

**ENVIRONMENTAL ASSESSMENT FOR 2 BLM ALLOTMENTS  
LOCATED IN THE RIO GRANDE, SANTA FE WATERSHED  
EA#NM-220-08-040**

**PURPOSE AND NEED**

One of the major uses of public lands administered by the Bureau of Land Management (BLM) has traditionally been the grazing of cattle, sheep or horses for the benefit of individuals and communities throughout the western United States. This use is regulated by public land legislation, including the Taylor Grazing Act, the Endangered Species Act, the Federal Land Policy and Management Act, and the Public Rangelands Improvement Act. This document provides information needed to determine whether BLM should renew permits for cattle grazing on 2 allotments within the Rio Grande, Santa Fe watershed for an additional 10 years. The 2 allotments are being analyzed in one document in order to address the cumulative effects of livestock on the BLM parcels within the Rio Grande, Santa Fe watershed and to reduce the volume of paper involved in the public notification process. The allotments addressed in this Environmental Assessment include: #542 Santa Fe Allotment and #544 Caja Allotment.

**PROPOSED ACTION AND ALTERNATIVES**

**Proposed Action: No Action Alternative**

Re-issue a term grazing permit without any changes as outlined in Table 1. For additional information, refer to Allotment Evaluation documents available for each allotment at the Taos BLM Field Office.

**Alternative 1, No Grazing:**

Do not issue grazing permits for these allotments, thereby suspending livestock grazing.

Table 1. Outline of allotment guidelines for permit renewal

Allotment Number	Livestock Type	Livestock Number	Season of Use	Total Federal Acres	Pastures	Grazing System	Proposed Improvements
542	Cattle Horse	271 5	3/01 - 2/28	17,763	6	Rotational	Possible vegetation manipulation by fire or mechanical means **
544	Cattle	15	3/01 - 2/28	820	1	Rotational	Possible vegetation manipulation by fire or mechanical means **
<b>Monitoring:</b> BLM would continue the rangeland monitoring study program, continue to consult with the grazing permittee on placement of mineral and supplemental feed and continue monitoring for new populations of noxious weeds.							
** These will be addressed in an amendment or in a later NEPA documents if and when funding is available.							

**Location and Maps**

**542** - Located approximately 9 miles northwest of Santa Fe, in Santa Fe County, New Mexico. Elevation on this allotment is roughly between 5,800 and 6,600 feet. The allotment is located on the USGS Agua Fria, Horcado Ranch and White Rock Quadrangle 7.5 minute series topographic maps. T. 17 N., R. 08 E. Sec 3,4,9,10,15 and 16; T. 18 N., R. 07 E. Sec 1 and 12; T. 18 N., R. 08E Sec 2-18, 20-29 and 33-36; T. 19 N., R 07 E. Sec 36; and T. 19 N., R. 08 E. Sec 26-35.

**544** - Located approximately 4 miles north of La Cienega, in Santa Fe County, New Mexico. Elevations run from 6,100 to 6,400 feet. The allotment is located on the USGS Tetilla Peak and Turquoise Hill Quadrangle 7.5 minute series topographic maps. T. 16 N., R. 07 E. Sec 24 and T. 16 N., R. 08 E. Sec 19 and 30.

See Figure 1 for the map. Individual allotment maps are available at the Taos Field Office and upon request.

## **AFFECTED ENVIRONMENT / ENVIRONMENTAL IMPACTS**

### **Areas of Critical Environmental Concern / Special Management Areas**

There are no Areas of Critical Environmental Concern or Special Management Areas within or adjacent to the subject allotments, thus there would be no effect from **either alternative**.

### **Wilderness / Wilderness Study Areas**

There are no wilderness or wilderness study areas within the subject allotments, thus there would be no effect from **either alternative**.

### **Air Quality**

The Clean Air Act Amendments in 1990 required that all federal actions conform with State Implementation Plans for air quality. One non-attainment area has been designated in New Mexico. None of these areas are located on or near the allotment.

Although this allotment is not within a non-attainment area, greenhouse gas emissions from non-renewable sources often occur from ranching operations. Greenhouse gases (GHG), including carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), and the potential effects of GHG emissions on climate, are not regulated by the EPA under the Clean Air Act. However, greenhouse gas emissions are linked to climate change.

