in remaining available DWMA may dictate where sheep graze early in the season, but are not anticipated to affect overall season of use.

b. Impacts of the No Action Alternative

Sheep turnout and grazing would continue as allowed under the interim measures of the settlement agreement. Impacts would be similar to those for the proposed action. However, additional measures to protect the Mohave ground squirrel would not be included under this alternative. As a result, the potential for a shortened sheep turnout in portions of the available allotment would be eliminated under this alternative. Other measures from the 1994 sheep grazing biological opinion to protect forage in remaining available DWMA may dictate where sheep graze early in the season, but would are not anticipated to affect overall season of use. Other impacts are the same as for the proposed action.

c. Impacts of the No Grazing Alternative

Under this alternative, the lessee would no longer be allowed to graze the allotment and the administrative process would be initiated to permanently eliminate sheep grazing from this allotment. The lessee would likely utilize private pasture instead. This alternative would result in the loss of another public-land grazing operation in the Mojave Desert, additional management costs on adjacent private pasture lands, and/or displacement of sheep grazing activities further north. This impact is consistent with overall local or regional trends of decreasing public and private range acreage and opportunities in Southern California, but does not represent a significant loss of agricultural (lamb) production.

3. Consultation

Consultation has been initiated and would continue with the Shadow Mountain allotment lessee, interested publics, County government, and Native American tribes with traditional ties to allotment lands.

4. Maps

See Maps 2 and 3.

5. References

None

B. AIR QUALITY

1. Affected Environment

The project area for the purpose of this analysis is the Shadow Mountain Allotment, located in rural San Bernardino County (see Map 1).

The project area is part of the Mojave Desert Air Basin. Most days air quality is good to fair. Windblown air pollutants from the South Coast Air Basin, which includes Orange County and non-desert portions of Los Angeles, Riverside, and San Bernardino counties, strongly influence the air quality of the Mojave Desert Air Basin. As pollutant emissions continue to decline in the South Coast Air Basin, the Mojave Desert Air Basin will benefit.

The pollutant emissions from sources, climatic conditions, and atmospheric interactions determine the quality of air. Air quality in a given location is described by the concentration of various pollutants in the atmosphere. An area is designated by the EPA as being in non-attainment for a pollutant if ambient concentrations of that pollutant are below the National Ambient Air Quality Standards (NAAQS).

Non-attainment areas are designated if repeated violations of the NAAQS occur, and the relative seriousness of the problem is determined at the time that a basin is determined to be in non-attainment of national standards. The classification may be deemed to be Very Serious, Serious or Moderate non-attainment. The California Clean Air Act of 1988 also requires that areas of California be designated attainment, non-attainment, and unclassified for state ambient air quality standards. The Ord Mountain allotment is included in an area classified by EPA and the California Air Resources Board as a Moderate non-attainment area for particulate matter (PM^{10}) and serious non-attainment for ozone.

Sources for ozone missions include exhaust from primary transportation vehicles (particularly diesel trucks) industrial sources, including secondary sources, and climatic sources. Grazing management activities do not contribute measurably to ozone emissions.

Primary sources for emissions of particulate matter under 10 microns, PM^{10}, in the project area are wind erosion on unpaved surfaces including disturbed areas, fires, and, mining-related activities. During most days of the year, visibility exceeds 25 miles. Exceptions occur during strong winds when locally generated particulates become airborne, during nearby forest fires or when dust is blowing and when smog filters up from the Los Angeles Basin. Generally, locally generated PM^{10} pollution is somewhat greater in the vicinity of increased disturbed areas and route densities, as well as increased unpaved route use associated with mining and recreational activities.

The Mojave Desert Air Quality Management District (MDAQMD) has State air quality jurisdiction over San Bernardino County, and has been delegated authority to implement the Clean Air Act from the EPA. MDAQMD has analyzed impacts from existing sources for PM^{10}, and prepared a State Implementation Plan for the Mojave Desert planning area which identifies sources of emissions and control measures to manage existing emissions and reduce new emissions (MDAQMD, 1995).

In the State Implementation Plan, Miscellaneous Area Sources were considered to be a minor category of PM^{10} emissions in the planning area, generating 1.3% of total emissions in 1990. Agricultural activity is a small contributor within this miscellaneous category, and the grazing allotment a small portion of the agricultural activity contributions. No measures were identified in the Plan specific to existing livestock grazing activities, and renewals of leases were exempted from conformity determinations, due to their nominal (less than 15 tons/year) contributions to air quality in the Mojave Desert planning area (BLM, 1997). None of the alternatives would result in increased grazing activities over those historic levels, and regional exceedances of PM^{10} standards have decreased approximately 10% (EPA, 2003) due to voluntary and SIP measures to decrease emissions from substantial sources. Therefore, there would be no substantial affect to air quality under any of the alternatives.

3. References

Mojave Desert Air Quality Management District. 1996. Final Mojave Desert Planning Area Federal Particulate Matter (PM10) Attainment Plan.

U.S. Bureau of Land Management. 1997. Fugitive Dust/PM10 Emissions Control Strategy for the Mojave Desert Planning Area. Barstow Field Office, Barstow, California.

U.S. Environmental Protection Agency. 2003. National Air Quality and Emissions Trend Report; Figure. 2-40: Trend in PM10 annual mean concentration by EPA Region, 1992–2001.

C. AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC)

The project area for the purpose of this analysis is the Fremont-Kramer DWMA (an ACEC established by the West Mojave Plan (2006), within the Shadow Mountain sheep grazing allotment in rural San Bernardino County (see Map 1).

1. Affected Environment

Approximately 20% of the allotment that is available for sheep grazing under the proposed action overlaps two special areas established in the WMP--the Fremont-Kramer DWMA and the Mohave Ground Squirrel Conservation Area. The Fremont-Kramer DWMA was designated as an ACEC in March, 2006 to protect the desert tortoise (a threatened species under the federal and State Endangered Species Acts) and its habitat. Under 1% of the ACEC (3,323 acres) lies within the Shadow Mountain Allotment.

Specific relevant features that formed the basis for ACEC designation are the historic and current desert tortoise densities, genetic composition of populations, and high quality habitat associated with this area. These lands met the importance criteria for ACEC designation because of their value for the recovery and genetic diversity of the species. It is possible that grazing will affect some individual desert tortoises or habitat; however, grazing operations are not anticipated to affect the relevance and importance of this ACEC. Impacts to desert tortoise and related biological resources are addressed further in the Biological Resources analysis.

The Mohave ground squirrel (MGS) Conservation Area also overlaps the northern 20% of the Shadow Mountain allotment. The MGS Conservation Area was designated as a Wildlife Habitat Management Area in March, 2006 to conserve the Mohave ground squirrel (a threatened species under the State Endangered Species Act) and its habitat. Under 1% of the MGS Conservation Area (3,323 acres) lies within the Shadow Mountain Allotment. Grazing is known to adversely affect MGS and their habitat, primarily due to forage competition during times of drought; however, grazing operations are not anticipated to substantially affect this Wildlife Habitat Management Area due to the small acreage that is affected by grazing. Impacts to MGS and related biological resources are addressed further in the Biological Resources analysis.

2. References

U.S. Bureau of Land Management. January, 2005. West Mojave Proposed Plan Amendment/FEIS. Moreno Valley, CA.

D. CULTURAL RESOURCES

1. Affected Environment

A large portion of the allotment is within the El Mirage OHV Open Area. Previous cultural surveys of the allotment covered less than 50% of the allotment acreage south of Shadow Mountain Road, and were conducted in the 1980s. There are seven documented historic trash dumps and mining sites within the Shadow Mountain allotment. One of these sites has been fenced. There no natural water sources in the area.

The recorded sites were visited by the Barstow Field Office Archaeologist in the fall of 2006. The seven sites show no evidence of impacts by sheep grazing. Field surveys pursuant to the Supplemental Programmatic Agreement for Livestock Grazing for the Shadow Mountain allotment are scheduled for completion by September 2010.

Within the jurisdiction of the BFO there are approximately 450,000 acres of land utilized for sheep grazing, of which 300,000 acres are public lands managed by the BLM. The Supplemental Programmatic Agreement for Livestock Grazing allowed 10 years to complete the cultural resource surveys of the grazing allotments as this is a time-consuming task. There are eight years remaining to fulfill the surveys. The agreement "allows for renewal of an existing grazing permit prior to completing all NHPA compliance needs as long as Protocol direction, the BLM 8100 Series Manual guidelines (Protocol Amendment F), and specific stipulations are followed" (see Attachment 1).

2. Environmental Consequences

a. **Impacts of Proposed Action**

No known previous or ongoing impacts from sheep grazing to cultural resources were identified during past surveys and recent field visits. Standard protective measures would be conditions of the proposed grazing lease renewal. These measures will be implemented for cultural sites that are adversely affected because of grazing, if and when such impacts are identified during future cultural surveys or regular rangeland monitoring.

b Impacts of No Action

Same as the proposed action.

c. Impacts of No Grazing

Under this alternative, there would be no future impacts to cultural resources from sheep grazing, as grazing would be permanently removed. It is unknown at this time to what extent cultural resources would benefit from the removal of sheep, because of the incompleteness of the current cultural survey for the area. However, surveyed areas are not currently being impacted by grazing, so removal of sheep is not anticipated to result in substantial benefits to cultural sites.

