Santa Fe Mountains Landscape Resiliency Project: Rangeland Resources Effects Analysis

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Issues Addressed

This section includes issues pertaining to Rangeland Resources that have been identified for detailed analysis. “An issue is a statement of cause and effect linking environmental effects to actions” (Forest Service Handbook 1909.15).

Issue Questions

How does grazing impact the effectiveness of the proposed treatments?

To address this issue, it is important to note that the forest ecosystems with the Santa Fe Mountains Landscape Resiliency Project (SMLRP) area have evolved with fire and natural fire return intervals that maintained a more resilient landscape. Past forest management practices and fire suppression have allowed for the accumulation of fuel loads that increase the risk of high-intensity, catastrophic wildfires. Livestock grazing is a land use that has been shown to decrease fine fuel loads which carry fire. Grazing animals can modify wildfire fuels through consumption and trampling. Animals have the potential to affect the smaller-sized live fuels, and the 1- and 10-hour fuels. These fuels influence an important part of fire behavior by providing the flammable material that creates a ladder of fuel in order for a fire to extend up from the ground into the brush and tree canopy.(Nader et al. 2007) Livestock grazing will have the most affect where grass is the primary carrier of fire. Livestock grazing along with the proposed treatments can manipulate these fuels to reduce the chances of high fire intensity within the project area. Livestock grazing effects on proposed treatments (Mechanical and Prescribed Fire) will have an advantageous effect.

The focus of this report is to analyze the following question:

How will the proposed SFMLRP treatments impact livestock grazing within the project area?

For a detailed discussion of this issue question and the analysis needed to answer the question, please see below. This report is organized into three main sections to help address this question: affected environment (describes the existing conditions for range resources), methodology (describes the methods, assumptions, and data used to focus the analysis), and environmental consequences (describes the impacts that could occur to range resources from both the no action alternative and proposed action).