Under the **proposed action**, GHG emissions are expected to be generated primarily from vehicles used to manage cattle operations and may be estimated to be about 10 tons of relevant emission. The BLM recommends using best management practices to reduce these emissions, such as reducing number of trips, keeping vehicle well maintained, purchasing more fuel efficient vehicles. There would be no effect under the **no grazing alternative**.

### **Climate**

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the Intergovernmental Panel on Climate Change (IPCC) predicted that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences (2006) supports these predictions, but has acknowledged that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. It is not, however, possible to predict with any certainty regional or site specific effects on climate relative to the proposed lease parcels and subsequent actions.

However, potential impacts to natural resources and plant and animal species due to climate change are likely to be varied, including those in the southwestern United States. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased windblown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated. Due to loss of

habitat or competition from other species whose ranges may shift northward, the population of some animal species may be reduced or increased. Less snow at lower elevations would likely impact the timing and quantity of snowmelt, which, in turn, could impact water resources and species dependant on historic water conditions. Forests at higher elevations in New Mexico, for example, have been exposed to warmer and drier conditions over a ten year period. Should the trend continue the habitats and identified drought sensitive species in these forested areas and higher elevations may also be more affected by climate change.

In New Mexico, a recent study indicated that the mean annual temperatures have exceeded the global averages by nearly 50% since the 1970's (Enquist and Gori). Similar to trends in national data, increases in mean winter temperatures in the southwest have contributed to this rise. When compared to baseline information, periods between 1991 and 2005 show temperature increases in over 95% of the geographical area of New Mexico. Warming is greatest in the northwestern, central, and southwestern parts of the state.

We anticipate that monitoring efforts will help indicate vegetation shifts, allowing for management modifications to address global climate change.

## **Soils**

The following soils are identified as occurring on the allotments analyzed in the watershed:

*Agua Fria-Paraje complex*, 1 to 8 percent slopes. These soils consist of gravelly loams, and gravelly clay loams with a rooting depth greater than 60 inches. Parent materials include: alluvium derived from schist, gneiss and granite. Average annual precipitation in this area ranges from 10 to 13 inches. Vegetation is characterized by blue grama, New Mexico feathergrass, black grama, sideoats grama, pinyon pine, Galleta, ring muhly, threeawn, oneseed juniper and sand dropseed.

*Alire loam*, 2 to 6 percent slopes. This soil consists of loams with rooting depths greater than 60 inches. Parent materials include: Alluvium derived granite, schist, gneiss, loess, and volcanic ash. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by blue grama, black grama, ring muhly, Galleta and broom snakeweed.

*Apache stony fine sandy loam*, 1 to 15 percent slopes. These soils consist of stony sandy loams with rooting depths between 10 and 20 inches. Parent material of weathered basalt and other volcanic debris comprise these soils. Average annual precipitation in this complex ranges from 12 to 15 inches. Vegetation is characterized by pinyon, juniper, sideoats grama, blue grama, needle and thread and fourwing saltbush.

*Buckhorse-Altazano complex*, 2 to 8 percent slopes, non-flooded and flooded. These soils consist of coarse and gravelly sandy loams with rooting depths greater than 60 inches. Parent materials include: Alluvium derived from fanglomerate, sandstone, granite and mudstone. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by blue grama, black grama, ring muhly, Galleta, oneseed juniper and broom snakeweed.

*Chupe-Riverwash complex*, 1 to 3 percent slopes, flooded. These soils consist of gravelly and loamy coarse sand with rooting greater than 60 inches. Parent materials include: Alluvium derived from granite, quartzite, and schist. Average annual precipitation in that area ranges from 9 to 13 inches. Vegetation is characterized by blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, Galleta and spike dropseed.

*Clovis loam*, 1 to 3 percent slopes. These soils consist of loams, with rooting depths between 20 to 36 inches. Parent material of mix old alluvium comprises these soils. Average annual precipitation in this area ranges from 12 to 14 inches. Vegetation is characterized by western wheat, blue grama, and squirreltail.

*Dondiego loam*, 1 to 3 percent slopes. This soil consists of loams with a rooting depth greater than 60 inches.

