



United States
Department of
Agriculture

Forest
Service

Southwestern
Region



Environmental Assessment for El Rito Lobato East and West Grazing Allotments

Carson National Forest



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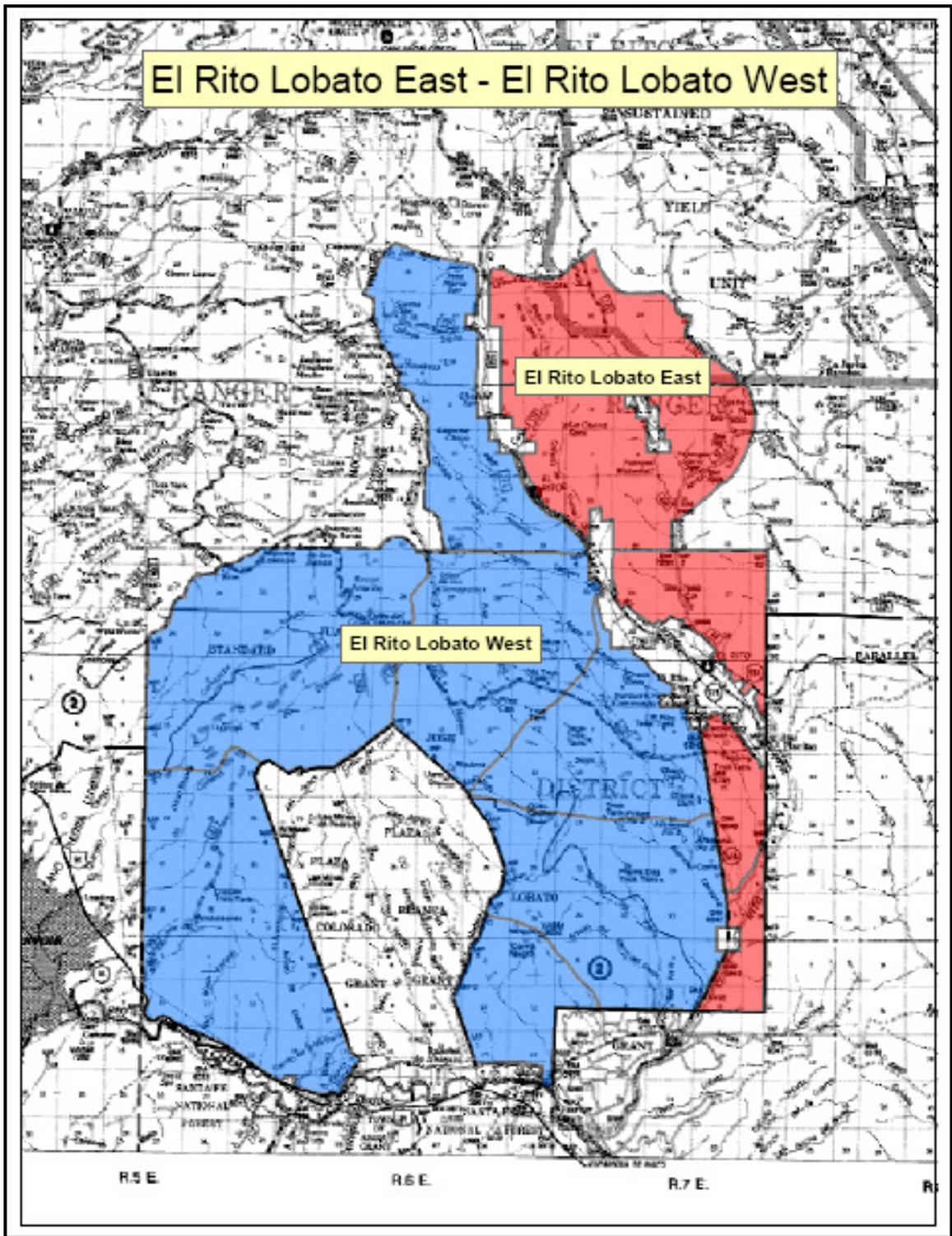


Figure 1. Analysis area vicinity map

Chapter 1 – Purpose and Need

The Forest Service has prepared this environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) of 1969 and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the implementation of the proposed action and alternatives, and considers the best available science. An interdisciplinary analysis on the proposed action is documented in a project record. Source documents from the project record are incorporated by reference throughout this EA by showing the document number in brackets [#]. This EA summarizes the project record to make the analysis results as clear as possible. Additionally, comments received during a 30-day comment period (as required by the Forest Service’s 36 CFR 215 notice, comment, and appeal regulations) were considered by the specialists in finalizing the proposed action on their effects analysis.

Background

The El Rito Lobato East and West allotments are located west and northwest of the community of El Rito in northern New Mexico (figure 1). They are within the El Rito Ranger District of the Carson National Forest in Rio Arriba County.

The El Rito Lobato East Allotment consists of approximately 23,000 acres of which 14,054 acres are grazable. The allotment is managed through 6 ten-year permits for 245 cow/calf units and 13 bulls. The allotment is made up of 5-pastures: El Rito North (only used for trailing due to lack of fences), La Jara, Lower Placitas, Upper Placitas, and Potrero. The summer grazing season is from May 1 through September 30 and the winter grazing season is from November 1 through December 31 using a 5-pasture rotational grazing system. Due to ecological conditions and permittee preferences actual stocking of the allotment over the last 5 years has averaged 167 cow/calf units and bulls.

The El Rito Lobato West Allotment consists of approximately 71,000 acres of which 58,403 acres are grazable. The allotment is managed through 12 ten-year permits for 409 cow/calf units and 26 bulls. The allotment is made up of 8-pastures: Perro, Sage, Madera, Comanche, Manzanares, Sierra, Amarilla, and Lopez. The summer grazing season is from May 1 through September 30 and the winter grazing season is from November 1 through December 31, except Lopez Pasture, which is grazed from December 1 through January 31 by one permittee. Due to ecological conditions and permittee preferences actual stocking of the allotment over the last 5 years has averaged 261 cow/calf units and bulls.

To balance livestock use with capacity, the Forest Service is considering administratively changing the boundaries of these two allotments; therefore both the east and west allotments will be evaluated as one area and will be referred to as the “analysis area” in this environmental assessment.

Purpose and Need for Action

The analysis area contains land that is considered suitable for grazing in the Carson National Forest Land and Resource Management Plan (Forest Plan, USDA 1986). When continued use is consistent with the goals, objectives, standards, and guidelines of the forest plan, it is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing (Forest Service Manual (FSM) 2203.1.6). The purpose of the proposed action is to

authorize livestock grazing in a manner that balances permitted use with Forest Plan objectives and desired conditions for rangeland vegetation, soil, watershed, and wildlife habitat.

There is a need for improving distribution of livestock within all pastures and providing dependable sources of water. Management Area (MA) 11-Revegetation Areas are located within Upper Placitas, Lower Placitas, Sage, Perro, and Madera pastures. There is a need for improving plant diversity especially cool season grasses in these areas.

There is riparian habitat within El Rito Creek in Lower Placitas Pasture considered suitable habitat for federally listed southwestern willow flycatcher. There is a need for maintaining and improving southwestern willow flycatcher habitat for nesting in this area. There is also a need for improving plant diversity of forage species in the Upper Placitas, Lower Placitas, Perro, Sage, and Madera pastures.

Currently a spring development is located near an archeological site within Comanche Pasture. In order to access water from the spring development, livestock trampling and subsequent erosion is causing damage to the site. There is a need for protecting this site from further damage.

Proposed Action

The El Rito Ranger District proposes to continue authorizing livestock grazing within the analysis area to meet the purpose and need. The proposed action is designed to maintain or improve resource conditions relative to livestock grazing. The proposed action would permit 654 cow/calf units and 39 bulls on a 13-pasture rotational grazing system. The permitted season of use would be May 1 through November 30 (7 months total), with the exception of Lopez Pasture that would be grazed December 1 through January 31.

Sagebrush treatments and revegetation would be done on 6,028 acres of Lower Placitas, Upper Placitas, Sage, Perro, and Madera pastures along with maintenance treatments, to provide more forage, improve ground cover, diversity and structure of cool season forage in the low elevation grasslands of these pastures.

In order to improve distribution of livestock and provide dependable sources of water, fence maintenance and construction with associated cattle guards, and water developments are proposed. Maintenance of existing water developments, such as cleaning stock tanks is also proposed. Improvements in the analysis area include: 16 miles of fence construction, 2 cattle guards, and 31 water developments (stock tanks, spring developments, and trick tanks). One archeological site in the Comanche Pasture would be protected by relocating a water trough.

Cattle would be better distributed within the analysis area by reducing the livestock use on La Jara, Upper Placitas, Lower Placitas, Perro, Sage, and Sierra pastures and increasing livestock use in El Rito North, Potrero, Manzanares, Comanche, Lopez, Madera, and Amarilla pastures through a rotational grazing system. This would better balance forage demand with availability among pastures by rotating the cattle through pastures earlier and pushing them to areas that have historically not been utilized.

The proposed action would not allow grazing within the Lower Placitas Pasture during the growing season, as recommended by the recovery plan for the southwestern willow flycatcher.

Distribution of livestock within the analysis area would be adjusted to achieve light to conservative grazing of 20 to 40 percent forage utilization to maintain or improve rangeland vegetation condition. A minimum 4-inch stubble height of forage species would be maintained in riparian areas. Monitoring would occur using a variety of methods. Additional details on the proposed action can be found in chapter 2.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives. The El Rito District Ranger is the Responsible Official for this proposal. For authorizing livestock grazing on analysis area, there is a two-part decision at the project level to be made:

- Determine whether livestock grazing will be authorized on all, part, or none of analysis area.
- If the decision is to authorize some level of livestock grazing, then identify what management criteria will be applied (including guidelines, grazing management system, and monitoring) and incorporated into the allotment management plan. Ensure that desired condition objectives are met, or movement occurs toward those objectives in an acceptable timeframe.

Public Involvement

The proposal for El Rito Lobato East and El Rito Lobato West was listed in the Schedule of Proposed Actions on October 2006. The proposal was provided to the public and other agencies including tribes for a 3 week scoping comment period starting June 17, 2008. Five scoping response letters were received. In addition, as part of the public involvement process, the agency held two public meetings on February 20, 2008 and May 22, 2008 to discuss historical and future use of the analysis area. In conjunction with these meetings a letter dated July 25, 2008 was mailed to all permittees to advise them of their applicant status with U.S. Fish and Wildlife Service.

Using the comments, issues were identified and alternatives were developed to address these issues. The alternatives were provided to the public during a 30-day notice and comment period beginning July 24, 2008. A legal notice of availability was published in *The Rio Grande Sun* in accordance with 36 CFR 215.5(b). A total of 3 comment letters were received.

Issues

Public involvement is used to identify issues to be addressed in the proposed action. Comments received during the scoping process were examined by Forest Service specialists for issues to address. The Forest Service separates issues into two groups: significant and non-significant issues.

Significant issues are defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual

evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in 40 CFR 1501.7 “...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)...” A list of non-significant issues and reasons regarding their categorization as non-significant may be found at (PR# 47) in the project record. The Forest Service did not identify any significant issues during the public involvement process.

