

FINDING OF NO SIGNIFICANT IMPACT/RATIONALE

DOI-BLM-NM-P010-2011-117-EA

Finding of No Significant Impact: I have reviewed this environmental assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined the proposed action will not have significant impacts on the human environment and that preparation of an Environmental Impact Statement (EIS) is not required.

Rationale for Recommendations: The proposed action would not result in any undue or unnecessary environmental degradation. The proposed action will be in compliance with the Roswell Resource Management Plan and Record of Decision (October, 1997).

/s/ Jerry Dutchover
Jerry Dutchover,
Acting Assistant Field Manager, Resources

01/03/2012
Date

ENVIRONMENTAL ASSESSMENT

GRAZING AUTHORIZATION

For

ALLOTMENT 65049

Sand Wells

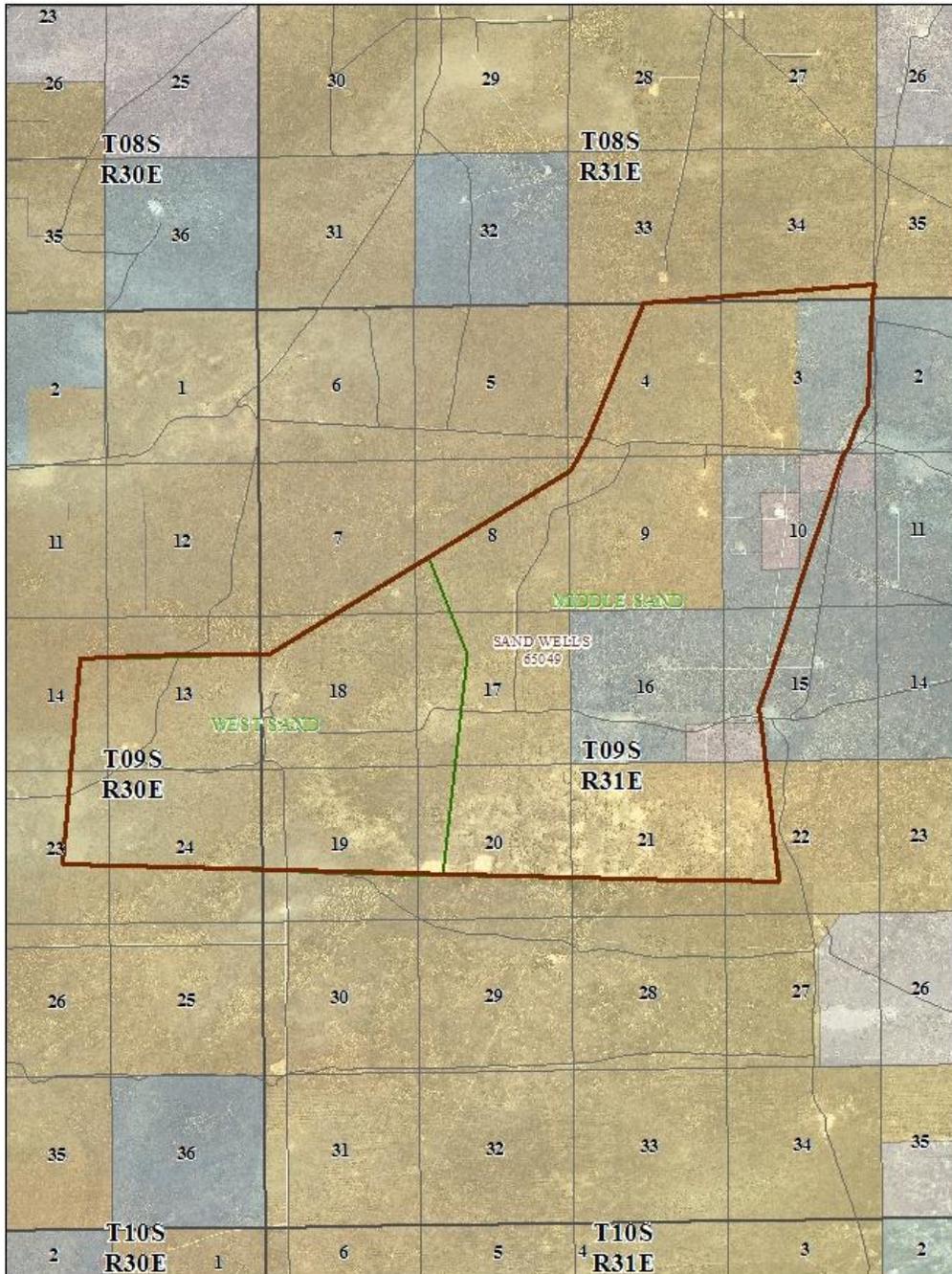
DOI-BLM-NM-P010-2011-117 EA

April 2011

U.S. Department of the Interior
Bureau of Land Management
Roswell Field Office
Roswell, New Mexico



Sand Wells Allotment



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I. BACKGROUND

Purpose and Need for the Proposed Action

The purpose of issuing a new grazing permit would be to authorize livestock grazing on public range on the Sand Wells Allotment #65049. The BLM has recently acquired 640 acres of private land located at T. 09 S., R. 030 E., Section 13, 480 acres of which exist within the Sand Wells allotment. This action will increase the public land percentage and the Animal Unit Month (AUM) amount. A new permit will be required to reflect these changes. When authorizing livestock grazing on public range, the Bureau of Land Management (BLM) must conduct a site-specific NEPA analysis before issuing a permit to authorize livestock grazing. This environmental assessment fulfills the NEPA requirement by providing the necessary site-specific analysis of the effects of issuing a new grazing permit on this allotment. The permit would be needed to specify the types and levels of use authorized, and the terms and conditions of the authorization pursuant to 43 CFR §§4130.3, 4130.3-1, 4130.3-2, and 4180.1.

The scope of this environmental assessment is limited to the effects of issuing a new grazing permit on this allotment. Over time, the need could arise for subsequent management activities which relate to grazing authorization. These activities could include vegetation treatments (e.g., prescribed fires, herbicide projects), range improvement projects (e.g., fences, water developments), and others. Future rangeland management actions related to livestock grazing would be addressed in project-specific NEPA documents as they are proposed.

Though this environmental assessment specifically addresses the impacts of issuing a grazing permit on this allotment, it does so within the context of overall BLM management goals. Allotment management activities would have to be coordinated with projects intended to achieve those other goals. For example, a vegetation treatment designed to enhance watershed condition or wildlife habitat may require rest from livestock grazing for one or more growing seasons. Requirements of this type would be written into the lease as terms and conditions.