Parent materials include: Alluvium derived from schist, gneiss, and granite. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by black grama, blue grama, ring muhly, broom snakeweed and Galleta.

*Encantado very cobbly sandy loam*, 25 to 45 percent slopes. This soil consists of very cobbly sandy loam with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from granite, quartzite and residuum weathered from granite, fanglomerate, and sandstone. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, Galleta, pinyon pine.

*Golondrina-Paraje complex*, 8 to 45 percent slopes. These soils consist of gravelly sandy loams and gravelly clay loams with rooting depths greater than 60 inches. Parent materials include: alluvium derived from schist, gneiss and granite. Average annual precipitation in this area ranges from 10 to 13 inches. Vegetation is characterized by blue grama, New Mexico feathergrass, black grama, sideoats grama, pinyon pine, Galleta and oneseed juniper.

*Horcado-Nazario complex*, 2 to 35 percent slopes. These soils consist of very gravelly loams with rooting depths greater than 60 inches. Parent materials include: Alluvium derived from schist, gneiss and granite. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by blue grama, black grama, New Mexico feathergrass, oneseed juniper, pinyon pine, sideoats grama, Galleta, bottlebrush squirreltail and broom snakeweed.

*Jaconita-Xenmack complex*, 25 to 60 percent slopes. These soils consist of very gravelly coarse sandy loams and extremely gravelly sandy loams with rooting depths 20 inches to greater than 60 inches. Parent materials include: alluvium derived from schist, gneiss, granite and micaceous sandstone and siltstone. Average annual precipitation in this area ranges from 9 to 12 inches. Vegetation is characterized by blue grama, black grama, New Mexico feathergrass, sideoats grama, Galleta and juniper.

*Junebee gravelly sandy loam*, 5 to 15 percent slopes. This soil consists of gravelly sandy loam with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from mudstone, fanglomerate, sandstone. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by Indian ricegrass, blue grama, sand dropseed and Galleta.

*Khapo fine sandy loam*, 1 to 3 percent slopes. This soil consists of fine sandy loams with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from granitic sandstone, and mudstone. Average annual precipitation in that area ranges from 10 to 13 inches. Vegetation is characterized by blue grama, black grama, Galleta, ring muhly and broom snakeweed.

*Latierra-Lamesilla-Levante complex*, 2 to 15 percent slopes, non-flooded and flooded. These soils consist of gravelly coarse sandy loams with rooting depths greater than 60 inches. Parent materials include: Alluvium derived from schist, gneiss and granite. Average annual precipitation in that area ranges from 12 to 14 inches. Vegetation is characterized by blue grama, black grama, New Mexico feathergrass, oneseed juniper, pinyon pine, sideoats grama, Galleta, oak, sand dropseed, Bigelow's rubber rabbitbrush and spike dropseed.

*Levante-Riverwash complex*, 1 to 3 percent slopes, flooded. These soils consist of loamy sands with rooting depths greater than 60 inches. Parent materials include: Alluvium derived from granitic sandstone, schist, gneiss and granite. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by blue grama, sand dropseed, black grama, Bigelow's rubber rabbitbrush, Galleta and spike dropseed.

*Majada stony fine sandy loams*, 20 to 50 percent slopes. These soils consist of very gravelly loams, with rooting depths between 20 and 40 inches. Parent material of weathered basalt and other volcanic debris

comprise these soils. Average annual precipitation in this complex ranges from 12 to 15 inches. Vegetation is characterized by sideoats grama, western wheat, blue grama, and galleta.

*Nazario gravelly loam*, 2 to 8 percent slopes. This soil consists of gravelly loam with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from granite, quartzite and residuum weathered from granite, fanglomerate, and sandstone. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by black grama, blue grama, New Mexico feathergrass, oneseed juniper, sideoats grama, Galleta, pinyon pine.

*Sipapu-Yuzarra-Kachina complex*, 5 to 65 percent slopes. These soils consist of gravelly sandy loams and fine sandy loams with rooting depths up to 20 inches as well as greater than 60 inches. Parent materials include: Colluvium and residuum derived from granitic sandstone, siltstone, and mudstone and Alluvium derived from granite, gneiss, and schist over residuum from granite, sandstone, and fanglomerate. Average annual precipitation in that area ranges from 12 to 14 inches. Vegetation is characterized by blue grama, black grama, mountain mahogany, little bluestem, oneseed juniper, pinyon pine, sideoats grama and eriogonum.