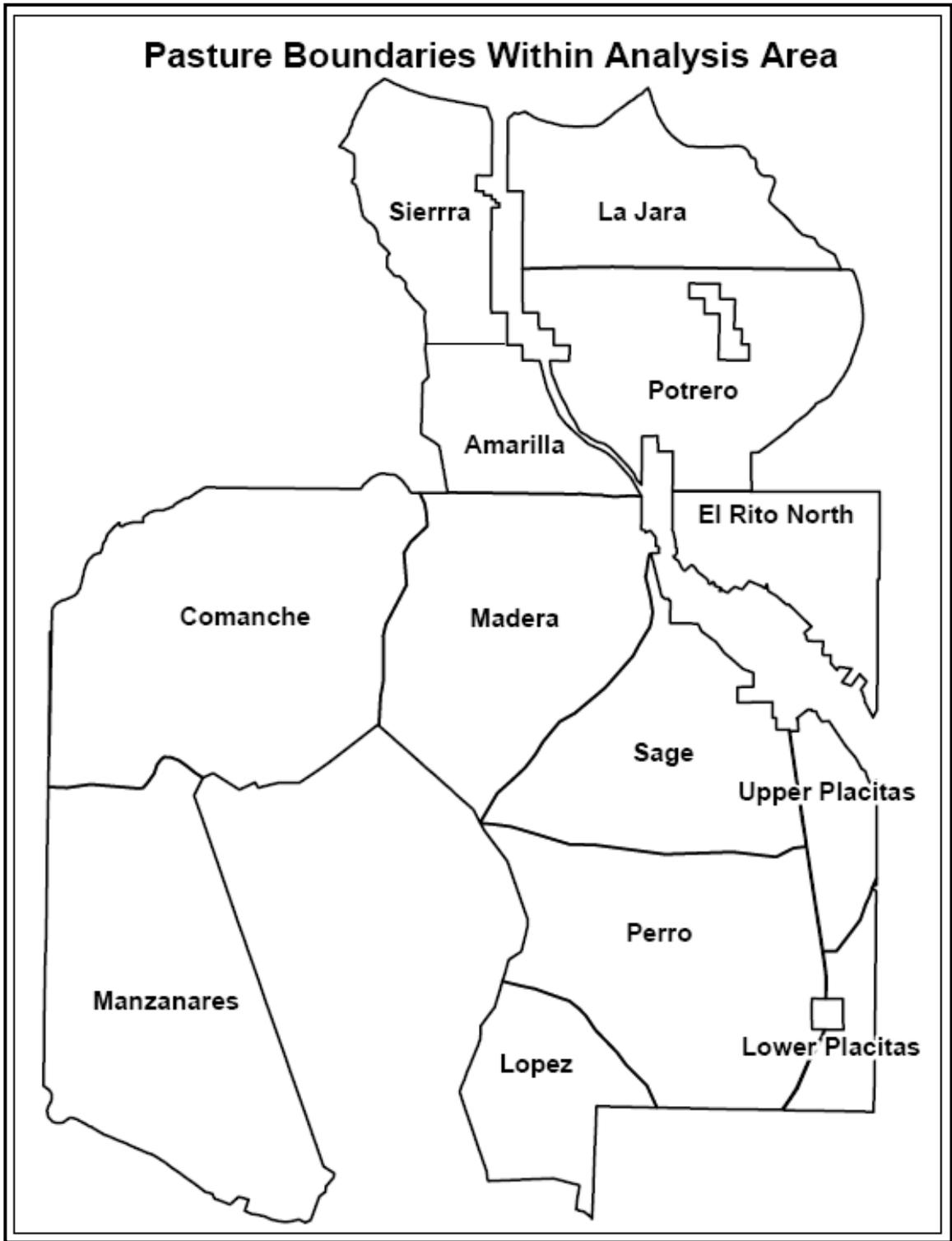


Figure 2. Pasture boundaries within the analysis area

Chapter 2 - Alternatives

This chapter describes and compares the alternatives considered for the El Rito Lobato East and West analysis. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the environmental, social, and economic effects of implementing each alternative. The no action alternative of no grazing must be addressed in the analysis as required by the CEQ regulations for implementing NEPA (40 CFR 1502.14).

Alternatives Considered, but Eliminated from Detailed Analysis

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternate methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the need to improve rangeland condition; therefore four alternatives were considered but eliminated from detailed analysis.

Permitted Management

This alternative would have reflected the currently permitted management on each allotment. On the El Rito Lobato East Allotment, 245 cow/calf units and 13 bulls would graze on a 5-pasture rotation system. On El Rito Lobato West Allotment, 409 cow/calf units and 26 bulls would graze on an 8-pasture rotation system. Season of use on both allotments would be May 1 through September 30 and November 1 through December 31. Without improving distribution, fully permitted numbers would continue to cause overutilization. This alternative would not meet the purpose and need and was not analyzed in detail.

Current Management

This alternative would have reflected existing grazing management based on the average livestock use over the past five years. On El Rito Lobato East Allotment 167 cow/calf units and bulls would graze on a 5-pasture rotation system. On El Rito Lobato West Allotment 261 cow/calf units and bulls would graze on an 8-pasture rotation system. Season of use on both allotments would be May 1 through September 30 and November 1 through December 31. Under this alternative all pastures on both allotments would not be fully utilized. This alternative would not meet the purpose and need and was not analyzed in detail.

Longer Season of Use in El Rito Lobato West Allotment

An alternative was considered, after meeting with permittees, to increase the season of use from 7 months to 10 months in the El Rito Lobato West Allotment. The proposed action addresses adjustments in season of use as an administrative decision managed through annual operating instructions (AOIs). Due to the effects of cold winter conditions on forage, a 10 month grazing season is not feasible and was not analyzed in detail as a separate alternative.

Exchanging Pastures from El Rito Lobato West to El Rito Lobato East Allotment

An alternative was discussed, after meeting with permittees, to exchange pastures from El Rito Lobato West to the El Rito Lobato East Allotment. This would be an administrative decision and was not analyzed in detail as a separate alternative.

Alternatives

Alternative 1 - No Action

Under the no action alternative, domestic livestock grazing would not occur on the analysis area. All maintenance of range facilities would revert to the Forest Service, where they would be evaluated for wildlife, watershed, and soil protection needs. Boundary fences would not be removed, as they would be needed to prevent use by livestock from adjacent active allotments. Pasture fences may be removed as appropriate. Removal or maintenance of improvements would be authorized by a separate decision. Under the no action alternative, the forest plan would continue to guide management of the area.

Alternative 2 - Proposed Action

For the analysis area this alternative would:

- Permit up to 654 cow/calf units and 39 bulls. The actual number of animals authorized each grazing season would depend on resource conditions of the pastures.
- Permit season of use from May 1 to November 30. Entry and exit dates may vary (up to one month within these dates) depending on resource conditions.
- Manage using a 13-pasture rotational grazing system.
- Brush hog sagebrush and replant² with native cool season grass on 265 acres in Lower Placitas Pasture, 1921 acres in Upper Placitas Pasture, 396 acres in Perro Pasture, 2810 acres in Sage Pasture, and 636 acres in Madera Pasture. Pastures should be rested two years after treatment. Retreatment to maintain grass conditions of these areas would occur every 5-10 years.
- Better distribute cattle by reducing use on La Jara, Upper Placitas, Lower Placitas, Perro, Sage, and Sierra pastures and increasing use on El Rito North, Potrero, Manzanares, Comanche, Lopez, Madera, and Amarilla pastures through the rotational grazing system.
- Only graze Lopez Pasture from December 1 through January 31.
- Relocate one water trough 200 feet from its existing location in the Comanche Pasture to protect one archeological site from livestock access. Construct approximately 600 feet of fence around the archeological site.
- Under the guidelines of the recovery plan for southwestern willow flycatcher, there would be no grazing in the Lower Placitas Pasture during the growing season.
- Distribution of livestock and forage use would be adjusted to achieve a light to conservative grazing intensity of 20-40% utilization. Except for riparian habitat all vegetation types would not exceed 40% utilization. In riparian areas identified as suitable for the southwestern willow flycatcher utilization would not exceed 35%. A 4-inch stubble height on grasses and forbs would be maintained in all riparian areas.

Table 2. Adaptive management strategy for the decision

Pasture	Improvements and Vegetation Treatments	Interim Management until Improvements and Vegetation Treatments are Implemented (AUMs)	Management with Improvements and Vegetation Treatments Implemented (AUMs)
La Jara Pasture (EA, app. B, figure 1)	2 ¹ stock tanks ² 3 miles fence	673	673
Potrero Pasture (EA, app. B, figure 2)	1 spring development	344	344
El Rito North Pasture (EA, app. B, figure 3)	3 stock tanks ² 2 miles fence 2 cattle guards	103	127
Upper Placitas Pasture (EA, app. B, figure 4)	1 stock tank 1921 acres veg treatments	268	356
Lower Placitas Pasture (EA, app. B, figure 5)	1 stock tank 1 spring development ² 265 acres veg treatments	229	255
Sierra Pasture (EA, app. B, figure 6)	1 stock tank 4 miles fence ²	599	599
Amarilla Pasture (EA, app. B, figure 6)	1 stock tank 2 miles fence ²	613	613
Comanche Pasture (EA, app. B, figure 7)	3 trick tanks ² / stock tanks	383	723
Manzanares Pasture (EA, app. B, figure 8)	3 stock tanks ²	215	215
Madera Pasture (EA, app. B, figure 9)	5 stock tanks ² 636 acres veg treatments	865	865
Perro Pasture (EA, app. B, figure 10)	5 stock tanks 5 miles fence 396 acres veg treatments	460	646

¹ The stock tanks would be dirt tanks, the trick tanks would collect precipitation, and spring developments would consist of an above-ground tank, with an associated fence and trough.

² After the release of the proposed action for 30-day comment, additional field examination, and meetings with the permittees, the alternative 2 was modified to reflect a different number of proposed water developments or miles of fence.

Sage Pasture (EA, app. B, figure 11)	2810 acres veg treatments	616	900
Lopez Pasture (EA, app. B, figure12)	3 stock tanks ² 1 spring development	102	102

Mitigation Measures

Stocking levels and the on and off dates would be adjusted annually through the annual operating instructions (AOI's), based on previous years' monitoring and anticipated forage as measured by range readiness inspections. The AOI's allow flexibility to respond to short-term resource conditions such as forage and water availability.

Best management practices (BMPs) applied on the analysis area can improve soil and watershed conditions by improving livestock distribution, removing grazing impacts in drainage areas and increase the vigor and diversity of riparian vegetation, specifically BMP 22.1-22.16.

Under the proposed action, distribution of livestock and forage use would be adjusted to achieve a light to conservative grazing intensity of 20-40% utilization, meeting guidelines. Utilization would not exceed 35% in riparian habitat that has been identified as suitable for the southwestern willow flycatcher. In all other vegetation types, utilization would not exceed 40%. A 4-inch stubble height on grasses and forbs will be maintained in all riparian zones.

If future surveys document Ripley's milkvetch to occur within the analysis area, occupied pastures would be rested one in three years or livestock grazing would be deferred after June to allow seed set.

Monitoring

Monitoring informs the decision maker, specialists, and interested public of progress towards the goals and objectives during the implementation of a project. By monitoring the effects of actions and evaluating the results, appropriate modifications in management practices can be made, resource trends can be analyzed, and new knowledge can be applied to similar projects in the future. The following monitoring will apply to the proposed action, if implemented:

- Range Readiness every year before grazing season.
- Parker 3-Step, cover frequency, and Rapid Assessment Methodology every 5-10 years.
- Forage utilization measured throughout each grazing season and at the end of each grazing season.
- Permit compliance including stocking levels, pastures grazed, and season of use monitored throughout the grazing season.
- Visual monitoring by range specialists throughout the grazing season for general resource concerns.
- Key grazing areas would be established and monitored in cooperation with permittees. Key grazing areas will be monitored and evaluated for utilization every year and range condition

and trend every 5 to 10 years. The intent of monitoring in key grazing areas would be to maintain good to excellent range conditions in key areas while accommodating the needs of wildlife.

Comparison of Effects by Alternative

Table 2 provides a summary of the effects of implementing each alternative. Information in the table is focused where effects can be distinguished quantitatively or qualitatively between alternatives. Further discussion of effects on resources by alternative can be found in chapter 3.