3. Consultation

a. Native American Concerns

Four Native American tribes have interests in the Shadow Mountain Allotment within the Barstow Field area. Consultation with Native Americans and interested publics on the proposed lease renewal was initiated in April 2006. There were no concerns expressed for specific sites or allotments by these parties.

Comments and concerns regarding cultural and religious values within this allotment that may be affected by livestock grazing will be solicited and incorporated into follow-up site-specific cultural evaluations.

b. State Historic Preservation Office

Consultation was conducted with the California State Historic Preservation Office November 17, 2004 at which time a schedule was submitted for implementation of the *Supplemental Procedures for Livestock Grazing Permits/Lease Renewals, A Cultural Resource Amendment to The State Protocol Agreement California Bureau of Land Management and the California State Historic Preservation Officer* (see Attachment 1).

4. References:

U.S. Bureau of Land Management. September, 2006. Personal Communication with James Shearer. Barstow, California.

U.S. Bureau of Land Management. 1990. El Mirage Cooperative Area Management Plan. Barstow, California.

U.S. Bureau of Land Management. 2004. Supplemental Procedures for Livestock Grazing Permits / Lease Renewals, A Cultural Resource Amendment to The State Protocol Agreement: California Bureau of Land Management and the California State Historic Preservation Officer. Sacramento, California

E. ENVIRONMENTAL JUSTICE

1. Affected Environment

The project area for the purpose of this analysis is rural San Bernardino County. Individual incomes vary widely in the sheep industry, depending on size of farm and whether activities are pursued on a full-time or part-time basis. Generally, farm incomes are above average as compared with other incomes in rural San Bernardino County. Overall, seasonal laborers hired by farm industries, including livestock ranchers, come from low-income households. This is typical of rural areas in general as compared with the overall population average income. Unlike other farm and livestock industries, one ethnic community, the Basque, is unusually prevalent in the sheep industry, including in Southern California.

In 2000, Basques made up approximately $^{1}/_{10}$ of one percent of the California population. California still has the largest Basque population in the U.S, 20,868 individuals, and accounting for over 36% of their total population in the U.S. Within California, median incomes in this ethnic group are somewhat higher than for the overall State population, and poverty levels are substantially lower. Their numbers are not broken down by specific industry occupation, but they have maintained their historic dominance in the sheep ranching industry in southern California. A survey in 1990 found that 7 percent of Basque workers

were engaged in the farming, forestry and fishing industry. The majority of these are engaged in ranching, and specifically sheep-ranching related industries.

Basque ranchers and herders are from a distinct northern Spanish Basque province, composed of several States. Basques include those of northern Spanish and southern French heritage that have a common cultural heritage and speak a distinctive language (Euskarez) to that region. They do not consider themselves Hispanic, and are not treated as such in census surveys. The Basque people have traditionally been known as sailors, fishermen, ranchers and tradesmen. Basque emigration to the Americas began during the Spanish and French colonial periods in the 16th and 17th Centuries, and included settlements in Newfoundland and Quebec, Florida, and Central America. As late as 1800, there were less than 1,000 Basque in the United States.

With the advent of the Gold Rush and westward expansion, many Basque moved to southern California as miners, ranchers or businessmen. Basque names have been so prominent in the western sheep business, that they were regarded by many as its founders. They have been herding and ranching sheep in the Americas since sheep were brought here in the colonial period and in California since the middle of the 19th Century. The sheep industry in California still includes Basque business owners, operators and their employee herders, comprising a wide range of asset and income levels. Many of the Basque herders are seasonal employees from South America.

2. Environmental Consequences

a. Impacts of the Proposed Action

Resumption of sheep grazing on 16, 461 acres of public lands during higher forage-production years would continue to contribute incomes and jobs to a measurable number of members of a small ethnic community in Southern California. As with other American immigrants, as their time in America has increased, their participation in the U.S. economy has diversified. However, sheep grazing still represents a link for this group to their cultural heritage and a way of life that substantially contributed to establishing their Southern California roots.

b. Impacts of the No Action Alternative

Impacts from grazing under the No Action Alternative are the same as for the proposed action.

c. Impacts of the No Grazing Alternative

Permanent elimination of sheep grazing on 16, 461 acres of public lands during higher forage-production years would result in the loss of less than 5 sheep industry jobs to members of a small ethnic community in Southern California. An overall trend of diversifying employment in the Basque community is occurring and this loss would contribute to that trend. However, this loss would not substantially adversely affect the links

of the Basque community to their cultural heritage and way of life, as personified by their shepherding heritage, since sheep grazing would still represent a substantial core of employment for the Basque community in Southern California.

3. References

U.S. Bureau of Census, *Selected Characteristics for Persons of Basque Ancestry: 1990*, Table CPH-l-149.

U.S. Bureau of Census, *Census 2000 Demographic Profile Highlights: Selected Population Group: Basque (005-007), California*.

The Basque in America, www.euroamericans.net/basque.htm, The Basque Country webpage and the U.S Basque History webpage, 2007.

F. FARMLANDS, PRIME OR UNIQUE

The proposed action or any alternative would have no affect on farmlands, prime or unique because no prime or unique farmlands are present in or adjacent to the Shadow Mountain sheep grazing allotment. In the Mojave Desert, prime or unique farmlands are associated with floodplains, which are absent in the allotment.

G. FLOOD PLAINS

The proposed action or any alternative would have no affect on flood plains because no flood plains are present in the Shadow Mountain grazing allotment (FEMA Flood Hazard Maps, 2006).

H. VEGETATION / INVASIVE, NON-NATIVE SPECIES

1. Affected Environment

a. General Vegetation Communities

The vegetative communities within the Shadow Mountain Allotment have been mapped by Holland and Sawyer et al., and vary with elevation, available water, soils, slope and annual precipitation. The primary plant community occurring within the affected area is Mojave Creosote Bush Scrub which is the characteristic plant community of the Mojave Desert. A description of the two key plant species and plant communities which may be affected by the proposed action follows (see Map 4):

- Creosote bush scrub: Approximately 75% of the allotment is creosote bush scrub vegetation community; creosote bush (*Larrea tridentata*) is the dominant species in this series. Associated species include white bursage (*Ambrosia dumosa*), cheesebush (*Hymenoclea salsola*), Anderson wolfberry (*Lycium andersonii*), indigo bush

(*Psorothamnus* spp.), beavertail cholla and cottontop cholla (*Opuntia basilaris* and *O. echinocarpa*), Joshua trees (*Yucca brevifolia*), and Nevada mormon tea (*Ephedra nevadensis*), desert needlegrass (*Stipa speciosa*), and Indian ricegrass (*Oryzopsis hymenoides*). Within the El Mirage Cooperative Management Off-Highway Vehicle Open Area (Open Area), virtually constant OHV disturbance has led to a process known as "type conversion," wherein the vegetation component of the ecosystem has converted from a diverse mix of shrubs, perennial forbs (non-woody broadleafs), and native annuals to a low diversity combination native shrubs and non-native invasive annual species.

- Desert saltbush Scrub: Approximately 20% of the allotment is in this vegetation community. This is a minor series, only found near El Mirage dry lake and along the west boundary of the Open Area. Saltbushes-- mainly Mojave saltbush (*Atriplex spinifera*), allscale (*A. polycarpa*), shadscale (*A. confertifolia*) --dominate; Mojave horsebrush (*Tetradymia stenolepis*), and Joshua tree, which are typical shrubs found in Mohave ground squirrel habitat, are also found. Type conversion is also present within this series within the Open Area.

- Mojave Mixed Woody Scrub: Approximately 5% of the allotment is in this vegetation community, concentrated in the area of Shadow Mountain Village. Dominant and associated species include Yucca species (*Yucca schidigera*, *Yucca bacata*) and associated species like winter fat (*Kraschenninnokovia lanata*), boxthorn species (*Lycium* sp.), spiny menodora (*Menodora spinescens*), spiny hopsage (*Grayia spinosa*), cacti species (*Opunita spp.*, *Mammallaria spp.*, *Echinocactus polycephalus.*, *Ferocactus cylindraceus.*, *Echinocerus spp.*) and California buckwheat (*Eriogonum fasciculatum*).

A fourth series, desert wash, has been identified by some researchers. The only desert wash of note is Fremont Wash in the northeastern corner of the El Mirage Open Area and the adjacent non-Open Area nearby, and sheep have not historically used this area. WMP Plan vegetation maps do not show "desert wash" series acreage on the Open Area; accordingly Map 2 does not show this series.

Monitoring conducted on this allotment indicates that vegetation community type conversion has not occurred within the sheep allotment outside of the El Mirage Open Area.

b. Sensitive Plant Species

No sensitive plant species have been identified on lands proposed for sheep grazing.

c. Invasive, Non-native species

Overall, the density of non-native invasive species on the allotment is considered moderate and non-native species density is generally greater than native forbs in the El Mirage Open Area. Outside the Open Area non-native invasive species densities are light to moderate. Invasives now common to the allotment are mediterranean grass (*Schismus arabicus*),

Russian thistle (*Salsola iberica*), filaree (*Erodium cicutarium*), and red brome (*Bromus madritensii*). These species flourish during the wetter years (usually associated with El Nino winter rains), which coincide with years when sheep are allowed to turn out, and may very well represent the bulk of forage species used by sheep in the spring.

Invasive, non-natives compete with native herbaceous species, especially native annual species, for available moisture, nutrients, and spatial occupation of available upland habitat. Density of these species varies widely, depending most on timing and amount of winter and early-spring rains. Since portions of this sheep allotment are within an Off-Highway Vehicle (OHV) Open Area ground disturbance is common.