*Tanoan-Encantado complex*, 5 to 25 percent slopes. These soils consist of gravelly sandy loams with rooting depths greater than 60 inches. Parent materials include: Alluvium derived from schist, gneiss, granite and basaltic tuff, as well as Colluvium and residuum, derived from granite, fanglomerate, and sandstone. Average annual precipitation in that area ranges from 13 to 15 inches. Vegetation is characterized by blue grama, black grama, ring muhly, New Mexico feathergrass, sideoats grama, Galleta and oneseed juniper.

*Tetilla loam*, 1 to 5 percent slopes. This soil consists of loams with a rooting depth greater than 60 inches. Parent materials include: Eolian deposits and alluvium derived from volcanic ash and basalt. Average annual precipitation in that area ranges from 10 to 12 inches. Vegetation is characterized by blue grama, Galleta, ring muhly, sand dropseed, threeawn and oneseed juniper.

*Vitrina-Haozous gravelly coarse sandy loams*, 5 to 15 percent slopes, non-flooded and flooded. These soils consist of gravelly coarse sandy loams with rooting depths greater than 60 inches. Parent materials include: alluvium derived from schist, gneiss and granite. Average annual precipitation in this area ranges from 10 to 13 inches. Vegetation is characterized by blue grama, black grama, oak, Galleta and oneseed juniper.

*Zepol silt loam*, 0 to 2 percent slopes, flooded. This soil consists of silt loams with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from pumice, volcanic ash, granite, and schist. Average annual precipitation in that area ranges from 10 to 13 inches. Vegetation is characterized by black grama, blue grama, ring muhly, broom snakeweed and Galleta.

*Zia fine sandy loam*, 0 to 2 percent slopes. This soil consists of fine sandy loams with a rooting depth greater than 60 inches. Parent materials include: Alluvium derived from pumice, volcanic ash, granite, and schist. Average annual precipitation in that area ranges from 10 to 13 inches. Vegetation is characterized by black grama, blue grama, ring muhly, broom snakeweed and Galleta.

*Zozobra-Jaconita complex*, 5 to 25 percent slopes. These soils consist of gravelly sandy loams with rooting up to 20 to 35 inches. Parent materials include: alluvium derived from granite, gneiss, schist and loess. Average annual precipitation in this area ranges from 10 to 13 inches. Vegetation is characterized by black grama, blue grama, New Mexico feathergrass, Galleta, sideoats grama, oneseed juniper and pinyon pine.

The **proposed action** could cause both positive and negative impacts to the soils. Livestock impacts to soils are dependent on management, soil properties and weather. For example, livestock movement over wet soils can result in increased erosion and soil compaction. Proper distribution of livestock minimizes the negative impacts while still providing the positive impacts, such as loosening of compacted soils and breaking up hydrophobic crusts resulting in increased infiltration. It is important that livestock are managed so that density and diversity

of vegetation cover are maintained to limit soil loss.

Under current management, soil indicators for the allotments point to good soil condition (Average = 85%) with the lowest Soil and Site Stability rating being 72% (see the ‘Standards for Rangeland Health’ portion later in this document for further information and explanations).

Based on current knowledge, the **proposed action** will result in no impact or have a positive impact. The **no grazing alternative** would remove livestock from the area and eliminate both the positive and negative impacts of livestock.

### Wetlands/Riparian Areas

The allotments identified in this document contain ephemeral channels adjacent to an interstate water. These are identified as Waters of the United States by the U.S. Army Corps of Engineers (USACE). Proposed grazing activities would not have a significant impact on these channels. Any alteration of these channels would require clearance from the Taos Field Office and USACE. There is no riparian vegetation within these allotments other than the semi-obligate species found in the arroyo riparian association, including rabbitbrush (*Chrysothamnus nauseosus*) and Apache plume (*Fallugia paradoxa*). Thus, **neither alternative** will have an effect on riparian areas.