Table 2. Comparison of Effects by Alternative

Resource	Alternative 1	Alternative 2
Range condition and trend	Overall range condition and trend would improve in the analysis area.	Move from poor to fair condition and downward to upward trend
Range Capacity	Overall range capacity would improve over time.	Overall range capacity would improve with proposed vegetation treatments and fence and water improvements.
Soils	Soil nutrient retention, vegetation growth, and soil stability would improve	Gradual improvement to soils in analysis area. Increase or maintain vegetation growth and soil nutrient retention.
Riparian areas, water quality, and wetlands	Riparian vegetation and stream sediment improve. Designated uses supported and water quality status maintained. Wetland function improved.	Riparian vegetation and stream sediment improve. Designated uses supported and water quality status maintained. Wetland function maintained.
Floodplains	Floodplain function maintained.	Floodplain function maintained.
Air Quality	Attainment status maintained.	Attainment status maintained.
Mexican Spotted Owl	No grazing in the analysis area would increase herbaceous shrub and forb species composition, species diversity, and plant vigor providing additional cover needs for MSO prey base species.	No impact to population. Will not result in a loss of any MSO. Would provide cover needs for prey base species that support MSO.
Southwestern willow flycatcher	No grazing would allow potential habitat to develop into suitable habitat. Would improve nesting habitat along El Rito Creek.	A dense mix of native and riparian woody and herbaceous plants would maintain and improve habitat in the Lower Placitas Pasture.
Sensitive Animal Species- western burrowing owl, Gunnison prairie dog, dwarf shrew, robust larkspur (arid sagebrush and grasslands)	Prey species availability, plant species diversity, plant vigor, ground cover, and availability of seeds would improve foraging habitat for these species with no	Prey species availability, plant species diversity, plant vigor, ground cover, and availability of seeds would improve from existing condition.

Resource	Alternative 1	Alternative 2
	livestock grazing.	
Sensitive Animal Species- Boreal toad, northern leopard frog, long tailed vole, water shrew, Cinerus masked shrew, spotted bat, Townsend’s big eared bat, ermine, mink, yellow billed cuckoo, Nokomis fritillary (riparian habitat and riparian conditions)	Greater herbaceous species composition, species diversity, and plant vigor and an increase in hydrophytic vegetation which will provide additional cover needs for both these individual species as well as for prey base species associated with predators.	Improved riparian areas would help provide cover needs for both individual small mammals as well as for prey base species for predators associated with riparian areas.
Ripley’s Milkvetch	No impact to population, but increase in individuals. Habitat improved.	No impact to population, but possible increase in individuals. Habitat improved.
Northern Goshawk	No impact to population or prey, and habitat quality improved.	No impact to population. Prey species diversity and habitat quality maintained or improved.
Rio Grande Cutthroat Trout	Livestock grazing would not occur on the allotments and there would be no stream sediment loading due to cattle.	Expectation is sediment levels in El Rito Creek and its tributaries would remain about the same as existing condition. .
Elk	No change to population or habitat trends. Habitat improved.	No change to population or habitat trends. Temporary displacement of some elk. Habitat improved.
Brewer’s Sparrow	No change to population or habitat trends. Habitat improved.	No change to population or habitat trends. Temporary displacement of some individuals. Habitat improved.
Aquatic Macro-Invertebrates	No decrease to macroinvertebrate populations or habitat.	No impact to forest-wide habitat or populations trends of macroinvertebrates.
Migratory Birds – Associated with great basin desert shrub habitat	No impact to populations. Habitat and prey availability improved.	No impact to populations, but individuals may increase. Habitat and prey availability improved.
Migratory Birds – associated with piñon juniper habitat	Additional cover needs would result in additional prey base diversity and abundance throughout the analysis area. survivability of juveniles, fledglings and young raptors.	Proposed treatments would set back piñon and juniper encroachment to sagebrush communities but will not have any lasting affects to these species since high densities of piñon and juniper stands occur in the immediate vicinity of the analysis area as well as throughout the Forest.
Migratory Birds-associated with ponderosa pine habitat	Would improve nesting and forging area for these species. Potential populations within these	Potential populations within these pastures are anticipated to persist over the next 10 years. Would not

Resource	Alternative 1	Alternative 2
	pastures are anticipated to increase over the next 10 years.	cause a decline in population
Migratory Birds-associated with mixed conifer habitat	Would improve nesting and foraging area for these species. Potential populations within these pastures are anticipated to increase over the next 10 years.	Potential populations within these pastures are anticipated to persist over the next 10 years. Would not cause a decline in population
Migratory Birds-associated with plains, mesa grasslands habitat	Would improve nesting and foraging area for these species. Potential populations within these pastures are anticipated to increase over the next 10 years.	Potential populations within these pastures are anticipated to persist over the next 10 years. Would not cause a decline in population
Heritage Resources	No adverse effect on sensitive and non-sensitive cultural sites.	No adverse effect on sensitive cultural sites. Possible livestock trampling on non-sensitive sites but no resulting loss of sites.
Wild and Scenic Rivers	No effect on the El Rito Creek wild and scenic river values. Eligibility values would be maintained.	No effect on the El Rito Creek wild and scenic river values. Eligibility values would be maintained.
Economics	No income generated by permittees.	Up to \$161,268 generated by permittees from livestock business on analysis area.
Social Environment	Permittees would find alternate grazing location, may have to reduce numbers, or cease operations.	Existing traditions of livestock management would continue for permittees.
Environmental Justice	This alternative could impact minority and low-income populations.	Selection of this alternative would not result in adverse or disproportionate effects on low income or minority populations.

Chapter 3 – Environmental Consequences

Chapter 3 summarizes the physical, biological, social, and economic environments of the analysis area and the potential changes (direct or indirect) to these environments if the alternatives were implemented. Chapter 3 also presents the scientific and analytical basis for the comparison of alternatives, as presented in table 2. Chapter 3 complies with the implementing regulations (40 CFR 1500-1508) of the NEPA for analytic and concise environmental documents (40 CFR 1502.2). The project record contains copies of the effects analysis for the resources analyzed. An index to the project record can be found in Appendix A. The analysis of effects for the proposed action under each resource is described with the assumption mitigation measures described in chapter 2 would be applied. This project was developed in consideration of the best available science and is consistent with the Carson National Forest Land and Resource Management Plan, as amended.

Cumulative Effects Analysis

A cumulative effect is the effect on the environment that results from the incremental effect of the action when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the other actions occur (40 CFR 1508.7). An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other actions, the effects may be significant.

Cumulative effects were assessed in terms of how the alternatives would add to the past, present, and reasonably foreseeable future activities, within and around the analysis area (table 3). Existing conditions by resource reflect the past and present actions that have occurred on the analysis area. The specialists identified reasonably foreseeable future activities that overlap in time and location of each alternative. The incremental effect of the action when added to the alternative was then analyzed.

Table 3. Past and present activities in and around the analysis area

Past and Current Activity Name	Timeframe	Location	Comments
Historic grazing by cattle, and wild horses	1920s to 1950s	Analysis Area (Yeso and Montoso Wild Horse Territory)	Wild horses no longer exist or graze within the analysis area.
Mechanical vegetation treatments and revegetation	1940s to 1990s	Upper Placitas, Lower Placitas, Sage, Perro, and Madera pastures.	Piñon, juniper, and sagebrush removal with grass reseeding, identified as MA 11- Revegetation Areas.
Pine Canyon Fire and rehab	2005 to 2008	Madera Pasture	4,500 acre wildfire and rehab including cleaning tanks, soil stabilization, pasture fence reconstruction.
Pine Canyon Reforestation	2007	Madera Pasture	400 acres reseeding, cleaning out dirt tanks.
Bark beetle infestation	2005-2007	El Rito North, Perro, Madera	Resulted in firewood removal of dead piñon pine trees. As a result forage has increased in these areas.

Past and Current Activity Name	Timeframe	Location	Comments
Effects of drought	1990s to present	Analysis Area	Loss of grass cover from lack of water.
Activities on adjacent private lands	1990s to present	Analysis Area: Lower Placitas, Perro and Manzanares pastures	Private residences, logging, livestock grazing, and small scale farming on private lands including Ghost Ranch, Plaza Blanca, and Colorado Land Grant, El Rito, Abiquiu, and BLM land adjacent to the allotment boundary.
1930s Civilian Conservation Corps Projects	1930s	Analysis Area: Perro, Manzanares, Lopez, and Placitas pastures	Developments of camp sites, erosion check dams.
La Madera prescribed burn	2003 to present	Madera and Comanche pastures	Implementation of 5000 acres over the last 5 years has burned.
Pine Angel Ponderosa Pine Fuelwood Sale (861 acres)	Late 1990s to present	Madera Pasture	Removal of trees provides openings for more forage.
Vegetation encroachment	1950s to present	Analysis Area	Piñon, juniper, sagebrush and conifer encroachment has been occurring within the analysis area due to fire suppression, historic grazing and drought conditions.
Grazing on adjacent allotments	1920s to present	Analysis Area	Oso, San Gabriel, Cano, Alamosa Allotments
Winter grazing by big game	Winter season	Madera, Perro and Sage pastures	Big game winter range
MA 20-Semi-Primitive Area	Present	Perro, Lopez, and Comanche pastures	Inventoried Roadless Area
El Rito Canyon Recreation Area	Present	El Rito Creek	Recreation use along the creek.
Agua Caballos Projects	Present	Northeastern edges of La Jara and Potrero	Treatments are designed to improve or enhance MSO and goshawk habitat

Cumulative Effects of Reasonably Foreseeable Future Activities

Proposed Management of Motorized Use on the El Rito Ranger District

The Carson National Forest is in the process of designating roads and trails open to motorized travel and prohibiting cross-country travel by motorized vehicles. This project was first listed on the schedule of proposed actions (SOPA) on July 1, 2008. This activity is going through the NEPA process and a decision is expected in May 2009. Implementation of the decision would begin in October 2009. Road management activities would take place on the analysis area as

follows: proposed road closures, proposed new roads and seasonal closures of Forest Service roads from January 1 to April 14.

Road closures would be beneficial to soils and vegetation. Since vehicles would no longer be authorized on the road, erosion would lessen; vegetation would grow in the roadbed over time. There are no cumulative effects of the seasonal road closure since it is during the winter months when cattle are not on the analysis area.

Wildfire Management Response

In the event that a wildfire would occur on the analysis area, the response would be determined on an individual basis due to a variety of physical and social variables.

La Madera Prescribed Burn

La Madera Prescribed Burn Project is approximately 5,000 acres in the Madera Pasture of the analysis area. The project is designed for fuels reduction and wildlife habitat improvements.

Pine Canyon Reforestation

Tree planting of native ponderosa pine seedlings, on approximately 200 acres of selected sites, where the fire burned with high intensity, was done to regenerate and establish ponderosa pine trees. Planting trees will provide a future seed source to regenerate areas that were burned.

Affected Environment

The analysis area is situated near the community of El Rito in northern New Mexico. The analysis area is 94,049 acres. The analysis area is bounded by the Oso, San Gabriel, and Cano allotments on the north; private land and BLM land on the south, Alamosa Allotment on the east; and private land, Ghost Ranch, Plaza Blanca and Plaza Colorado Land Grants to the west. The village of El Rito and its surrounding patented land are enclosed within the allotment, and the village of Abiquiu borders the allotment on the southwest. Approximately 72,457 acres are identified as grazable by permitted livestock and 21,600 acres are identified as having no livestock capacity due to steep, rocky terrain, dense forested stands or lack of water availability that make these areas inaccessible to livestock.

The vegetation types present across the entire analysis area include the following: grassland, piñon, juniper, sagebrush, ponderosa pine, riparian vegetation, and smaller areas of spruce and fir. This effects analysis focuses on the vegetation present primarily within the grazable acres where livestock would graze. The forest plan provides the overall direction to meet desired conditions for the Carson National Forest. The analysis area falls within 11 management areas (MA): MA 3-Mixed Conifer <40% (slopes), MA 4-Ponderosa Pine <40%, MA 7- Unsuitable Timber, MA 8-Piñon/Juniper, MA 10-Low Elevation Grasslands, MA 11-Revegetation Areas, MA 12-Sagebrush, MA 13-Oak, MA 14- Riparian, MA 16-Recreation Sites, and MA 20-Semi-Primitive.