Conformance with Land Use Planning

The proposed action conforms to the 1997 Roswell Approved Resource Management Plan (RMP) and Record of Decision; the 2000 New Mexico Standards for Public Land health and Guidelines for Livestock Grazing Management and Record of Decision and the 2008 Special Status Species Resource Management Plan Amendment as required by 43 CFR 1610.5-3.

Relationships to Statutes, Regulations, or Other Plans

The proposal to renew the livestock grazing permit on this allotment is in conformance with the 1994 Environmental Impact Statement for Rangeland Reform; the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1700 et seq.); the Taylor Grazing Act of 1934 (TGA) (43 U.S.C. 315 et seq.); the Public Rangelands Improvement Act of 1978 (PRIA) (43 U.S.C. 1901 et seq.).

II. PROPOSED ACTION AND ALTERNATIVES

Proposed Action - Current Livestock Management

The proposed action is to issue a ten-year permit to graze cattle and horses on this allotment. The permit will reflect the changes in public land percentage and AUM amount. Current permitted use is based on long term monitoring and rangeland conditions. Additionally a

rangeland health assessment has been completed and the allotment meets the Standards for Public Land Health. See Table 1 & 2 below for details of this allotment.

Table 1. Animal Units/Animal Unit Months before acquisition

Allot Number	Allotment Name	Acres of Public Land	Percent Public Land	Animal Units Authorized	Animal Unit Months Authorized	Permitted Animal Units	Permitted Animal Unit Months
65049	Sand Wells	5268	72	186	1609	186	1609
Totals		5268	72	186	1609	186	1609

Table 2. Animal Units/Animal Unit Months after acquisition (proposed action)

Allot Number	Allotment Name	Acres of Public Land	Percent Public Land	Animal Units Authorized	Animal Unit Months Authorized	Permitted Animal Units	Permitted Animal Unit Months
65049	Sand Wells	5748	79	186	1763	186	1763
Totals		5748	79	186	1763	186	1763

There would be no changes from current livestock management as conducted by the permittee, or to existing range improvements already in place. Future projects or activities identified by the permittee or the BLM can still be considered for implementation. Rangeland monitoring would continue on the allotment and changes to livestock management would be made as necessary. If new information surfaces that livestock grazing is negatively impacting other resources, action will be taken to mitigate those impacts.

No Grazing Alternative

Under this alternative a new grazing permit would not be issued for this allotment. No grazing would be authorized on federal land on this allotment under this alternative. Under this alternative and based on the land status pattern within the allotment, new fences would be required to exclude grazing on the federal land.

Alternatives Considered But Not Analyzed

Grazing with reduced numbers – BLM considered authorizing grazing with reduced numbers on this allotment. Grazing with reduced numbers would produce impacts similar to the proposed action. Additionally, this allotment meets the Standard for Public Land Health and monitoring studies do not indicate changes are necessary. Therefore, BLM will not analyze this alternative.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

General Setting

This allotment is located in Chaves County, approximately 40 miles north east of Roswell, NM. Shinnery oak/dune (SOD) and Grasslands (GR) are the major plant communities occurring within Allotment #65049. Annual precipitation for this region averages 12 -13 inches. These communities are in the Canadian Plains major land resource system between elevations of 3,800 and 4,300 feet. The vegetation on the allotment is the grassland vegetative community as identified in the Roswell Resource Management Plan/Environmental Impact Statement (RMP/EIS). Vegetative communities managed by the Roswell Field Office are identified and explained in the RMP/EIS. Appendix 11 of the draft RMP/EIS describes the Desired Plant Community (DPC) concept and identifies the components of each community.

Affected Resources

The following resources or values are not present or would not be affected by the authorization of livestock grazing on these allotments: Cultural Resources, Native American Religious Concerns, Floodplains, Prime or Unique Farmland, Minority/Low Income Populations, Hazardous or Solid Wastes, Wild and Scenic Rivers, and Wilderness. Cultural resources are not usually adversely affected by livestock grazing, although concentrated livestock activity such as around livestock water troughs can have adverse effects on the cultural resource. Prior to authorizing range improvements, a Class III Cultural Survey must be completed ensuring cultural resources will not be affected. There are several known cultural resources within the allotment on which controlled livestock grazing will have an effect.

Vegetation

Affected Environment

The allotment is comprised of two vegetation community types arranged in a mosaic over the allotment. Shinnery Oak Dune and Grassland communities dominate. General objectives or guidelines for each vegetation community are described in the Roswell Approved RMP and Record of Decision (BLM 1997) and the Roswell Draft RMP/EIS (BLM 1994). The primary features in the SOD community are topography influenced by aeolian and alluvial sedimentation on upland plains forming hummocks, dunes, sand ridges and swales and presence of shinnery oak (*Quercus havardii*). Topography is gently sloping and undulating sandy plains, with moderate to very steep hummocky dunes of up to ten feet and more in height scattered throughout. Some dunes are stabilized with vegetation, while a number of them are unstable and shifting. Dune blowouts with shinnery oak and bluestem (*Andropogon* spp.) either isolated or in dune complexes are common in this community.

A distinguishing feature for the grassland community is that grass species typically comprises 75% or more of the potential plant community. This community also includes shrub, half-shrub, and forb species. The percentages of grasses, forbs, and shrubs actually found at a particular location will vary with recent weather factors, past resource uses and the potential of the site.

Grasslands are intermixed with all community types. Sand dropseed, three-awn, black grama, bush muhly and fluffgrass are common in the sandy uplands. Tobosa is found in both sandy uplands and bottomlands. Grassland sites also have a mesquite or broom snakeweed shrub component. Blue grama is primarily found on loamy soils and black grama on more gravelly soils. Grassland communities on the uplands and shallow breaks support a large percentage of

shrub species. Mesquite, broom snakeweed, fourwing saltbush, and yucca are common shrub species. The primary grasses are sand dropseed, bush muhly, vine mesquite and black grama. The Rangeland Health assessment indicates a problem with invasive plants, most notably mesquite in the west sand pasture. Mesquite dominates the deep sand ecological sites and affects both the plant community and hydrologic functions of these sites.

Rangeland monitoring studies have been established in two key areas within the allotment. The western pasture (West Sand) rangeland study is situated in a Sandhills CP-2 ecological site complex. The Middle Sand study is located on a Sandhills CP-2 ecological site as well. These permanent sites are used to track vegetation changes and to determine proper stocking rates. The description for these ecological sites was developed by the Soil Conservation Service (now referred to as the National Resource Conservation Service) in their ecological site guides. Ecological site descriptions are available for review at the Roswell BLM office, any Natural Resources Conservation Service office or accessed at www.nm.nrcs.usda.gov. From 1978 to 1999 agencies were using the traditional range condition methodology to depict range condition. This compared collected rangeland monitoring information with the potential vegetation community in terms of species composition by weight. The rating is based on a scaled of 0 to 100 with 100 being the actual representative site.

