

# Chapter 3

## Affected Environment and Environmental Consequences

### Introduction

This chapter describes the present conditions of the environment in and around the Canon Analysis Area. This chapter discloses the probable consequences (impacts and effects) of implementing each Alternative presented in Chapter 2 on selected environmental resources, based on key issues. It provides the analytical basis to compare the Alternatives. This chapter is organized by selected environmental and social resources. Each resource discussion addresses the following components: 1) scope of the analysis, 2) past activities that have affected the existing condition, 3) existing condition, and finally 4) direct, indirect, and cumulative effects.

Some required determinations are not elaborated on in the resource discussions, so they are briefly mentioned immediately below. An explanation is provided on why they are not significant.

All alternatives comply with the Clean Air Act. The Revised Forest Plan FEIS (USDA Forest Service 1996) explains on page 3-152 through 3-154 that air quality in the RGNF is acceptable for all air pollutants, that the entire Forest meets National Ambient Air Quality Standards, and that nothing proposed in the Forest Plan will substantially change existing air quality. Continuation of livestock grazing within the Canon Analysis Area will not noticeably alter air quality and, therefore, is in full compliance with the Clean Air Act.

The actions proposed in the Alternatives of this EA would have no effect on ecologically critical areas. Ecologically critical areas have not been formally recognized within the Analysis Area. However, there are no activities proposed that would alter the natural appearance or function of landscapes in the Analysis Area.

The actions proposed in this project will not change any existing road management; therefore there is no need of a project level Roads Analysis.

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## General Description of the Analysis Area/Project Area

The Canon Allotment contains 21,700 acres and is located approximately 30 miles southwest of Creede, Colorado. The allotment lies within the upper Rio Grande watershed and includes its tributaries of Bear Creek, Pole Creek and Lost Trail Creek. The allotment occurs on a variety of volcanic rock materials on gentle to steep mountain slopes, fans and floodplains of the mountain and sub alpine zones. Elevations range from about 9,500 to 11,600 feet and the overall annual precipitation ranges from 16 to 35 inches. The predominant potential natural communities of the grassland ecosystems on the Canon allotment include 34 percent willow and sedge, 34 percent Thurber fescue, and 29 percent Arizona fescue. Vegetation consists of Arizona fescue and Thurber fescue meadows, riparian areas, above timberline grasslands, spruce-fir forest, and aspen. The riparian bottoms are relatively narrow with steep slopes that are a mixture of rock outcrops and spruce-fir forest.

## Terms Used in the Analysis

A list of terms and definitions used in the analysis is located in Appendix F of this EA.

## Wildlife Habitat

### Key Issue 1 – Wildlife/livestock conflicts

**What impact does big game grazing have on the ability of the permittee to manage livestock, and what impact does livestock grazing have on big game habitat quality and quantity?**

#### Present Condition

Over 80% of the Canon C&H Allotment is classified in the Forest Plan as Management-Area Prescription (MAP) 3.3, Backcountry. These areas are managed to maintain plant and animal habitats that are shaped primarily through natural processes, and to provide backcountry experiences to the public in areas where there is little evidence of human activities. The remainder of the allotment falls into MAP 1.11, Wilderness-Pristine and 4.3, Dispersed and Developed Recreation. Livestock grazing is appropriate and authorized within all three Management Area Prescriptions.

Elk are the most abundant big game species on the allotment. Mule deer and moose are also found throughout the area. The allotment falls entirely within Game Management Unit 76, which is a trophy elk unit, huntable through permit only. Numerous other species occur in the area. More common species include coyote, black bear and marmots.

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The area is best described as consisting of narrow valleys leading up to large open grassy plateaus. North aspects are typically greater than 40% slope and are heavily timbered. Wildlife summer range is abundant throughout the area. Due to the areas high elevation, wintering range is not available and big game species are forced to migrate to lower elevations.

Habitat conditions for wildlife are generally good throughout the allotment. Occasional incidents of cattle concentrating in riparian areas are documented but are not considered to have a significant impact upon wildlife or wildlife habitat. Grazing conflicts between cattle and elk has been raised as a concern but studies have shown that these conflicts, if any, are limited to late spring when cattle and elk are both following spring green up.

## Direct and Indirect Effects

Three wildlife related issues were examined in the analysis and include;

1. Potential wildlife displacement associated with livestock grazing
2. Potential decrease in wildlife habitat effectiveness associated with grazing and
3. Potential livestock/cattle competition for forage.

All allotment management plans incorporate standards and guidelines within the Forest Plan pertaining to allowable forage utilization by livestock. In addition, specific Forest-wide objectives with respect to big game are in place (i.e. “supply ample forage to sustain wildlife and permitted-livestock populations without damaging range condition”). The direct impact of livestock use is that livestock consume forage on the allotment and that may impact elk use on the allotment. However, there are no known instances of livestock grazing preventing elk from using an area as long as appropriate standards and guidelines are being met. These standards and guidelines will be met under all alternatives.

**Alternative 1** - One herd of cattle instead of two, decreases the overall area in which cattle and wildlife may interact with each other and so decreases the likelihood for wildlife displacement.

Of the action alternatives, this alternative offers the greatest opportunities for grazing flexibility and will best help to meet Forest-wide Standards and Guidelines. Wildlife habitat will best be protected and there will be the least amount of potential for livestock/elk conflicts.

**Alternative 2:** One herd grazing management. There will be no potential for wildlife disturbance or cattle/elk conflicts on the west end of the allotment under this alternative. However, the east end of the allotment will receive heavy use by livestock even with reduced AUMs decreasing this areas effectiveness for wildlife and increasing occurrences of wildlife displacement and potential conflicts between cattle and elk.

## Alternative 3: No Grazing

Under this alternative there will be no potential for wildlife disturbance as a result of cattle grazing and grazing’s associated management. Forage for wildlife will be more abundant although forage availability is not limited under any of the alternatives.

There will be no potential for elk and cattle conflicts. Overall this alternative offers wildlife the best habitat. However, there are no significant wildlife related reasons why

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cattle should not graze on the allotment. Through grazing timing and proper grazing management, potential impacts upon wildlife are mitigated. One positive result of selecting this alternative would be the decrease in wildlife disturbance but this improvement is currently not quantifiable nor has it been raised as a significant issue at this time.

Grazing and grazing activities associated with the Canon Allotment are not expected to significantly impact the quality and quantity of habitats, nor their spatial distribution over the Forest, and population trends are not expected to be affected.

## Management Indicator Species (MIS)

The Rio Grande National Forest has 9 Management Indicator Species. Four species were selected as Management Indicator Species due to habitat and management associations within the Canon Allotment. The remaining species were not selected due to grazing activities not being expected to significantly impact the quality and quantity of habitats, nor their spatial distribution over the Forest and population trends are not expected to be affected. For complete MIS analysis, reference Appendix D5. Table 3-1 summarizes species’ rationale for selection as an MIS for the project, followed by a detailed discussion.

**Table 3.1: MIS Selected for Canon Analysis Area**

SPECIES SELECTED	RATIONALE
<b>Rio Grande Cutthroat Trout</b> (or proxies, ie. brook, rainbow and brown trout)	Indicator of the health of montane aquatic ecosystems. Sensitive to management activities that increase sediment, reduce stream cover, create barriers to movement, or impact stream flows or water quality.
<b>Wilson’s Warbler</b>	Indicator of the health of willows and riparian communities. Riparian species tied to different structural elements susceptible to grazing and other activities within riparian areas.
<b>Lincoln’s Sparrow</b>	Indicator of the health of willows and riparian communities. Riparian species tied to different structural elements susceptible to grazing and other activities within riparian areas.
<b>Vesper Sparrow</b>	Indicator of the health of upland bunchgrass/shrub communities. Utilizes a narrow set of habitat conditions for nesting such as sparsely or patchily distributed shrubs with abundant grass cover; may be affected by grazing.

## **General Direct/Indirect Effects Alternatives 1 and 2.**

Direct effects from the action alternatives (Alternatives 1 and 2) may include cattle displacing Management Indicator Species from the various pastures while they are present and possible direct mortality to individuals as the result of trampling or nest destruction. Direct effects may also include increased human disturbance by herd management activities (herding, salting, fencing...) within the various pastures.

Indirect potential effects are mainly due to cattle grazing in riparian areas and upland vegetation habitat types. Riparian areas are often disproportionately preferred by cattle over surrounding uplands because of access to water, abundant and palatable forage, a cooler and shadier microclimate, and moderate slopes allowing easy access. Grazing affects riparian vegetation through removal and trampling. Removal by browsing affects the structure, spacing and density of vegetation. Grazing can alter the age structure and species composition of riparian areas. Cattle readily eat shoots of cottonwoods and willow, and heavy grazing can completely eliminate regeneration of these species. This produces even-aged, non-reproducing communities of mature cottonwoods and decadent willows, with little understory. These effects to the riparian areas can impact stream habitat by creating channels that are generally wider and shallower than normal, can destabilize streambanks, promote bank sloughing which reduces undercut bank habitat, and increase fine sedimentation and water temperatures.