The disturbance created by sheep grazing occurs on this allotment intermittently, on average one out of every two-to-three years (years when sheep are turned out), and is exacerbated by disturbance from continuous, unrestricted OHV use in the Open Area.

2. Environmental Consequences

a. Impacts of the Proposed Action

The proposed action has minor impacts on availability of vegetation to native wildlife, including sensitive species, and negligible impacts to overall vegetation community composition outside of the Open Area on a short-term basis. The proposed action implements protective measures designed to protect the Mohave ground squirrel and the desert tortoise by assuring that during years when ephemeral forage production is low, sheep would not be allowed to turn out. This removes direct competition for ephemeral forage with the desert tortoise and the Mohave ground squirrel, and it protects perennial forage and shrubs for the use of the Mohave ground squirrel as well. The current sheep lessee has not historically requested to turn out livestock on the allotment below these thresholds, but would be unable to do so under this alternative.

Browsing (shrub utilization) thresholds have been included in the proposed action, consistent with the West Mojave Plan, for winterfat, spiny hopsage, fourwing saltbush, shadscale, and allscale. These thresholds were specifically designed to promote the Mohave ground squirrel by preventing over-use of these important browse species within the MGS Conservation Area portion of the allotment.

Within the majority of the allotment still available for grazing (i.e., within the Open Area), the re-establishment of native herbaceous vegetation is unlikely due to factors other than sheep grazing.

<u>Invasive, Non-native species</u>
Outside the Open Area, the effects on non-native species vary by time of year. In early season, sheep tend to devour the non-natives before they can make seed, thus lowering their overall biomass and the number of non-native seeds that enter the seedbank. In the late season (after the plants have flowered and made seed) the sheep spread weed seed into areas not previously infested by carrying the seed in their wool and by depositing still-viable seed

in their droppings. Both beneficial and adverse impacts are highest and most long-lasting at the sheep bedding and watering locations, depending on when used. The overall impacts of the proposed action are that invasive, non-natives would remain fairly static outside the Open Area, but may contribute to local spread of non-natives.

Within the Open Area, impacts of grazing on invasive, non-native species are negligible. The disturbance created by sheep grazing occurs on this allotment intermittently and seasonally, on average one out of every two-to-three years (years when sheep are turned out). The relative contribution of grazing to non-native weed species within the Open Area is minimal since vegetation community type conversion in the Open Area is already advanced and likely irreversible due to factors other than grazing.

b. Impacts of the No Action Alternative

The no action alternative protects ephemeral forage for use by the desert tortoise and the Mohave ground squirrel similarly to the proposed action. However, browse utilization thresholds to conserve Mojave Ground Squirrel would not be required under this alternative. Therefore, some potential exists for sheep to browse shrubs or graze perennial forbs at higher rates than would be allowed under the proposed action.

Invasive, Non-native species
Under this alternative the impacts to non-native invasive species would be the same as the proposed action.

c. Impacts of the No Grazing Alternative

Outside of the Open Area, the no grazing alternative would eliminate the potential for decreased availability of ephemeral vegetation to native wildlife, including sensitive wildlife species. Impacts to overall vegetation community composition due to elimination of grazing are not anticipated. Within the majority of the allotment still available for grazing (i.e., within the Open Area), the impacts are the same as other alternatives—re-establishment of native herbaceous vegetation is unlikely due to factors other than sheep grazing.

Invasive, Non-native species
Under the no grazing alternative, outside the Open Area a short-term unwanted but probably unavoidable flourish of non-native invasives would occur because there is an existing abundance of non-native seed in the soil. This effect would occur during at least the first El Nino winter/spring after the total elimination of sheep grazing on the allotment because no early season grazing of non-natives by the sheep would occur. In the long-term, the elimination of late season seed spread and soil surface disturbance by domestic sheep would reduce overall non-native invasive production to a moderate degree.

Within the Open Area, impacts of eliminating grazing on invasive, non-native species are negligible.

3. Consultation

Consultation continues to occur with all lessees, interested publics, the County government, and Native American tribes with traditional ties to allotment land.

4. Maps

See Map 4.

5. References

Chavez, R. 2006. Personal communication. Rangeland Management Specialist. Bureau of Land Management, Barstow Field Office, Barstow, California.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Natural Diversity Database, California Department of Fish and Game, Sacramento, California.

Sawyer & Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society.

I. RECREATION

1. Affected Environment

The portions of the allotment that remain available to sheep grazing are divided between the 3,323 acres of public lands located generally south of Shadow Mountain Road and north of the El Mirage Cooperative Management (OHV) Open Area; and the 9,064 acres of public land within the Open Area itself.

The lands outside the OHV Open area are Class L ("limited use") lands, with casual use access confined to designated open routes per WMP route designation (Bureau 2006). Recreational access and use of the land in the Open Area is not restricted, since the Open Area was created to allow OHV "free play" (generally unrestricted use). Therefore, the OHV Open Area is subject to intense, recurring recreation-related disturbances. Recreation use and related disturbance is greatest and most diverse on and immediately adjacent to the El Mirage Dry Lake, and generally decreases in intensity and types of uses as length from the lake bed increases. High-speed testing, motorized aerial-use, and other casual and permitted recreational activities can occur on the lakebed. The Open Area receives extremely heavy use during the fall, winter, and spring, especially the longer weekends associated with Columbus Day, Halloween, Thanksgiving, Christmas and New Year's, Martin Luther. King Day, and President's Day.

A fence marks the Open Area boundary. The lessee can access both the OHV Open area and non-Open Area portions of the allotment, subject to the general sheep grazing restrictions.

2. Environmental Consequences

a. Impacts of the Proposed Action

The proposed action would have little effect on recreational users or uses of the allotment. No injuries have been documented to recreationists because of sheep grazing. At the most, the lessee has sheep on the allotment one year in two-to-three, so more than half the time during sheep turnout season, there are no conflicts between grazing and recreational enjoyment of the Open Area. The protective measures that would be implemented under the proposed action could only shorten the period when the sheep on the ground. The lessee already avoids the lower portions of El Mirage OHV Open Area or avoids the Open Area entirely during busy winter and spring weekends, since from his perspective the heavy recreational use presents more of a hazard to the sheep than the sheep present to recreationists.

b. Impacts of the No Action Alternative

The effects on grazing of the no action alternative are the same as the proposed action. Sheep grazing may be on the ground somewhat longer, but actual on-the-ground conflicts have been minimal and are not anticipated to increase.

c. Impacts of the No Grazing Alternative

Potential conflicts between recreational use and sheep grazing would be eliminated by this alternative. Since conflicts between sheep and recreational use of the allotment are minimal, most recreational users of the area are not likely to notice the lack of sheep.

3. Consultation

Consultation would continue to occur with all lessees, interested publics, county government, and Native American tribes with traditional ties to allotment land.

4. Maps

See Map 3.

5. References

None.

J. SOCIAL AND ECONOMIC VALUES

The Shadow Mountain ephemeral sheep allotment is located in rural San Bernardino County. The lease operator primarily resides in an adjacent county closer to market shipment points. The residences for San Bernardino sheep operators are primarily in Kern and Riverside Counties. Typical of this industry, market transactions are generally done over the internet

and phone for sale of sheep products (i.e., meat, wool). Operators hire herders on a yearly basis, primarily from South America. This labor typically consists of two to four persons. Therefore, primary revenues accrue to Kern or Riverside Counties, while social benefits accrue to both of those counties as well as San Bernardino County. Therefore, the project area for the purpose of this analysis is Kern, Riverside and San Bernardino Counties.

In these three counties, as with most of Southern California, overall land area and farm size has been decreasing over time, while market values of all farm products have been increasing. The decrease in land area from 1987 to 2002 was approximately 27%, while inventories of sheep decreased by 30% during the same 15-year period. During this 15 years, market values of agricultural products have steadily increased, except for the temporary downturn that occurred in the entire market in the fall of 2001. This trend has been more pronounced for wool. In California in the last 5 years alone, wool production has gone down almost 20 percent, while prices have gone up 150 percent.

California is the top sheep and wool producing State in the nation, and ranks in the top five states in terms of the relative contribution of agricultural production to the overall State economy. Kern and Riverside Counties in particular stand out based on their high State rank for market shares for wool and sheep. Kern County is a significant national producer of products, ranking fourth in market value in the nation among Counties for sheep, goat, and wool products. A substantial amount of the labor force participates in the sheep industry in Kern County in particular. Overall, ranching-related production represents approximately 1% of the State's gross state product, ranking behind most other industries, but still contributing a measurable amount of production to the State GDP (*California Statistical Abstract*, California Department of Finance, Table D-4, January, 2006).

The Shadow Mountain allotment is abutted on the southeast by an urban area that continues to grow at a rapid pace. Even within the allotment, many lots have been sold for homesteads, but actual development is still spotty. Conflicts between residents and traditional rural land uses such as ranching exist, but have not created major urban interface problems for lessees or the community around lessees on this allotment, to date. No residents that own private property within the allotment boundaries have expressed concerns about the resumption of grazing.

The contribution of the Shadow Valley allotment to the overall goods and services of the area is nominal. The sale of lambs at the stock yard by the lessee benefits the financial needs of the lessee, as any small business would, and allows them to purchase goods and services for their grazing operation and personal household. This operation is relatively small and its effects on the general economy of both Riverside and San Bernardino Counties are minor.