In 1999 the National Resource Conservation Service (NRCS) revised the methodology for comparing the existing vegetation community with the potential vegetation community and to aid in the determination of ecological condition. This methodology is called the Similarity Index (SI) the BLM is currently incorporating this revision into the monitoring and evaluation processes. The SI compares existing vegetation data (collected from rangeland monitoring) with the potential vegetation community described in the NRCS ecological site guide for that site. The index is based on a scaled of 0 to 100 with 100 being the actual representative site. For the Sandhills CP-2 ecological (range) site, the normal year production is about 1800 pounds per acre. The index takes into account vegetation species present and the relative amount of production for each species when compared to the potential for the range site. The percent bare ground and rock found on the allotment fall within the parameters established by the RMP/EIS for this vegetative community.

Noxious and Invasive Weeds: Noxious weeds affect both crops and native plant species in the same way, by out-competing for light, water and soil nutrients. Losses are attributed to decreased quality and quantity of agricultural products due to high levels of competition from noxious weeds and infestations. Noxious weeds can negatively affect livestock productivity by making forage unpalatable to livestock thus decreasing livestock productivity and potentially increasing producer's feed costs. Potential noxious weed species include African rue, non native thistles (*Cirsium* spp.), leafy spurge and goldenrod. There are known populations of African rue on surrounding allotments therefore monitoring for noxious weeds on the allotment is necessary.

Environmental Impacts

Under the proposed action the vegetation in the Shinnery Oak Dune and Grassland communities will continue to be grazed and trampled by domestic livestock as well as other herbivores. The area has been grazed by livestock since the early part of the 1900's, if not longer. Ecological condition and trend is expected to remain stable and/or improve over the long term at the permitted number of livestock.

Upland sites would reflect a static ecological condition trend at the existing permit level. In the long term, upland vegetation would continue to improve in all pastures from the implementation

of a rest-rotation system. Range monitoring data indicates that the vegetation is sustainable to meet multiple resource requirements and forage at the permitted use level under the Proposed Action and Alternative. Data indicates that livestock grazing is compatible with vegetation cover and composition objectives. In addition to the upward trend in ecological condition, monitoring data show the vegetative resources have been improved and sustained since monitoring began in 1981.

Under the No-Grazing Alternative, no impacts to vegetation resources would occur on public lands from authorized livestock grazing. Vegetation cover would increase over the long term in some areas. Grasslands in the uplands would increase in cover and composition, but composition would be tempered by mesquite somewhat dominating the shrub component.

Soils

Affected Environment

The Soil Survey of Chaves County, New Mexico (USDA Soil Conservation Service 1983) was used to describe and analyze impacts to soils on these allotments. The soil units covering most of the area are described below, more in depth information can be found in the soil survey.

Blakeney-Ratliff association, 0 to 5 percent slopes (BRB) Permeability of the unit soil is moderately rapid. Runoff of the unit soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high.

Chispa-Malstrom association, 0 to 4 percent slopes (CMB) Permeability of the Chispa soil is moderate. Runoff of the soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high. Permeability of the Malstrom soil is moderately rapid. Runoff of the soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high.

Faskin-fine sand, 0 to 2 percent slopes (FaA) Permeability of the Faskin soil is moderate. Runoff of the unit soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high. Permeability of the Malmstrom soil is moderately rapid. Runoff of the unit soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high.

Faskin-Malstrom association, 0 to 2 percent slopes (FMA) Permeability of the Faskin soil is moderate. Runoff of the unit soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high.

Faskin-Roswell complex, 0 to 5 percent slopes (FRB) Permeability of the unit soil is moderate. Runoff of the unit soil is medium and the hazard of water erosion is moderate and the hazard of soil blowing is high.

Roswell fine sand, 10 to 30 percent slopes (RoD) Permeability of the soil is rapid. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

Roswell-Jalmar fine sand, hilly., 0 to 25 percent slopes (RPD) Permeability of the Roswell soil is rapid. Runoff of the soil is slow and the hazard of water erosion is slight and the hazard of soil blowing is very high. Permeability of the Jalmar soil is moderate. Runoff of the unit soil is slow and the hazard of water erosion is slight and the hazard of soil blowing is very high.

Environmental Impacts

Under the Proposed Action, livestock would remove some of the cover of standing vegetation and litter, and compact the soil by trampling. If livestock management were inadequate, these effects could be severe enough to reduce infiltration rates and increase runoff, leading to greater water erosion and soil losses (Moore et al. 1979, Stoddart et al. 1975). Producing forage and protecting the soil from further erosion would then be more difficult. The greatest impacts of removing vegetation and trampling would be expected in areas of concentrated livestock use, such as trails, waters, feeders, and shade.

Under the Proposed Action rangeland monitoring would help ensure that adequate vegetation cover is maintained to protect the soil from erosion. Low/moderate forage quality plants provide protection to the soils resource. Cumulative long term monitoring data reflect the soils are being adequately protected.

Under No-Grazing Alternative, any adverse impact from livestock grazing would be eliminated. However, it is possible that removing grazing animals from an area where they were a natural part of the landscape could result in poor use of precipitation and inefficient mineral cycling (Savory 1988). Bare soil could be sealed by raindrop impact, and vegetation could become decadent, inhibiting new growth. Therefore, the results of no grazing could be similar to those of overgrazing in some respects.

Watershed – Hydrology

Affected Environment

The watershed and hydrology in the area is affected by land and water use practices. The degree to which hydrologic processes are affected by land and water use depends on the location, extent, timing and the type of activity. Factors that currently cause short-lived alterations to the hydrologic regime in the area include livestock grazing management, recreational use activities, groundwater pumping and also oil and gas developments such as well pads, permanent roads, temporary roads, pipelines, and powerlines.

Environmental Impacts

Livestock grazing management and range improvement projects can result in long term and short term alterations to the hydrologic regime. The potential hydrologic effects to peak flow is reduced infiltration where surface flows can move more quickly to perennial or ephemeral rivers and streams, causing peak flow to occur earlier and to be larger. Increased magnitude and volume of peak flow can cause bank erosion, channel widening, downward incision, and disconnection from the floodplain. The potential hydrologic effects to low flow is reduced surface storage and groundwater recharge, resulting in reduced baseflow to perennial, ephemeral, and intermittent rivers and streams. The direct impact would be that hydrologic processes may be altered where the perennial, ephemeral, and intermittent river and stream system responds by changing physical parameters, such as channel configuration. These changes may in turn impact chemical parameters and ultimately the aquatic ecosystem.