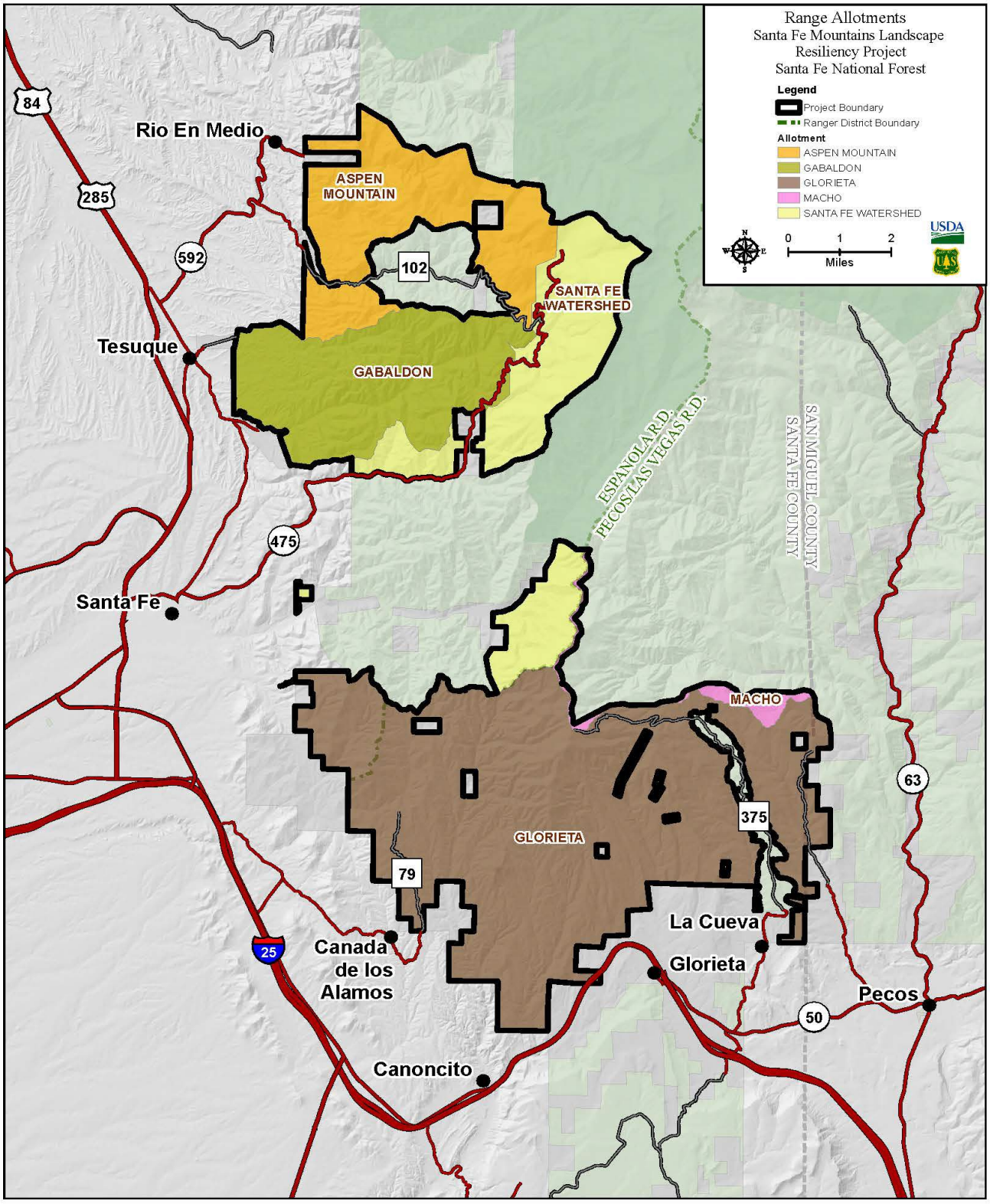
Affected Environment

Livestock grazing is important to the local economy and is directly tied to the history and strongly rooted culture that has shaped the present-day area. There are several small predominantly Hispanic villages near the project area. The residents retain their traditional values and depend on the use of natural resources, including livestock grazing and the use of forest products. Raising livestock contributes to a sense of identity, prestige within the community, pride of lifestyle, and a feeling of self-sufficiency. These create a strong sense of community (Raish and McSweeny 2003; 2012).

Livestock grazing contributes to the livelihood of permittees and the economy of local communities and counties. For most permittees, livestock grazing is generally not a commercial venture. Most of the permittees have other jobs and do not make their sole living from livestock production, although for some, a substantial portion of their income is derived from livestock. The permittees typically own small ranches, and federal grazing permits are integral to their overall operations.

The SMLRP area contains all or part of five grazing allotments: Aspen Mountain, Gabaldon, Glorieta, Macho and Santa Fe Watershed grazing allotments (Figure 1). Aspen Mountain allotment consists of 16,768 acres in size. Recent inspections of the allotment indicate that range resources are in balance with permitted use. Within the last several years permittees have and continue to adopt progressive management practices. A majority of the capable range acres within the Glorieta allotment are considered in satisfactory range management status. Very few acres are considered to be in unsatisfactory range management status. The Macho allotment which comprises only 821 acres within the project area is considered to be in satisfactory range condition. Two of the five allotments that overlap with the SMLRP area are permanently closed, meaning no livestock are permitted to graze in these allotments (Table 1). Range improvements in the SMLRP area include 33.5 miles of fence and 1 cattleguard.

Adaptive management is used to adjust current resource conditions with livestock numbers. The number of authorized livestock, season of use, and levels of livestock use can vary from year to year based on resource conditions. It is important to note that the current standard as formalized in the Forest Service Handbook may be different from that used in older allotment decisions.



The data used to create this map is intended for broad-scale planning purposes. The Forest Service provides no warranty regarding its accuracy or use for other purposes.
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Table 1. Grazing allotments and acreage within the project area

Allotment Name	Allotment Status	Total Acreage of Allotment	Acres of Allotment in Project Area	Percent of Allotment Acres in Project Area	Number of Permits	Number of Permitted Livestock	AUMs
Aspen Mountain	Active	16,768	7,529	45%	5	49 Cow/Calf 4 Bulls	323 15
Gabaldon	Closed	8,120	8,092	100%	0	0	0
Glorieta	Active	30,466	26,346	86%	1	16 Cow/Calf	222
Macho	Active	36,415	821	2%	1	16 Cow/Calf	106
Santa Fe Watershed	Closed	23,012	7,721	34%	0	0	0
Total		**114,781**	**50,509**	**267%**	**7**	**81 Cow/Calf** **4 Bulls**	**666**

Methodology

The methods used to analyze the effects of the SMLRP alternatives on rangelands within this area is largely based on Geographic Information Systems (GIS) technology, the Ecological Response Units (ERU) of the Santa Fe National Forest and personal knowledge of the area. Data sets were used from the U.S. Forest Service GIS Corporate Data. Private and Pueblo lands were not analyzed.

The effects of forest thinning and prescribed burning to livestock grazing is analyzed in this report. Table 2. shows resource indicators and measures concerning forest thinning and prescribed burning.

Table 2. Resource condition indicator and measure for assessing effects to livestock grazing

Issue	Indicator or Measure
Changes to the livestock grazing conditions and allotment management	Quantification of acres of proposed forest restoration treatments within active livestock grazing allotments. Qualitative discussion of changes to range capability and effects to herbaceous vegetation (abundance and diversity).

For this report, the definition of a short-term impact is 1 to 5 years because immediate treatment effects are expressed during this time period, such as the response of herbaceous plants and shrubs.

For this report, the definition of a long-term impact is 6 years and beyond because the structure and composition of vegetation recover from fire effects by this time.