2. Environmental Consequences

a. Impacts of Proposed Action

Under the proposed action, grazing would continue, generally at current stocking rates and operating costs on public land within the portion of the Shadow Mountain allotment that has

been in use for the last 15 years. This grazing operation would continue to supply substantial personal income to this operator and his employees, but would have a nominal influence on the regional, California, and national economy.

The way of life practiced by this sheep rancher would be essentially unchanged. This may be a positive or negative impact to other public land users and nearby residents, but in either case, the impact is not considered substantial at this time due to the other activities in the area and the intermittent nature of the presence of sheep.

b. No Action

The socioeconomic impacts under this alternative would be the same as the proposed action.

c. No Grazing

Under this alternative, the Shadow Mountain sheep allotment would be eliminated as a small source of food and fiber for the region and the nation. The nominal economic and market contributions of ephemeral sheep grazing on the Shadow Mountain allotment to Riverside and San Bernardino Counties is not substantial. The overall effect of this on the County economies would not be noticeable. Because the sheep and woolgrower would no longer be able to graze his sheep on public land in the Barstow Field Office, there would an increase in the annual cost to this operator in some years to obtain private pasture and take advantage of the Mojave Desert's productive ephemeral bloom in years when it occurs.

3. Consultation

Consultation would continue to occur with all lessees, interested publics, the county government, and Native American tribes with traditional ties to the lands within the allotments being analyzed.

4. Maps

None.

5. References

2002 and 1992 Census of Agriculture, USDA, National Agricultural Statistics Service, Vol. 1, Ch. 2, 2004.

California Statistical Abstract, California Department of Finance, Table D-4, January, 2006.

K. SOILS

1. Affected Environment

a. Soils

Soils on the Shadow Mountain allotment have not been classified or mapped by the Natural Resource Conservation Service. The Shadow Mountain Allotment has three major soils complexes. The Hesperia-Rosamond Association is moderately well drained to well drained, has moderate to moderately rapidly permeability, with very deep sandy loams. It is developed from stratified alluvial sandy loam and loam. The Mohave Variant - Sunrise Association is moderately well drained to well drained, is moderately to slowly permeable, and varies from loamy fine sands, shallow to deep to caliche. It is developed from stratified alluvial clay loam and fine sandy loam. The Rock Land Association is excessively drained, very stony or very rocky sandy loams to sands. It is derived from bedrock.

The soils are by nature "droughty" and unable to hold moisture for long periods of time. Therefore shrubs with extensive fibrous root systems or very deep tap roots, forbs (non-woody broad-leafed plants) with similar root systems to the shrubs, and annuals are best able to grow on these types of soils.

b. Biological Soil Crusts

The open space between higher plants is not generally bare of all life. Highly specialized organisms can make up a surface community that may include cyanobacteria, green algae, lichens, mosses, microfungi and other bacteria. Soils with these organisms are often referred to as cryptogamic soils, and form what is referred to as biological soil crusts (BSC).

Cyanobacteria have been located on the Shadow Mountain allotment outside of the Open Area (Chavez, 2006). Rangeland health determinations have not been conducted on this allotment and no species-specific mapping of the allotment has been conducted for biological crusts. If the grazing lease is renewed, rangeland health analysis would be scheduled for this allotment to occur by 2008 or 2009. If so, BSC would be inventoried at that time throughout the allotment.

In general, cyanobacteria and microfungal filaments weave through the top few millimeters of soil and aid in holding loose soil particles together forming a biological crust which stabilizes and protects soil surfaces. The biological crusts aid moisture retention, "fix" nitrogen, and may discourage the growth of annual weeds. Below the surface, the soil flora grows various rhizimes, hyphae, and filaments that further bind the soil together. Most biological crust organisms grow during cool moist conditions. The intermountain region of the western U.S. has many-extensive complex crusts. Many of those areas are so fragile that even casual foot traffic can cause extensive damage. The intermountain areas generally have fine textured soils, cooler climates and summer rains which are conducive to crust development.

In contrast, the western Mojave desert has coarse-textures soils, high temperatures, little summer rain and very high potential evapotranspiration potential (PET). According to Belnap (2003, 2005) "less stable, coarse-textured soils often support only highly mobile, large filamentous cyanobacteria (such as *Microcoleus* spp.)." She also observes that (2003 and 2005), "Cyanobacteria heavily dominate crusts of hot desert sites (Sonoran, Mojave and

Chihuahuan) where PET is high." She further indicates that some hot desert sites may not support biological crusts (Belnap 2005). The latest data, Belnap (2003 and 2005) and BLM 2001, indicates that the likelihood is that BSC would be simple crusts that are highly mobile and quick to recover from disturbance. Although the allotment is in a transitional zone between the hottest portion of the Mojave Desert and the more intermountain-like or even montane vegetation types of the mountains to the south, the discussion above is very much the case here.

2. Environmental Consequences

a. Impacts of the Proposed Action

Under the proposed action, throughout the allotment, temporary but widespread sheep hoof action at the soil surface leads to minor, localized soil erosion (sheet erosion and rilling) because the plant cover is substantially removed for a time. This affect would be somewhat more noticeable in sheep bedding and temporary camp areas, until recovery.

BSC may also be impacted by sheep grazing. Generally, hoof action breaks the crusts down. Under the proposed action, BSC would not be advanced or promoted by sheep grazing. However, the BSC can withstand disturbances better on coarse-textured soils (Belknap 2003) such as those found on this allotment, provided the disturbance is not constant. Sheep only graze at most every other year on this allotment, every third year of late, which does allow recovery time on otherwise undisturbed soils. Therefore, outside of the Open Area, BSC would be impacted by sheep grazing in the short term, but have not historically and are not likely in the future to be permanently damaged.

Within the Open Area, impacts to BSC are minimal from grazing, because other uses have already substantially impacted soils and do not provide the opportunity for sufficient recovery time for any associated BSC.

b. Impacts of the No Action Alternative

The impacts of the no action alternative would be the same as the proposed action.

c. Impacts of the No Grazing Alternative

Under the no grazing alternative livestock grazing would not resume. Outside the Open Area, soil disturbance from grazing would end. Therefore, impacts from this alternative would be nominally better than under the other alternative. Minor soil erosion caused by sheep grazing would not occur. BSC outside of the Open Area would no longer be impacted by sheep grazing in the short-term, and could become more widespread where soil conditions allow and other impacts are not regularly occurring.

No discernible change in impacts to soils or BSC would occur within the Open Area from the elimination of grazing, because of the amount of regular disturbance that will continue in this area regardless of the presence or absence of sheep grazing.

3. References

Belnap, J. and O.L. Lange. 2003. Biological Soil Crusts: Structure, Function, and Management.. Springer, New York.

Belnap, J. 2005. Personal communication.

Chavez, R. 2006. Personal communication. Rangeland Management Specialist, Bureau of Land Management, Barstow Field Office, Barstow, California.

L. WASTE, HAZARDOUS OR SOLID

1. Affected Environment

The proposed action or any alternative would have no affect on solid or hazardous wastes on public lands. Occasionally various materials are illicitly dumped in this area—generally either trash no longer accepted at the County landfills (e.g., appliances, couches, tires), or waste oils (many of which are managed as hazardous substances). Periodic cleanups are scheduled in this area to address the trash dumping, and waste oils are disposed of in a timely manner when discovered, after site evaluation. There have been no documented occasions of sheep being the source of or interfering with the management of these wastes.

Agricultural solid wastes are not managed as an environmental contaminant under federal or State law, except at confined animal facilities. Under 41 CFR 261.4 (b), *Identification and Listing of Hazardous Waste*, the EPA has determined that the raising of animals, including animal manures are solid wastes that are exempt from consideration as hazardous wastes if returned to the soils.

Use of agricultural solid wastes, including manure, is managed pursuant to State and local law under RCRA implementing regulations (RCRA Subtitle D). California has issued joint California Integrated Waste Management Board/State Water Resources Control Board regulations (Division 2, Title 27). Use of non-hazardous decomposable waste is generally exempt from these State regulations. The Regional Water Quality Control Board may issue waste discharge requirements or reclamation requirements to cover such materials, and has done so for confined animal facilities such as feed lots and poultry farms, but not for unconfined ranching operations. Sheep on the Shadow Mountain Allotment do not spend extended periods of times in confined facilities (corrals), which are used primarily for shearing and shipping. Since agricultural solid wastes from free-roaming sheep are not managed by federal or State law, any site-specific impacts associated with free-roaming sheep are considered in the context of water quality.

M. WATER QUALITY, SURFACE AND GROUND WATER

Surface water sources on the Shadow Mountain allotment include several ephemeral washes, and the intermittently flooded El Mirage lakebed. The sheep grazing operation does not

graze on or adjacent to the El Mirage lakebed or Fremont Wash. Ephemeral sheep grazing operations do not use surface or ground water in the Shadow Mountain allotment, and do not congregate near the natural ephemeral washes or other small springs. Therefore, sheep grazing has no effect on water quality or ground water.

N. WETLANDS / RIPARIAN ZONES

El Mirage Dry Lake Bed, Fremont Wash, and small springs are not used by sheep. Other potential riparian or wetland habitat associated with the main ephemeral drainages is missing key constituent components due to the amount of disturbance associated with recreational uses. Therefore, there are no effects to wetlands/riparian zones from sheep grazing on this allotment.

O. WILD AND SCENIC RIVERS

The proposed action or any alternative would have no affect on Wild and Scenic Rivers because there are no Wild and Scenic Rivers that have been designated or determined eligible for designation on or adjacent to the allotment.