Long-term direct and indirect impacts to the watershed and hydrology would continue for the life of the livestock grazing management and range improvement projects and would decrease once reclamation of the range improvement projects has taken place. Short term direct and indirect impacts to the watershed and hydrology from access roads that are not surfaced with material would occur and would likely decrease in time due to reclamation efforts.

Under the Proposed Action rangeland monitoring would help ensure that adequate vegetation cover is maintained to protect the hydrologic regime. Low/moderate forage quality plants provide protection to the soils resource and hydrologic regime. Cumulative long-term monitoring data reflect the hydrologic regime is being adequately protected.

Under the No Grazing Alternative, any adverse impact from livestock grazing management and range improvement projects would be eliminated. However, it is possible that removing grazing animals from an area where they were a natural part of the landscape could result in poor use of precipitation and inefficient mineral cycling (Savory 1988). Bare soil could be sealed by raindrop impact, and vegetation could become decadent, inhibiting new growth. Therefore, the results of no grazing could be similar to those of overgrazing in some respects.

Water Quality

Affected Environment - Ground Water

Fresh water sources are in the Quaternary Shallow Alluvium Aquifer. Depth to water in nearby wells in the shallow aquifer ranges from 30 to 100 feet (Water Table Contour Map of Part of East Chaves County, Geohydrology and Associates 1978).

Environmental Impacts – Ground Water

The proposed action would not have a significant effect on ground water. Livestock would be dispersed over the allotment, and the soil would filter potential contaminants.

Affected Environment – Surface Water

No perennial surface water is found on the Public Land on this allotment.

Environmental Impacts – Surface Water

Direct impacts to surface water quality would be minor, short-term impacts during stormflow. Indirect impacts to water-quality related resources, such as fisheries, would not occur.

Wildlife

Affected Environment

Two Candidate Species inhabit this allotment. They are the lesser prairie chicken and the sand dune lizard.

Raptors that are frequently associated with the vegetation types on this allotment are the red-tailed hawk, Swainson's hawk, ferruginous hawk, roughlegged hawk, common nighthawk, and the American kestrel.

Game bird species in this areas include the scaled and bob white quail, and the mourning dove.

Other bird species that are usually observed are the turkey vulture, roadrunner, Chihuahuan raven, great-horned owl, burrowing owl, northern flicker, loggerhead shrike, western meadowlark, western kingbird, pyrrhuloxia, horned lark, and other passerine birds.

At least 33 species of mammals occur on or utilize this allotment. The diversity of small mammals provide for an excellent prey base for carnivores such as the coyote, gray fox, bobcat, raccoon, badger, hooded skunk and striped skunk.

Mammals that provide a prey base include the black-tailed jack rabbit, desert cottontail, spotted ground squirrel, pocket mice, deer mouse, kangaroo rats, northern grasshopper mouse, harvest mice, and the white throated woodrat.

Two big game species that occur on the allotment are pronghorn antelope and mule deer.

Reptiles and amphibians that inhabit the area are the dune sagebrush lizard, southern prairie lizard, lesser earless lizard, side-blotched lizard, longnose leopard lizard, sixlined racerunner, tree lizard, skinks, western diamond back, western rattlesnake, coachwhip, spadefoot toads, western box turtle, and the yellow mud turtle.

Migratory Birds: Executive order #13186 titled "Responsibilities of Federal Agencies to Protect Migratory Birds"; signed 1/10/01 requires that the BLM evaluate the effects of federal actions on migratory birds. No migratory bird inventory has been completed for the proposed project area. Common migratory birds which may use the area as habitat include various species of song birds, owls, ravens, hawks, finches, doves, thrashers, and meadow larks.

Environmental Impacts

Under the Proposed Action, livestock grazing management and range improvement projects designed with consideration for wildlife would generally enhance the quality of wildlife habitat. Vegetation condition, forage production, and habitat diversity would improve, and wildlife species distribution and abundance would increase. The construction of livestock waters in previously unwatered areas would promote increased wildlife distribution and abundance, but may potentially increase grazing pressure in those same areas. Short-term impacts of range improvement projects would be the temporary displacement of wildlife species during construction activities.

Under No-Grazing Alternative, there would no longer be direct competition between livestock and wildlife for forage, browse and cover. Wildlife habitat would moderately improve. The limitation for improvement would continue to be the existing invading species component (e.g., mesquite, snakeweed) affecting plant composition. Since livestock grazing would not be permitted, range improvement projects that benefit wildlife, such as water developments, would be abandoned. New range improvement projects that would also benefit wildlife habitat, such as brush control, may not be implemented because these projects are primarily driven and funded through range improvement efforts.

Special Status Species, Including Threatened and Endangered Species

Federally Listed Threatened/Endangered Species:

There are no species listed as endangered, threatened, or proposed for protection under the Endangered Species Act known on this allotment. Designated critical habitat for a listed species also does not occur on this allotment.

Other Special Status Species

The species listed below are also potentially associated with this allotment and are considered sensitive due to their state of NM status and BLM sensitive status. (BS refers to BLM Sensitive

species, FC refers to Federal Candidates for listing for protection under the Endangered Species Act, and SE refers to State Endangered species.)

	<u>Status</u>	<u>Riparian/Aquatic</u>	<u>Uplands</u>
Loggerhead shrike <i>Lanius ludovicianus</i>	BS		x
Lesser prairie-chicken <i>Tympanuchus pallidicinctus</i>	FC		x
Sand dune lizard <i>Sceloporus arenicolus</i>	FC		x

SE--State Endangered, BS--BLM Sensitive, FC--Federal Candidate

Loggerhead Shrike

The shrike occurs throughout the sand shinnery oak community of Chaves, Eddy and Lea Counties. The shrike is usually seen in relatively xeric habitats dominated by shrubs and desert grasses. Some of the important shrubs are honey mesquite and fourwing saltbush, and some of the grasses include tobosa, grama spp., sand dropseed, and three-awn. Trees are generally uncommon but a few large honey mesquite, soapberry, or hackberry are occasionally present.

Lesser prairie-chicken

The lesser prairie-chicken (LPC) is a species of prairie grouse endemic to the southern high plains of the United States, commonly recognized for its feathered feet, stout build, ground-dwelling habit, and elaborate breeding behavior.