### Water Quality

Subsurface water – Current impairments are not identified and ground water is not likely to be impacted by the proposed cattle. Therefore, based on current knowledge, there would be no impact from **either alternative**.

Surface – These allotments are located in Hydrologic Unit (HUC) 13020201, which comprises 715,762 acres along the Rio Grande, near Santa Fe, NM, and its tributaries and is further divided into smaller HUCs. The allotments analyzed in this document occur in four of these smaller HUCs (Table 2).

Table 2. Summary of BLM allotments by 10 Digit HUC (subwatershed and NMED evaluation unit).

NMED Assessment Unit	Subwatershed	Allotments	BLM Acreage	Percent of Subwatershed
NM-2110_00	Santa Fe River	544	820	0.5%
NM-2111_00	Canada Ancha – Rio Grande	542	14,776	6.4%
NM-2111_00	Rio Tesuque – Rio Grande	542	1,062	1.5%
NM-2111_00	Pojoaque Creek	542	1,862	0.8%

The New Mexico Environment Department surveyed and evaluated perennial reaches in the three mentioned watersheds in 2002 and identified impairments for stream reaches not meeting water quality standards for designated uses. The following impairments are identified for these units:

NM-2110\_00, Santa Fe River (Cochiti Pueblo bnd to Santa Fe WWTP) – Includes 820 acres of BLM land in allotment 544. This reach was assessed in 2002 and categorized as 1, not supporting warmwater and marginal coldwater fishery use. Probable causes were stream water deposits and pH with probable sources including urban runoff/storm sewers, surface mining, resource extraction, range grazing, municipal point sources, mine tailings, grazing related sources and agriculture.

Based on Rangeland Health Evaluation surveys, there is not likely to be any increased water quality impairments resulting from the **proposed action**. This opinion is based on two factors: BLM land surface in these watersheds comprise a low percentage of the total area and ratings for Soil/Site Stability and Hydrologic Function for allotment 544 in the Santa Fe River watershed associated with the impaired reach, average over 90% similarity to ecological site descriptions. The survey team identified four likely reasons contributing to reduced health: historic overuse, drought, altered fire regimes and urbanization. It is recommended that all

allotments not averaging at least 80% for any category manipulate grazing or implement range improvements to improve conditions (See section Standards for Rangeland Health and Table 5). The **no grazing alternative** may reduce probable sources of impairment by removing livestock.

## **Floodplains**

Surveys occurring during 2007 indicated that flood plains occur only within ephemeral channels or arroyos. There are not mapped by FEMA and their frequency and extent of inundation are difficult to estimate due to a lack of gauge data. However, significant flow can occur resulting in channel scouring. Upslope conditions and hydraulic alteration of these channels can degrade the floodplain resulting in excessive erosion and increased flow rates. Any permittee alteration planned within these channels will require a separate NEPA analysis and permits from other regulatory agencies.

Grazing in compliance with the **proposed action** will have minimal adverse effect on floodplains due to timing and intensity of grazing. The **no grazing alternative** would have no direct negative effect on ephemeral floodplains.

## **Hazardous or Solid Wastes**

There were no hazardous or solid wastes identified on the allotments or will result from the proposed action. There would be no effect under **either alternative**.

## **Wild and Scenic Rivers**

There are no Wild and/or Scenic rivers identified within or near the allotments, consequently there is no effect under **either alternative**.

## **Prime or Unique Farmland**

There have been no prime or unique farmlands identified within the Taos Field Area, to there would be no effect under **either alternative**.

## **Vegetation**

Vegetation expected for the soils identified in the allotments include: blue grama, black grama, ring muhly, Galleta, oneseed juniper, broom snakeweed, sand dropseed, Bigelow's rubber rabbitbrush, spike dropseed, western wheat, squirreltail, New Mexico feathergrass, sideoats grama, pinyon pine, Indian ricegrass, oak, threeawn, mountain mahogany, little bluestem, buckwheat and other species in smaller amounts.