P. WILDERNESS

The proposed action or any alternative would have no affect on wilderness because the allotment is not within or adjacent to designated wilderness or wilderness study areas.

Q. WILD HORSES AND BURROS

No alternatives would affect wild horses or burros since no wild horses or burros, and no wild horse and burro herd management areas are present within or near the allotment.

R. WILDLIFE

1. Affected Environment

Wildlife habitat quality on the grazed portion of the allotment is at a lower seral stage because of overall naturally low vegetative diversity exacerbated by man-caused disturbances, and because water is scarce. Seasonal grazing by sheep is one of the man-caused disturbances contributing to the low vegetation diversity.

Common Animals

The Management Plan for El Mirage Cooperative Management Area (1990) notes that common mammals are black-tailed jackrabbits (*Lepus californicus*), coyotes (*Canis lupus*), kangaroo rats (*Dipodomys* spp.), and desert wood rats (*Neotoma spp.*). Also fairly common on the allotment are deer mice (*Peromyscus* spp.), desert pocket mice (*Peroganthus* spp.), and antelope ground squirrels (*Ammospermophilus leucurus*).

Common birds are mourning doves (*Zenaida macroura*), common ravens (*Corvus corax*), roadrunners (*Geococcyx californianus*), cactus wrens (*Campylorhynchus brunneicapillus*), red-tailed hawks (*Buteo jamaicensis*), loggerhead shrikes (*Lanius ludovicianus*), horned owls (*Bubo virginianus*), black-throated sparrows (*Amphispiza bilineata*), blue-gray gnatcatchers (*Polioptila caerulea*), and horned larks (*Eremophila alpestris*). Common reptiles are the zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Cnemidophorus tigris*), desert iguana (*Dipsosaurus dorsalis*), Mojave "green" rattlesnake (*Crotalus scutulatus*), sidewinders (*Crotalus mitchelli*), gopher snakes (*Pituophis melanoleucus*), and horned lizards (*Phrynosoma* spp.).

Special-status species

The **Mohave ground squirrel** (MGS) is a State threatened species under the California Endangered Species Act. Suitable habitat is found throughout the allotment, although most of the MGS suitable habitat is now outside the Open Area. Habitat supporting the Mohave ground squirrel is the desert wash and desert saltbush scrub types.

As late as 1980 (Bureau 1991) and 1991 (Laabs and Allaback 1991) Mohave ground squirrel were known to exist within the Open Area. However Leitner (2004) was unable to locate any Mohave ground squirrel within the Open Area in 2002 or 2004. Leitner notes that, "The failure to capture Mohave ground squirrels at four grids in desert wash habitat and desert saltbush scrub in May 2004 strengthens the hypothesis that the species does not occur in the El Mirage OHV Open Area at present." Leitner notes further, however, that Mohave ground squirrels were captured in 2004 on nearby Edwards Air Force Base and on public lands to the north and east. Therefore, based on the most recent survey data, MGS do still exist on the allotment outside of the Open Area.

The **burrowing owl** (*Athene cunicularia*) is a migratory species listed as BLM sensitive and California Species of Special Concern. The burrowing owl is found on level desert floor habitat. This species is tolerant of urban-fringe habitat, thus seemingly more tolerant of human disturbance than many other bird species. WMP notes that existing records of this species are found either on or near Edwards Air Force Base; specific locale data and confirmed breeding data are scant.

The **desert tortoise** is federally and state threatened. The desert tortoise was listed as threatened in 1990 by the Fish and Wildlife Service and has been listed as threatened by the California Department of Fish and Game since 1989. The Service designated four critical habitat units (CHU) within the West Mojave planning area in 1994. The Shadow Mountain allotment contains a substantial amount of DWMA (known as critical habitat, and previously designated as Category I or II habitat). Approximately 3,323 acres, or less than 1 percent of DWMA is available to sheep grazing. All of this DWMA acreage is south of Shadow Mountain Road (see Map 3). Approximately 9,064 acres of non-DWMA habitat previously designated as Category III, is available to sheep grazing, also south of Shadow Mountain Road.

The desert tortoise is widely distributed across the California desert and has been observed within the allotment. The Mojave Creosote Bush Scrub type common throughout the

allotment is prime desert tortoise habitat. However, in various field surveys that have been conducted throughout the California Desert and specifically within the El Mirage Open Area since the desert tortoise was listed, no high concentration desert tortoise areas have been identified.

According to Keith and Berry (2005), there are fairly uniform but low concentrations of desert tortoise on and near the Open Area. They conducted an intensive survey throughout the Open Area in 2005. Loss of habitat because of OHV activity, raven predation, shootings, and dog attacks contributed to their estimate of 134 adult desert tortoises remaining on the open area, with 107 adult desert tortoises having died in just the past 4 years. Another change that has adversely affected desert tortoise is the type conversion of vegetation communities within the Open Area. Desert tortoise depends primarily upon native annual vegetation. Because vegetation within the Open Area has been type converted to an almost entirely shrub- and invasives-dominated landscape, rather than a diverse mix of shrubs, perennial forbs, and native annuals, it provides very low-quality forage for desert tortoise.

The 2005 study confirms a predicted -- and likely irreversible -- trend within the Open Area towards elimination of a viable desert tortoise population. A similar precipitous decline of the desert tortoise outside the Open Area is not evident, as vehicle impacts are generally restricted (to open routes). Survey data outside the Open Area from the 1998 and 2001 total corrected sign (TCS) surveys (portrayed on maps from 2002 in WMP (Bureau 2005) indicate uniform sign of desert tortoises (from none to 9-16 per square mile). TCS does not indicate density per se, but the 1998 and 2001 indicators imply desert tortoise densities that are relatively low, but considerably higher than within the Open Area.

The **Mojave fringe-toed lizard** (*Uma scoparia*) is an obligate sand-dwelling species found in dunes throughout southern California and far western Arizona. It depends on wind-blown sand for its survival. Morafka (2003) conducted presence/absence surveys at the Open Area in 2002 and 2003; he was unable to verify that the species exists at this location. The suitable habitat on the Open Area, near the dry lake, is noted by Morafka as "saturated with OHV tracks, or entirely high impact zone." The areas grazed by sheep outside the Open Area is devoid of suitable dune habitat.

Other BLM-sensitive bats and migratory birds are known to exist within the sheep allotment that are negligibly affected by sheep grazing.

2. Environmental Consequences

a. Impacts of the Proposed Action

Common to all discussion in this section is the fact that sheep impacts are greatest at the bedding and watering locations, which are generally previously disturbed. Also, regardless of the amount of impact, especially removal of vegetation, not all areas are temporarily denuded and large areas of relatively undisturbed habitat within and around the allotment perimeter is always available to wildlife. Nearly all wildlife are mobile enough to sustain themselves on the less impacted or intact habitat.

Common animals

Most common wildlife species are mobile and can avoid being trampled by sheep. Indirect effects to habitat caused by sheep soil disturbance and removal of vegetation would occur, such as the removal of most above-ground vegetation at some grazing locations and at watering / bedding locations. However, at the same time this is occurring, forage is plentiful in the surrounding ungrazed areas. Common animals that thrive on low seral, invasive vegetation benefit from sheep grazing; these include ants, some lizards, some small mammals, and snakes.

Special-status species

Outside the Open Area, the **Mohave ground squirrel** are not anticipated to be directly impacted by sheep, and may benefit from WMP protective measures to reduce conflicts between sheep and the ground squirrel for perennial forage and shrubs. The ephemeral production thresholds insure annual vegetation is available to this species. Sheep turnout currently occurs when ephemeral production is at least 500-600 lbs./acre, so the thresholds create a mechanism to prevent this scenario from changing at some time in the future. Within the Open Area, the Mohave ground squirrel has apparently been extirpated. Therefore, within the Open Area the proposed action would not adversely affect or benefit the species.

Outside the Open Area, sheep grazing, which is at its peak at the time that birds attempt to nest, could adversely affect all bird species to some extent. However, the **burrowing owl** is the species most likely to be directly effected by sheep grazing, since it is a ground-nesting species with nests that can be crushed by sheep hoofs. No cases of sheep-caused burrow collapse or nest loss have been documented in the allotment. Sheep grazing in the Open Area is unlikely to result in substantial effects to birds due to other substantial disturbances that make the Open Area an unattractive place for successful nesting.

Outside the Open Area (within the DWMA) the **desert tortoise** benefits similarly to the Mohave ground squirrel because annual vegetation upon which the desert tortoise depends is conserved for this species. The requirement that ephemeral vegetation exceed 350 pounds per acre before sheep are allowed to graze in desert tortoise habitat benefits the desert tortoise. This threshold is intended to avoid competition between livestock and (desert) tortoises in years of poor rainfall and plant growth (WMP 2005). However, in years of poor rainfall and plant growth, it is unlikely that the lessee would turn out sheep. The 230 lb. non-DWMA production threshold within the Open Area would result in negligible benefit to the desert tortoise based on intense, regularly-occurring impacts that are not related to sheep grazing.

Literature regarding direct and indirect impacts of livestock grazing to rangeland and desert tortoise habitat has been critically reviewed in an unpublished document by the U.S. Geological Survey (Boarman 2002). The critical review analysis reported a paucity of information available on the effects of grazing on the Mojave ecosystem. A brief summary of that review follows below.