## **Alternative 3.**

With no grazing, there would no impacts to MIS species due to cattle. Some impacts from elk use and recreational use would still occur but would be relatively insignificant.

## **MIS species specific effects**

### **Rio Grande Cutthroat Trout (or proxies)**

The Rio Grande cutthroat trout (and proxies) was selected as a project MIS to answer the monitoring question as to whether livestock grazing is being managed in a manner that provides for viable, well-distributed populations of aquatic species across the Forest. All perennial waters within the Canon Allotment are considered potential trout waters. RGCT and other desirable nonnative trout species are known to occur in Pole Creek, Lost Trail Creek, West Lost Trail Creek, and in the Upper Rio Grande. RGCT in these streams are classified by DOW as recreation populations which serve the dual purpose of maintaining genetic refugia for pure historic populations and provide sportfish recreation.

Trout species can serve as an indicator of the health of montane aquatic ecosystems. Use of trout will assist in monitoring whether Forest Plan standards and guidelines are being met for riparian areas, and the associated aquatic habitat, with an emphasis on grazing within the water influence zone (WIZ). Since grazing can impact the riparian environment resulting in loss of instream habitat and increase fine sediment deposition, trout populations could be directly influenced by improper grazing practices and/or failure to fully implement Forest standards and guidelines. Population size, density (fish/mile), biomass (pounds/acre), and age structures could be directly influenced by degraded stream health.

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Table 3-2 Summary of Effects on RGCT

<b>Alt 1: Proposed Action</b>	As long as S&G's are being met, should improve habitat conditions, trout density/biomass, and population numbers.
<b>Alt 2: Four Pastures</b>	Some trout populations would improve due to pasture closures but other populations might decrease due to longer periods of grazing within riparian areas.
<b>Alt 3: No Grazing</b>	Should improve habitat conditions, trout density/biomass and population numbers.

## Lincoln's Sparrow

This species is an indicator of the health of willows and riparian communities. The Colorado Breeding Bird Atlas documented Lincoln's sparrow as breeders in a high percentage of the survey blocks in the mountainous areas of the state. The Natural Heritage ranking for this species is demonstrably secure globally. The population trend information from the Breeding Bird Survey shows a slight increase for this species in Colorado.

Primary habitat for Lincoln's sparrow on the Rio Grande National Forest occurs in Land Type Association (LTA) 10 – Willows and sedges on floodplains. This LTA occurs primarily on gentle slopes at elevations of 8,600 to 11,600 feet and comprises about 54,000 acres (3%) on the Forest. The Lincoln sparrow forages on the ground in wet areas close to their nest location, which is often in dense foliage. Their slow feeding style tends to include slower and more hidden arthropods, which is a feeding strategy which tends to separate them from direct competition from Wilson's warblers, which are often found in the same habitat but consume different types of insects.

## Wilson's Warbler

This species is an indicator of the health of willows and riparian communities. The Colorado Breeding Bird Atlas documented Wilson's warblers as breeders in a high percentage of the survey blocks in the mountainous areas of the state that contained willow communities above 9,000 feet elevation. The Partners in Flight Total Score indicates a significant decrease in population trend for this species.

Population trend information from the Breeding Bird Surveys also shows a significant decrease for this species in Colorado.

Similarly to the Lincoln's sparrow, primary habitat for Wilson's warbler on the Rio Grande NF occurs in LTA 10-willows and sedges on Floodplains. This LTA is used to a great extent for livestock grazing as well as for recreational activities due to the proximity of water and shade. This species along with other species which nest and/or forage in heavy shrubs or herbaceous ground cover are the most likely to be negatively impacted by livestock grazing. Generally, a riparian ecosystem is more susceptible to livestock damage when it is surrounded by land that is steep, rocky and contains less palatable forage. Accordingly, Wilson's warbler was selected as an MIS for the Canon Allotment.

## Vesper Sparrow

This species is an indicator of the health of upland bunchgrass/shrub communities. The Colorado Breeding Bird Atlas lists the vesper sparrow as the most abundant species in mountain grasslands. Population trend information from the Breeding Bird Survey shows an increasing trend for vesper sparrow in Colorado.

Primary habitat for vesper sparrows on the Rio Grande NF occurs in montane and lower elevation grasslands that occupy about 12% of the Forest landbase (LTAs 8, 9 and 12). The primary management influences on these systems and their associated wildlife species are related to ungulate grazing. Current livestock grazing activities on the Forest occur on approximately 87% of the potential vesper sparrow habitat. Accordingly, the vesper sparrow was selected as an MIS for the Canon Allotment.

**Table 3-3 Summarizes Effects of the Alternatives on Wilson’s Warblers, Lincoln’s Sparrow, and Vesper Sparrows**

Alt 1: Proposed Action	As long as existing S&G’s are being met, this alternative should not result in any change in habitat conditions or population trend.
Alt 2: Four Pastures	Same as above.
Alt 3: No Grazing	Same as above.

## Cumulative Effects and Baseline Current Condition

Cumulative Effects/Baseline Conditions include a combination of the past impacts of the Canon C&H Allotment and other ongoing or planned projects within the allotment boundary. Potential sources of cumulative effects/baseline conditions are:

### Past Human Actions

The effects of the proposed action when added to past development projects and human activities, may create significant effects to the environment.

Past activities which have taken place, include timber sales, firewood cutting and various recreational activities including hiking and hunting. In comparison to other areas, the allotment is lightly roaded and receives moderate visitation as the result of its relative remoteness and lack of access.

### Ongoing and Foreseeable Future Actions

Other ongoing or human activities which are scheduled or reasonably likely to occur in the foreseeable future, and which combined with the proposed action, may create significant effects to the environment.

Several motorized trails exist in the allotment in addition to developed and dispersed camping in the Ute Creek area. Several summer homes and dude ranches also exist in the general vicinity of Ute Creek. The vast majority of recreational use comes from the motorized Lost Trail Creek system and Road 520, which is a 4WD road, which runs throughout the southern boundary of the allotment and is a common route for 4WD enthusiasts traveling across the Continental Divide.

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None of the alternatives are precedent setting. The preferred alternative, and associated grazing activities will not automatically trigger other projects, which might have similar effects on this area of the environment. Any future actions, which may be proposed by the Forest Service, will be studied and an independent evaluation will be made of the cumulative effects of those actions. There are no other known or anticipated projects in the general area, which cumulatively might impact MIS species or their habitat.

There is very little private land within the allotment boundary and land administered by another agency. No further development within the area is expected. The only current developments include two trail heads (Ute Creek and Lost Trail Creek) and one campground (Lost Trail Campground) and one private ranch (Lost Trail Ranch) at the eastern end of the allotment.

## Threatened, Endangered, and Sensitive (TES) Wildlife Species.

### Present Condition

The allotment offers adequate habitat for a variety of TES species. A Biological Assessment (BA-Threatened and Endangered Species) and Biological Evaluation (BE-Sensitive Species) have been completed for the Canon C&H Allotment and can be found in Appendix D2 and D3. A complete description of habitat, life history and effects are detailed. A separate BE has been completed for the Rio Grande Cutthroat Trout (See Appendix D1)

Habitat exists for fifteen Sensitive species within the analysis area (see the BE for more specific information). The BE concluded that the project will have “no impact” upon most sensitive species. It was determined that for some species such as the Boreal Toad, Leopard Frog, Tiger Salamander, Rio Grande cutthroat trout, Fox Sparrow and Dwarf Shrew grazing may impact individuals but is not likely to result in a loss of viability in the planning area, nor cause a trend towards Federal listing or a loss of species viability range-wide. Existing standards and guidelines should effectively protect and sustain habitat for Sensitive species.

Table 3-4 summarizes determinations for Sensitive Species with Suitable Habitat within the analysis area.