Grazing can and has impacted vegetation within allotment 542. These impacts have been attributed to the lack of livestock movement from the lowlands to the ridges within the allotment. Vegetation appeared slightly decadent and underutilized on the uplands and ridges and over utilized on the bottoms and in the arroyos. Due to the topographic nature of this allotment it is imperative that livestock utilize the ridges (where there is plenty of feed) to adequately manage this allotment. Recent grazing has not been utilizing the ridges. Mandatory salting of the ridges was implemented to ameliorate this unbalanced use. Other vegetation concerns are lack of natural disturbance regime, juniper expansion and the loss of bunchgrasses. The permittee has been working on restoring areas in the private and State lands by juniper removal. Still other impacts to vegetation within this allotment include OHV use and motorcycle trails.

The interdisciplinary resource team concluded that the allotments generally look better than in the past except on the bottoms in allotment 542. But due to the mandatory implementation of salting on the ridges and the overuse being during the dormant season, these portions of allotment 542 should recover quickly. Therefore,

under the **proposed action**, short-term impacts to vegetation are expected while long term trends are expected to ameliorate. Under the **no grazing alternative**, there would be no measurable vegetative removal from the allotment.

### Noxious Weeds

Any time livestock are grazed in other areas and then returned to the allotment or fed non-certified feed there is a risk of introducing exotic or noxious plant species to the allotment. The **proposed action** would not pose additional risks of introduction or spread of noxious weeds beyond those already occurring. Under both the **proposed action** and **no grazing alternative**, weeds could be introduced by road maintenance equipment or recreational activities.

Under the **proposed action**, weeds could be introduced to the allotment through livestock feces, emergency feed, watering equipment or vehicles associated with the management of livestock. The **no grazing alternative**, would limit the risk of new infestation to those caused by human activities and wildlife.

### Cultural Resources

All allotments were visited and Class 2 surveys were completed to identify sites to determine the impacts grazing may have on the sites located. Results are summarized in Table 3.

Table 3. Summary of cultural resource surveys by allotment

Allotment Number	Total Federal Acres	Survey Date	Sites Recorded	Site Type	Adverse Affects
542	17,763	6/16/2008	0	N/A	NONE
544	820	8/22/2007	1	Lithic Scatter (FS-544-01)	NONE

Under the **proposed action**, grazing intensity would remain at current levels. Based upon a literature, site and survey files review and the reconnaissance inventory, it is likely that little or no damage would result from grazing. But, continued grazing in these subject allotments could impact cultural resources in two ways. First, grazing could cause some trampling of artifacts and features. Second, natural erosion due to ground disturbance could damage sites. These effects would be slightly less under the **no grazing alternative**. As seen in the Table 3, no impacts to cultural resources were discerned during the surveys of the allotments. Therefore, there would be little or no damage to cultural sites from grazing. The **no grazing alternative**, would have no effect on cultural resources by removing livestock from the allotment.

### Native American Religious Concerns

There have been no areas of concern identified within these allotments. As part of the EA process, all tribes within the Field Office boundary will receive the opportunity to provide information on any areas of concern in or near the allotments.

### Wildlife

Existing habitat with the allotments include; pinyon-juniper woodlands, and arroyo/wash areas, and supports seasonal home ranges for elk, mule deer, mountain lion, bobcat, coyote, striped skunk, badger, raccoon, gray fox, rock squirrel, Colorado chipmunk, valley pocket gopher, Ord kangaroo rat, various mice and woodrat species, porcupine, black-tailed jackrabbit, desert cottontail, scaled quail, vesper sparrow, western meadowlark, woodhouse toad, ornate box turtle, collared lizard, New Mexico whiptail, Great Plains skink, gopher snake, western diamondback rattlesnake, bats, and a variety of insects. The region is an important refuge for many

species of wildlife.

Impacts of improper grazing practices on wildlife and habitat include: increased competition for limited water, forage, and space; alteration of vegetative composition and structure; impacts to stream hydrology and water quality; and reduced soil permeability and potential to support plants due to soil compaction. Judicious grazing practices can have positive affects on wildlife and be a beneficial management tool; these include: increases in vegetation composition diversity and improvement of forage availability and quality for early to mid-successional wildlife species; creation of patchy habitat with high structural diversity for feeding, nesting and hiding; opening up areas of dense vegetation to improve foraging areas for a variety of wildlife; removing rank, coarse grass that will encourage regrowth and improve abundance of high quality forage for wild ungulates; stimulating browse production by reducing grass biomass; and improving nutritional quality of browse by stimulating plant regrowth (NMDGF 2005).