Indirect impacts to tortoise habitat were evaluated by reviewing studies on livestock grazing effects on plant communities in other arid and semi-arid regions. Direct impacts were evaluated by reviewing reported observations and anecdotes. Potential indirect impacts include: an altered plant community structure, soil compaction, and increased fugitive dust and erosion.

Boarman (2002) notes that little information was found describing direct impacts to desert tortoises except that some accounts reported that livestock have crushed juvenile tortoises by stepping on them. Also, it has been reported that livestock have crushed tortoise burrows resulting in injured tortoises or a damaged burrow. In-depth research on the direct impacts of livestock grazing on tortoise appears to be lacking; no evidence of these impacts having occurred on the desert pasture exists. The proposed action would not likely change the amount of, or potential for, these seemingly rare direct impacts, which are more likely to result from cattle grazing rather than sheep grazing.

The **Mojave fringe-toed lizard** has apparently been extirpated in the Open Area, and this species has little, if any, suitable dune habitat outside the Open Area; therefore this species would not be adversely affected or benefit from the protective measures that would be implemented by the proposed action.

b. Impacts of the No Action Alternative

For common and sensitive animal species, the impacts from sheep grazing – within and outside of the Open Area – would be the same as the proposed action. Impacts to sensitive species would be slightly greater under this alternative, due to the absence of ephemeral production threshold requirements prior to sheep turnout. In addition, under this alternative, the **Mohave ground squirrel** would not benefit from WMP protective measures (which are part of the proposed action) to reduce conflicts between sheep and the ground squirrel for perennial forage and shrubs.

c. Impacts of the No Grazing Alternative

Outside the Open Area, most animal species would benefit, more or less, from the removal of sheep grazing from the allotment. Overall, given the relatively low-level of current conflicts between sheep and wildlife in this allotment, these benefits are nominal. On the other hand, within the Open Area, the cessation of sheep grazing would provide negligible benefit to wildlife species.

3. Consultation

The BLM conducted formal consultation with USFWS on five occasions (from 1993 to 2006) on the effects of livestock grazing on the desert tortoise and its critical habitat. BLM proposes to issue grazing leases under the 1994 biological opinion on sheep grazing.

4. Maps

None

5. References

Boarman, W.I. 2002. Threats to desert tortoise populations: A critical review of the literature. Unpublished report prepared for the West Mojave Planning Team, Bureau of Land Management. U. S. Geological Survey, Western Ecological Research Center. San Diego, California.

Leitner, P. 2004. Mohave Ground Squirrel Survey. El Mirage Off-Highway Open Area, 2002 and 2004. Anteon Corporation. San Diego, California.

Morafka, D.J. 2004. Status of the Mojave Fringe-toed Lizard (*Uma scopria*) at Off-Highway Vehicle (OHV) use sites at El Mirage Dry Lake, Rasor Road, and Dumont Dunes (San Bernardino County, CA). Anteon Corporation. San Diego, California.

U.S. Bureau of Land Management. 1990. Management Plan for El Mirage Cooperative Management Area. Barstow Resource Area, Barstow, California.

U.S. Bureau of Land Management. 2005. Final Environmental Impact Report and Statement for the West Mojave Plan and California Desert Conservation Area Plan. California Desert District. Moreno Valley, California.

U.S. Bureau of Land Management and California Department of Fish and Game. 1992. California Statewide Desert Tortoise Management Policy. Official policy signed in 1992 by the District manager and State Director of the BLM and Regional Managers (Regions 4 and 5) and the Director of the CDFG.

U.S. Fish and Wildlife Service. 1990. Formal Consultation on the Management Plan for the El Mirage Cooperative Management Area (1-8-90-F-36). Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 1994. Biological opinion for the Bureau of Land Management's interim livestock grazing program in Mojave desert tortoise critical habitat (1-8-94-F-107). Memorandum from Regional Director, Region 1 to State Director, Bureau of Land Management, Sacramento, California. Dated April 20. Portland, Oregon.

U.S. Fish and Wildlife Service. 2002. Biological opinion for the California Desert Conservation Area Plan [Desert Tortoise] (1-8-01-F-16). June 17, 2002. Ventura Fish and Wildlife Office, Ventura, California.

U.S. Fish and Wildlife Service. 2006. Biological opinion for the California Desert Conservation Area Plan (West Mojave Plan) (1-8-03-F-58). Ventura Fish and Wildlife Office, Ventura, California.

CHAPTER 4. CUMULATIVE IMPACTS

Bureau of Land Management regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed. CEQ regulations implementing the procedural provisions of NEPA define cumulative effects as: "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." (40 CFR 1507)

This cumulative analysis tiers off of the Cumulative Analysis found in the West Mojave Proposed Plan/Final Environmental Impact Statement (January 2005) for San Bernardino County and adjacent areas. The cumulative analysis in this document therefore does the following:

- Briefly summarizes the West Mojave cumulative analysis as it relates to grazing issues;
- Focuses on information from activities other than grazing specifically occurring within the Shadow Mountain sheep grazing allotment and that may contribute to cumulative effects from the proposed action or alternatives, as appropriate, and
- Discusses resource-specific cumulative effects for the Shadow Mountain sheep grazing allotment.

Where there has been no change in the previous analysis the conclusions of the previous document are briefly summarized and the reader is referred to the West Mojave Proposed Plan/FEIS for more detail.

1. Summary of West Mojave Plan Cumulative Analysis

The West Mojave Plan described the current environment of the planning area as having been broadly influenced by past activities occurring prior the passage of FLPMA in 1976, such as development of major highways, railroads, and communities in the region. Other important activities related to the baseline condition of the planning area have included the Land Tenure Adjustment Program, mining, military use, recreation, lands actions, wildfire, special area designation and management, and livestock grazing (Proposed Plan/FEIS, Chapter 3).

West Mojave Plan further addressed recent and reasonably foreseeable future changes in land use resulting from FLPMA and other resource management related laws, including State and Federal Endangered Species Acts and the California Desert Protection Act, and the Fort Irwin expansion legislation (Proposed Plan/FEIS, pages 4-135 to 4-141). West Mojave Plan considered BLM's six CDCA regional plan amendments that were approved or under preparation as key determinants of environmental conditions (Proposed Plan/FEIS, pages 4-139 and 4-140).

The West Mojave Plan specifically recognized the cumulative conservation benefits of other past actions by Congress in setting aside large areas within the CDCA for parkland, non-surface disturbing military use, the Desert Tortoise Natural Area, and wilderness. The plan

recognizes the benefits derived from designation by US Fish and Wildlife Service of millions of acres of critical habitat in the CDCA. In addition, the West Mojave plan identified benefits resulting from the implementation of management actions established under BLM land use planning for six regional plan areas in the CDCA.

In the West Mojave planning area, these benefits included mineral withdrawals, voluntary grazing relinquishments, elimination of ephemeral grazing within DWMA, and ACEC management for special status species. The plan also acknowledged cumulative adverse impacts; particularly to wildlife in incidental take areas from factors such as urban-interface conflicts, use within adjacent OHV Open Areas, and the Fort Irwin expansion.

The West Mojave Plan discusses factors that affect both forage availability and use, and grazing use in livestock allotments, including the Shadow Mountain sheep-grazing allotment, as well as the cumulative effects of grazing management in the region. These effects are discussed relative to past, present, and reasonably foreseeable actions that would occur as a result of grazing management within the parameters of the West Mojave Plan.

Cumulative effects for the following resources and activities/uses are identified in the West Mojave Plan that also affect or are affected by grazing in the Shadow Mountain grazing allotment: habitat/vegetation and invasive species; wildlife, including desert tortoise and Mohave ground squirrel; soils, cultural resources; OHV use in the OHV Open Areas, vehicle access; environmental justice, and socioeconomic resources. In addition, new legislation facilitating alternative energy development and expansion of energy corridors, as well as other large-scale resources or uses specific to the Shadow Mountain grazing allotment are addressed in this cumulative analysis. The cumulative treatment will focus on how the adoption of the **Proposed Action** would modify the cumulative effects with respect to these factors.

The cumulative effects region for effects of grazing management for the Shadow Mountain Allotment and other past, proposed, and reasonably foreseeable actions varies by resource as noted herein. There are two main analytical frameworks considered in this cumulative effects analysis of grazing management in the Shadow Mountain Allotment:

- Grazing management activities or activities with similar impacts to grazing management (those activities that can or do modify forage availability and public land health) that are occurring within the Shadow Mountain grazing allotment and the cumulative effects region;
- Other activities within the Shadow Mountain Allotment that similarly affect (as does grazing management) specific resource values and uses.

2. Past, Present, and Reasonably Foreseeable Actions affecting the Shadow Mountain Allotment

One of the CDCA Plan (1980) decisions included designations of allotments and, where appropriate, associated levels of AUM (numbers of animals). Most of the sheep grazing allotments, including Shadow Mountain, were designated as ephemeral, with a maximum number of animals that would be permitted in any grazing season. That is, in any grazing

season depending on forage production and availability, anywhere from 0 to the maximum number of animals might be permitted. Livestock allotments and associated animal numbers were reviewed in the West Mojave Plan (2005) and other bioregional plans in southern California and in some cases, boundaries or uses were modified or eliminated and AUM was adjusted.

In addition to the activities discussed in the cumulative effects analysis in the West Mojave Plan, there have been substantial actions and proposals that have resulted in or have the potential to add to cumulative impacts for one or more resources being affected by grazing management in the Shadow Mountain grazing allotment. A listing of the most substantial of these follows. Whether or not these are individually mentioned, they have contributed or have the potential to contribute to cumulative effects, based on the amount of land base they may affect or change in land use they could produce, not only within their boundaries, but regionally (at least indirectly).