The analysis area was originally the Lobato C&H Allotment and was part of the Lobato Grant, a Spanish land grant. This grant was acquired by the U.S. Government in the 1930s. In 1951 the land was transferred to the administration of the Forest Service, and is now an integral part of the El Rito Ranger District. Stocking levels declined following administration by the federal government to address overutilization particularly in Upper Placitas, Lower Placitas, Perro, Sage and Madera pastures that have been heavily used by cattle and horses since the early 1900s.

Sagebrush and piñon has invaded many areas that were formerly open meadows and grasslands.

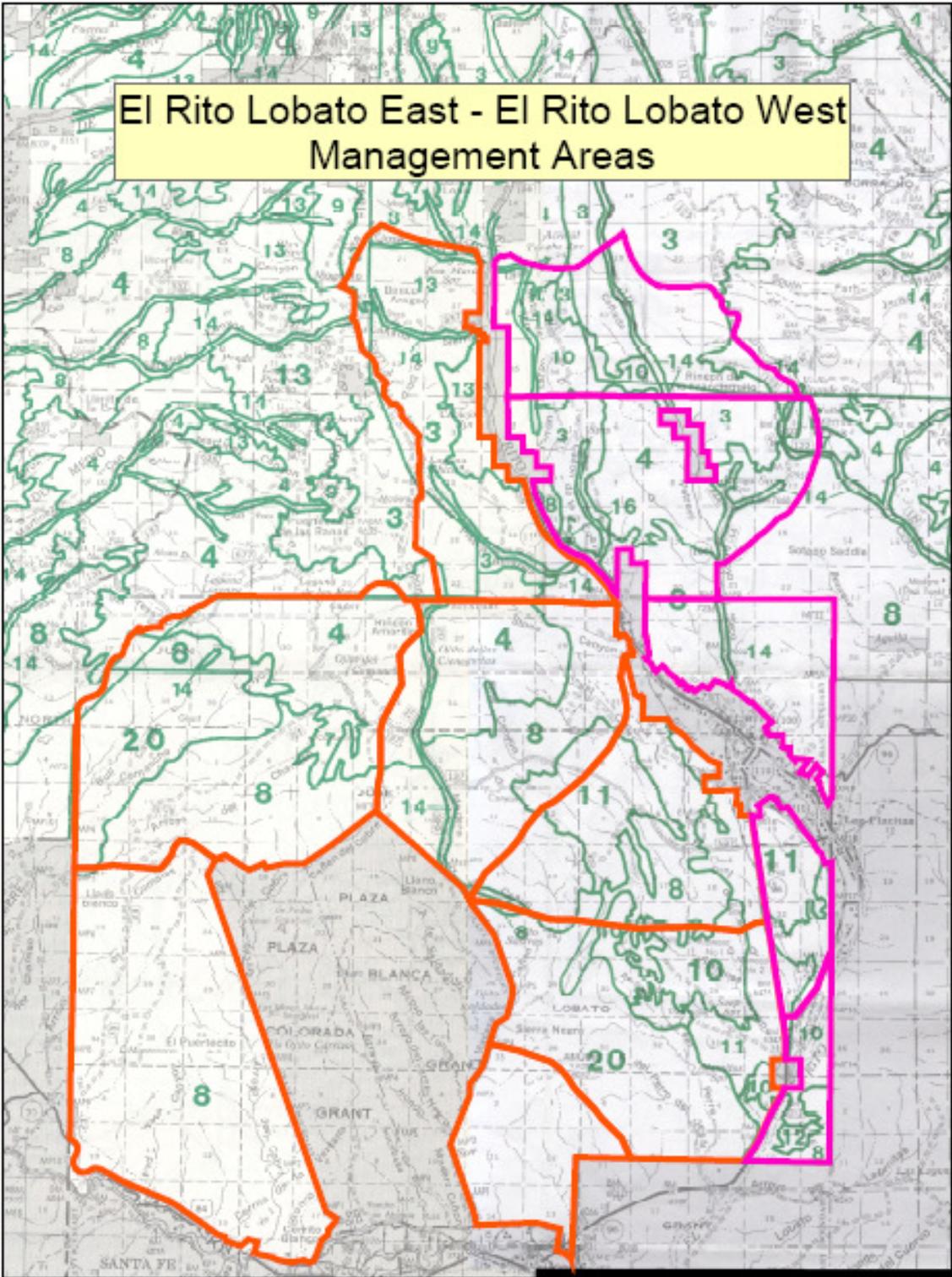


Figure 3. Forest Plan Management Areas within the analysis area

Grasslands are scattered throughout the analysis area and have reduced in size over the last 50 years. Coniferous trees are gradually taking over the meadow areas reducing grazing capacity of these sites. Lower elevation grasslands have been invaded by sagebrush and piñon and juniper trees. Higher elevation grasslands have been invaded by all tree species that are taking up large amounts of available water. These areas now need artificial manipulation in the way of brush hogging and reseeding to increase forage production. Fire suppression has been largely responsible for the encroachment and reduction of these grassland openings. The open grasslands and open areas near earthen tanks are where cattle mostly graze.

In the 1940s the Carson National Forest converted MA 11-Revegetation Areas of piñon, juniper, and big sagebrush to grass in the Perro, Sage, Madera, Upper Placitas, and Lower Placitas pastures. These conversions were accomplished by plowing, chaining, dozer piling, tree crushing, and hand clearing with chainsaws. The areas were reseeded with crested wheat grass and were treated again in the 1970s to increase forage for grazing. Today these areas are late seral stage big sagebrush.

Big game primarily uses the Manzanares, Madera, Perro, Comanche, and Sage pastures of the analysis area during the winter months. These areas are composed of piñon-juniper woodland with interspersed grasslands supporting a variety of grasses and forbs. Meadows in higher elevations of Sierra, Amarilla, and La Jara pastures are critical during spring green up to provide a much needed energy source for elk after the winter.

The Pine Canyon Complex Fire burned in the Madera Pasture primarily through piñon and juniper trees exposing the understory. Vegetation production and rangeland condition in Madera Pasture have improved as a result. The pasture was rested (two seasons) after the fire to promote forage production. The Madera Prescribed Fire was in the Madera and Comanche pastures.

The analysis area is located within El Rito and Lower Chama watersheds. El Rito Creek runs through the northeastern quarter of the analysis area and Rio Chama runs along the southern boundary. The section of El Rito Creek above the El Rito community is the only perennial stream system within the analysis area. Management Area 20- Semi Primitive is located on the Manzanares and Lopez pastures. El Rito Canyon Campground is located five miles northwest of El Rito within the analysis area. The analysis area is popular for hunting.

Effects of Each Alternative by Resource

The following resources were analyzed by specialists in relation to the effects on each resource anticipated with the implementation of each alternative: range condition and trend, soils, riparian areas, water quality, wetlands, floodplains, air quality, wildlife, heritage resources, wild and scenic rivers, economics, and social environment.

Range Condition and Trend

Range condition is a combination of an overall rating for plant composition, plant vigor, soil condition, bare ground, vegetation structure, plant litter, and plant diversity. These seven components are the key indicators of range condition. The condition rating is an estimate of the relative effects of grazing on vegetation. Grazing by livestock may impact vegetation by changing the mix of species in the plant communities being grazed; the density and frequency of perennial forage plants; and the vigor of the grazed plants. These effects are reflected by the following

range condition classes: excellent, good, fair, poor, and very poor. For example, a reduction in desirable forage plant species results in a lower range condition rating.

Range trend shows whether vegetation conditions are improving or declining in relation to plant composition, plant vigor, soil condition, bare ground, vegetation structure, plant litter, and plant diversity. Range trend expresses the direction of change (if any) in range condition in response to past and existing livestock management practices or other land use activities, in combination with other environmental factors (FSH 2209.21 CH 40.5-2). A downward trend indicates a reduction in forage available for livestock and wildlife, that may reduce grazing capacity on the analysis area. It is important to note that a downward trend may not necessarily be the result of livestock grazing. For example: the encroachment of trees and woody shrubs may indicate a downward trend in forage species. The new vegetation type, however, may provide hiding cover and browse for wildlife.

Effects by Alternative

The range condition and trend of the proposed action are summarized in table 4, followed by a more detailed explanation.

Table 4. Comparison of the effects on range condition and trend by alternative

Pasture	Existing (condition/trend)	Alternative 1 No Action (condition/trend)	Alternative 2 Proposed Action (condition/trend)	Grazable Acres
Lower Placitas	poor/stable	fair/upward	fair/upward	1688
Upper Placitas	poor/stable	fair/upward	fair/upward	2263
El Rito North	fair/upward	fair/upward	fair/stable	1196
Potrero	poor/downward	fair/upward	fair/upward	3232
La Jara	poor/downward	good/stable	fair/stable	5675
Lopez	poor/upward	fair/upward	fair/stable	3354
Perro	very poor/upward	poor/upward	fair/upward	7652
Sage	poor/upward	fair/stable	fair/upward	6695
Madera	fair/upward	good/upward	fair/upward	9414
Manzanares	fair/upward	fair/stable	fair/upward	11863
Comanche	fair/upward	good/upward	fair/upward	11613
Sierra/Amarilla	poor/downward	fair/upward	fair/upward	7812

Range condition and trend of the analysis area has been measured since the 1950's. Existing range condition and trend for analysis area was determined through a review of both historical and recent monitoring records. Recent data was collected through ocular inspections, photos, cover frequency, Parker 3-Step method, and range readiness inspections. Through an evaluation of this data the analysis area is determined to be in very poor to fair condition, with 7 out of 13 pastures in an upward trend.

Alternative 1

With no livestock grazing in the analysis area, range condition and trend would improve in all pastures. Plant composition (including cool season grass density) would improve from the impacts of no grazing, especially early in the summer when plants are most vulnerable. Without trampling and grazing impacts, plants would have the opportunity to grow and set seed, improving forage cover, plant vigor, and forage production. Sagebrush and conifer encroachment would continue under this alternative and range condition would decline as woody species increase. Native bunch grass meadows in La Jara, Amarilla, and Sierra pastures would continue to convert to Kentucky bluegrass, an introduced species. Under alternative 1 overall range condition would be fair with an upward trend.

Alternative 2

Under this alternative range condition and trend would improve in all pastures. Range condition is expected to move from very poor to fair, to good. An upward trend would continue across the analysis area. This alternative includes installation of range improvements and vegetation treatments that would increase forage production and vegetation cover. Impacts from cattle would be distributed between pastures more evenly and vegetation would have additional rest recovery periods.

Constructing 2 stock tanks and 1 spring development in Lower Placitas and Upper Placitas pastures would provide more water sources and distribute cattle to otherwise under utilized areas. Water developments would draw livestock away from existing water sources and riparian areas as well as increase use in other areas that are currently not used. No grazing in the Lower Placitas Pasture during summer growing season would move range condition to fair with an upward trend. Sagebrush treatments on these two pastures (1921 acres Upper, 265 acres Lower Placitas) and subsequent seeding would improve forage production. Broadcast seeding of warm and cool season grass varieties would help improve vegetation structure and soil protection.

Constructing 11 water tanks and 3 trick tanks/stock tanks would help distribute cattle by providing more sources of water on El Rito North, Madera, Manzanares, and Comanche pastures. Two miles of new fence along Highway 554 in El Rito North Pasture would make that pasture available in the grazing rotation. Sagebrush treatments on the Madera Pasture (636 acres) and subsequent seeding would improve forage production. Broadcast seeding of warm and cool season grass varieties would help improve vegetation structure and soil protection. Water developments in the Comanche and Manzanares pastures would provide dependable water sources drawing livestock away from existing water sources and increase use in other areas that are currently not used due to lack of water availability.

Constructing 2 stock tanks, 1 spring development and 3 miles of fence in Potrero and La Jara pastures would keep cattle in the pastures and help promote distribution. The division fence would allow for more efficient use of forage.

Constructing 2 stock tanks, and 6 miles of fence in Sierra and Amarilla pastures would help distribute cattle. Constructing 5 miles fence along Sierra and Amarilla would prevent unauthorized use from adjacent private land and stay within the allowable use of the pasture. Constructing a 1 mile fence between Amarilla and Sierra pastures would help with livestock distribution utilizing more areas of Amarilla Pasture giving Sierra Pasture some relief.