The historic range of the LPC encompassed habitats with sandy soils supporting shinnery oak (*Quercus harvardii*)-bluestem (*Andropogon* sp.) and sand sage (*Artemisia filifolia*)-bluestem communities in the high plains of southeastern Colorado, southwestern Kansas, western Oklahoma, west Texas, the Texas panhandle, and eastern New Mexico. In New Mexico, Ligon (1961) reported the historic range as being the sandhill-bluestem plains, an approximately 120 km (75 mi) wide swath from the northeast border with Colorado to the southeast border with Texas and in northern De Baca County to 48 km (30 mi) west of Ft. Sumner.

In the 1920s and 1930s, the former range of the LPC in New Mexico was described as all of the sandhill rangeland of eastern New Mexico as far west as De Baca County. Ligon (1927) mapped the breeding range as encompassing portions of seven counties, a small subset of what he described as former range. In the 1950s and 1960s, occupied range was more extensive, indicating reoccupation of some areas. Presently, the NMDGF reports that LPCs are known from portions of seven counties and the occupied range of the LPC in New Mexico is estimated to encompass approximately 5,698 km² (2,200 mi²) (Davis 2006) compared with its historic range of 22,390 km² (8,645 mi²). Private and State land supports approximately 40 percent of the LPC population in New Mexico, with the remaining occurring on lands managed by BLM (Davis 2006). In the 1950s, the LPC population was estimated at 40,000 to 50,000 individuals, but by 1972 the population had declined to an estimated 6,000 to 10,000 individuals. NMDGF currently estimates the LPC statewide population to be about 9,443 individuals (Beauprez 2008).

In New Mexico, the most recent LPC population decline began in 1989. LPC counts on leks dropped dramatically in the BLM Caprock Wildlife Habitat Management Area and in west-central

Lea County (Smith et al. 1998). Estimated hunter harvest also declined sharply (Cowley 1995), resulting in closure of hunting seasons in New Mexico in 1996. Although the decline may have been precipitated by drought conditions and reduced nest success, it is also likely that population recovery during the drought was hampered by habitat fragmentation and low recruitment. Since 2005, weather conditions have improved resulting in population increases, and Federal and State agencies have focused staff time and funding to address habitat concerns. From 1998-2008 LPC populations within the core area of southern Roosevelt, northern Lea, and eastern Chaves counties have increased (Beauprez 2008). The LPC population south of U.S. Highway 380 in southeastern Chaves County has shown a significant decline over the same ten-year period, even though 5 leks were detected in 2008, the largest number of leks detected since 1998 (Beauprez 2008). In 1995, conservation interests petitioned the USFWS to list the LPC as a threatened species under the Endangered Species Act. In 1998, the FWS ruled that such a listing was warranted, but precluded by the need to devote limited agency resources to other higher priority species. The species is currently considered a candidate species for listing. The 2008 Candidate Notice of Review elevated the species to a Listing Priority Number of 2, the highest priority ranking as a candidate species.

Sand Dune Lizard

The SDL is native to a small area of southeastern New Mexico and west Texas. A habitat specialist, the SDL only occurs in sand dune complexes associated with shinnery oak (Degenhardt et al. 1996), with areas often separated by large stretches of unsuitable habitat.

The SDL prefers active and semi-stabilized sand dunes associated with shinnery oak and scattered sandsage. The oaks provide dune structure, shelter, and habitat for the species' prey base. SDLs are found in large dunes with deep, wind hollowed depressions called blowouts, where they remain under vegetation or loose sand during the hot part of the day and at night. These large, deep dunal blowouts (greater than 3 m deep and 32.9 m long) provide superior habitat with more area for cover (for thermoregulation and predator avoidance) and steeper slopes needed as breeding habitat. SDLs avoid shallow blowouts.

SDLs feed on ants, small beetles, crickets, grasshoppers, and spiders. Most feeding takes place within or adjacent to patches of vegetation, usually shinnery oak habitat. Individuals are diurnal and wary, and will seek protection and shelter in burrows, under the sand, beneath leaf litter, and under the shinnery oak canopy (BLM 2006). Within a dune complex, the shinnery flats between dune blowouts are used for movement by females seeking nesting sites and for dispersal of recent hatchlings (Painter 2007). Therefore, it is imperative that connectivity be considered across interdunal areas.

Within the geographic range of the species, habitat is localized and fragmented where known populations are separated by vast areas of unoccupied habitat. Fitzgerald et al. (1997) observed isolated areas of apparently suitable habitat that did not contain SDLs. It is possible that these observations are the result of local extinction events in isolated areas where recolonization is either impossible or has not yet occurred (Snell et al. 1997). It is also possible that these areas have never been occupied and other factors such as competition with or predation by other species prevent SDL occupation in otherwise suitable habitat. Recent surveys by the BLM have reconfirmed the presence of SDLs within the known geographic range of the species. The BLM has also developed a habitat predictability model to help redefine the parameters of the known geographic range.

Conservation interests petitioned the USFWS to list the SDL as a threatened species under the Endangered Species Act. In 2001, the FWS ruled that such a listing was warranted, but

precluded by the need to devote limited agency resources to other higher priority species. The species is currently considered a candidate species for listing. The 2008 Candidate Notice of Review retained the species at Listing Priority Number of 2, the highest priority ranking as a candidate species. As of December 13th 2010, the SDL was proposed to be listed as endangered.

Impacts

Lesser prairie-chicken

Grazing is one of the dominant land uses on public and private lands throughout the range of LPCs. The evolutionary history of the mixed-grass prairie resulted in endemic bird species adapted to a mosaic of lightly to heavily grazed areas (Bragg and Steuter 1996; Knopf and Samson 1997). In some areas within LPC range where heavy grazing has removed tallgrass and midgrass cover, insufficient amount of lightly grazed habitat is available to support successful nesting (Jackson and DeArment 1963; Davis et al. 1979; Crawford 1980; Taylor and Guthery 1980; Davies 1992). Uniform or widespread livestock grazing of rangeland, to a degree that leaves less than adequate residual cover remaining in the spring, is considered detrimental to LPC populations because grass height is reduced below that necessary for secure nesting cover and desirable food plants are markedly reduced (Bent 1932; Davis et al. 1979; Crawford 1980; Bidwell and Peoples 1991; Riley et al. 1992; Giesen 1994b). Residual cover at and around nests is thought to increase nest success because the nest is better concealed from predators (Davis et al. 1979; Wisdom 1980; Riley et al. 1992; Giesen 1994b).