The spatial extent of analysis is the active grazing allotments (Aspen Mountain, Glorieta & Macho) that occur within the SFMLRP boundary as shown in Table 3.

Table 3. Ecological Response Unit acreages within Active Allotments in the SFMLRP area

Allotment Name	Ecological Response Unit	Acres	Total acres
Aspen Mountain	Mixed Conifer - Frequent Fire	2657.68	7520.44
	Mixed Conifer w/ Aspen	10.32	
	Montane / Subalpine Grassland	0.94	
	PJ Woodland	2571.19	
	Ponderosa Pine Forest	1461.96	
	RMAP Narrowleaf Cottonwood / Shrub	203.75	
	RMAP Upper Montane Conifer / Willow	16.26	
	RMAP Willow - Thinleaf Alder	5.85	
	Spruce-Fir Forest	592.48	
Glorieta	Colorado Plateau / Great Basin Grassland	4.93	26352.50
	Juniper Grass	222.43	
	Mixed Conifer - Frequent Fire	9688.95	
	Mixed Conifer w/ Aspen	56.84	
	PJ Grass	0.03	
	PJ Woodland	1666.09	
	Ponderosa Pine Forest	14049.69	
	RMAP Narrowleaf Cottonwood / Shrub	96.92	
	Spruce-Fir Forest	566.61	
Macho	Mixed Conifer - Frequent Fire	609.40	820.67
	Mixed Conifer w/ Aspen	2.82	
	Ponderosa Pine Forest	0.28	
	Spruce-Fir Forest	208.17	

Environmental Consequences

No Action Alternative

Direct and Indirect Effects of the No Action Alternative

Under the no action alternative, permitted livestock numbers would stay the same. Forest ecosystem conditions would continue to decline, there would be no vegetation treatments to modify stand structure in order to improve forest resiliency in the project area. Vegetation thinning using mechanical and manual treatments would not occur and the overgrown conifer forests with unnaturally high densities of small size-class trees would remain. The overgrown forests would continue to adversely impact rangeland health by suppressing forage availability, including native grasses, forbs, and shrubs for livestock. As shade-tolerant species become dominant and alter the species composition of the forest, the grasses, forb, and shrub matrix of the forest would decline. The canopy would continue to grow denser and the resources needed for the understory, including water and sunlight, could become limiting thereby decreasing the amount of grasses, forbs, and shrubs growing in the understory. The amount of available forage and plant diversity would decrease. In the long-term, the stand structure would become more uniform and would create a less diverse plant species population. These effects resulting in poor forest health would create adverse impacts to rangeland resources, including limiting the growth of livestock food sources, particularly native grasses, forbs and shrubs.

Under the no action alternative, the use of prescribed fire would not occur, the overgrown stand density would remain, and the risk of high severity wildfire would persist. If the historic fire-adapted ecosystems are not maintained and/or restored, the availability of grasses, forbs, and shrubs for livestock grazing would decline. The overgrown understory of small size-class trees would continue to increase, which would elevate the risk of wildfire within grazing allotments over the long term.

Rangeland capability, the potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity, and the ability of grazing livestock to move freely within an allotment, in the SMLRP area is declining because of tree encroachment and would continue to do so. Under the no action alternative, no forest restoration treatments would occur, and herbaceous vegetation density and diversity would continue to decline. Rangeland capability and forage production would not improve.

Proposed Action Alternative

Direct and Indirect Effects of the Proposed Action, Alternative 2

Implementing the proposed action would have both adverse and beneficial short-term impacts to rangeland resources. Impacts from each restoration method are discussed below. Overall, the Macho and Aspen Mountain allotments would have minimal impacts from the proposed action as less than half of the acreage associated with these allotments overlaps the project areas. The Glorieta allotment has only 16 cow/calf pairs grazing over 30,000 acres and would have minimal impacts because as the project proposes that 750 acres would be treated with vegetation thinning and 4,000 acres with prescribed fire annually throughout the entire project area, so cows would be able to graze in other areas not being treated.(see Table 1).

Range infrastructure, including fences and the one cattleguard in the project area, would likely not be affected by the proposed action because the U.S. Forest Service would coordinate proposed treatment activities with permittees prior to implementation. (see design features, Range-2, 9) in addition, the forest restoration treatments would reduce the risk of wildfire in some parts of the forest, which would help protect range improvements from wildfire events.

Resource protection measures described in EA Chapter 2, specifically rangeland management, would help minimize, avoid, or mitigate adverse short-term effects on rangeland resources. Under this alternative the number of permitted animal unit months (AUMs) would stay the same on Term Grazing Permits, however adaptive management is used to adjust current resource conditions with livestock numbers. The number of authorized livestock, season of use, and levels of livestock use can vary from year to year based on resource conditions.