Constructing 3 stock tanks and 1 spring development on Lopez and Sage pastures would help distribute cattle and moving pastures from poor to fair/stable condition. Sagebrush treatments (2810 acres) on Sage Pasture and subsequent seeding would improve forage production. Broadcasting seeding of warm and cool season grass varieties would improve vegetation structure and soil protection.

Constructing 5 miles of division fence and 5 tanks in Perro Pasture would more efficiently utilize areas and improve distribution. Sagebrush treatments (396 acres) on this pasture and subsequent seeding would improve forage production. Broadcasting seeding of warm and cool season grass varieties would help improve vegetation structure and soil protection.

Cumulative Effects on Range Condition and Trend

The cumulative effects of past and present activities such as past vegetation treatments, prescribed burning, Pine Canyon Fire, past grazing and use by wildlife are reflected in the discussion of range condition and trend by alternative (table 3). Road closures in the analysis area would have little cumulative effect on range condition and trend. New roads would help permittees maintain the stock tanks in the area and would help improve distribution. The Pine Canyon Reforestation Project would have no cumulative effect to range condition and trend in Madera Pasture when added to the direct and indirect effects of alternative 2.

Range Capacity

Rangeland grazing capacity refers to the average number of livestock and wildlife which may be sustained on an allotment compatible with objectives for that allotment. The forage allocation model (PR# 73, 74) was used to assess grazable acres of full, potential, and no capacity range areas.

Table 5. Description of Proposed Action

Capacity	Full	Potential	No	Total
Acres	45751	26706	21592	94049
% of analysis area	49%	28%	23%	100%

The forage allocation model used to calculate capacity, takes into account full and potential acres along with the forage allowable use coefficient, and terrestrial ecosystem survey (TES) forage production potential estimates to refine capacity estimates and establish proper stocking levels for each pasture. The outputs are based on a maximum of 40% available forage utilization, as compared to total forage production. The model estimates numbers and days before and after improvements and vegetation treatments for each pasture. The total estimated capacity for the

analysis area is 5470 AUMs. With implementation of improvements the AUMs would increase to 6418. Adaptive management strategy outlined in chapter 2 is based on capacity by pasture.

Soils

Soil erosion and degradation increase when vegetation cover and protective litter are removed. Soil condition is an evaluation of soil quality based on the interpretation of factors that effect vital soil functions. A soil condition category is a reflection of soil quality status. The three categories are satisfactory, impaired and unsatisfactory.

- Satisfactory soil condition indicators suggest that soil function is being sustained and the soil is functioning properly. The ability for the soil to maintain resource values and sustain productivity is high.
- Impaired soil condition indicators suggest that there is a reduction in soil function. The ability for the soil to function properly has been reduced and/or there exists an increase in susceptibility to degradation.
- Unsatisfactory condition indicators suggest that loss of soil function has occurred. Degradation of vital soil functions result in the inability of soil to maintain resource values, sustain productivity, and recover from impacts.

The soils within the analysis area have been mapped on the Terrestrial Ecosystem Survey (TES) for the Carson Nation Forest (PR#04). Soil condition categories for TES map units within the analysis area were determined through the use of existing data, interpretations within the TES, and limited ground truthing in areas of concern. Information was also gathered from recent Parker 3-Step monitoring.

Seventy-five percent of the analysis area is in satisfactory soil condition. No TES units with unsatisfactory soil conditions are found. Soil condition is currently impaired in TES map units 118, 140, 149E, 159, 168, 194, 195, 278, and 450. The Perro, Manzanares, El Rito North, Comanche, and Sage pastures contain extensive acreages of these map units. The Placitas and Madera pastures contain considerably less acreage of impaired soils. TES map unit 149E (4521 acres) is rated as stable based on the criteria defining soil stability, but is considered as impaired given the eroded nature of the map unit as observed in ground truthing of the analysis area. Many of the areas identified with impaired soil conditions experience limited to no grazing by livestock. These areas lack water and are on steep slopes. Overall the grazable acres within the analysis area are in satisfactory condition. The Pine Canyon Complex Fire and Madera Prescribed Burn burned primarily through piñon and juniper trees exposing the understory and improving ground cover in the Madera Pasture.

Alternative 1

This alternative would result in increased groundcover and a reduction of soil erosion on TES map units that are currently in satisfactory condition. Given the arid nature of the southern half of the analysis area, the increased groundcover would be most noticeable in 3 to 5 years, with reduction of soil erosion 2 to 3 years later. In areas where vegetation has been altered by past management (eg., revegetation areas) conversion from the introduced species (crested wheatgrass) to native plants would continue.

On extremely steep slopes in TES units 159, 168, 195, and 140, there would be no noticeable increase in groundcover. Where slopes are not as steep groundcover would likely increase in map units 118, 149E and 194 without livestock grazing, but would not be noticeable for several years.

Alternative 2

Under this alternative the groundcover and forage production would increase in the analysis area. The proposed vegetation treatments (brush hogging and reseeding) in Upper Placitas, Lower Placitas, Perro, Sage, and Madera pastures would provide the root mass and structure needed to hold soils in place, as well as provide groundcover needed to protect the soils from erosion on over 6000 acres of the analysis area.

Proposed vegetation treatment areas would provide more livestock forage on grazable acres. The water developments and fences would work concurrently with the vegetation treatments to improve livestock distribution across the analysis area and increase ground cover and reduce soil erosion.

Cumulative Effects on Soils

The cumulative effects of past and present activities such as past vegetation treatments, past prescribed burns, and the Pine Canyon Wildfire are reflected in the discussion of soils by alternative. Proposed road closures would increase vegetation cover and would contribute to improving soil conditions along with management for grazing under alternative 2. The proposed Pine Canyon Reforestation would regenerate and establish native ponderosa pine trees on sites where no trees or few trees survived the fire and would provide for long-term soil stability and further species composition.

Riparian Areas, Water Quality, and Wetlands

Riparian areas occur as a transition between aquatic and upland ecosystems and have distinct vegetation and soil characteristics. On the Carson National Forest, riparian areas are identified as MA 14-riparian areas. Good riparian vegetation along streambanks prevents soils from eroding into streams and creating excess sediment in the water. Riparian condition translates into effects on water quality and aquatic habitat. Livestock grazing and trampling in riparian areas can degrade riparian vegetation and destabilize streambanks.

New Mexico Environment Department, Surface Water Quality Bureau assesses water quality. Their assessment is based on established designated uses for surface waters and whether the stream, riparian area and wetlands are supporting these uses. Water quality depends on the condition of riparian vegetation. A properly functioning wetland provides a means for filtering water quality while slowly allowing it to dissipate for use by vegetation. There are 264 miles of stream channel mapped within the analysis area. Within Lower Placitas Pasture 2 miles of El Rito Creek are perennial.

The riparian areas include Bull Canyon (Comanche Pasture), Madera Canyon (Madera Pasture), Cañada Sierra and Cañada Jose Maria (Sierra Pasture), Cañada Piedra Amarilla (Amarilla Pasture), Cañon Largo (La Jara and Potrero pastures), Cañada Del Potrero and Cañada de la Cueva (Potrero Pasture), Arroyo Seco (El Rito North and Potrero pastures). These riparian areas are in good condition with adequate vegetation cover consisting of willows, cottonwoods, rushes, and sedges.

Within Lower Placitas Pasture there are 2 miles of riparian vegetation along El Rito Creek. The riparian zone is narrow, relatively flat, and well vegetated. Willows are abundant and Russian olive and saltcedar trees are expanding. Areas with the best structural diversity consist of a mix of older cottonwood and Russian olive with an understory of salt cedar and willow. Cottonwoods are relatively old with few very large trees and no seedlings. Some areas, especially along the forest boundary on the south end, have small older channels and are exhibiting fingers of riparian habitat, with dryland species in between, such as grama grass and juniper trees. Currently vegetation in riparian areas is slightly exceeding the 35% utilization, but the woody vegetation is meeting the utilization criteria.

The analysis area resides within five watersheds within the Rio Chama Watershed. (figure 4) The majority of the analysis area exists in El Rito Creek and Rio del Oso watersheds. A small part of the analysis area is within the Canjilon Creek Watershed (near Cisneros Springs), the Rio Ojo Caliente Watershed (the northeast corner of El Rito North Pasture), and the Rio Vallecitos Watershed (the northeast edge of the analysis area in the Valle Grande Peak area). Most of the drainages within the analysis area only contain water during spring snow melt periods and summer monsoon rainstorms. Numerous springs exist within the analysis area, some of which have been developed for use by wildlife and livestock.

Table 6 shows the current New Mexico Environment Department (NMED) Surface Water Quality Bureau 303 (d)-305 (b) impaired streams listed as exceeding water quality standards and Total Maximum Daily Loads (TMDLs). El Rito Creek, Canjilon Creek, Rio del Oso, and Rio Ojo Caliente are identified on the list. Rio Vallecitos, Canjilon Creek, and Rio del Oso meet their designated uses. Canjilon Creek and Rio Vallecitos are listed as not fully supporting high quality aquatic life. Field surveys on El Rito Creek were used to determine if there are specific areas of concern for water quality. Most impacts observed were from recreational vehicle, ATV use, and camping.

Table 6. Watershed and Designated Uses

Watershed	Designated Uses
Rio Vallecitos Canjilon Creek El Rito Creek	Livestock watering, domestic water supply, high quality aquatic life, irrigation and wildlife habitat
Rio del Oso	Wildlife habitat
Rio Ojo Caliente	Livestock watering, coldwater aquatic life, irrigation, warm water aquatic life, and wildlife habitat

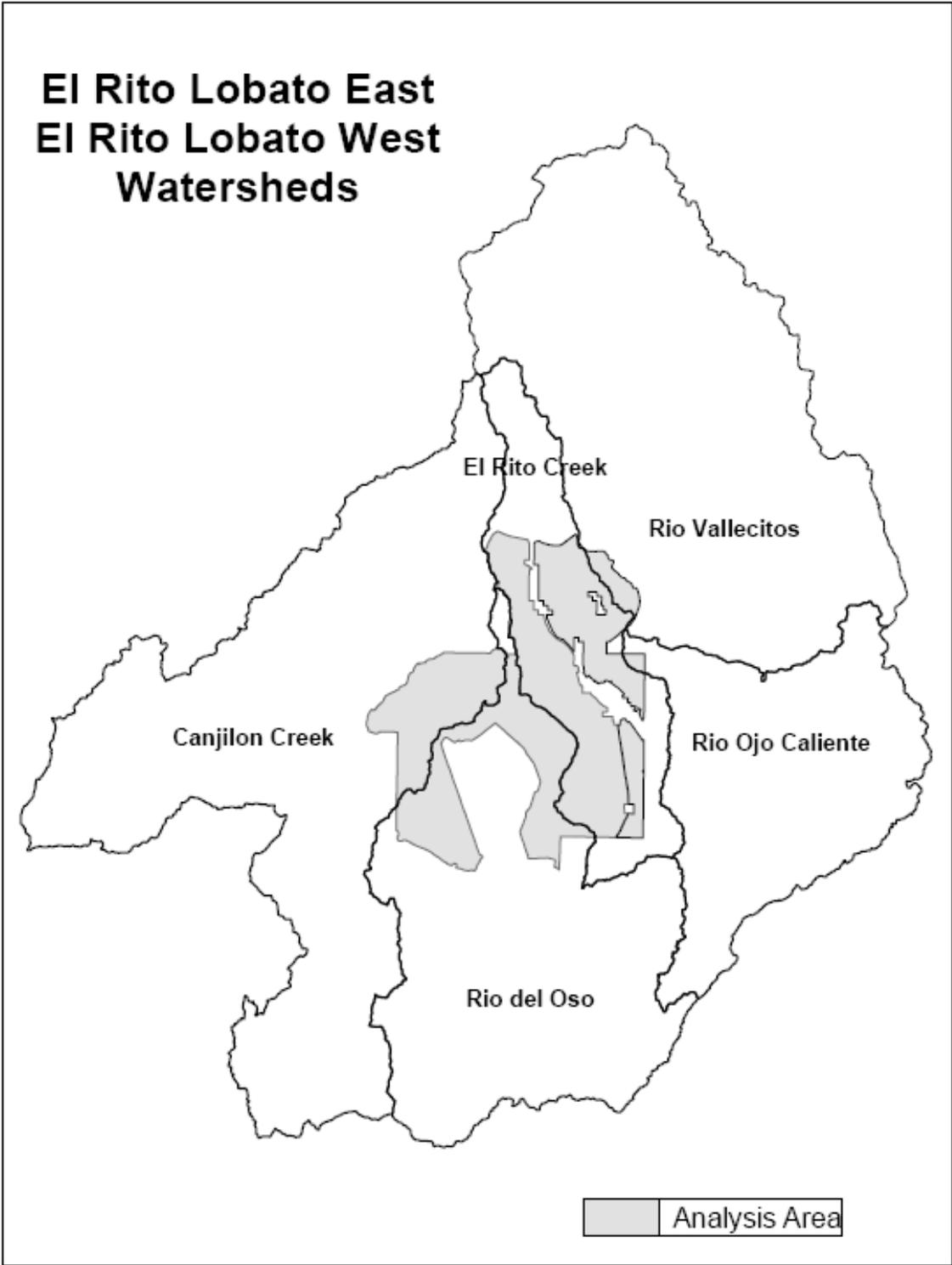


Figure 4. Watersheds Map

Proper Functioning Condition (PFCs) assessments and visual monitoring were conducted in riparian habitat located in MA 14-Riparian Areas (figure 3). PFC assessments are used to assess the condition of riparian wetland areas. The assessment takes into account the hydrology, vegetation, and erosion and deposition attributes and processes of an area. There are four categories of PFC:

1. **Proper Functioning-** adequate vegetation, landforms, and woody debris to dissipate stream energy; filter sediment, aid floodplain development; improve flood water retention and ground water recharge; develop root mass to stabilize streambanks; provide ponding and channel characteristics needed to provide desired habitat for aquatic life and wildlife; and support biodiversity (USDI, 1998).
2. **Functional at risk-** riparian areas are still functional but there are existing characteristics, such as vegetation, soil, or water issues that make them vulnerable to degradation (USDI, 2006).
3. **Non-functional-** riparian areas are not providing enough vegetation, landforms, or woody debris to dissipate energy associated with normal stream flow or high flow events, and not reducing erosion or water quality (USDI 1998, 2003).
4. **Unknown-** riparian areas lack sufficient information to make a determination.

All of the PFC assessed riparian areas in the analysis area (Laguna Chico, Canada Piedra, El Rito Creek, and Canada Jose Maria) were determined to be properly functioning or functional at risk with a stable or upward trend. In the areas assessed as functional at risk, riparian degradation along streambanks appears to be caused by off-road and other recreational use, road runoff, stream bank destabilization, and some sedimentation. These impacts make them vulnerable to degradation. Cañada Sierra (tributary to El Rito Creek) was non-functional because the stream channel was down cut within a meadow area and water cannot access the floodplain and the associated meadow is drying up.

Table 7. Functional-at-Risk Assessed Riparian Areas

Pasture	Location	Causes
Potrero	Cañada del Potrero	<ul style="list-style-type: none"> • Sedimentation from roads, trails, and dispersed camping • Some bank under-cutting present
	Cañada La Cueva	<ul style="list-style-type: none"> • Sedimentation from roads, ATVs, dispersed camping • Some trailing and bank trampling near the stock tank
Madera	Cañada La Madera	<ul style="list-style-type: none"> • Sedimentation from roads • Sedimentation from Pine Canyon Fire • ATV use, dispersed camping • Some bank erosion and cutting
Sierra	Cañada Sierra	<ul style="list-style-type: none"> • Sedimentation and bank damage from road crossings • Heavy bank destabilization and cutting • Some livestock caused bank erosion from trailing and trampling • Dispersed camping

Pasture	Location	Causes
La Jara	Cañon Largo	<ul style="list-style-type: none"> • Heavy sedimentation at road crossings and culverts • Nearby road contributes to runoff and erosion • Livestock trailing along banks and across stream • In open meadows there is head cutting, bank erosion and trampling from cows congregating
Madera	Ojito de Las Cieneguitas	<ul style="list-style-type: none"> • Road erosion and runoff • Erosion and bank cutting where the nearby pond enters the stream

The terrestrial ecosystem survey (USDA 1987), was used to identify wetland areas. There are 346 acres of wetlands in the analysis area. These areas are mostly on the east boundary of Sierra and Amarilla pastures, and the west boundary of La Jara, Potrero and El Rito North pastures along El Rito Creek. Wetlands exist in the form of wet meadows in El Rito Canyon and also occur in isolated upland meadows associated with springs and seeps.

Past and present livestock grazing has resulted in a decrease in wetland function on the analysis area. Grazing in wetlands has changed the vegetation composition by reducing rushes and sedges and increasing Kentucky bluegrass. Trampling by livestock has compacted soils and reduced soil moisture in wetland areas. Vegetation composition (sedges and rushes) and soil moisture are key components to wetland function.

Alternative 1

With no livestock grazing in the analysis area, riparian vegetation would improve, providing stable conditions and minimizing stream sediment. As a result, all designated uses would continue to be fully supported and current water quality status would be maintained. Without livestock grazing wetland conditions would improve, therefore wetland function would also improve.

Alternative 2

Under alternative 2 proposed fences and water developments would improve livestock distribution and move cattle away from wetlands and riparian areas in Sierra, Amarilla, Comanche, Madera, El Rito North, Potrero, and La Jara pastures. The proposed fence and water developments in the El Rito North Pasture would allow for more grazing in this pasture reducing the grazing pressure and time spent by livestock in Potrero and La Jara pastures. This would reduce livestock impacts on riparian areas and wetlands in these pastures. Field observations in the Lower Placitas Pasture show that streambank and riparian conditions are on an upward trend. Under the proposed action there would be no grazing during the growing season on this pasture, which would support the upward trend by improving existing vegetation.

All designated uses would continue to be fully supported and current water quality status would be maintained under alternative 2.

Fence and water improvements that help move livestock away from wetlands would help in maintaining wetland function.

Cumulative Effects on Riparian Areas, Water Quality, and Wetlands

The cumulative effects of past and present activities such as historic grazing, activities on private land, ATV use, roads are reflected in the discussion of riparian areas and water quality by alternative. Improvements to the El Rito Canyon Recreation Area would improve riparian areas along El Rito Creek where camping is occurring along the creek. This project would move campers further upland and away from the creek. The improvements for this project would maintain water quality along the creek by protecting meadows.

Floodplains

Floodplains reduce the risk of loss due to floods by minimizing the impacts to human safety, health, and welfare. Executive Order 11988 requires federal agencies to “...reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare, and restore and preserve the beneficial values served by floodplains...”. Since the analysis area is not mapped for floodplains on the Rio Arriba County FEMA Flood Insurance Rate Maps, field observation were conducted to identify where floodplains exist in the analysis area. El Rito Creek has a floodplain that is well vegetated and has no impediments. The floodplain located within the village of El Rito is classified as a zone A floodplain, meaning there is a 1% chance annually that the floodplain would be inundated with water. There are no management activities in the proposed action that would cause development or occupation of floodplains.

Air Quality

The analysis area is within the Upper Rio Grande airshed. There are no Class I airsheds in the analysis area. The closest Class I areas are Mesa Verde National Park (130 miles northwest), Great Sand Dunes National Park (130 miles north), and Weminuche Wilderness (130 miles north).

Alternative 1

Under this alternative livestock management activities that potentially generate dust would not occur on the analysis area. Air quality attainment status would not change.

Alternative 2

Air quality would be minimally affected by the proposed improvements and cattle grazing. The proposed livestock management activities would have a short term and localized effect on air quality by producing dust. Prevailing winds and normal ventilation act to quickly disperse any dust generated. Air quality attainment status would not change. These activities include herding, gathering, trailing, and implementation of improvements that would generate dust and vehicle emissions.

Wildlife

Federally Listed Species

The U.S. Dept. of Interior (USDI) Fish and Wildlife Service (FWS) provided a list of threatened and endangered species that occur in Rio Arriba County for consideration in analysis (USDI 2008). The Mexican spotted owl (*Strix occidentalis lucida*), and southwestern willow flycatcher (*Empidonax traillii extimus*), have habitat within the analysis area and are assessed below.

Mexican Spotted Owl

The analysis area contains suitable Mexican spotted owl (MSO) habitat in and adjacent to the Sierra, Amarilla, La Jara and Potrero pastures. The most suitable habitat occurs along both sides of the Canada del Potrero in mixed conifer forest with steep slopes greater than 40% in the center of Sierra and Amarilla Pastures. There is approximately 2,100 acres of mixed conifer in Comanche, Madera, La Jara, and Potrero pastures. These pastures have steep slopes greater than 40% and riparian drainages that are considered suitable and potential MSO habitat. Suitable habitat on the Carson exists for the MSO, but occupancy has not been verified. The closest known MSO territory to the project area is on the Jicarilla Ranger District and the Santa Fe National Forest. Suitable habitat on the Carson exists for the MSO, but occupancy has not been verified. Surveys were conducted on the Felipito and La Manga timber sales which are northwest of the analysis area. Surveys were conducted for MSO in these timber sales in the early 1990s but no MSOs were documented. A one time follow up survey in 1996 was conducted in the La Manga Timber Sale which included a part of the Felipito Pasture but this survey was conducted in late August and no MSO were detected. To date there have been no verified MSO found occupying this or adjacent areas.

Excessive utilization of forage can have an effect on the abundance MSO prey base species. Voles, meadow jumping mice, and shrews are important prey species for MSO. In a 6-year study of MSO prey base availability and selection by MSO, rabbits and pocket gophers are the 4th and 5th most important prey species for spotted owls (Fletcher and Hollis, 1994) and these species are also associated with open meadows used by domestic livestock.

To accommodate the needs of the owl and its prey species, “key livestock grazing areas” should be maintained at good to excellent range conditions not to exceed 40% utilization. Currently, there are no officially designated key use areas within the analysis area, but some areas have been consistently monitored in the past and would establish key use areas upon coordination with the permittees (Rael, 2008).

Alternative 1

No grazing on the analysis area would increase herbaceous, shrub and forb species composition, species diversity, and plant vigor providing additional cover needs for prey base species. Habitat quality for MSO prey species would increase within the Sierra, Amarilla, La Jara and Potrero pastures within 10 years. The additional cover would result in additional prey base diversity and abundance throughout the analysis area. An abundance and greater diversity of prey base species could attract additional MSO to nest on the analysis area as well as improve nesting success and increase survivability of juveniles, fledglings and young owls.

Alternative 2

The proposed action would provide cover needs for prey base species that support MSO by improving distribution. Fences and water developments constructed in the higher pastures Sierra, Amarilla, La Jara, Potrero, Madera and Comanche pastures would improve existing rangeland condition and vegetation cover in MSO foraging areas. Utilization would be maintained at conservative use levels (20-40 %) and would increase cover for MSO prey species (small mammals). Construction of new fence and water developments in mixed conifer would occur outside the breeding season for MSO to eliminate, the effects of noise disturbances. Proposed fencelines would be walked by the district biologist prior to construction to curtail the removal of large trees in mixed conifer habitat to maintain high quality habitat. Vegetation treatments would not occur in MSO habitat.

Southwestern Willow Flycatcher

Southwestern willow flycatcher suitable habitat is found within the analysis area. Approximately 2 miles of suitable habitat occurs along El Rito Creek in the Lower Placitas Pasture. It is assumed southwestern willow flycatcher occupy the analysis area based on the presence of suitable habitat.