The impacts of grazing on LPC habitat can vary widely, depending on climatic conditions, the state or health of range vegetation, and the type of grazing regime utilized. Drought tends to magnify grazing impacts, as both processes reduce plant cover (Giesen 2000). When forage is reduced by drought, what remains tends to be grazed more heavily unless animal numbers are reduced. As a result, some grazed areas may supply adequate habitat during periods of normal rainfall, but may be unable to support LPCs during periods of drought (Merchant 1982). Intensive and/or persistent grazing may reduce or eliminate residual tallgrass cover needed for nesting (Davis et al. 1979; Riley et al. 1992). Heavy grazing that repeatedly interrupts plant succession over a broad area may result in the conversion of tallgrass prairie to shortgrass or forb-dominated habitat (Hoffman 1963; Jackson and DeArment 1963; Litton et al. 1994) or shrub-dominated landscapes.

Suitable habitat for LPCs has been lost due to conversion to agriculture and modified through grazing practices and other factors, such that remaining suitable habitat is increasingly fragmented and isolated (Crawford 1980; Braun et al. 1994). Fragmentation may threaten local LPC populations through several mechanisms: habitat juxtaposition and remaining patches of rangeland may be smaller than necessary to support populations (Samson 1980); necessary habitat heterogeneity may be lost; habitat between patches may accommodate high densities of predators; and ability to move and/or disperse among suitable patches of habitat may decrease (Wilcove et al. 1986; Knopf 1996).

Wire fencing is common throughout LPC range as a means of confining livestock to ranches and pastures, or excluding them from areas not intended for grazing such as CRP, agricultural fields, and public roads. Like most grassland wildlife, LPC evolved in open habitats free of vertical features or flight barriers. Fences, power lines, or other wire structures are an unnatural threat to prairie grouse that, until recently, were seldom perceived as significant at the population level (Wolfe et al. 2007).

Lesser prairie-chicken was a focal species in the 2008 Pecos District Special Status Species Approved Resource Management Plan Amendment. Through the planning process, the USFWS supported BLM's determination of "may affect, not likely to affect" for LPC. The management prescriptions of the plan include vegetation management and livestock management (grazing) as addressed on pages 15-23 of the Amendment and further in Appendix 2.

Sand dune lizard

There are no known direct impacts to SDL from livestock grazing. However, domestic livestock and wildlife grazing practices that reduce the ability of the land to sustain long term plant and animal production (Smith et al. 1996) may lead to the loss of grassland cover, mortality of plant species, and increased erosion. Further, improper grazing practices and increased conversion of rangelands to agricultural production may lead to habitat fragmentation and loss by promoting conditions favorable for shrub encroachment and by increasing infrastructure development, such as roads, drinkers, windmills, water pipelines, and fences (Dinerstein et al. 2000). These land management activities are compounded by extended drought periods and altered hydrologic functions.

The Sand Dune Lizard was a focal species in the 2008 Pecos District Special Status Species Approved Resource Management Plan Amendment. Through the planning process, the USFWS supported BLM's determination of "may affect, not likely to affect" for SDL. The management prescriptions of the plan include vegetation management and livestock management (grazing) as addressed on pages 15-23 of the Amendment and further in Appendix 2.

Air Quality

Affected Environment

Air quality in the region is generally good, with winds averaging 10-16 miles per hour depending on the season. Peak velocities reach more than 50 miles per hour in the spring. These conditions rapidly disperse air pollutants in the region.

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including seven nationally regulated ambient air pollutants. Regulation of air quality is also delegated to some states. Air quality is determined by atmospheric pollutants and chemistry, dispersion meteorology and terrain, and also includes applications of noise, smoke management, and visibility.

The area around the allotment is considered a Class II air quality area. A Class II area allows moderate amounts of air quality degradation. The primary sources of air pollution are dust from blowing wind on disturbed or exposed soil and exhaust emissions from motorized equipment. Air quality in the area is generally good and is not located in any of the areas designated by the Environmental Protection Agency as "non-attainment areas" for any listed pollutants regulated by the Clean Air Act. The allotments are in a Class II area for the Prevention of Significant Deterioration of air quality as defined by the federal Clean Air Act. Class II areas allow a moderate amount of air quality degradation.

Environmental Impacts

Air quality would temporarily be directly impacted with pollution from enteric fermentation (ruminant livestock), chemical odors, and dust. Dust levels resulting from allotment management activities would be slightly higher under the Proposed Action or No Action alternative, than the No Grazing Alternative. The cumulative impact on air quality from the allotment would be negligible compared to all pollution sources in the region.

The federal Clean Air Act requires that air pollutant emissions be controlled from all significant sources in areas that do not meet the National Ambient Air Quality Standard (NAAQS). The New Mexico Air Quality Bureau (NMAQB) is responsible for enforcing the state and national ambient air quality standards in New Mexico. Any emission source must comply with the NMAQB regulations (USDI, BLM 2003b). At the present time, the counties that lie within the jurisdictional boundaries of the Roswell Field Office are classified as in attainment of all state and national ambient air quality standards as defined in the Clean Air Act of 1972, as amended (USDI, BLM 2003b).

The Environmental Protection Agency (EPA), on October 17, 2006, issued a final ruling on the lowering of the NAAQS for particulate matter ranging from 2.5 micron or smaller particle size. This ruling became effective on December 18, 2006, stating that the 24-hour standard for PM_{2.5}, was lowered to 35 ug/m³ from the previous standard of 65 ug/m³. This revised PM_{2.5} daily NAAQS was promulgated to better protect the public from short-term particle exposure. The significant threshold of 35 ug/m³ daily PM_{2.5} NAAQS is not expected to be exceeded under the proposed action.

Climate

Affected Environment

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years.

Greenhouse gases (GHGs), including carbon dioxide (CO₂) and methane (CH₄), and the potential effects of GHG emissions on climate are not regulated by the EPA under the Clean Air Act. However, climate has the potential to influence renewable and non-renewable resource management. The EPA's Inventory of US Greenhouse Gas Emissions and Sinks found that in 2006, total US GHG emissions were over 6 billion metric tons and that total US GHG emissions have increased by 14.1% from 1990 to 2006. The report also noted that GHG emissions fell by 1.5% from 2005 to 2006. This decrease was, in part, attributed to the increased use of natural gas and other alternatives to burning coal in electric power generation.

The levels of these GHGs are expected to continue increasing. The rate of increase is expected to slow as greater awareness of the potential environmental and economic costs associated with increased levels of GHGs result in behavioral and industrial adaptations.

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.