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**Table 3-4 Determination Summary for Sensitive Species with Suitable habitat for the Proposed Action and Alternatives to that Action**

SPECIES	EFFECT	RATIONALE	Mitigation
Boreal Toad			
Alternative 1	MI	For alternatives 1 and 2, grazing could affect vegetation structure in Boreal Toad habitat impacting toad reproduction success. Limited potential for trampling.	Yes
Alternative 2	MI	For alternative 3, suitable Boreal Toad habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Rio Grande Cuthroat Trout		See Appendix D1 for this BE	
N. Leopard Frog			
Alternative 1	MI	For alternatives 1 and 2, grazing could affect vegetation structure in Leopard Frog habitat impacting frog reproduction success. Limited potential for trampling.	Yes
Alternative 2	MI	For alternative 3, suitable Leopard Frog habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Tiger Salamander			
Alternative 1	MI	For alternatives 1 and 2, grazing could affect vegetation structure in Tiger Salamander habitat impacting salamander reproduction success. Limited potential for trampling.	Yes
Alternative 2	MI	For alternative 3, suitable Tiger Salamander habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Boreal Owl			
Alternative 1	NI	For alternatives 1 and 2, grazing has a remote chance of impacting Boreal Owl prey species habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing.	No
Alternative 2	NI	For alternative 3, suitable Boreal Owl habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Fox Sparrow			
Alternative 1	MI	For alternatives 1 and 2, grazing could affect willow structure in Fox Sparrow habitat impacting reproduction success.	Yes
Alternative 2	MI	Remote likelihood of limited displacement due to livestock grazing	
Alternative 3	NI		

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SPECIES	EFFECT	RATIONALE	Mitigation
Golden-Crowned Kinglet		For alternatives 1 and 2, grazing has a remote chance of impacting Golden-Crowned Kinglet habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing.	No
Alternative 1	NI		
Alternative 2	NI		
Alternative 3	NI	For alternative 3, suitable Golden-Crowned Kinglet habitat will not be impacted by livestock grazing.	
Goshawk		For alternatives 1 and 2, grazing has a remote chance of impacting Goshawk habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing.	No
Alternative 1	NI		
Alternative 2	NI		
Alternative 3	NI	For alternative 3, suitable Goshawk habitat will not be impacted by livestock grazing.	
Olive-Sided Flycatcher		For alternatives 1 and 2, grazing has a remote chance of impacting Olive-Sided Flycatcher habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing	No
Alternative 1	NI		
Alternative 2	NI	For alternative 3, suitable Olive-Sided Flycatcher habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Three Toed Woodpecker		For alternatives 1 and 2, grazing should have no effect upon Northern Tree-Toed Woodpecker habitat. There is a remote likelihood of limited displacement due to livestock grazing	No
Alternative 1	NI		
Alternative 2	NI	For alternative 3, suitable woodpecker habitat will not be impacted by livestock grazing.	
Alternative 3	NI		
Dwarf Shrew		For alternative 1 and 2, grazing could result in disturbance, trampling and changes in vegetation structure impacting individual Dwarf Shrew survival.	Yes
Alternative 1	MI		
Alternative 2	MI	For alternative 3, suitable shrew habitat will not be impacted by livestock grazing.	
Alternative 3	NI		

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SPECIES	EFFECT	RATIONALE	Mitigation
American Marten Alternative 1 Alternative 2 Alternative 3	NI NI NI	For alternatives 1 and 2, grazing has a remote chance of impacting Marten habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing  For alternative 3, suitable Marten habitat will not be impacted by livestock grazing.	No
Townsend's Big-Eared Bat Alternative 1 Alternative 2 Alternative 3	NI NI NI	For alternatives 1 and 2, grazing has a remote chance of impacting bat habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing  For alternative 3, suitable bat habitat will not be impacted by livestock grazing.	No
Wolverine Alternative 1 Alternative 2 Alternative 3	NI NI NI	For alternatives 1 and 2, grazing has a remote chance of impacting Wolverine habitat but this likelihood is extremely low rating a No Impact determination. Remote likelihood of limited displacement due to livestock grazing  For alternative 3, suitable Wolverine habitat will not be impacted by livestock grazing.	No

## T&E Species

The BA concluded that there is habitat within the allotment (project site) for two T&E species, the Canadian Lynx and Southwestern Willow Flycatcher.

Canadian Lynx habitat is present within the allotment. The BA concluded that grazing on the allotment May Affect, but is not likely to adversely affect Canada Lynx or Southwestern Willow Flycatcher or their primary habitat either directly, indirectly or cumulatively for Alternatives 1 and 2. Alternative 3 would result in a No Affect determination for lynx and Southwestern Willow Flycatcher. Concurrence with this determination was received from the Fish and Wildlife Service on April 27, 2004.

Table 3.5 Determination Summary for Threatened and Endangered Species for the Proposed Alternative

SPECIES	EFFECT	RATIONALE	Mitigation
Bald Eagle	No Effect  Alts 1,2,and 3	Little to no potential habitat.	No
Canada Lynx	NLAA  For Alts	Grazing could result in limited disturbance and could impact snowshoe hare forage,	Yes

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SPECIES	EFFECT	RATIONALE	Mitigation
	1 and 2  No Affect for Alt 3	particularly willow. Mitigation measures are in place to reduce the potential impact of grazing upon willow and riparian communities.	
Mexican Spotted Owl <i>Stix Occidentalis lucida</i>	No Effect Alts 1,2,and 3	No Suitable Habitat	No
Southwestern Willow Flycatcher <i>Empidonax trailii Extimui</i>	NLAA For Alts 1 and 2  No Affect for Alt 3	Several stands of willow exist in the allotment which could potentially provide habitat for SWFL. However, surveys have not detected any birds and the elevation, height and density of existing willow stands provide marginal habitat. Existing standards and guidelines are in place to protect riparian stands and willow.	Yes
Uncompahgre Fritillary Butterfly <i>Boloria acrocnem</i>	No Effect For Alts 1, 2 and 3	No suitable habitat within the allotment.	No

### Cumulative Effects

The Cumulative Effects discussion is the same for general wildlife and TES species.

Sometimes the combined effects of several projects are more substantial and of a different nature, than the incremental impact of each project viewed separately. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time. Potential sources of cumulative effects are:

Natural Trends – These are naturally occurring changes in existing physical and biological systems. Natural trends may have the effect of compounding the effects caused by the proposed action.

\* Natural trend is an increase in vegetation (grasses and forbs) in the allotment as the area recovers from past heavy grazing pressure from both sheep and cattle. Associated with an increase in vegetation is a trend towards an increase in wet microsites as soils become more suited for moisture retention.

## Soils Effect of Each Alternative

Key Issue 2 – Overall health of soils, watershed, and fisheries

What impacts are livestock having on stream banks and what are historical and current livestock impacts to the soil resource?

The Revised Forest Plan and EIS describe the important goals, objectives, and desired conditions for the soil resources of the National Forest. This analysis is tiered to the Forest Plan, as amended.

The Soil Resource and Ecological Inventory for the Rio Grande National Forest-West Part (1996 Draft) describes the ecosystems and soils of the Canon allotment. The Inventory reveals that most of the area consists of the following soil/ecological units listed in Table 3.6:

*Table 3.6 Soils and Ecosystems of the Canon Allotment*

Number	Ecological Units	Soil
113	Ponderosa Pine-Douglas-fir on Rugged Mtn Slopes	<i>Bushvalley soils-Rock outcrop</i>
114	Arizona Fescue/Mtn Muhly on Moderate and Steep Mountain Slopes	<i>Bushvalley-Rogert soils</i>
124	Willow/sedge on Floodplains	<i>Cryaquolls-Cryoborolls soils</i>
128	Sedge/Elephanthead on Floodplains	<i>Cryohemist-Cryaquolls soils</i>
157	Arizona fescue/Thurber fescue on Glacial Moraines	<i>Quander soil</i>
159	Thurber fescue/Arizona fescue on Moderate and Steep Mountain Slopes	<i>Quander-Bowen soils</i>
160	Thurber fescue/Arizona fescue on Moderate and Steep Mountain Slopes	<i>Quander-Bushvalley soils</i>
169	Thurber fescue/Arizona fescue on Moderate Mountain Slopes	<i>Tellura-Gothic Soils</i>

Except for a few small areas of shallow soils, most of the soils are deep and are capable of producing more than 1,200 pounds of forage per acre in an average year. They have moderate to high erosion hazard which can be mitigated by maintaining a healthy cover of surface plants. It should be noted that the ecological units describe potential natural community. Existing vegetation may not reflect potential vegetation nor desired conditions.

Soil erosion and compaction are the main soil impacts from livestock grazing. Forest Plan standards state that no more than 15 percent of an activity area (in this case, suitable grazing lands or ecological units) can be detrimentally compacted or eroded. The environmental analysis for the Term Grazing Permit renewal for this allotment

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done in 1995 showed that soil health was generally good throughout this allotment. Additional on-site investigations were conducted from August 19-21, 1996. Soils observations were made and documented regarding soil conditions and concerns. Both soil investigations concluded that soil resource standards and desired conditions were in general being met.