The riparian area is narrow, relatively flat, and well vegetated. Willows are abundant and Russian olive and saltcedar trees are expanding. Areas with the best structural diversity consist of a mix of older cottonwood and Russian olive with an understory of salt cedar and willow. Cottonwoods are relatively old with few very large trees and no seedlings. Some areas, especially along the forest boundary on the south end, have small older channels and are exhibiting fingers of riparian habitat, with dryland species in between, such as grama grass and juniper trees. Currently vegetation in riparian areas is slightly exceeding the 35% utilization, but the woody vegetation is meeting the utilization criteria.

Brown headed cowbirds are attracted to cattle. Nest parasitism from brown headed cowbirds can impact flycatcher nests, flycatcher nests, or promote foraging opportunities closer to flycatcher nesting areas.

Alternative 1

Under this alternative, no grazing would occur and southwestern willow flycatcher nesting habitat would improve along El Rito Creek. All criteria for suitable habitat would increase under the no grazing alternative. No grazing would allow potential habitat to develop into suitable habitat. No grazing would also eliminate the potential of direct contact with nests or nest trees which could result in destruction of nests, or loss of eggs or nestlings. No livestock grazing would reduce the affects of nest parasitism from brown headed cowbirds. No grazing would not promote cowbird contact with flycatcher nests, or promote foraging opportunities closer to flycatcher nesting areas.

Alternative 2

Under alternative 2, no grazing during the growing season would occur on Lower Placitas Pasture. All criteria from the Southwestern Willow Flycatcher Recovery Plan would be met for suitable habitat for nesting. This includes conservative grazing not to exceed 35% of palatable, perennial grasses and grass-like plants in uplands and riparian habitats and extent of alterable stream-banks showing damage from livestock use not to exceed 10% and woody utilization not to exceed 40% on average. A dense mix of native riparian woody and herbaceous plants to maintain and improve southwestern willow flycatcher habitat in the Placitas pasture would be maintained.

New stock tanks and vegetation treatments in Lower Placitas Pasture would help to move cattle away from the riparian area and reduce impacts to willow flycatcher habitat.

Based on field observations streambank and riparian conditions are on an upward trend and under this alternative the trend would remain upward. No grazing during the growing season would improve existing nesting habitat and allow conditions for potential habitat to develop into suitable nesting habitat.

Forest Service Sensitive Species

There are 47 species on the Southwestern Regional Forester's Sensitive Species 2007 list that occur on the Carson National Forest. Fifteen of these species are found on the analysis area and warranted further analysis: western burrowing owl, Gunnison prairie dog, dwarf shrew, robust larkspur, boreal toad, northern leopard frog, long tailed vole, water shrew, Cinereus masked

shrew, spotted bat, Townsend's big eared bat, ermine, mink, yellow billed cuckoo, Nokomis fritillary, northern goshawk, Ripley's milkvetch, Rio Grande chub, Rio Grande cutthroat trout, and Rio Grande sucker.

Sensitive Animal Species Associated with Arid Sagebrush and Grasslands Habitat

Western burrowing owl, Gunnison prairie dog, dwarf shrew and robust larkspur are dependant upon arid sagebrush and grassland habitats. In the analysis area there are approximately 12,000 acres of both sagebrush and grasslands in Manzanares, Comanche, Madera, Sage, Perro, Lopez, Lower Placitas, Upper Placitas, and El Rito North pastures (see rangeland condition trend section for the existing conditions of these pastures).

Western burrowing owl is found in dry, open, short-grass, treeless plains. It is often associated with burrowing mammals. Presence of a nest burrow seems to be a critical requirement for the owl. Prey species include prairie dogs and a variety of small mammals. Prey species are assessed based upon the results of management actions providing cover and diversity of grasslands.

The Gunnison prairie dog inhabits Great Basin Desert Scrub habitat in New Mexico. It occurs in low valleys, but also is common in parks and meadows in the montane forests up to 10,000 feet. The dwarf shrew uses various habitats, including rocky areas in alpine tundra, partly into sub-alpine coniferous forest and ponderosa pine. It also inhabits sedge marsh, sub-alpine meadow, dry brushy slopes, arid short-grass prairie, dry stubble fields, and piñon-juniper woodland. Plant species diversity, plant vigor, ground cover, and availability of seeds provides good foraging habitat for Gunnison prairie dog and dwarf shrew.

Robust larkspur grows in canyon bottoms and aspen groves in lower and upper montane coniferous forests. In New Mexico, it is found in meadows between 6,890 – 8,530 feet elevation. The robust larkspur flowers between July and September. Forty percent utilization meets the conditions for robust larkspur, which are dependent on good diversity in grasslands and meadow habitat types.

Surveys for western burrowing owl, Gunnison prairie dog, and dwarf shrew have not been conducted in the analysis area. During the 2007 mid-scale vegetation (mapping) inventory project, the robust larkspur was not recorded or mapped on the Carson National Forest (Cortez 2008). Since the occurrence of these four species is unknown within the analysis area, their presence is implied based upon available suitable habitat. Assessments incorporate existing and potential habitat conditions and field observations.

Alternative 1

Without livestock grazing, plant species diversity, plant vigor, ground cover, and availability of seeds would increase and improve foraging habitat for the burrowing owl, Gunnison prairie dog, and dwarf shrew. Potential populations within the analysis area are anticipated to increase within 10 years. Utilization under this alternative would be less than 40%, meeting the conditions for robust larkspur that are dependent on good diversity in grasslands and meadow habitat. This alternative would have a beneficial effect on populations of these four species.

Alternative 2

Under this alternative more intensive management of livestock, range improvements, and vegetation treatments would increase cool season grasses and bring Manzanares, Comanche, Madera, Sage, Perro, Lopez, Lower Placitas, Upper Placitas, and El Rito North pastures into fair and eventually (10 years +) good condition. With the proposed fence and water improvements in

place, prey species availability, plant species diversity, plant vigor, ground cover, and availability of seeds would improve foraging habitat for burrowing owl, Gunnison prairie dog, and dwarf shrew. A maximum utilization of 40% would increase grass and shrubland conditions that would meet criteria for robust larkspur that is dependent on a good diversity in grasslands and meadow habitat types.

Sensitive Animal Species Associated with Riparian Habitat

Boreal toad, northern leopard frog, long tailed vole, water shrew, Cinereus masked shrew, spotted bat, ermine, mink, yellow billed cuckoo, and Nokomis fritillary butterfly are Forest Service sensitive species dependant upon riparian and upland meadow habitats in Sierra, Amarilla, Comanche, Madera, El Rito North, Potrero, and La Jara pastures. Boreal toad inhabits small lakes and ponds above 8,000 feet elevation in the vicinity of Canjilon Lakes, Trout Lakes, and Lagunitas on the Carson National Forest. Northern leopard frog occurs in riparian areas and wetlands. Long-tailed vole is a montane forest species, usually associated with meadows and forest edge, and sometimes within forested areas. The vole is most common in mixed coniferous and spruce-fir forests, descending into ponderosa pine, along sheltered canyon sides. The long-tailed vole is a good indicator of permanent water in montane forests. Water shrews are closely associated with water and usually found within 10 feet of perennial streams at 8,000+ feet with dense streamside vegetation in subalpine coniferous forest. Cinereus masked shrew is found in riparian habitat above 9,000 feet, with moist sites and deep enough soil or duff to burrow. Spotted bats roost in crevices in cliffs or under loose rocks, and rocky areas. Moths are the bat's principal food. These bats can be found in ponderosa pine areas during June and July in and lower elevations in late summer and autumn. Ermine and mink are dependant upon riparian and upland meadow habitats and require grasses and shrubs for cover and a nearby source of water. The ermine's prey includes rabbits, mice and voles which have habitats in burrows and tall grasses. The yellow billed cuckoo requires extensive riparian habitat with cottonwoods. The Nokomis fritillary butterfly is a narrow endemic and its essential habitat components are wetlands associated with flowing water and streamside meadows with an abundance of violets (*Viola nephrophylla*). It requires an abundance of violets as their larval food plant and adult nectar sources (mostly composites).

There is approximately 352 acres of riparian habitat in the analysis area. The longest stretch of continuous riparian habitat in the analysis area occurs along El Rito Creek in the Lower Placitas Pasture for approximately 2 miles. Beaver dams along El Rito Creek maintain surface water year round. Willow composition is showing good age class and size class diversity. Streambank stability along El Rito Creek is in an upward trend and is within 80% natural bank protection (USDA 1986). Water quality in El Rito Creek is currently meeting State standards and was removed from the impaired list in 2004. Key habitat components that livestock grazing could have an effect upon include cover needs to support individual species such as boreal toad, northern leopard frog, long-tailed vole, and water shrew, as well as, prey base species cover for mink and ermine. Spotted bat is dependent on water for prey such as noctuid moths that are dependent on hydrophytic plants. Townsend's big-eared bat feeds on moths that are primarily associated with wetlands. Nokomis fritillary is dependent on bog violet which is associated with riparian and wetlands. Yellow billed cuckoos are dependent on riparian deciduous trees for nesting.

Alternative 1

No livestock grazing in within riparian habitat would increase herbaceous species composition, species diversity, and plant vigor and increase in hydrophytic vegetation that would provide

additional cover needs for individual species as well as for prey base species. This would improve habitat quality and increase the chances of survivability of the boreal toad, northern leopard frog, long tailed vole, water shrew, Cinereus masked shrew, spotted bat, ermine, mink, yellow billed cuckoo, and Nokomis fritillary butterfly in each of their life stages throughout the analysis area. Under this alternative populations within these pastures would increase.

Alternative 2

Only grazing Lower Placitas Pasture outside the grazing season would reduce livestock use in riparian areas and wetlands. This alternative requires a minimum residual stubble height of 4 inches in riparian areas, and provides for decreased woody forage utilization and increased bank stability. These factors result in riparian areas that would provide cover needs for both individual small mammals and prey base species for predators associated with riparian areas. Grazing and the proposed improvements and vegetation treatments in the Sierra, Amarilla, Comanche, Madera, El Rito North, Potrero, and La Jara pastures would have no effects to populations, but direct impacts to individuals may occur such as trampling of small mammals.

Ripley's Milkvetch

Ripley's milkvetch occurs within sagebrush, piñon-juniper woodland, and Gambel oak thickets in ponderosa pine forest between 7,000 and 8,250 feet. A total of 2,902 acres of habitat for this species occur in the analysis area. Terrestrial ecosystem unit 119 is identified as suitable for this species and occurs in the El Rito North, Sage, Perro and Madera pastures, all in the elevation range for this species. 2008 surveys conducted throughout the Carson National Forest did not detect this species in the analysis area.

Studies indicate that high stocking rates during periods of growth, or other management practices that lower growth and survival of individuals, would have a much more detrimental effect than just seed loss on population viability. The studies show that while repeated spring grazing is detrimental, rotation-grazing systems in which spring grazing occurs only one in three years appears to be compatible with the long-term persistence of *A. scaphoides* populations (Ladyman 2003.) Deferred grazing after seed has set (typically May through June) or even later in the year is another option. In response to prolonged drought a rest rotation of more than one in three years may be necessary. Individual plants die back to the ground each year; therefore care should be taken to avoid disturbing the soil too deeply to prevent damage to dormant root stock.

Alternative 1

Under this alternative, no livestock grazing impacts in El Rito North, Sage, Perro and Madera pastures would occur. No loss of individuals or populations would be caused by grazing.

Alternative 2

Under this alternative there would be no effect to Ripley's milkvetch. Based on 2008 forest surveys this species was not detected in the analysis area. If future surveys document this species in the analysis area, occupied pastures will be rested one in three years or livestock grazing will be deferred after June to allow seed set.

Northern Goshawk

Goshawk nesting and foraging areas within the analysis area are found on approximately 24,000 acres of ponderosa pine, Douglas-fir, white fire, Engelmann spruce, and aspen stands. Forest GIS vegetation layers were used to determine nesting and foraging habitat. These areas are found in

the La Jara, Potrero, Amarilla, Comanche, and Madera pastures (see rangeland condition trend section for the existing conditions of these pastures).