Studies in northern New Mexico have indicated that total elimination of grazing did not improve range condition on upland or lowland sites when compared with adjacent moderately grazed areas (Holecheck and Stephenson 1985). There are examples that suggest many wildlife species are tolerant of moderate grazing and many appear to benefit from light to conservative grazing. Smith et al. (1996) found that lightly grazed climax rangelands and conservatively grazed late seral rangelands had similar songbird and total bird populations. They also concluded that wildlife diversity was higher on the conservatively grazed late seral than the lightly grazed climax rangeland. Studies in southeastern Arizona by Bock et al. (1984) support the hypothesis that conservatively to moderately grazed areas in mid or late seral condition supported greater diversity of wildlife than ungrazed areas in climax condition. Livestock grazing was also shown to enhance forage for elk and manage their distribution by increasing availability and nutritional value of preferred grasses in early growth stages (Holechek et al. 2004).

Best management practices would ensure that forage production within this area can support both wildlife and livestock on a sustained basis. The functionality assessment of habitat components is as outline in Table 4.

Table 4. Functionality assessment for Biotic Fauna.

Allotment	Biotic Fauna Rating	Summary
542	Functioning at Risk-Downward Trend	Juniper and pinyon expansion / lack of disturbance regime
544	Proper Functioning Condition	N/A

It is not likely that grazing under the **proposed action** would have notable negative impacts on wildlife. The **no grazing alternative** would remove all possible competition between wildlife and livestock.

### Threatened or Endangered Species

Federally listed threatened (T) and endangered (E) species in Santa Fe County, New Mexico, include: black-footed ferret (*Mustela nigripes*) (E); Southwestern willow flycatcher (*Empidonax traillii extimus*) (E); Rio Grande silvery minnow (*Hybognathus amarus*) (E); and Mexican spotted owl (*Strix occidentalis lucida*) (T). It is determined that there are no federally listed threatened or endangered species likely to be found in the subject allotments. There are four state-listed threatened species which may be found in the area: the Bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), Gray vireo (*Vireo vicinior*) and Baird's sparrow (*Ammodramus bairdii*). There is no designated critical habitat for any species listed by the U.S. Fish and Wildlife Service (USFWS) within the allotments. It is determined that the **proposed action** or **no grazing alternative** will have no affect on federally listed proposed, candidate, threatened or endangered species, and minimal to no impact on species that are state-listed threatened or endangered species.

Migratory bird species of conservation concern (BLM Interim Management Guidance 2008-050) that have the potential to occur on the allotments include burrowing owl, ferruginous hawk, prairie falcon, golden eagle,

loggerhead shrike, mourning dove, pinyon jay, Brewer’s sparrow, and sage sparrow. The **proposed action** has the potential to have a negative affect upon individual birds, eggs, young and/or the nesting habitat of ground nesting birds, due to trampling, however, it is unlikely there would be a notable impact to the population of this or any other species of conservation concern. The **no grazing alternative** could have either a beneficial or detrimental affect on individual migratory bird species of concern, depending on the response of range condition and individual species requirements, but affects at the population or species level would not be adverse.

Species of Greatest Conservation Need (NMDGF 2005) that have the potential to occur on the allotments include: ferruginous hawk, mourning dove, loggerhead shrike, sage thrasher, sage sparrow, bald eagle, golden eagle, olive-sided flycatcher, pinyon jay, yellow warbler, white-tailed jackrabbit, Gunnison’s prairie dog, mule deer, tiger salamander, and collared lizard. It is determined that the **proposed action** and **no grazing alternative** will have minimal impacts on Species of Greatest Conservation need.

**Social / Economic Issues**

BLM permits/leases are transferred to qualified applicants at the request of the current permittee/lessee; the BLM has had no influence on the social makeup of those who currently hold these permits. Therefore, it has been determined that neither the **proposed action** nor the **no grazing alternative** would be likely to result in impacts which would occur disproportionately in low-income groups, minorities or Indian tribes. With regard to economics, the **proposed action** would allow the permittee to continue the lifestyle they have known and earn money from cattle operations on federal lands. Suspension of the grazing permit under the **no grazing alternative** would cause monetary losses to the permittee/lessee, in the form of increased costs to rent additional pasture or in purchasing feed.