Some soils issues raised during previous scoping and analysis included: soil erosion, fragile soils, alpine soils, delicate riparian areas, loss of vegetative cover, soils effects on recreational uses, and taking a hard look at soils impacts. The sections that follow fulfill the direction to take a hard look at soils issues impacts.

Erosion hazards and areas with soil health concerns are shown in Appendix C.

The ecological landtypes/soils units of this area are physically and biologically suited for livestock grazing. When they are in mid seral status or better, they have adequate vegetative cover to protect the soil from erosion. The pastures being reviewed in this EA are not "alpine soils" which occur above treeline. Canon soils are soils of the montane and subalpine climatic zones, and have better resilience than sensitive alpine soils which on this Forest occur above 11,600 feet. If soils are achieving soil health goals and objectives, there is no reason to believe they are biologically unsuited for grazing. They have from moderate to high erosion hazards and these limitations do not preclude livestock grazing. Livestock grazing can occur according to standards and appropriate mitigation to assure long-term soil productivity.

## Existing Conditions

**Lost Trail Park:** Vegetation cover was fairly good, with fescue grassland cover types dominating the pasture. Soils were clayey and a few small salting areas had some soil erosion. Erosion hazard is moderate. This area would achieve desired soil health with soil impacts in less than 15 percent of pasture area.

**Lost Trail:** This pasture is narrow and confined by steep adjacent slopes. Few bare soil areas and few compacted areas. Soil erosion is moderate. Overall this area would achieve desired soil health with soil impacts less than 15 percent of the pasture area.

**West Lost Trail:** The West Lost Trail landslide occurs in this pasture. It comprises about 200 acres directly and indirectly affects soil erosion, water quality and fisheries of West Lost Trail Creek. Soil erosion is moderate to high. In addition, there are natural erosive landforms with high sediment delivery efficiency. Overall vegetative conditions on lands outside of the landslide are in fairly good ecological status with Arizona and Thurber fescues dominating the uplands and willows and sedges in the riparian areas. Because of cumulative effects including the bare soil exposed and deposited by the landslide, ecological unit 124 has poor soil health conditions over 10 to 14 percent of the area. This is still within acceptable soil limits whereby soil damages are less than 15 percent of an activity area. The extensive landslide effects make unit 124 at risk for soil health. Proper grazing management is essential so that grazing does not add additional impacts to soil health.

**Pole Creek:** This pasture is dominated by fescues though a number of areas have mid-seral vegetation that is only marginally protective of soil health. Any further reduction in plant ecological status may jeopardize soil health by incurring erosion that might exceed soil tolerances. This area has moderate to high erosion hazard, livestock distribution and other protective management practices and mitigation are necessary. There are cumulative soil effects in this pasture from livestock, dispersed recreation, and wildlife. The upper part of this drainage is not grazed by cattle, but is grazed by sheep. This area has historical soil damages from sheep grazing and shallow, eroded

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soils were observed in areas where sheep obviously trailed through. This pasture also showed an area of compaction on the west bench between West and North Fork of Pole Creek. This was the result of cumulative effects of an outfitter camp, livestock grazing, and elk impacts. Some wet elk wallows were also observed. These small, wet areas lacking vegetation are scattered throughout this pasture and are the result of cumulative effects of livestock and cattle. No less than 288 elk were observed in one herd during this field inspection in one area (W. Fork Pole Creek), and these animals were observed wallowing and congregating in the West Fork drainage. It is estimated that the cumulative soils impacts would account for 10 to 13 percent of the suitable rangelands.

**Upper Rio Grande:** Livestock effects on soils seemed fairly minimal in this unit. Erosion hazard is moderate. There are a few impacts to soils from recreational use.

**Bear Creek:** The confluence of the Rio Grande, Pole and Bear Creeks contains a glacial outwash bench that has compaction and erosion concerns. The results are cumulative and are caused by both livestock grazing and dispersed recreation, specifically wheeled vehicle use. This area has erosion concerns due those impacts. Because of these cumulative soil impacts, this ecological unit has been identified as one having soil health concerns. Most of the rest of the pasture has few soils problems, and would be less than 15 percent of the pasture.

**Brewster Park:** This pasture has healthy soil conditions but some minor areas of compaction from dispersed recreation and livestock use. The vegetation condition of this pasture appears less than adequate and needs to improve so that soils are adequately protected. Overall this pasture would achieve desired soil health with soil impacts less than 15 percent of the area. Erosion hazard is moderate.

**Ute:** This pasture receives recreation and livestock grazing impacts to soils. Erosion hazard is moderate. Overall this pasture would achieve desired soil health with soil impacts less than 15 percent of the pasture area.

Over the entire allotment, soils are meeting desired conditions though there is concern about soil health in West Lost Trail, Bear Creek confluence and Pole Creek. In order to improve soil health, reduced numbers of livestock from the 1996 Term Grazing Permit Decision and improved rotation/deferment will help vegetation conditions improve, thereby protecting soil resources. Minimizing soil compaction and puddling can be accomplished with better cattle distribution, so that animals do not congregate around any particular area to cause resource damages.

In summary, Table 3.7 displays soil impacts that can be reasonably expected.

<b>Table 3.7 Potential Effects of Alternatives on Soil Resources</b>			
	Alternative 1	Alternative 2	Alternative 3
Current and future soil health conditions	Properly functioning	Properly functioning	Properly functioning
Recovery of small areas with soil erosion and compaction concerns	Proceed toward improvement	Grazed units improve, ungrazed improve more rapidly	All units improve more rapidly

# 3 Environment and Consequences

## Alternative 1

Animals in a pasture for shorter times may allow longer recovery and deferment. On other allotments, this seems to improve soil and vegetation conditions. This system could improve soil health over time.

## Alternative 2

Close Bear Creek, Upper Rio Grande, and Pole Creek. This would accelerate recovery of damaged soils in these pastures though dispersed recreation effects would continue. Deferment in the other four pastures would improve soil, vegetation and ecological conditions over time.

## Alternative 3

This alternative of no grazing would accelerate recovery of damaged soils in every pasture although dispersed recreation effects would continue.

If proper mitigation, standards and guidelines are implemented, soil impacts would remain within acceptable soil limits (that is, they should remain at affecting less than 15 percent of the suitable rangeland or ecological units in this allotment), and would likely improve over time.

## Watershed/Riparian

Key Issue 2 – Overall health of soils, watershed, and fisheries  
 What impacts are livestock having on stream banks and what are historical and current livestock impacts to the soil resource?

Watersheds, streams, major riparian areas and recreational streams in the Canon Allotment are displayed in Appendix C. The State of Colorado has designated beneficial uses in these streams as cold water aquatic life, primary recreation, water supply and agricultural.

Major riparian areas are shown on the Riparian Area Map in, Appendix C. Riparian areas are composed of diverse plant species including willow, sedge and rush.

A cumulative watershed assessment was completed in this allotment to evaluate watershed health from all past and present activities. Upper Rio Grande, West Lost Trail Creek and Lost Trail Creek watersheds are considered sensitive because over 70% of the watershed area is composed of soils having a high erosion hazard.

A list of surface disturbing activities for each watershed is listed in Table 3.8

## Past Conditions

<b>Geophysical Modification</b>	<b>Unit</b>	<b>10101</b>	<b>10102</b>	<b>10103</b>	<b>10104</b>	<b>10105</b>	<b>10106</b>	<b>10108</b>
Fragile rangelands, poor condition	Ac			100		80		

<b>Table 3.8 Disturbances by Watershed</b>								
<b>Geophysical Modification</b>	<b>Unit</b>	<b>10101</b>	<b>10102</b>	<b>10103</b>	<b>10104</b>	<b>10105</b>	<b>10106</b>	<b>10108</b>
Durable rangelands, poor condition	Ac					5		
Outdoor recreation	Ac				40			15
Residential/business	Ac							5
Mass failure, active	Ac				160			
Gullies and severe sheet erosion	Ac				30	10		
Waterbar/Outslope	Ac				5	9		32
Temp Road	Ac	7		4	7	5		4
Off Road Trails	Ac	6		1	9	4	18	2
REgen<1/4 recovery PC	Ac							
Natural lakes and Ponds	Ac	10				5	250	
Stock ponds	Ac							
Impound with seasonal water drawdown	Ac							
Water level lowered	Ac					5		
High water table induced	Ac					5		
Sites filled or drained	Ac					5		

The cumulative watershed assessment shows that less than 3% of each watershed has been disturbed. This amount is well below the level that would suggest a concern.

During 1995, an interdisciplinary team investigated a portion of the Canon Allotment for the Term Grazing Permit review. The team reported livestock impacts in the form of undesirable riparian, stream and fish habitat conditions. Specific problems included cut banks and stream widening on the Rio Grande at Brewster Park and at Bear Creek Junction. The team recommended a reduction in livestock numbers by 35% to improve riparian areas and aquatic ecosystems, which was implemented in the 1996 Term Grazing Permit Decision Notice.