Use of Prescribed Fire

The use of prescribed fire would result in adverse short-term effects (1-6 years) on vegetation, livestock grazing, allotment management, and individual permittees. Approximately 34,694 acres of active grazing allotments would be subject to prescribed fire treatments within the SMLRP area over the life of the project, with an estimate of no more than 4,000 acres treated by prescribed fire annually. In some instances, small sections of a prescribed burn units or burn piles may burn too hot, thereby scorching the root crown and killing plants entirely. Creating areas of bare ground could lead to an introduction or propagation of nonnative invasive species (Zouhar and others 2008)(See plant design features; see in EA Chapter 2 for the full list) After a prescribed fire is completed, there would be a cessation of grazing (in affected pastures) for 1-2 years (see the range design criteria, Range-12). This rest period is needed to let the soil stabilize and for grasses and forbs to reestablish themselves and grow. Perennial grasses which lose their leaves in the first growing season after a fire (e.g., through grazing) produce less forage and do

not grow as well. They are also more likely to die (Jirik and Bunting 1994; Bunting et al 1998). During the rest period, permittees may be required to temporarily reduce their authorized livestock numbers, shorten the season of use, or do a combination of both to allow herbaceous vegetation to recover and regenerate. Permittees would be minimally affected economically. With livestock management changes cost occurs by having permittees move livestock, having to lease pastures and purchasing replacement livestock for their herds. With extensive coordination between permittees, rangeland and fire/fuels staff prior to a treatment would reduce the potential adverse economic effects to permittees. In addition, allowing these permittees to use understocked allotments elsewhere and use of an altered pasture rotations would reduce or eliminate adverse economic and logistical impacts to their operations.

These short-term impacts on grazing and permittees discussed above would be reduced if maintenance or re-entry burning when compared with first entry burning. During a maintenance burn, livestock can be moved around an allotment to take advantage of improved forage while another part of the allotment is undergoing a maintenance burn. Reentry burns would also burn with less intensity because the amount of fuel would be greatly reduced during the initial burn, thus allowing for more flexibility in adaptive management.

Prescribed fire could potentially have greater effects on an allotment if there is a drought in the year before the burn. The drought would slow reestablishment of native herbaceous vegetation. In this scenario, after resting the affected pastures for at least one year, reductions of authorized livestock numbers, season of use, or a combination of both could compound the effects on livestock grazing, allotment management, and the permittees in order to align livestock grazing numbers with resource conditions.

An increase in range capability and improved range conditions after using prescribed fire is expected. This means that more of the allotment can be used by grazing animals under proper management without long-term damage to the soil resource or plant communities. Under current conditions, livestock cannot access some areas because of the dense forest. Other areas have limited amounts of forage because there are too many trees. Prescribed fire would thin the forest and remove fuels. This would allow livestock to use areas that were inaccessible before burning.

Prescribed fire would increase the amount of herbaceous vegetation within the ponderosa pine and dry mixed conifer forest types. There would also be an increase in species diversity, abundance, and distribution of herbaceous vegetation (Covington et al. 1997; Webster and Halpern 2010). Similar effects on herbaceous vegetation are likely to occur in other forest types, including aspen (USDA 1989) and piñon-juniper (Covington et al. 1991). Over the long term, the increase in forage production from the proposed prescribed fire treatments would improve allotment conditions and allow for a more flexible grazing management scheme because livestock distribution would improve and livestock utilization rates in any one specific area would decrease, meaning the concentration of grazing livestock would disperse to other areas with available forage. Range capability is also expected to increase. These benefits would allow for a more sustainable range program through drought years, and for low-intensity, naturally-occurring surface fires to occur on the landscape, further sustaining forage production.

Vegetation Thinning Treatments

Approximately 34,694 acres of active grazing allotments would be subject to vegetation thinning treatments within the SMLRP area over the life of the project, with an estimate of no more than 750 acres of vegetation thinning treatments annually. Mechanical treatments and stand improvement thinning would have some minor short-term impacts (1-6 years) on livestock grazing, grazing management, and the permittees. These include the loss of available forage or use of pastures and damage to range

infrastructure (fences, water tank, or cattleguards). These impacts could result from the activity of vegetation thinning equipment, vehicle traffic).

Mechanical treatments have been implemented in the general area in the past with few impacts on livestock grazing, allotment management, and permittees. For this project, damage to range infrastructure would be avoided to the extent possible. If there is damage to infrastructure from treatments, it will be restored before the project is completed (Range-4; see in EA Chapter 2 for the full list of design features). This will reduce impacts on livestock grazing before and during these treatments. Even so, it may be necessary in some instances to limit or delay grazing in areas where mechanical thinning treatments are actively occurring. Manual thinning has a minimal if any effect on livestock grazing due to low disturbance in areas that are being treated.