- **designation and subsequent recreational activities and land tenure adjustments, associated with the El Mirage OHV Open Area,**
- **unauthorized sheep grazing by "coyotes",**
- **El Mirage Route Rehabilitation and associated Route Signing,**
- **Expansion of the R-2508 and R-2515 military flight corridors,**
- **establishment of Edwards Air Force Base and subsequent conservation measures and Land Tenure adjustments.**

The BLM's multiple use mission typically results in a variety of activities that are authorized to occur on the same lands, consistent with designations for geographic-specific planning units within the land use plan (California Desert Plan, 1980, as amended). Activities that overlap the Shadow Mountain grazing allotment primarily include recreational activities, such as casual-use recreation (i. e. hunting, picnicking, camping, hiking, motor-vehicle touring and rock hounding) and casual and organized recreation, testing, and motion picture industry filming associated with the El Mirage Cooperative Management Open Area. Many of these activities were occurring in some manner prior to the development of the CDCA land-use plan, such as the historical recreational and filming use of El Mirage dry lakebed.

The Bureau minimizes disturbances through the planning and associated NEPA process as well as through subsequent site-specific NEPA compliance. With respect to planning decisions, all areas are designated based on the spectrum of resource use vs. resource protection within the multiple-use mandate of FLPMA. In addition, resource-specific allocations have been made across broad landscapes in the land-use plan.

For instance, routes of travel have been designated for casual recreational vehicle use to minimize off-route impacts. OHV Open Areas, such as the El Mirage Cooperative Management Area have been designated for organized and intensive recreational uses and other activities compatible with those recreational uses. Other areas have been identified for sensitive resource protection, special management actions beyond those identified in the CDCA Plan, or to define parameters for areas with potentially conflicting uses.

Cumulative effects to the Shadow Mountain allotment have primarily resulted, either directly or indirectly from OHV use, and from designation and use of the El Mirage Cooperative Management Area (OHV Open Area). This action has resulted in substantial changes to a broad spectrum of environmental resources, including vegetation communities, diversity and abundance of wildlife, soil disturbance and erosion potential, and other factors that sheep grazing may also impact.

Mining operations in the California Desert Conservation Area (wilderness, multiple-use class Limited, special areas) require a plan of operations regardless of size, and in any event, where a SMARA plan is required (over 1 acre). Military flight corridors were identified in association with the West Mojave Land Tenure Program, to minimize development conflicts within important military training areas. In addition, several livestock allotments were identified and allotments were designated for particular landscapes, including numbers and types of livestock, types of forage management, and grazing seasons of use.

The Shadow Mountain sheep allotment was one of the allotments designated in the CDCA Plan. At that time, range condition was listed as fair because of ongoing recreational use and unauthorized sheep grazing. Designation of the El Mirage Open Area and increased monitoring of rangelands were implemented to provide parameters and improve range conditions. Subsequently, new parameters were identified through the West Mojave Plan that has been incorporated into the current proposed action for the Shadow Mountain allotment. Impacts from grazing management may be short term (for example, impacts resulting from camp and bedding areas or actual forage use) and long term (impacts resulting from recurring hoof action to area soils). Both the short-term and long-term impacts are consistent with the analysis of the West Mojave Plan. When added to effects identified in the West Mojave Plan and effects of other actions on the allotment, the cumulative impact of the proposed action would not be significant as summarized below.

3. Resource-specific Cumulative Assessment

This environmental assessment concludes that no significant impact would result from the proposed grazing permit renewals or other alternatives. Cumulative impacts to the following 11 critical resources and other resource uses and values of the human environment are minimal, as described below:

1) Areas of Critical Environmental Concern. Affects to specific resources within ACEC that would not affect importance or relevance for ACEC designation are discussed under the appropriate topic.
2) Protection of Native American values has not been identified by tribes as an issue during consultation, and are addressed under cultural resources.
3) Prime or unique farmlands are not present within the allotment.
4) Riparian areas and wetlands are not present within the allotment.
5) Permanent or ephemeral natural water sources are not present in the allotment where the sheep graze, and there are no range improvements for the sheep. The closest ephemeral waters are west and southwest of the allotment. Water is trucked in to mobile camps for the animals. Animals are constantly on the move and do not create concentrated areas of droppings. Therefore, there are no impacts to water quality

from sheep grazing.
6) Floodplains are not present within the allotment.
7) Hazardous or solid wastes are not present, based on federal and State regulations that are associated with grazing.
8) Designated or eligible wild and scenic rivers are not present.
9) Wild horses and burros are not present.
10) Air quality impacts are not contributing to air quality exceedances under any alternatives and are consistent with the State Implementation Plan.
11) Wilderness areas or wilderness study areas are not present.

Impacts described in this EA include insignificant impacts from the proposed action to livestock grazing, biological resources, invasive species, soils, cultural resources, environmental justice, recreation, and social and economic values. These impacts have been determined to be insignificant because both the short-term and long-term impacts are consistent with the analysis of the West Mojave Plan, contributions from grazing are insubstantial as compared to other effects that contribute to cumulative impacts, and adverse effects have been offset by substantial positive strategies identified in the West Mojave Plan. When added to effects identified in the West Mojave Plan and effects of other actions on the allotment, the cumulative impact of the proposed action would therefore be insignificant as summarized below:

Grazing Management

Small adjustments in season of use, thresholds on use of specific species, and overall increased forage thresholds prior to turn-out are anticipated to result in nominal effects in the Shadow Mountain allotment and minor effects to sheep grazing in the West Mojave. Past limitations on grazing since the listing of the desert tortoise as a threatened species have led to substantial loss of potential forage availability in the West Mojave, including the elimination of use of several allotments. In addition, the larger regional effects of reduced agriculture and ranching in the West Mojave and regionally in the west, is the result of economic and development pressures unrelated to the proposed action. The changes identified in the proposed action are not anticipated to substantially contribute to these cumulative effects.

The no grazing alternative for the Shadow Mountain allotment would have a small negative present and reasonable foreseeable future cumulative impact on the livestock industry in the Mojave Desert by adding to the current trend of reduced ranching presence on a regional basis. The overall cumulative effect of this trend is substantial within the sheep-growing industry in southern California. Regional changes include elimination of over 300,000 acres of sheep grazing areas since the approval of the CDCA Plan, reasonably foreseeable future limits to the industry based on resource protection on both public and private lands, future urban development, and other potential factors limiting available sheep-grazing land in the West Mojave and surrounding areas.

Biological Resources

The past, present, and reasonable foreseeable future cumulative impacts of sheep grazing on plants and wildlife in the West Mojave Bioregion are anticipated to decrease due to the implementation of the proposed action and other measures within the West Mojave Plan. The proposed voluntary relinquishment of one cattle and three sheep grazing allotments totaling over 248,000 acres, and elimination of ephemeral sheep grazing in portions of 4 other sheep grazing allotments would reduce the overall cumulative impacts of grazing to biological resources in the West Mojave. Overall, over 300,000 acres of public lands is no longer be grazed by sheep as a result of biological opinions since desert tortoise listing and the West Mojave Plan.

Some loss of plants and wildlife will still occur from sheep grazing. Slower, less mobile wildlife species may not be able to escape being injured or killed by sheep, particularly in sheep bedding areas, or may be lost because of set-up and use of temporary camps. Some plant species, particularly attractive sheep browse species, will suffer reduced growth and depending upon browse timing (before or after seeding) reduced reproduction potential.

These losses are small when compared to those that may occur from other desert activities, such as direct mortality and vegetation loss from fast moving recreational vehicles in and around the allotment, particularly concentrated use in the southern portion of the allotment within El Mirage Open Area.

Indirectly, casual and organized OHV use and related activities have the potential to degrade habitat by removing vegetation, compaction of soils and elimination of microclimates that facilitate re-vegetation. Habitat is impacted by recreational vehicles in localized areas where favorite trails or hill climbs exist, at OHV staging areas, on and adjacent to El Mirage lakebed, and at other well-used camping areas. Past and current illicit dumping activities have resulted in small, localized areas of intense disturbance within the allotment. Rural development on adjacent private lands has also resulted in habitat loss.

Development losses have been partially offset by areas set aside for special uses and programs to consolidate lands north of the OHV Open Area within areas under flight corridors for Edwards Air Force Base (EAFB). Most of the military activities on EAFB are associated with Rogers dry lake bed, which has been historically used for aircraft testing and flights. Habitat away from the lakebed within EAFB receives little surface disturbance and provides good habitat for many wildlife species. In addition, a major program to consolidate public lands in the West Mojave region including north of El Mirage Open Area, was approved in 1991 and has been subsequently implemented. This program has resulted in protection of substantial high-value desert tortoise and Mohave ground squirrel habitat from potential development that could result in major habitat loss.

The designation of routes in the West Mojave planning area will reduce cumulative impacts, including direct wildlife losses, long-term habitat degradation, and spread of invasive species. Particularly positive is the impact reduction that occurs from the closure of routes in the West Mojave Plan. In excess of 2,200 miles of routes in the West Mojave, including approximately 350 miles in the El Mirage Subregion would no longer be accessible by motor vehicle. Not only are rehabilitated areas improved, but also additional areas that are no

longer readily accessible by vehicle are improved, both directly through natural revegetation and indirectly through the elimination of a major vector (OHVs) for surface disturbance and the spread of non-native invasives species.