# 3 Environment and Consequences

Additional stream health assessments were conducted in 1996 by the forest hydrologist and fish biologist. A reach on Bear Creek, classified as a B3 stream type, had 29% unstable stream banks, largely the result of hoof shear. In a B3 reference stream reach, bank instability is typically much lower (mean = 3%). Fine sediment that was observed in this reach was attributed to naturally steep, erosive hillsides throughout this area.

During the summer of 1996, all streams in the allotment were inspected. Problems were observed in localized areas where livestock had historically congregated. These areas identified included the first meadow on Pole Creek, the confluence of Lost Trail and West Lost Trail Creeks, lower Lost Trail Creek, Brewster Park on the Rio Grande, and the area around Bear Creek Junction.

In 1996, Cross-Section and Green-line Transects were established in key riparian areas. The methods were selected from Region 2's Rangeland Analysis and Management Training Guide. The seral condition class of the key riparian areas met desired conditions as described in the Forest Plan. Plants were vigorous and provide proper functioning of the riparian area and associated floodplain in many areas, but are at risk in some areas as evident from unstable or sloughing stream banks.

Problems included bank instability, stream widening, short riparian vegetation stubble height, and a higher than expected level of fine sediment. Vegetation composition in these areas was meeting Forest Plan seral condition requirements, stream health was considered diminished. Diminished conditions posed no immediate threat to biotic life, but improvement was needed to avoid more serious damage in the future. Condition and trend in these areas did not appear to be improving at an acceptable rate. Changes in management were needed to initiate desired improvements.

It is important to note that overall stream health was good. The Rio Grande near Bear Creek Junction was also being impacted by the road crossing (stream widening, fine sediment inputs), which can be attributed to motorized travel.

To determine change to stream and riparian health that the 1996 reduction in livestock numbers has made, Bear Creek was revisited in August 2004. A reach approximately 625 feet long was examined (Photo 2-Downstream view). This reach was chosen since unstable banks had been previously determined by the Forest Hydrologist. It was determined that the amount of unstable bank has decreased from 29% to approximately 13%, indicating improving riparian and stream health condition.



Photo 1: UTM 13S 281979/4181457



Photo 2: UTM 13S 282225/4181459

Livestock impacts were mainly noted as bank shear at stream crossing locations (Photo

# Environment and Consequences **3**

3), but hoof shear along creek banks as a whole is low. Willow and sedge vegetation appears to be improving along the stream (Photo 4), another indication the reduction in livestock numbers is having a positive effect on conditions.



Photo 3: UTM 13S 281979/4181457



Photo 4: UTM 13S 282318/4181455

## Riparian Areas, Bank Stability and Sediment effects

Stable banks can be damaged from trampling by animals, especially elk and cattle. As banks are damaged, streams become wider and shallower, pools and overhanging banks are eliminated or severely altered. Unstable and damaged banks also impact fish habitat by eliminating cover and pools.

Disturbed areas within a watershed produce sediment that can be delivered to stream channels. Disturbances located close to channels, or connected to channels, are normally the biggest contributors of sediment to streams and the most likely to impact proper riparian and floodplain function. Some sediment is delivered to streams from road crossings. Sediment is also delivered from damaged banks in isolated locations, as described in the affected environment.

Cattle will not exceed grazing periods of 21 days in any pasture; this will be dependent on actual forage utilization. Stream bank trampling will occur, with less frequency as a result of fewer days in and adjacent to riparian areas. The deferred rotation will insure each pasture/riparian area has an adequate time to respond to management prior to being grazed again. Indirectly, bank erosion and associated sedimentation will decrease under this alternative. Recovery of problem areas mentioned in the affected environment will also occur over time as management requirements are consistently implemented, along with additional mitigation and management changes.

Livestock will utilize riparian forage under alternative 1. Riparian vegetation and browse utilization standards insure deep rooted vegetation and woody species maintain a competitive edge. Indirectly, riparian conditions will improve as stream channels in problem areas become narrower and covered with deep rooted vegetation. Changes in management that improve stream health and riparian condition will also improve fish, and other aquatic life, habitat. Implementation of management requirements described in the Forest Plan will protect the vast majority of streams and riparian areas in this allotment, which are already in acceptable condition.

## Riparian Effects Alternative 1

# 3 Environment and Consequences

## Riparian Effects Alternative 2

Closing the Bear Creek, Upper Rio Grande and Pole Creek Units would provide the most rapid recovery of impacted areas within those units. By reducing available pastures, impacts to remaining pastures have the potential to exceed standards and guidelines. Fewer cattle numbers may not have the desired effect of reducing pressure on riparian areas, because the cattle would be less likely to disperse. Existing conditions in the grazed pastures would be maintained, and rate of recovery impeded.

## Riparian Effects Alternative 3

No livestock grazing would eliminate any potential impacts from livestock. Recovery of problem spots identified in the affected environment section would occur unimpeded over time. This alternative would produce the most rapid improvement in stream condition in the shortest amount of time.

Flow regimes, temperature, and water purity would have minor negative effects from the action alternatives and a minor positive effect would be expected from the no grazing alternative

## Fish Habitat

Key Issue 2 – Overall health of soils, watershed, and fisheries

What impacts are livestock having on stream banks and what are historical and current livestock impacts to the soil resource?

Mainstems of streams within the allotment support aquatic life, including fish. Rio Grande cutthroat trout (RGN), a Region 2 sensitive species, exist within the allotment (see the "Rio Grande Cutthroat Trout and High Recreational Value Streams" map in Appendix C). In summer 1996, the Colorado Division of Wildlife (DOW) stocked RGN in the upper Rio Grande, Pole Creek, Lost Trail Creek, and West Lost Trail Creek. Weminuche Creek, along the analysis area boundary, was also stocked with RGN at this time. It is generally believed that optimum Rio Grande cutthroat trout habitat occurs up to 10,000 feet in elevation; these sites are all above 10,000 feet. In addition, because Rio Grande cutthroat trout did not evolve in the presence of other salmonids, it does not compete well with other trout species. Other trout species are present in these streams, and Rio Grande cutthroat trout may be displaced as a result. The DOW intended these stocked populations to provide "put-and-grow" recreational fisheries, and does not consider them to be refugia populations because of the uncertainties surrounding their long-term survival at these sites (John Alves, DOW aquatic biologist, personal communication, 2/20/97). Reaches on several of these streams have been identified as important, high use recreational fisheries (see "RGN and High Recreational Value Streams" map in Appendix C).

Trout population data can be utilized to help determine if the Forest Plan Range Standards and Guidelines provide for adequate aquatic habitat across the Forest. Population data was collected in 2003 from Pole Creek, Lost Trail Creek, West Lost Trail Creek, Bear Creek, and the Rio Grande at Brewster Park. Density and biomass estimates were calculated for these streams. Young of year trout were collected in each of the streams which indicate suitable spawning habitat is available.

Stream habitat evaluations conducted in 1995 and 1996 identified unstable stream banks and/or wide, shallow stream sections in the Rio Grande (Brewster Park area), Lower Lost Trail Creek area, and Lower Bear Creek areas. Trout biomass, in 2003,

## Environment and Consequences 3

within these streams was 28 pounds of trout per acre of stream habitat, 36 pounds of trout per acre, and 24 pounds of trout per acre, respectively. Some minor impacts to stream health were also observed in Pole Creek during the 1995/1996 habitat evaluations. Biomass estimates in 2003 for Pole Creek was 69 pounds of trout per acre.

In West Lost Trail Creek, a Proper Functioning Condition Assessment (1996) showed the riparian area was properly functioning. Trout biomass within this area was 277 pounds of trout per acre. This is an increase from 150 pounds of trout per acre estimated in 1994. It should be noted that the biomass estimates included all species of trout collected and only trout over 150 mm in total length. Species collected include Rio Grande cutthroat trout, brown trout, rainbow trout, and brook trout. The low biomass estimates in the Rio Grande, Lower Lost Trail Creek, Lower Bear Creek, and Pole Creek could also be influenced by a combination of factors including grazing, travel management, and angling pressure. But, grazing impacts were noted in prior habitat evaluations and it is probable that some of the impacts have influenced the trout populations.

### **Effects:**

Livestock grazing can affect the riparian environment and corresponding trout populations. The trout population data collected on this allotment illustrates that when the Forest Plan standards and guidelines are successfully implemented, such as in West Fork Lost Trail Creek, trout populations thrive. When riparian conditions decline, trout populations decline. The trout populations in the Rio Grande, Lost Trail Creek, Bear Creek, and Pole Creek should improve as riparian conditions and stream health improves. The overall stream conditions within the allotment does not pose a serious threat to the existence of desirable trout populations, but it does show that some stream sections may not be at maximum potential due to isolated habitat problems.