Over the long-term, reducing tree density with vegetation thinning treatments would increase the diversity and abundance of understory plants- grasses, forbs and shrubs. Removing trees opens up the canopy and allows more light and precipitation to reach the forest floor, and reduces competition between plants for soil moisture and nutrients. These conditions improve growing conditions for understory plants in dry forest types including piñon-juniper (Bates et al. 2000; Brockway et al., 2002), ponderosa pine (Covington et al. 1997; Griffis et al. 2001), and mixed conifer (Collins et al. 2007). The combination of vegetation thinning treatments followed by prescribed fire often has an additive effect- the increase in understory vegetation is greater after the two treatments than either one by itself (Griffis et al. 2001; Laughlin et al. 2008).

Long-term beneficial effects on rangeland resources could result from debris left over from vegetation thinning treatments, which could enhance soil productivity and resilience to invasive nonnative species. The remaining slash debris contains significant amounts of carbon and nitrogen which regenerates the soil fertility leading to more plant processes and ultimately plant diversity. The debris also acts as a natural mulch which increases soil water availability. Both processes coupled together work to suppress the introduction of nonnative species and enhance native vegetation communities (Kirkland 2012). Suppressing nonnative species and increasing soil productivity from debris would create long-term beneficial impacts to rangeland resources, including more forage availability for livestock.

The piñon-juniper vegetation types would also have an increase in range capability and forage production. Vegetation thinning treatments would be done at different intensities- more trees would be removed in some areas than in others- to achieve specific management objectives. Because of this, the increase in herbaceous vegetation would vary across the treated areas. It may also take longer to occur in areas that are treated less intensely (fewer trees are removed).

Vegetation thinning treatments would increase range conditions and capability, since livestock could use areas that were previously inaccessible or had limited forage availability. Mechanical treatments and manual thinning, with or without prescribed fire, would also reduce fuel loads and lower the potential for an uncharacteristically severe wildfire that could cause significant damage to rangeland resources.

The long-term effects of mechanical and manual treatments outweigh the undesirable short-term effects. It is expected that over a 10-year period, the increase in forage production from these treatments would improve allotment conditions and livestock distribution, decrease utilization rates and allow for a more flexible grazing management scheme. These benefits would allow for a sustainable range program through drought years, and for low-intensity ground fires to occur on the landscape.

Riparian Restoration Activities

Riparian restoration treatments within an estimated 100-foot buffer of established waterways are proposed along approximately 4.5 miles and 370 acres of Arroyo Hondo and approximately 12.5 miles and 310 acres of Tesuque Creek to improve watershed conditions. In areas where riparian vegetation is in poor condition, or is being encroached with conifers, vegetation thinning, prescribed burning, native species plantings, and possible herbicide applications would occur. Improving riparian conditions would contribute to an upward trend in Rangeland Capability and condition by improving the potential for diverse vegetation properly functioning riparian areas.

Both within and outside of active floodplains, prescribed fire would be indirectly introduced by allowing low intensity prescribed fire to back down into the riparian areas from upland areas. This indirect use of prescribed fire would reduce understory fuels and promote riparian vegetation growth. Use of prescribed fire, herbicides and vegetation thinning in these areas would have a short term effect on livestock grazing. Adaptive management would be utilized when these management action occur within riparian areas in the project area.

Fencing may be installed if needed to protect restored areas if it is determined that riparian vegetation regeneration is being hampered by browsing and grazing. This would adversely impact livestock utilization of riparian areas within the project area over the long term. By excluding livestock from riparian areas it can impede livestock use of water and forage resources within these areas. The Arroyo Hondo is a main water source for livestock on the Glorieta allotment and Tesuque Creek is the main water source for the Aspen Mountain allotment which can have a detrimental long-term impacts to the permittee and the livestock management within the allotment since there are no other water sources available. Coordination with watershed, rangeland and wildlife staff would be coordinated for effective riparian exclosures that benefits all resource objectives within the project area as well as provide water for livestock.

Road Closure

There would be no impacts to the ability of livestock to graze within the SMLRP area as a result of the 1.5 mile road closure along Forest Service Road 79W, however the management of livestock will be minimally affected by limiting permittees access to hurt or sick livestock and if livestock are trespassing on private lands. Administrative use of the road will mitigate the permittee from being affected by the road closure.

Proposed Forest Plan Amendments

The proposed Forest Plan amendments would provide guidelines specifying how vegetation would be manipulated within Mexican Spotted Owl protected activity centers (PACs), adopting aspects of the 2012 Mexican Spotted Owl Recovery Plan, clarifying activity restrictions during MSO breeding seasons, and clarifying the need for interspaces for consistency with updated Northern goshawk management guidance. (See Chapter 2 of this EA). The guidelines are not expected to result in significantly different effects to rangeland resources than the proposed action and as a result, are not independently analyzed for range resources.

Cumulative Effects of the Proposed Action, Alternative 2

The area considered for the cumulative effects analysis is the active allotments within the SFMLRP area because this is where cumulative impacts would be evident within allotments. The cumulative effects analysis considered past, present, and reasonably foreseeable future non-project activities and their effects, in combination with the proposed action.