**Recreation**

There are no developed recreation sites on the subject allotments, thus neither the **proposed action** nor the **no grazing alternative** would have measurable impacts on recreation.

**Standards for Rangeland Health**

Field crews completed the Rangeland Health Evaluation Summary Worksheet for all the subject allotments, with subdivision by parcel or distinct Ecological Site. Results are summarized in Table 5 by Soil/Site Stability, Hydrologic Function and Biotic Integrity and totals by site and indicator group. The percent similar indicator score was created by multiplying an assigned value for departure from site descriptions/reference areas by the number of indicators at the level. Departure scores are categorized as: none to slight = 5, slight to moderate = 4, moderate = 3, moderate to extreme = 2 and extreme = 1, thus giving the most similar sites the highest score. For example, if all indicators under Soil/Site Stability were rated none to slight (best condition), the equation would be  $5(\text{score}) \times 9(\text{indicators}) = 45 / 45 \times 100 = 100\%$  similarity, or what is expected based on an Ecological Site Description.

Table 5. Summary of indicators by allotment.

Allotment Number	Observers	Survey Date	Percent of Soil/Site Stability	Percent of Hydrologic Function	Percent of Biotic Integrity	Average Percentage
542	Meyer, Riehn, Young	5/7/2008	86%	80%	82%	81%
			84%	80%	80%	
			84%	78%	82%	
			82%	74%	80%	
544	Riehn, Young	8/22/2007	100%	100%	100%	100%

The Standards are a tool for assessing range condition and are not analyzed under **either alternative** here. If an allotment or pasture falls below 80% in the Soil Site Stability, Hydrologic, or Biotic indicators, monitoring should be established to determine the cause/s of the low rating. The BLM in consultation with the permittee and various other agencies, through an interdisciplinary effort would develop goals and objectives for the areas that are falling below 80% to improve the condition.

### **Residual Impacts**

Residual impacts of livestock grazing would not change under the **proposed action**. There would continue to be moderate removal of current years growth on forage species. This removal may be detectable by visitors to the area but is within the acceptable range. Livestock would be visible on the allotment during their season of use. This can be positive or negative depending on the perspective of each visitor. There would be no measurable impact from the **no grazing alternative**.

### **Cumulative Impacts**

The primary disturbance factor within the region has been historical grazing with subsequent habitat conversion. The area has been affected by habitat fragmentation and conversion due to urban, residential, commercial, and recreational activities and development. The future effects of these developmental factors may increase as human populations in the area continue to grow.

BLM land comprises roughly 6% of the area within the Rio Grande, Santa Fe watershed. (Percentages are relative to lands within the Taos Field Office.) The subject allotments cover roughly 43% of the BLM land in this watershed and 2.6% of the total land mass of this watershed. Due to the relatively low percentages of federal land involved, and with no changes being made to livestock management on these allotments, there would be no significant impact. Although, 43% of the BLM land appears to be a large percentage, it only represents roughly 3% of the watershed. The survey team acknowledges that this assessment covers a large area of our land jurisdiction, but has determined that the driving factors for lower ratings are due to drought and altered fire regimes, not livestock grazing. Livestock grazing is only one of several disturbance activities within the area. Some uses with similar impacts are off-road vehicles, other recreational use and road construction and maintenance. There would be no measurable cumulative impacts from the **proposed action** or the **no grazing alternative**.

### **Conformance with Plans**

The proposed permit renewals within this document are in conformance with the Taos Resource Area Management Plan (1988). Livestock grazing impacts were analyzed on a Resource Area wide basis in the Taos Resource Management Plan. An Allotment Evaluation (AE) document has been prepared for each allotment and is available for review at the Taos Field Office. Individual allotment maps are available at the Taos Field Office and upon request.

### **Consultation and Coordination**

This Environmental Assessment will be mailed to all individuals or organizations who have notified the Taos Field Office of their interest. These individuals or organizations will be given 15 days to make comments on the accuracy of this document.

### **Preparers**

This document was prepared and reviewed by a team from the Taos Field Office. They include:  
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