Poor riparian conditions can lead to loss of in-stream fish habitat due to unstable stream banks, stream widening, and a decrease in stream depth. Increased sedimentation resulting from poor riparian conditions can lead to fine sediment deposition which affects spawning areas and reduces pool habitat.

Spawning success can be reduced due to fine sediment suffocating trout eggs and/or trapping emerging trout fry which can lead to loss of age classes and affect density, biomass and ultimately, reduce overall population numbers. Pool habitat provides thermal refuge during summer low flow and winter refuge from effects of collapsing snow, buildup of anchor ice, and low stream flow. Loss of deep, slow velocity, pool habitat can result in loss of individuals due to increased stream temperatures during the summer and effects of harsh winter conditions. Therefore, monitoring the riparian habitat gives an insight into overall stream health and corresponding fish populations.

Fish habitat conditions are closely related to overall stream and riparian health. Fish habitat is impacted where stream health is impacted, and where diminished conditions exist.

No immediate threat to fish populations is believed to exist under actions proposed in Alternatives 1 or 2. Where livestock related impacts are diminishing fish habitat conditions, Alternative 3 will have the greatest recovery rate.

# 3 Environment and Consequences

## Cumulative Effects

Cumulative watershed impacts from all past and present activities are described in the Affected Environment section. None of the alternatives add impacts. Since all alternatives will reduce impacts, cumulative impacts will decline from current conditions.

## Recreation – Effects of Each Alternative

Key Issue 3 – Recreation/livestock conflicts

Issue 3- What impacts does livestock grazing have on recreational users experience, and what impacts do recreational users have on livestock management?

Recreation visitors take part in a variety of recreation activities within the Canon Allotment from May through mid-November. A majority of these activities are associated with motorized vehicles within a semi-primitive motorized setting. The trail and road routes in this area are popular with 4wd groups, individuals, motorcycle and ATV users as well as horseback groups and hikers. Dispersed recreation activities include but are not limited to hiking, horseback riding, fishing, hunting, birding, dispersed camping and picnicking, mountain biking, motorcycling, jeep touring, sight-seeing and wildlife viewing. Many of the popular dispersed camping sites are within riparian zones and near the Rio Grande River which are also frequently used by livestock.

There are two popular 4 wheel drive travel corridors within the Canon Allotment. FSR 520 provides access to the upper Rio Grande river drainage and FSR 506 provides access to the upper Bear Creek drainage and the Beartown site.

There are developed recreation sites present within the Canon Allotment. These include: the Ute Creek Trailhead (parking area, toilet hitching rails and wilderness registration box and wilderness bulletin board), Lost Trail summer home group (6 summer home residences, access road and water distribution line), Lost Trail campground (7 camping units and parking spurs, access road, toilet, hand pump and the campground occupies about 4 acres), and the Lost Trail trailhead (parking area and trail signs).

Numerous Forest system trails are located outside the Weminuche wilderness and within the Canon Allotment. These are: FDT 821 (Lost Trail Creek – open to ATV, horse users and hikers), FDT 822 (West Lost Trail – open to motorcycle and horse users and hikers – approximately 5 miles), FDT 820 (Pole Creek – open to motorcycle and horse users and hikers – approximately 4 miles – segments of the Continental Divide National Scenic Trail and the Colorado Trail), FDT 813 (West Pole Creek – about 1 mile – segment of the CDNST trail), and FDT 869 (Bear Town trail – open to horse users and hikers – approximately 1 mile – provides access to the upper West Ute drainage).

# Environment and Consequences 3

Managed recreation settings (ROS) within the allotment are: modified roaded within the two road corridors and semi-primitive motorized (trails open to motorized users) and non-motorized (trails open to horse users and hikers) settings throughout much of the area (Pole Creek, Bear Creek, Upper Rio Grande drainage and Lost and West Lost Creek drainages). Settings within the Weminuche wilderness are semi-primitive within the Ute Creek trail area and pristine in the Ute Ridge and Indian Ridge areas.

## Wilderness

The Weminuche Wilderness was formally designated as wilderness on January 3, 1975 with the enactment of P.L. 93-632. Approximately 23% of the Canon Allotment is located within the Weminuche Wilderness. About 2% of the area within the wilderness is capable range within the Ute (0.7%), Brewster (0.9%) and Rio Grande (0.5%) allotment pastures. Livestock grazing, where previously permitted prior to the wilderness designation, continues to be authorized. Livestock use within the Ute Creek drainage is minimal. Cattle do not venture up the drainage to any extent.

FDT 819 (Ute trail – open to horse users and hikers – approximately 2.5 miles) is located within the Ute pasture. This trail is one of the District's most heavily used wilderness trails that provide access to the upper Ute drainage and lakes. Day-use outings by hikers and fishermen occur on the lower sections of this trail with Black Lake a popular overnight destination.

### Site Specific Existing Conditions

An August, 1996 IDT review of the Canon Allotment highlighted areas with an overlap of livestock grazing and recreation use. Noted problems were:

**Ute Creek Trailhead** – this trailhead is unfenced. When livestock are in the Ute pasture, they have unrestricted access throughout the trailhead.

**Lost Trail Campground** – this 4 acre campground is unfenced. Cattle have unrestricted access throughout the campground when they are in the Ute pasture.

**Dispersed Camping** – there are 25 – 28 existing dispersed camping sites (many are located adjacent to the road and near the river) from Brewster Park to the upper Rio Grande drainage. These sites are used mainly by motorized visitors. These areas are also used by livestock.

**Roads** – there are pasture boundary fences that intersect with FSR 506 and 520. Forest visitors have to open the gates to continue up or down the roads. These gates are often left open causing livestock to drift into previously grazed pastures. This makes livestock management difficult for the permit holder.

### Trail – Existing Conditions

Historic and current livestock use of system trails has contributed to the widening of the segment of the Colorado trail where it climbs to the saddle above the parking area on Pole Creek. Livestock, recreational stock and motorized users have impacted this section of trail, preventing water from being diverted off the trail. Trail impacts were also noted on sections of Lost Trail Creek and West Lost Trail Creek that can be attributed to livestock and motorized recreational users.

# 3 Environment and Consequences

## Effects – Alternative 1

### Effects Common To All Alternatives:

Livestock impacts do occur in the vicinity of and at the Ute Creek Trailhead. The recreation trail is marked, but braided with multiple livestock trails in this location. Cattle congregate around the trailhead.

Given these factors, there are management actions (such as herd management, establishing allotment pastures and rotating livestock between pastures based upon established vegetative use within these pastures, providing visitor information (bulletin boards) which includes maps of the allotment, pasture rotation schedules which inform visitors where to expect livestock within the allotment during the grazing season) which can help lessen the recreation experience impacts associated with livestock use.

Factors affecting recreation user experiences (camping, fishing, hiking, driving for pleasure or participating in a guided service) when livestock use occurs are encounters with livestock and the frequency of these encounters, duration of the encounter, noise and cow manure.

Recreation use and presence of livestock will overlap from June to October. This can create conflicts due to the fact that some users have had very little exposure to cattle. The presence of large numbers of cattle in the vicinity of their campsites and families cause many of the individuals to feel uncomfortable or intimidated by these large animals. (Mitchell and Miller, 1996). Where livestock tend to congregate for periods of time, these areas become fouled with urine and manure which may not be conducive to a quality recreational experience.

There is concern for public safety on roads with a high amount of traffic and cattle in the road. Conflicts along travelways and trails can occur when livestock are being moved to the next pasture in the rotation. The installation of cattleguards along FDR 506 and 520 to replace existing wire gates will increase the ability of the permittee to insure cattle are following the rotation.

Fencing the Ute Creek TH and Lost Trail Campground will eliminate cattle in these developed sites.

## Effects – Alt 2

Alternative 2 closes Bear Creek, Rio Grande and Pole Creek pastures to livestock use. This will eliminate human encounters with livestock, but shifts the impacts to the lower four pastures which increases the number and duration of livestock/visitor encounters. As forest users travel to the upper portions of the allotment, cattle will be encountered in the lower pastures. Trail impacts attributed to domestic livestock will be eliminated in the upper pastures. Trail conditions will be the same in the lower pastures, but will likely improve in the upper pastures.

The installation of cattleguards along FDR 506 and 520 to replace existing wire gates will increase the ability of the permittee to manage livestock within Forest Plan Standards and Guideline. Indirectly, this will enhance public perception of livestock if a rotation schedule is being adhered to.