The proposed action is not predicted to result in any long-term adverse impacts on current livestock grazing permit holders.

The past uses in the cumulative effects analysis area have had a direct effect on range capability, as described in Affected Environment and Environmental Consequences sections. Past uses mostly comprise of vegetation management projects that improve forage conditions for livestock benefit, however some recreation and urban interface projects have minimally changed livestock movement and management over the years but not significantly. Historic proliferation of mining and ranching roads, the establishment of federal, state, county, and private lands, and community development have all contributed to the current range conditions in the cumulative effects analysis area.

Ongoing and planned activities such as the Habitat Improvements for Terrestrial Species, Vegetation Treatments throughout the Santa Fe National Forest, and Non-native Invasive Species Management Projects (all proposed for the Santa Fe National Forest in the Draft Forest Plan [U.S. Forest Service 2019]) are similar in nature to the proposed action (but much smaller in scale, compared with the SMLRP 50,566 acres). The cumulative impact of the actions listed in Table 4 to range resource would be short-term and adverse because disturbance associated with these projects could temporarily disturb grasses and forbs during implementation. Over the long-term, range resources would benefit from these projects because the project would improve range capability through the analysis area.

Table 1. Actions that May Have Cumulative Impacts to Resources within the Study Area

Action	Summary of Action
Pacheco Canyon Forest Resilience Project	The scope of the project is to thin and use prescribe fire on approximately 2,042 acres northeast of the City of Santa Fe, near several popular recreation sites, including the Big Tesuque Campground, Aspen Vista Picnic Area, and the Santa Fe Ski Basin. Tesuque Pueblo lands are within and northeast of the project area. The purpose of the project is to change stand conditions in predominantly ponderosa pine forests in the Pacheco Canyon area. The actions proposed to accomplish this change would be thinning and burning about 2,042 acres. Decision signed on June 1, 2018.
La Cueva Fuelbreak Project	The purpose of the project is to change fire behavior in treated areas to reduce the risk of a large-scale, high intensity wildfire spreading to or from the communities of La Cueva, Dalton Canyon, and the Santa Fe Watershed. This project proposes creation of a shaded fuelbreak by thinning 995 acres and conducting prescribed burns (pile and broadcast burning) on approximately 1,100 acres. Decision signed on February 4, 2005
County Line Fuel Wood Treatments	The purpose of the project is to improve forest health and wildlife habitat through a combination of thinning and prescribed burning across approximately 900 acres on Borrego Mesa. Decision signed on August 6, 2010
Southern Rowe Mesa Restoration Project	The purpose of this project is to promote a mosaic of healthy forest stands and natural grasslands through thinning and prescribed burning activities on approximately 17,500 acres on Rowe Mesa. Decision signed on February 21, 2013.

Action	Summary of Action
Hyde Park Wildland Urban Interface Project	The scope of the project is to thin and use prescribe fire on up to 1,840 acres. The project area is dominated by dense stands of ponderosa pine forests with a lesser component of mixed conifer and pinon-juniper. The project area is located in forests east of the community of Hyde Park Estates, near Hyde Memorial State Park, and adjacent to Black Canyon campground. The purpose of this project is to reduce the risk of uncharacteristic, stand-replacing wildfire and reduce the risk for insect and disease related tree mortality within the project area. Decision signed on March 21, 2018.
Santa Fe Municipal Watershed	The scope of the project is to use a combination of tree thinning and prescribed burning on up to 7,270 acres of national forest and city lands in the Santa Fe Municipal Watershed. The proposal is designed to reduce the risk of a severe crown fire and to restore sustainable forest and watershed conditions in the Watershed. Record of Decision signed in October 2001.
Santa Fe Municipal Watershed Pecos Wilderness Prescribed Burn Project	The project proposes to perform prescribed burns of between 200 and 2,100 acres at one time in ponderosa pine and mixed conifer stands within an approximately 2,900-acre, mid elevation (8,500 – 10,000 ft) treatment area within the Pecos Wilderness. Decision signed on April 28, 2015.
Rowe Mesa II (U.S. Forest Service n.d.)	Fuel treatment to promote a mosaic of healthy forests stands and natural grasslands by thinning and prescribed burning in pinon/juniper, and ponderosa pine trees that have encroached into the understory of woodlands and into meadows of Rowe Mesa. Project initiation 12/19/2018; expected implementation 4/2020.
Century Link/PNM Santa Fe to Los Alamos Fiber Optic Project (U.S. Forest Service n.d.)	Proposal to bury a fiber optic line along Forest Road 24 on Santa Fe National Forest land to a PNM transmission line where it will be carried to DOE facilities to improve service to Los Alamos National Lab and Los Alamos community. Notice of initiation 10/1/2018.
Issuance of Forest-wide Temporary and Priority Special Use Permits (SUPs) for Non-Motorized Over-Snow Activities (U.S. Forest Service n.d.)	Proposal to approve issuance of temporary and priority SUPs for outfitter and guides throughout the Santa Fe National Forest to conduct guided recreation activities related to over-snow uses, including but not limited to cross country skiing and snow shoeing. Notice of initiation 12/1/2019.
Rio Chama Aquatic and Wetland Habitat Restoration Project (U.S. Forest Service n.d.)	Species habitat improvement project to increase diversity and quality of aquatic habitat for fish and invertebrates in Rio Chama downstream from Abiquiu Dam approximately 5.6 miles between Santa Fe and Carson National Forests to point 1.34 miles upstream of Highway 84 bridge. Notice of initiation 10/1/2019; expected implementation 4/2020.
Comexico Jones Hill Exploration (U.S. Forest Service n.d.)	Exploratory drilling operation on unpatented mining claims in Pecos/Las Vegas Ranger District of SFNF. Proposal will cause approximately 5-7 acres of surface disturbance in an area that has been previously disturbed by earlier exploration date. All activities will occur within 1 year of the state date. Scoping was conducted in December 2019; expected implementation 10/2020.