A 2007 US Government Accountability Office (GAO) Report on Climate Change found that, "federal land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring. These effects include, among others: 1) physical effects such as droughts, floods, glacial melting, and sea level rise; 2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and 3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses." 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.

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.

Environmental Impacts

Climate change analyses are comprised of several factors, including greenhouse gases (GHGs), land use management practices, the albino effect, etc. The tools necessary to quantify climatic impacts from the Proposed or No Action Alternatives are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined. Additionally, specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that may contribute to climate change. Qualitative and/or quantitative evaluation of potential contributing factors within the planning area is included where appropriate and practicable.

Livestock Management

Affected Environment

Under the proposed action there would be no impacts to the current livestock management. Allotment 65049 would continue to be grazed on a seasonal basis. Since 1988, the operator has grazed up to 450 head of yearling steers from April through September. From April to the latter part of May up to 450 yearling steers are grazed in the West Sand pasture. In latter May the herd is reduced to 350 head and split between West Sand and Middle Sand pastures. The public lands within the Section 15 Allotment 65050 (which lies to the east of this allotment) are grazed prior to April and after September when the cattle are removed from Allotment 65049.

The allotment contains about 7281 total acres (see Location Map). Landownership consists of approximately 198 acres of private land, 5748 acres of federal land, and 1335 acres of state land. Current range improvement projects for the management of livestock include earthen tanks, wells, and several drinking troughs with associated pipelines, pasture and boundary fences and corrals.

Environmental Impacts

Under the Proposed Action, livestock would continue to graze public lands within the allotment. Existing pasture configurations and water developments would remain the same. Livestock management would still follow the single-herd rotation system.

Under No-Grazing Alternative, there would be no livestock grazing authorized on public lands. The public lands would have to be fenced apart from the private lands or livestock would be considered in trespass if found grazing on public land (43 CFR 4140.1(b)(1)). Exclusion of livestock from the public land would approximately cost \$71,000.00 (based on 5.9 miles at \$12,000/mile). This expense would be borne by the private landowner. Range improvements on public land would not be maintained and the BLM would have to compensate the permittee if any of the improvements were cost shared at the time of their authorization.

Under No-Grazing Alternative, the overall livestock operation could be reduced by 134 AUs (those attached to the public lands) to approximately 52 AUs. This would have an adverse economic impact on the permittee.

Cumulative impacts of the grazing and no grazing alternatives were analyzed in Rangeland Reform '94 Draft Environmental Impact Statement (BLM and USDA Forest Service 1994) and in the Roswell Resource Area Draft RMP/EIS (BLM 1994). The no livestock grazing alternative was not selected in either document.

Visual Resources Management

Affected Environment

The allotment is in a Class IV area for visual resources management. The objective of Class IV is to: "Provide for management activities which require major modification of the existing landscape character...Every attempt, however, should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements."

Environmental Impacts

The basic elements of the landscape would not change within the allotment under management alternative. Potential impacts to visual resources would be analyzed and mitigated as allotment management activities are proposed in the future.

Recreation

Affected Environment

Recreation opportunities are focused around hunting and watchable wildlife. Mule deer, antelope, and game birds, such as quail and dove are taken during hunting seasons. This ranch is used by birders to observe prairie chickens during their lek courtship displays. Legal and physical access to public lands located on this allotment are through state lands, county maintained roads and roads existing on public lands. Off Highway Vehicle designation for public lands within this allotment are classified as "Limited" to existing roads and trails.

The allotment provides habitat for numerous game species including desert mule deer, pronghorn, mourning dove and scaled quail. Predator and feral pig hunting may occur on the allotment, as well as trapping for predators or furbearers. General sightseeing, wildlife viewing and photography are non-consumptive recreational activities that may occur. Rock collectors find various minerals unique to the area.

Environmental Impacts

Game and non-game wildlife species could realize long-term benefits through the improvement of habitat. It is expected that hunter success and wildlife viewing opportunities would be enhanced. Under No-Grazing Alternative, no conflicts between ranching activities and recreational use would occur on public lands. Success of hunts and non-consumptive opportunities would remain the same or slightly improve. Vandalism could still occur to range improvements. Conflicts with OHV use would continue.

Cave and Karst

Affected Environment

This allotment is located within a designated area of *Low Cave Karst Potential*. A complete significant cave or karst inventory has not been completed for the public land located in this grazing allotment. Presently, no known significant caves or karst features have been identified within this allotment.

Environmental Impact

Since no caves or major karst features have been identified on this grazing allotment, grazing would not affect these resources. If a significant cave or karst feature were discovered on public land within this allotment, that cave or feature may be fenced to exclude livestock and off-highway vehicle use.

IV. CUMULATIVE IMPACTS

A cumulative impact is defined in 40 CFR 1508.7 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

The incremental impact of issuing a grazing permit on these resources must be analyzed in the context of impacts from other actions. Other BLM actions that could have impacts on the identified resources include: livestock authorization on other allotments in this area; oil and gas activities on the uplands; rights-of way crossing the area; and recreation use, particularly off-highway vehicles. All authorized activities which occur on BLM land can also take place on state and private land.

Many of the actions which could contribute to cumulative impacts have occurred over many years. Impacts from open-range livestock grazing in the last century are still being addressed today. Oil and gas activities began in the early part of the 20th century. These activities are still occurring today, and are expected to continue into the foreseeable future to some degree.

If the No-Grazing Alternative were chosen, some adverse cumulative impacts would be eliminated, but others would occur. Grazing would no longer be available as a vegetation management tool, and BLM lands within the allotment would be less intensively managed.

Wildlife: Wildlife, as well as domestic livestock, will continue to utilize the available forage and browse. The amount of cover available for the various wildlife species present on the allotment will fluctuate, based on livestock use levels and amount of precipitation. Maintenance and operation of existing waterings will continue to provide a dependable water source for wildlife, as well as livestock.

Livestock grazing may have an impact on the various habitat components of some wildlife species. Livestock select the herbaceous component, which provides a source of food for various neotropical migrants and upland game birds, first before other vegetative types such as browse or forbs. Subsequently, impacts to the ground nesting birds and to the various food types utilized by avian species (seeds, green vegetative material, etc.) can range from beneficial to detrimental depending on specific livestock management scheme including season of use, pasture rotation system, annual precipitation and number of livestock.

Specifically, in Sand Wells allotment, cattle are rotated between pastures outside of the designated allotment, adequate growing season rest is given to pastures before cattle return to them, voluntary nonuse is taken during drought periods, and utilization levels are within the acceptable range so the impacts from livestock grazing to wildlife is minimized.