Most biological components of rangeland health are substantially less affected in ephemeral sheep allotments than in perennial allotments because (1) no sheep use is permitted and thus no forage is utilized unless forage is prolific and readily available and (2) ephemeral sheep lessees generally do not rely on natural water sources for their animals. This is the case in Shadow Mountain allotment. Sheep grazing affects two important rangeland health factors—invasive, non-native species and soils, including biological soil crusts. These are addressed separately below.

Invasive Species

Past and present grazing practices are one of several activities that have negatively impacted native plant communities on grazing allotments in the West Mojave, including within the Shadow Mountain allotment. The spread and establishment of non-native invasive species occurs through a variety of man-made and natural mechanisms, including grazing or other disturbances, which promote fast growing pioneer species that flourish during the early seral stages of vegetation communities.

Sheep contribute to non-native species spread by eating and redepositing native species, by providing soils disturbed by hoof action in which seeds can flourish, and to a lesser extent, by direct disturbance, particularly in bedding and camp areas. Sheep grazing also provides biological control of some of the more invasive weed species through consumption of those species before they can set seed. Net effects of sheep grazing are generally positive or neutral in less disturbed areas and neutral in areas that are more disturbed, in the short-term.

As discussed above, there are other activities such as casual and organized OHV use that occur on public land that contribute to the degradation of native plant communities on an ongoing basis, particularly in the OHV Open Area. Fragile, plant communities require periodic rest from anthropogenic pressures to maintain long-term stability. The effects of sheep grazing in the Open Area, both short-term and long-term, are nominal as compared with ongoing effects to native plant communities from OHV activities.

Both within and outside of the OHV Open Area, the proposed action would allow some level of periodic rest from anthropogenic pressures through the seasonal limitation on grazing use of the allotment and during intermittent years when no ephemeral use is authorized. Therefore, long-term impacts from sheep grazing are considered moderate in the Shadow Mountain allotment.

Adverse impacts from sheep grazing are partially offset by the permanent elimination of sheep grazing in DWMA, an ongoing program for management of invasives, implementation of route designation, and activities and parameters on permits and leases to minimize the potential for non-native establishment and recruitment.

Soils

The past, present and reasonably foreseeable future sheep grazing operations will continue to have a localized, cumulative impact on soils in sheep allotments. Other land uses also contribute to compaction and accelerated erosion both on a localized scale and on a broader scale. Indirectly, casual and organized OHV use, other recreational activities, mining, and other disturbances have the potential to modify soil structure, increase erosion potential, decrease re-vegetation potential, and adversely affect biological soil crusts. However, the net effect from hoof action of sheep through an area is to improve the soil medium for plant growth—for both native and non-native species.

Impacts to soils from sheep can be noticeable in camp and bedding areas, but due to the short-term nature of these uses, do not contribute to long-term impacts unless other, more substantial disturbances are also occurring. In this allotment, OHV Open Area activities may result in substantial increases in erosion potential and soil compaction in heavily used areas and on the route network. Within the OHV Open Area, removal of sheep grazing would not substantially improve soil conditions, because their relative contribution to compaction and erosion potential is small. These impacts are generally low to moderate over broad areas outside of the OHV Open Area, and do not result in cumulative adverse effects over the long-term.

Off-route impacts from OHV use to biological soil crusts (BSC) can result in the burial of those crusts—including when soil moisture is low—and may have fairly substantial effects on the sustainability of sensitive BSC populations within the allotment. Rehabilitation of soil productivity can be enhanced through de-compaction of soils in heavily used areas and providing microclimates for plant seedlings, thereby decreasing erosion potential over the long-term. Sheep also contribute to cumulative effects to BSC through hoof action, but the relative contribution of sheep grazing as compared with recreational use is small.

The designation of routes will reduce cumulative impacts to soils. Particularly positive is the impact reduction that occurs from the closure of substantial mileage of routes. Rehabilitated areas are improved by reduced erosion and elimination of compaction, and additional areas that are no longer readily accessible by vehicle are improved.

Wildfire

Wildfire has not been a major factor in this part of the West Mojave, but in hotter, drier portions of the West Mojave has resulted in large-scale short-term and long-term habitat and vegetation community impacts when there are favorable climatic conditions. Although natural wildfire is an expected occurrence in these vegetative communities, several factors have contributed to increased frequency and extent of wildfire. Primary factors are risks from growing population centers in communities nearby and increasing numbers of arson fires. Other factors include changes to vegetation communities due to slow fire recovery and increasing non-native invasive plant populations.

Wildfire has had a recurring and cumulatively significant adverse affect on wildlife habitat in the West Mojave, but is relatively rare within this allotment due to local climatic conditions. Sheep grazing may indirectly contribute to wildfire occurrence and severity to the extent it contributes to the spread of certain non-native invasive species, but the overall effect of grazing on wildfire has been insubstantial due to low wildfire potential in this area and other substantially larger factors for the spread of invasive, non-native species. Therefore, sheep grazing in the Shadow Mountain allotment is not a substantial contributor to adverse wildfire effects.

Cultural Resources

The causes of adverse effects to most known sites are natural weathering or vandalism. Vandalized sites include cultural resources that have been removed, scratched with hard sharp rock, or had modern graffiti added to obscure the prehistoric or historic cultural values, and sites on the ground that have experienced substantial damage from OHV use off of designated routes. In sheep allotments, impacts could include surface displacement or hoof action on subsurface midden areas.

Approximately 10% of the known sites are found in active allotments and these sites have been subject to grazing for many years without documented damage. Impacts from sheep grazing and the proposed grazing permit renewal are not expected to add any further adverse impact to known sites. Sites with documented damage from sheep grazing would be fenced or otherwise protected until their importance can be determined, and appropriate mitigation, such as data recovery performed on valuable sites. The combined impact would be insignificant, both incrementally and cumulatively, because BLM will implement procedures to protect any affected resources in accordance with amended 2004 State Protocol Agreement to insure compliance with section 106 of the National Historic Preservation Act.

Environmental Justice

There is not a lot of information on the Basque community, but based on available sources, there have been cumulative impacts on this small ethnic community from past, present and reasonably foreseeable activities to limit sheep grazing in Southern California. This is because a substantial segment of this ethnic group has historically and continues to participate in the sheep-grazing industry in Southern California and throughout the west. Southern California is the home of the largest Basque community—about 20,000 people or 37% of the total number of Basque in the nation as of 1990. Between 5 and 10 percent of this community is believed to be involved in some aspect of sheep grazing, and sheep grazing is one of three primary industries in which American Basques participate.

Adoption of the proposed action and resumption of sheep grazing on 16,461 acres of public lands in the Shadow Mountain allotment during higher forage-production years has a relatively small impact to this community. However, continued opportunities for sheep grazing here would assure that some income and job opportunities from sheep grazing continue to be available to members of this small ethnic group in Southern California. As with other American immigrants, as their time in America has increased, their participation

in the U.S. economy has diversified. Sheep grazing still represents a link for this group to their cultural heritage and a way of life that substantially contributed to establishing their Southern California roots.

The no grazing alternative would not contribute to providing this continued opportunity, and taken together with past and reasonably foreseeable actions to limit sheep grazing in Southern California, could have a substantial effect on this community.

Recreation

Recreational use would not be substantially adversely affected by sheep-grazing activities because grazing activities do not overlap the most popular portion of the OHV Open Area, have not affected overall recreational opportunities either within or outside of the Open Area, and have not been a source of perceived or documented conflict in the past. In the El Mirage OHV Area in particular, the lakebed is the primary focus of much of the intensive uses and this lakebed is outside of the allotment. Impacts from viewing sheep are relatively infrequent and subjective, and any past, present and reasonably foreseeable cumulative affects from the proposed action on recreation are anticipated to be nominal.

Social and Economic Values

There would not be substantive cumulative impacts to the local or regional economy of San Bernardino County from the implementation of any of the alternatives. Farming and ranching in the West Mojave region continue to decrease in land area, numbers of operations, and numbers of animals, regardless of these lease renewals or non-renewals. These downward trends are anticipated to continue in San Bernardino County as in most parts of the country, and are the result of downward pressures on production costs of agricultural products as farm production increases in other parts of the world, as well as regional upward pressures for non-rural development activities for residential and commercial enterprises. The past, present, or future gross domestic product contributions of these operations to the local or regional economy are nominal and are expected to continue to decrease as a percent of the total regional economy.

In conjunction with the increasing non-rural development of the region, OHV use has been steadily increasing over the past 10 years. This use is anticipated to further increase in the Shadow Mountain allotment and surrounding areas, as urban development in the nearby Lancaster/Palmdale and Victor Valley areas (e.g., Adelanto, Apple Valley, and Victorville) continues. As indicated in the West Mojave Plan, these are two of the three fastest growing metro areas over the last few decades, since they provide lower cost housing to workers in the Los Angeles Metro Area. Local private-property owners within and adjacent to the allotment boundaries have expressed concerns about how OHV use may affect their private property, as well as the cumulative effects of rangeland management activities, increasing residential use, and other recreational uses in the area.

CHAPTER 5. CONSULTATION AND COORDINATION

A. Participating Staff

Remijio Chavez	Rangeland Management Specialist
Charles Sullivan	Natural Resource Specialist
Jim Shearer	Archaeologist
Edy Seehafer	Environmental Coordinator

B. Consultation

Affected grazing lessees, tribal interests, and interested public.