Action	Summary of Action
Pecos Bike Trails (U.S. Forest Service n.d.)	Project to develop trail system and impress access and promote visitor safety in Canada de Los Alamos/Glorieta area. Notice of initiation 11/1/2019; expected implementation 2/2020.
Pecos Rio Grande Cutthroat (RGCT) Trout Restoration (U.S. Forest Service n.d.)	Project to restore RGCT populations to Willow Creek and upper Cow Creek by adding 9 miles of stream to currently occupied distribution. Scoping occurred February 2019.
	Non-Forest Service Projects
Aztec Springs, Phase 2 & 3 (City of Santa Fe, The Nature Conservancy, New Mexico State Forestry)	150 acres of thinning, piling, and prescribed burning activities.
Aspen Ranch (Pueblo of Tesuque)	160 acres of thinning, piling, and prescribed burning activities in ponderosa pine and mixed conifer.
Vigil Grant (Pueblo of Tesuque)	158 acres of thinning, piling, and prescribed burning activities in ponderosa pine and mixed conifer.
Hyde Memorial State Park (New Mexico State Forestry)	Thinning, piling, and prescribed burning across 276 acres in Hyde Memorial State Park.
City of Santa Fe Planned Communities and Infrastructure Projects	Three master planned communities that is projected to absorb most of Santa Fe's growth through 2030 • Tierra Contenta Master Plan (1995) approved as many as 5,200 housing units and to date is 50% completed with up to 2,500 homes and apartment units completed. The western portion of Phase 2 and Phase 3 await construction and includes 400 acres of developable land and 100 acres of open space/parks. • Las Soleras Master Plan (2008) covers 400 acres with most of the land along I-25 slated for commercial and mixed use. Internal portion of master plan are reserved for residential units which could be developed with 1,000-1,500 housing units. • Northwest Quadrant (2010) covers approximately 160 acres of 2,000 acres the city owns in the northwest corner of the city. The Master Plan calls for 750 housing units to the southeast of Highway NM 599. Roadway improvements, trails and urban mixed use and parks (Southwest Activity Node, Las Soleras Park, and South Meadows Park) (City of Santa Fe 2017). Multiple drainage projects are proposed by City of Santa Fe in Council Districts 1, 2, 3, and 4 to be completed in three phases between 2019 and 2022 (City of Santa Fe n.d.).
Santa Fe River Greenway R&PP Lease Project	EA (released 11/21/19) for the conveyance of 23.5 acres of BLM-administered public lands to Santa Fe County under the Recreation and Public Purpose Act (R&PP) for the construction and maintenance of a short segment of the greenway and for bank stabilization of the Santa Fe River. The proposed project will create a greenway of public parks and multi-use recreational trails along the Santa Fe River from Two-mile Reservoir in eastern Santa Fe west to the Santa Fe County wastewater treatment plant, which is located just west of New Mexico Highway 599 (BLM 2019a).

Consistency with Relevant Laws, Regulations, and Policy

Land and Resource Management Plan

The Santa Fe National Forest Land and Resource Management Plan (LRMP) (1987, as amended 1992, 1997 and 2010) provides standards and guidelines for Rangeland Resources within the project area. The SFLRMP is consistent with the LRMP standards and guidelines that are provided for rangeland resources.

Other Relevant Law, Regulation, or Policy

Laws, regulations, and policies direct Forest Service rangeland management. Policies are the Forest Services rules defining rangelands management. The policies are documented in agency manuals and handbooks.