Fencing the Ute Creek TH and Lost Trail Campground will eliminate livestock associated impacts in these developed sites. There will still be livestock impacts adjacent to the fenced sites.

Alternative 3 eliminates grazing from the allotment which eliminates the impacts associated with livestock use. Recreation use is expected to remain the same. This alternative will eliminate encounters with domestic livestock on the allotment. The

noise, cow manure and public safety hazards will be eliminated. Trail impacts contributed by cattle will improve the most rapidly. There will continue to be recreation pack stock impacts.

### **Cumulative Effects to Recreation and Wilderness Resources**

Impacts between livestock use and recreation users within the Canon allotment occur mainly at developed recreation sites and within travelways (dispersed recreation activities within road and trail corridors). By implementing the recommended mitigation measures, Forest wide and Management Area Recreation Standards and Guidelines will mitigate these impacts. There are no cumulative impacts to the recreation resources or users within the Canon allotment.

## **Range Resources**

Key Issue 4 – Overall capacity and health of the rangeland resource  
Do range capability determinations reflect actual conditions? Is stocking capacity, entry date onto the allotment, class of stock and grazing system suited for this allotment? Are range conditions/ecological trend studies reflective of actual conditions?

"Capable range" is the basis for determining livestock grazing capacity. The capable rangelands for the Canon Allotment as determined in the Revised Forest Land Management Plan were used. Allotment inspections did not indicate that capable acres needed to be adjusted. Capable range for the Canon Allotment consists of grasslands on slopes of less than 40%, various riparian and wetland areas that do not have standing water season long, and produce at least 200 pounds of forage per acre. The allotment is composed of long narrow valleys, dominated by a riparian bottom and a narrow band of fescue dominated uplands. 4,321 acres within this allotment are capable and suitable for domestic livestock grazing. (See maps in Appendix C).

Grazing capacity for this allotment was determined in the 1995 Canon EA. The grazing capacity of 585 AMs is based on the amount of forage available on the NFS lands capable for livestock grazing. The current analysis determined an average stocking rate of 7.4 suitable acres/AM.

Long-term vegetation monitoring transects (Parker 3-Step Clusters) were established during the 1950's. Where permanent transect stakes were still established, those transects were reread in 1996. Two sources of information were utilized to determine vegetation changes over time.

1. Mountain Meadow and Mountain Bunchgrass scorecards from the 1985 Forest Service Range Analysis Handbook were used to determine forage condition and trend.
2. Natural Resource Conservation Service Range Site descriptions for Arizona fescue and Thurber fescue were used to interpret ecological status and trend.

Ecological status is a phase in the sequential development of a climax plant

### **Grazing Capacity**

### **Long-term vegetation monitoring**

# 3 Environment and Consequences

community. The individual phases are termed seral stage. Three transects were reread. Table 3.9 details the comparisons of range conditions from 1979 to 1996.

*Table 3.9: Comparison of Range Condition*

Transect	Range Condition - 1979	Range Condition - 1996
C1 T1	Poor	Fair
C1 T2	Poor	Fair
C3 T1	Poor	Fair

Range conditions improved from poor to fair on each permanent transect. Transect C1 T2 is improving at a slower rate because of the decrease in desirable species. There are positive signs; however, that ground cover is increasing and bare soil decreasing. This is a result of increases in intermediate species of plants and litter. Ecological trend was estimated based upon relative changes in the appropriate Range Site dominants and mid-seral species.

Cover-frequency vegetation transects were established in 1996 at nine locations. A desired condition transect was established for comparison purposes for these transects. Variability between sites made comparisons difficult, but these transects will provide additional information in the future as to trend and seral stage.

A history of livestock use and management of the Canon Allotment is described in the Environmental Assessment for the Term Grazing Permit Decision for the Canon and Alder-Silver Allotments, Feb. 16, 1996. The EA and Decision Notice reduced permitted use 35% from 893 to 585 animal months. Livestock numbers were reduced from a level of 260 to 179, and the grazing season changed from June 21 to June 26.

Forage utilization was monitored in key areas during 2001, 2002 and 2003. Averaged utilization measurements and riparian stubble heights for 2001 and 2003 were within Forest Plan standards and guidelines. Riparian stubble heights at the end of the 2002 season did not meet standards; extreme drought conditions were not conducive to plant growth.

## Short Term Monitoring

## Environmental Consequences

### Direct and Indirect Effects

Consequences similar to all action alternatives are that sufficient forage would be produced to satisfy wildlife demand while at the same time satisfy demand by livestock. Deferment would be allowed for each pasture, and each pasture would have cattle scheduled for a shorter time. This allows for less chance of plants being regrazed by domestic livestock.

# Environment and Consequences 3

## **Alternative 1 (Proposed Action)**

Alternative 1 proposes a rotation system consisting of one herd in seven pastures. Pastures receive deferment and the Ute Creek pasture use is reduced. Improved management in all the pastures is anticipated. This alternative should maintain or improve ecological status over time. The proportion of exotic, early-seral, and mid-seral plant species on the allotment should remain static or slowly decrease in prominence over time. This alternative should have a good chance of perpetuating natural rangeland diversity. Livestock numbers and grazing season are within the capacity of the allotment.

**Alternative 2** proposes to close the Bear, Upper Rio Grande, and Pole Creek pastures. The management would consist of a one herd, four pasture rotation system. Ecological status would improve most rapidly in the closed pastures. Ecological status improvement, although at a slower rate, is expected in the remaining pastures.

**Alternative 3** proposes no grazing by domestic livestock. This alternative should maintain or improve ecological status over time at a faster initial rate than the action alternatives, with an eventual plateau. Big game use of the forage resource will be an unknown factor in rates of change. The proportion of exotic, early-seral, and mid-seral plant species on the allotment should slowly decrease in prominence over time. This alternative should have a good chance of perpetuating natural rangeland diversity relative to pre-settlement conditions.

## **Cumulative effects**

No new effects would be incurred by any of the alternatives. Rangeland condition and ecological seral condition would be expected to improve.

## **Economic Analysis**

Key Issue 5 – Livestock grazing as a traditional, cultural and economic land use

How will livestock grazing continue to be a traditional land use, and remain an aspect of the local economy?

### **Scope of the analysis**

The economic analysis focuses on the financial efficiency associated with the Alternatives presented in this EA. The purpose of this analysis is to compare the financial efficiency of each alternative. This is not an economic efficiency analysis incorporating a monetary value for all known market and non-market benefits and costs.

### **Existing Condition**

Ed and Martha Oliver are the sole term grazing permit holders on the Canon Allotment. The Oliver's rely on ranching as a substantial portion of their livelihood, and the grazing allotment is an integral part of their operation. Oliver maintains base property along with other private holdings throughout the San Luis Valley.

# 3 Environment and Consequences

## Direct, Indirect and Cumulative Effects

Alternatives 1 would maintain the current animal months (585 AMs) and monies to the Federal Treasury and returns to Mineral County through the 25% Receipt Fund. Seven hundred and ninety dollars (\$790) would be returned to the Federal Treasury (based on a grazing fee of \$1.35 per AM). Alternative 2 would decrease numbers, decreasing monies to Federal Treasury and the 25% Receipt Fund. Indirect costs to the permittee would be incurred with leasing other pasture for cattle numbers historically on the allotment.

The permittee would incur additional costs under Alternatives 1 and 2. New fences would be constructed in each of the alternatives; the permittee would pay for 50% of construction costs for these improvements as well as assuming 100% of all maintenance costs for new improvements thereafter. Maintenance of existing improvements is a recurring cost. Combining and eliminating pastures in the action alternatives would require removal of pasture fences, which has an associated cost.

Adherence to the prescribed levels of use will require more monitoring time. There are costs associated with intensive management such as dispersing cattle to achieve more even utilization of forage, placement of salt blocks in strategic locations, and regularly moving livestock from riparian areas to upland sites.

The permittee currently hires a part-time range rider, implementing intensive measures will likely result in the need for a full-time rider. In addition to the salary cost of hiring a full-time rider, the permittee will continue to incur other costs such as fuel for vehicles, maintenance and repair of vehicles and equipment, horses and tack, and costs associated with complying with state employment requirements.

Livestock grazing as a traditional land use would continue under each alternative except for Alternative 3.

Implementation of the No Grazing alternative (Alternative 3) would have the greatest effect on the grazing permittee. It would also result in reduced revenue to the Federal Treasury and a loss to Hinsdale County's 25% Receipt Fund. Table 3.11 below displays the potential direct and indirect economic effects of the alternatives.