Special Status Species

Lesser Prairie-chicken: Residual (growth from the previous year) cover in the form of sand bluestem, little bluestem, dropseeds (*Sporobolus* spp.), and other native warm-season grasses are the preferred nesting substrate for lesser prairie-chicken (LPC), and these grasses typically occur under light to moderate grazing intensities (Riley et al. 1992). When birds are forced to

nest in isolated small pockets of suitable cover, or in areas of less than suitable cover, nesting success is greatly reduced. In these areas, nest failure due to predation is increased.

Livestock grazing may reduce nesting success when it results in less residual grass height and density, or less litter and more bare ground (Riley 1978, Wisdom 1980). Range management practices that do not leave adequate residual cover contribute to the decline of nesting habitat. Intensive grazing that does not include sufficient rest at the end of the growing season can eliminate some residual cover necessary for nesting the following spring. Severe climatic events such as drought often magnify the effect of livestock grazing throughout the LPC range.

Lesser prairie-chicken was a focal species in the 2008 Pecos District Special Status Species Approved Resource Management Plan Amendment. Through the planning process, the USFWS supported BLM's determination of "may affect, not likely to affect" for LPC. The management prescriptions of the plan include vegetation management and livestock management (grazing) as addressed on pages 15-23 of the Amendment and further in Appendix 2.

Sand Dune Lizard: There are extensive public land shinnery oak habitats that have been altered by grazing, spraying of the herbicide tebuthiuron and oil and gas development and exploration. As the lizard occupies the blowout dunal features exclusively, livestock grazing itself will not affect the lizard and there has been no documentation of direct effects on lizards due to grazing.

At this time the Sand Wells allotment falls outside the current sand dune lizard distribution map however does contain habitat that is conducive for the sand dune lizard.

Loggerhead Shrike: Declines in range wide populations are attributed to the consumption of contaminated prey (large insects and small mammals), the loss of nesting sites such as hedgerows and thorn trees, and the loss of pastureland feeding habitat. Specifically, impacts to the shrike in the RFO can be attributed primarily to drought conditions affecting prey species, and loss of nesting habitat. Loggerhead shrikes nest in shrubs, so a decrease in shrub density would lead to a decrease in nesting structure available for the shrike. Shrub communities within the Sand Wells allotment are abundant so nesting habitat for the shrike is not impacted in this allotment. Concurrently, since cattle are primarily herbaceous grazers, the grazing of livestock within the allotment would not impact the nesting habitat for the loggerhead shrike.

V. MITIGATION MEASURES

Vegetation monitoring studies will continue if a new grazing permit were issued under the Proposed Action. Changes to livestock management would be made if monitoring data showed adverse impacts to the vegetation.

If new information surfaces that livestock grazing is negatively impacting other resources, action will be taken at that time to mitigate those impacts.

VI. RESIDUAL IMPACTS

Residual impacts are direct, indirect, or cumulative impacts that would remain after applying the mitigation measures. Residual impacts following authorization of livestock grazing would be insignificant if the mitigation measures are properly applied.

VII. SOCIO-ECONOMIC FACTORS

The proposed action or Alternative B as outlined in this document are not anticipated to alter the socio-economic conditions for either the permittees or Chaves County. Should the no livestock grazing alternative be adopted, economic impacts would occur. Chaves County would lose tax revenues on approximately 134 head of cattle annually.

Under the no livestock grazing alternative, it would be the responsibility of the permittees to prevent livestock from grazing on the public lands. To accomplish this, the permittees would most likely have to construct fences to exclude the public land. New fence would be needed at a cost of approximately \$12,000/mile. BLM would also have to provide compensation to the permittees for their interest in authorized range improvements due to the exclusion of livestock grazing. These costs could be reduced or mitigated by land exchanges with either the state or the permittees to block up the public land.

IX. BLM TEAM MEMBERS

Helen Miller - Rangeland Management Specialist
Kyle Arnold - Rangeland Management Specialist
Mike McGee - Hydrologist
Justin W. Peters – Archaeologist
Howard Parman – Environmental Coordinator
Bill Murry – Outdoor Recreation Planner
Randy Howard – Wildlife Biologist
Mike Bilbo – Cave Specialist

X. PERSONS AND AGENCIES CONSULTED

Chaves County Public Land Use Advisory Committee
New Mexico Department of Game and Fish
New Mexico Energy, Minerals, and Natural Resources Department
- Forestry and Resource Conservation Division
New Mexico Environment Department - Surface Water Quality Bureau
New Mexico State Land Office
U.S. Fish and Wildlife Service - Ecological Services
U.S. Fish and Wildlife Service - Fishery Resources Office

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**Bureau of Land Management, Roswell Field Office
Environmental Assessment Checklist, DOI-BLM-NM-P010-2011-117 EA**

Resources	Not Present on Site	No Impacts	May Be Impacts	Mitigation Included	BLM Reviewer	Date
Air Quality			X	X	Hydrologist /s/ Michael McGee	5/2/2011
Soils			X	X		
Watershed Hydrology			X	X		
Floodplains	X					
Water Quality - Surface			X	X	Hydrology /s/ Michael McGee	5/2/2011
Water Quality - Ground			X	X		
Cultural Resources		X			Archaeology /s/ Justin W. Peters	5 May 2011
Native American Religious Concerns	X					
Paleontology	X					
Areas of Critical Environmental Concern	X				Plan & Enviro Cord. /s/Glen Garnand	5/31/2011
Farmlands, Prime or Unique	X				/s/Tate Salas Realty Specialist	5/3/2011
Rights-of-Way	X					
Invasive, Non-native Species			X	X	/s/ Helen Miller Range Management Specialist	06/13/2011
Vegetation			X	X		
Livestock Grazing			X	X		
Wastes, Hazardous or Solid		X			/s/ Jared Reese Nat. Resource Spec.	June 8, 2011
Threatened or Endangered Species	X				/s/ Randy Howard	5/10/2011
Special Status Species			X	X		
Wildlife			X	X		
Wetlands/Riparian Zones	X					
Wild and Scenic Rivers	X				/s/ Bill Murry Outdoor Rec Plannr	5/3/2011
Wilderness	X					
Recreation		X				
Visual Resources		X			/s/ Michael J. Bilbo Cave Specialist	5/27/2011
Cave/Karst	X	X				
Environmental Justice		X			/s/ Jared Reese Nat. Resource Spec.	June 8, 2011
Public Health and Safety		X				
Solid Mineral Resources		X			/s/ Jerry Dutchover	05/13/11
Fluid Mineral Resources		X			/s/ John S. Simitz Geologist	May 16, 2011