Laws

The authority to protect, manage, and administer the National Forest System, and other lands under Forest Service administration for range management purposes, is found in the following acts:

- Organic Administration Act of 1897 - authorizes the President to modify or revoke any instrument creating a National Forest; states that no National Forest may be established except to improve and protect the forest within its boundaries, for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Authorizes the Secretary of Agriculture to promulgate rules and regulations to regulate the use and occupancy of the National Forests.
- The Bankhead-Jones Farm Tenant Act of 1937 - directs the Secretary of Agriculture to develop a program of land conservation and utilization to correct maladjustments in land use and thus assist such things as control of soil erosion, reforestation, preservation of natural resources and protection of fish and wildlife.
- Sustained Yield Forest Management Act of 1944 - is an agreement between Secretaries of Agriculture and the Interior, or with other Federal agencies having jurisdiction over forest land. Each of the said Secretaries is further authorized in his discretion to enter into cooperative agreements with the other Secretary, or with any Federal agency having jurisdiction over federally owned or administered forest land, or with any State or local agency having jurisdiction over publicly owned or administered forest land.
- Organic Act of 1944 - provides establishment and protection of water rights. There are authorized to be appropriated for expenditure by the Forest Service such sums as may be necessary for the investigation and establishment of water rights, including the purchase thereof or of lands or interests in lands or rights-of-way for use and protection of water rights necessary or beneficial in connection with the administration and public use of the national forests.
- Granger-Thye Act of 1950 - authorized range improvements from appropriated funds and allowed the Forest Service to authorize grazing advisory boards and to issue grazing permits for periods not exceeding ten years.
- The Multiple Use Sustained Yield Act of 1960 - establishes the policy and purpose of the National Forests to provide for multiple-use and sustained yield of products and services.
- Forest and Rangeland Renewable Resources Planning Act of 1974 - which authorizes long-range planning by the United States Forest Service to ensure the future supply of forest resources while maintaining a quality environment. It requires that a renewable resource assessment and a Forest Service plan be prepared every ten and five years, respectively, to plan and prepare for the future of natural resources.
- The National Historic Preservation Act of 1966 - secures protection of archaeological resources and sites on public and Indian lands.

- National Environmental Policy Act of January 1, 1970 - directs all federal agencies to consider and report the potential environmental impacts of proposed federal actions, and established the Council on Environmental Quality.
- National Forest Management Act of October 22, 1976 - The National Forest Management Act reorganized, expanded and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest lands. The National Forest Management Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests.
- The Clean Water Act of 1972 - sets the basic structure for regulating discharges of pollutants to waters of the United States.
- The Endangered Species Act of 1973 - protects animal and plant species currently in danger of extinction (endangered) and those that may become endangered in the foreseeable future (threatened). It provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through Federal action and by encouraging the establishment of state programs.
- Forest and Range Renewable Resources Planning Act of 1974 - establishes public land policy and guidelines for the management, protection, development, and enhancement of the public lands.
- Federal Land Policy and Management Act of 1976 - requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use. Also states that the United States shall receive fair market value of the use of the public lands and their resources unless otherwise provided for by law.
- Public Rangelands Improvement Act of 1978 - establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; charge a fee for public grazing use which is equitable; continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values.
- The Rescission Act of 1995 (Public Law 104-19) - required each National Forest to establish and adhere to a schedule for completing NEPA analysis and decisions on all grazing allotments within a 15 year period.

Regulations

Regulations governing range management on the National Forests are found throughout the Code of Federal Regulations Title 36 Parks, Forests, and Public Property Parts 200 to 299. The range management section of this regulation is located in 36 CFR 222. In addition, policy relating to range resources and coordination of range activities of the USDA agencies and other executive agencies, organizations, and individuals is included in the following.

- Secretary's Administrative Order of August 1963, Administration of Lands Under Title III of the Bankhead-Jones Farm Tenant Act; Establishment of National Grasslands.
- Departmental Regulation, Number 9500-5 - dated December 15, 1983; Subject: Policy on Range.
- Executive Order 12548 - Grazing fees, 1986 - provide for establishment of appropriate fees for the grazing of domestic livestock on public rangelands.

Policies

Forest Service Rangeland Management Directives -the Forest Service's Rangeland Management Manuals and Handbooks.

- FSM 2200 – RANGE MANAGEMENT
- FSH 2209.13- GRAZING PERMIT ADMINISTRATION HANDBOOK

Conclusion

The no action alternative would have the least benefit to rangeland resources and ecosystem resilience because only small-scale, fragmented projects would be implemented across the landscape. Herbaceous vegetation and available livestock forage would continue to decline in areas that are not treated. There would continue to be periodic reductions in authorized livestock numbers or season of use, or a combination of both due to localized treatments.

Under the proposed action, range condition is expected to improve over the long-term as forage production and quality increases, utilization rates decrease, and distribution of livestock improves. The long-term benefits would outweigh the short-term effects and would ultimately improve the ecological sustainability of livestock grazing, and substantially increase ecosystem resilience to uncharacteristically severe wildfire and other disturbances. Effects would be short term and would not result in permanent changes to permitted livestock numbers or season of use.

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