Effect	Alt. 1	Alt. 2	Alt. 3
Loss of Animal Months	0	249	585
Reduced Revenue to Federal Treasury	0	\$336	\$790
Lost Revenue to County 25% Receipt Fund	0	\$ 84	\$198
Impact to Individual Permittee	0	Moderate	Major
Impact on Local Economy	0	Minor	Minor

## Financial and Economic Analysis

Financial–efficiency and economic–efficiency analyses were conducted to compare

# Environment and Consequences **3**

cost and benefits of implementing each alternative. FSM 1970.6 outlines requirements for Financial and Economic Analysis. Software called Quick-Silver (version 5.0) was used to conduct the economic analysis. Quick-Silver is a project analysis tool to determine the economic performance of long-term investments. It has been adapted and developed for use in the Forest Service and was used in this analysis. Appendix E contains the Economic Returns Crosstab Report from the Quick-Silver analysis which summarizes present value benefits and the present value costs.

*Table 3. 12: Present Net Value by Investment Partner*

Partner	Alt 1	Alt 2	Alt 3
	Proposed Action	Rec/WL Emphasis	No Grazing
All	\$(22,345)	\$(18,405)	\$(7,976)
Permit Holder	\$(16,291)	\$(7,789)	NA
USFS	\$(6,053)	\$(10,616)	\$(7976)

## TES Plants

### Scope of the Analysis

This analysis discusses plants that are Threatened, Endangered, Proposed, or Forest Service designated Sensitive. The scope of this analysis is confined to the Canon C&H Allotment.

### Past Actions affecting the Existing Condition

There have been previous activities in this allotment. See the Range Resources section in this chapter for a description of the previous livestock grazing history in this allotment.

### Existing Condition

There presently are no reported records or suspected occurrences of Threatened, Endangered, or Proposed plant species on this Forest. Threatened and Endangered plants in Colorado have unique habitats or ranges that do not occur on the Rio Grande National Forest. There are also no plants Proposed by the US Fish and Wildlife Service that occur or would be suspected to occur on the Rio Grande National Forest.

There are seven Sensitive plants documented on the Rio Grande National Forest. The allotment does not contain any documented Sensitive plant populations. See the Biological Assessment (BA) / Biological Evaluation (BE) for plants prepared for this analysis in Appendix D-4.

# 3 Environment and Consequences

## Direct, Indirect, and Cumulative Effects

A BA/BE for plants was completed to evaluate the impact of each Alternative on Threatened, Endangered, Proposed, and Forest Service designated Sensitive plants. The BA/BE for plants is found in Appendix D-4 and provides detailed effects analysis. The information below is a brief summary.

### Alternatives 1 and 2

Both of these Alternatives propose some level of livestock grazing. However, the effects are considered more or less equivalent for this analysis (i.e., there is no real distinction of effects made between these two Alternatives for this analysis). None of these Alternatives impact documented Sensitive plant populations based on a review of current Element Occurrence Records from the Colorado Natural Heritage Program data base. The following reiterates the determination language made in the plant BA/BE (from Appendix D-4):

It is my determination for *Astragalus ripleyi*, *Draba grayana*, *Draba smithii*, and *Gilia sedifolia* that Alternatives 1 and 2 would have "**no impact**." This determination is based on the conclusion that either the plants do not exist in the allotment or potential habitat would not be impacted by any of the actions proposed in these Alternatives.

It is also my determination for *Eriophorum altaicum* var. *neogaeum*, *Machaeranthera coloradoensis*, and *Salix arizonica* that Alternatives 1 and 2 "**may adversely impact individuals, but not likely to result in a loss of viability on the Planning Area, nor cause a trend to federal listing or a loss of species viability rangewide**." This determination is made based on the conclusion that potential habitat exists for these Sensitive plants in the allotment and these plants could be accessible to livestock. However, implementing any livestock grazing action Alternative would likely have a minimal impact on these plants if mitigation measures along with revised Forest Plan Standards and Guidelines pertinent to livestock grazing and rangelands were followed.

### Alternative 3

Since this Alternative proposes no livestock grazing, there would be no direct, indirect, or cumulative effect anticipated on any Sensitive plant species. The following reiterates the determination language made in the plant BA/BE (from Appendix D-4):

It is my determination that Alternative 3 would have "**no impact**" on any Sensitive plant species. This determination was based on the fact that there would be no livestock grazing allowed under this Alternative.

## Heritage Resources

### Scope of the Analysis:

Heritage resource analysis and assessment focused on areas where there is a high potential for livestock grazing impacts which overlap areas identified as having a high potential for locating heritage resources as defined in terms of the Memorandum of Understanding Among the Colorado Historic Preservation Officer and the Rio Grande National Forest Regarding Range Management Activities.

## Existing Conditions

### **Past Activities that have Affected the Existing Condition of Heritage Resources:**

Grazing activity in the past has had a limited impact on identified heritage resource sites, mostly in the form of cow trails through sites and resultant minimal erosion.

Previous heritage resource inventories within the Canon Grazing Allotment include those done prior to the Lost Trail Campground project (1979), the Cochran Special Use Road project (1982), and the Rio Grande Reservoir Low Water Inventory (1990). The above projects resulted in the inventory of 50 acres of the Canon Grazing Allotment and the recording of 4 prehistoric heritage resource sites: 5HN71, 5HN72, 5HN131, and RG-90-A. Sites 5HN71 and RG-90-A were determined to be eligible to the National Register of Historic Places. Site 5HN71 was monitored to determine if grazing impact were occurring and a cow trail through the site was noted. The impact is not considered significant. Site RG-90-A was not monitored because it is presently under water backed up by Rio Grande Reservoir.

In 1995 an additional 50 acres of the Canon Allotment, in areas where there is a high probability for heritage resources and a high probability for livestock grazing impacts, was inventoried for heritage resources. This inventory resulted in the recording of 3 additional heritage resource sites which are being considered eligible to the National Register of Historic Places pending final significance determination.

### **Direct and Indirect Effects on Heritage Resources Common to All Alternatives**

The proposed action alternatives are similar enough that there are no perceived differences in effects on identified heritage resources within the Canon Range Allotment. Recorded heritage resource sites revealed no significant impact from past livestock grazing activities. If previously unknown heritage resources are found in areas where there is a high probability for livestock grazing impacts they will be recorded and evaluated for inclusion into the National Register of Historic Places. If, after evaluation the site is determined to be eligible to the National Register of Historic Places it will be monitored at least once every three years to determine if effects from grazing activity is occurring.

### **Cumulative Impacts**

Heritage resource inventory and associated monitoring activity indicates that grazing and other past activities have had a limited impact on identified heritage resource sites.

## **Fuels Section**

### **Scope of the analysis**

The allotment occurs on a variety of volcanic rock materials on gentle to steep mountain slopes, fans and floodplains of the mountain and sub alpine zones. Elevations range from about 9,500 to 11,600 feet and the overall annual precipitation

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ranges from 16 to 35 inches. Vegetation consists of Arizona fescue and Thurber fescue meadows, riparian areas, above timberline grasslands, spruce-fir forest, and aspen.

## **Past Activities/Existing Conditions**

Many of the past century's traditional approaches to land management, the development of unnaturally dense, diseased or dying forests, and treatment of wildland fire have contributed to more severe wildland fires and created widespread threats to communities and ecosystems. Drought conditions have caused extremely low live fuel moisture content in grasses, forbs, shrubs, and trees makes for increased consumption and erratic fire behavior. Any area within the Canon allotment is susceptible to wild land fire, depending on annual conditions.

With approximately 90,000 Animal Unit Months of permitted livestock use on the Rio Grande Forest, in a combination of sheep and cattle grazing, the fine fuel component is affected. This annual permitted treatment of grassland and forb communities helps reduce fire-ignition potential as well as fire-spread potential. Local economies are also supported with federal land grazing authorizations

## **Direct and Indirect Effects on Fuels Resources Common to All Alternatives**

Directly, the grazing alternatives have the potential to reduce the fine fuel component. Indirectly, any fire activity can affect rangeland health. With high intensity fire, succession can be set back on plants. Low intensity burns can increase plant palatability to domestic livestock as well as wildlife. Increased plant vigor may result and some studies indicate a short-term flush of protein content may result from fire with proper timing. A secondary indirect effect from burning may be range forage improvement. Livestock and wildlife benefit from improved forage health.

## **Cumulative Impacts**

The proposed action and alternatives to that action will not have any cumulative impacts to the fuels resource within the project area.

## **Literature Cited**

USDA Forest Service, 1996. Soil Resource and Ecological Inventory of Rio Grande National Forest, Draft. Rio Grande National Forest, CO

Mitchell, John and Miller, Scott, 1996. NOT PUBLISHED. A Study of Visitor Perceptions about Livestock Grazing on the Canon Allotment, Divide RD, Rio Grande National Forest.