Northern goshawk is recognized as a forest generalist, requiring a mixture of habitat diversity (Hoover and Wills 1987). Suitable nesting habitat is found in older aged forests with a high density of large trees and large amounts of tree canopy cover interspersed with small openings (Hoover and Wills 1987). Association is often found with shaded cool, northern exposures of canyons and mountain slopes with rock outcrops or cliffs. Prey species are primarily made up of a large biomass of small mammals relative to other prey species taken (USDA, 1991). Common species include rabbits, hares, squirrels, and grouse (USDA 1991; Hoover and Wills 1987). Forest edges, openings and underneath forest canopies of all timber types are used for hunting.

Livestock and goshawks do not directly interact, however over utilization of the range could lead to the decline of prey species necessary for the goshawk's survival. It is critical that livestock grazing is managed for a maximum of 40% utilization in goshawk suitable habitat and a 4-inch stubble height in riparian areas.

No goshawk surveys have been conducted within the analysis area. Goshawk post fledgling area's (PFAs) were established in the Agua Caballos Projects which borders the northeast corner of the analysis area into the La Jara and Potrero pastures. The Agua Caballos PFAs are not within the analysis area but are the closest documented PFAs.

Alternative 1

With no livestock grazing, additional cover, such as greater herbaceous species composition, species diversity, and plant vigor and increase in hydrophytic vegetation, would provide for goshawk prey base species (small mammals). Potential populations within La Jara, Potrero, Amarilla, Comanche, and Madera pastures would increase within 10 years.

Alternative 2

Fence improvements and water developments would redistribute livestock and improve forage conditions in La Jara, Potrero, Amarilla, Comanche, and Madera pastures. Vegetation improvements in Madera Pasture would also improve foraging habitat for the goshawk. Intensive grazing management, such as light to conservative grazing not to exceed 40% utilization, range readiness, and riparian stubble height requirements would minimize negative impacts to goshawk. The proposed improvements in the lower and middle pastures (Comanche and Madera) would reduce pressure in the higher elevation pastures (Sierra, La Jara, and Potrero). The rotation system and better livestock distribution would improve pasture condition to fair condition with an upward trend. With cover needs improving over current conditions, northern goshawk populations would also improve over time. Under alternative 2 losses of populations or individuals are not likely

Rio Grande Cutthroat Trout

Rio Grande cutthroat trout have not been detected through stream surveys within the analysis area, including the section of El Rito Creek in Lower Placitas Pasture. Genetically pure strains of Rio Grande cutthroat trout are present in 11 miles of El Rito Creek and its tributaries; however these miles are upstream and not within the analysis area. The State considers these cutthroat trout a core conservation population that requires certain protections (New Mexico Department of Game and Fish 2002). Survey data suggests Rio Grande cutthroat trout population is stable (New

Mexico Department of Game and Fish 2008). Since the Rio Grande cutthroat trout is not found within the analysis area and not affected by livestock grazing no further analysis is warranted.

Forest Management Indicator Species

The Carson Forest Plan identified eleven wildlife species as management indicator species (MIS) to monitor the conditions of the forest's ecosystems. The forest plan provides direction on managing quality habitat for MIS by management area. These MIS are considered to be representative for a variety of other species with similar life requirements and were determined to reflect the habitat needs for the majority of the forest's species. These MIS were selected because population changes are believed to indicate the effects of management activities that occur on the forest.

All 11 MIS or species groups were considered for the analysis area. Elk, Brewer's sparrow, resident trout, and aquatic macro-invertebrates are found to have the potential of being affected by the alternatives and were evaluated in detail. The MIS that are not evaluated in detail are listed in table 8 with reasons why there are no effects under each alternative. This MIS analysis was developed in consideration of the best available science.

Table 8. Management indicator species not affected by livestock grazing in the Analysis Area

MIS	Key Habitat Component	Reasons for No Effect
Juniper Titmouse	Piñon juniper canopies	Cattle do not generally graze within this habitat and they have no effect on the tree canopies.
Abert's Squirrel	Interlocking canopies (ponderosa pine)	Cattle do not generally graze within this habitat and they have no effect on interlocking tree canopies.
Hairy Woodpecker	Snags	Cattle have no effect on snags.
Red Squirrel	Mixed conifer	Cattle do not generally graze within this habitat due to a lack of understory forage and they have no effect on mixed conifer.
Turkey	Old growth ponderosa pine (roost trees)	Cattle do not generally graze within this habitat and they have no effect on old growth ponderosa pine.
White-Tailed Ptarmigan	Alpine tundra, subalpine deciduous shrub	No grazable area for cattle near or adjacent to alpine tundra therefore cattle would have no effect.
Bighorn Sheep	Alpine, subalpine tundra mountain meadow grassland	No overlapping use of cattle with seasonal bighorn sheep use in limited subalpine ranges therefore cattle would have no effect.

Elk (general forest)

The majority of the analysis area is considered habitat for elk. Open meadows are critical during spring green up to provide a much needed energy source for elk after the winter, as well as during

the fall breeding season. The current Forest-wide population trend on elk is stable including the analysis area (USDA 2007). The habitat trend for elk on the Carson National Forest is considered to be stable (USDA 2007). The analysis area occurs in game management unit (GMU) 51 and is a popular unit for hunting. This GMU has shown an increase in populations in recent years based on aerial surveys conducted by New Mexico Game and Fish (USDA 2007).

Alternative 1

Without livestock grazing elk populations within the analysis area would increase over the next 10 years. More forage would become available for elk, providing additional forage. This alternative would have beneficial effects to elk habitat during all life history phases including, spring green up, calving and winter range throughout the analysis area. Elk population and habitat trends across the forest would not change.

Alternative 2

Proposed improvements such as sagebrush treatments, fencing, and water developments would not have any long-term impacts on individuals or on any populations. Management of utilization at conservative use levels of 20 to 40% would allow enough forage for elk during spring and fall when available forage is critical. In addition, this alternative would increase cool season grasses in Upper Placitas, Lower Placitas, Madera, Perro and Sage pastures and bring these pastures into fair and eventually good condition (10 years +). More cool season grasses would reach seed set and provide elk forage for both winter months and early in the spring green up season. This alternative would not alter forest-wide habitat or population trends for elk.

Brewer's Sparrow (sagebrush)

On the Carson National Forest, the Brewer's sparrow is an indicator species for sagebrush (USDA 1986). In northern New Mexico, the habitat for the Brewer's sparrow is sagebrush, brushy plains, and the interface of piñon-juniper woodlands and sagebrush. The species prefers brushy conditions intermixed with grasses and grass understory. The Brewer's sparrow is strongly associated throughout its range with high sagebrush vigor (Knopf et al. 1990), preferring areas dominated by high shrub cover, large patch size, and bare ground (Rotenberry and Wiens 1980). The species can also be found to a lesser extent in mountain mahogany, rabbitbrush, bunchgrass grasslands with shrubs, bitterbrush, *Ceanothus* spp., manzanita, and large openings in piñon-juniper (Knopf et al. 1990; Sedgwick 1987; Walker 2004). Existing habitat for the Brewer's sparrow on the Carson National Forest is in good condition with an upward trend. There is approximately 8,100 acres of sagebrush, mostly in the Upper Placitas, Lower Placitas, Madera, Perro, and Sage pastures.

In 2003 and 2004, the Carson National Forest cooperated with the Rocky Mountain Bird Observatory to conduct avian inventories across a wide variety of vegetation types, including sagebrush habitats (Beason and Giroir 2003; Beason and Leukering 2004). Brewer's sparrows were found in sagebrush in the forest and likely occur in the analysis area. Based on its current distribution throughout New Mexico, the population trend for the Brewer's sparrow on the Carson National Forest is considered stable.

Alternative 1

Without grazing in the analysis area, Brewer's sparrow habitat and populations would increase over the next 10 years within the analysis area. Brewer's sparrow population and habitat trends across the forest would not change.

Alternative 2

Of the approximately 8,100 acres of sagebrush in the analysis area, about half of these acres would be treated under this alternative. As sagebrush is converted to grassland in these areas, a direct loss of Brewer's sparrow habitat would occur. This loss would be offset by the availability of large amounts of sagebrush in the immediate vicinity of the treatment areas. If individuals are displaced by the brush treatments there is also a large variety of suitable acres adjacent to the project area. Fence construction under this alternative would have no effect to Brewer's sparrow or its habitat. The long-term effects of vegetation treatments would create a greater age and size class diversity of sagebrush between treated and non treated areas. This type of diversity would increase insect populations in foraging areas and eventually improve nesting areas. Brewer's sparrow populations within treated pastures are anticipated to persist over the next 10 years. Livestock activities under this alternative would not alter forest-wide habitat and population trends.

Resident Trout (perennial stream, riparian)

Resident trout have not been detected through stream surveys within the analysis area, including the section of El Rito Creek in Lower Placitas Pasture. Genetically pure strains of Rio Grande cutthroat trout are present in 11 miles of El Rito Creek and its tributaries; however these miles are upstream and not within the analysis area. Since resident trout are not found within the analysis area and therefore not affected by livestock grazing, forest-wide habitat and population trends would not change.

Aquatic Macroinvertebrates (perennial stream, riparian)

Aquatic macroinvertebrates or aquatic insects are found in lakes, streams, ponds, marshes and puddles and help maintain the health of the water ecosystem by eating bacteria and dead, decaying plants and animals. Local populations of certain aquatic macroinvertebrates are indicator species of high quality water. They are indicator of overall aquatic conditions, quality of fisheries and associated riparian habitat (USDA 1986). Most of the drainages within the analysis area only contain water during spring snow melt periods and summer monsoon rainstorms.

El Rito Creek, Rio del Oso, and Rio Ojo Caliente, Rio Vallecitos and Canjilon Creek are identified on New Mexico Environment Department's 303 (d)–305 (b) list (see water quality) and are within the analysis area. El Rito Creek, Canjilon Creek, and Rio del Oso meet their designated uses including high quality aquatic life. Canjilon Creek and Rio Vallecitos are listed as not fully supporting high quality aquatic life are due to agriculture, flow alterations from water diversions, loss of riparian habitat, and streambank destabilization.

Habitat data collected upstream indicate sediment levels were at 20%, Aquatic habitat with sediment levels greater than 20% are considered to be functioning at risk. Overall macroinvertebrate habitat quality was considered to be fair to good based upon field observations during site visits in 2007 and 2008. Macroinvertebrates populations were found to be present in El Rito Creek and are considered to be stable.

Alternative 1

Under this alternative there would be no decrease to macroinvertebrate populations or habitat. Livestock grazing would not occur on the analysis area and there would be no stream sediment loading due to cattle.

Alternative 2

Under this alternative better distribution through additional water developments and fencing would keep livestock away from creek improving riparian habitat within the analysis area. Within the analysis area, El Rito Creek only flows through a small portion of the Lower Placitas Pasture and sediment levels would remain the same as existing condition. Under this alternative there would be no impact to forest-wide habitat or populations trends of macroinvertebrates.

Migratory Birds

Partners in Flight (PIF) identifies physiographic areas and high priority migratory bird species by broad habitat types. They also developed a list of priority breeding bird species by habitat type. Information from the PIF website was reviewed for this analysis. New Mexico PIF identifies physiographic areas and high priority migratory bird species by broad habitat types. They also developed a list of priority breeding bird species by habitat type. The US Fish and Wildlife Service released its Birds of Conservation Concern 2002 report (webpage - <http://migratorybirds.fws.gov/reports/bcc2002.pdf>). The environmental assessment for this project uses information from both the New Mexico PIF website (<http://www.hawksaloft.org/pif.shtml>) and the Birds of Conservation Concern Report for the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR) #16 for the migratory bird analysis. The New Mexico PIF highest priority list of species of concern by vegetation type and the BCR #16 species list will be used to determine which species will be analyzed in this analysis.

The following describe habitats found on the project area. All species described have not been located within the project area, but have the potential of occurring.

Migratory Birds Associated with Great Basin Desert Shrub Habitat

This habitat occurs in northwestern New Mexico from western Bernalillo and Sandoval counties to the Colorado border. It also occurs in western Taos and eastern Rio Arriba counties. Big sagebrush (*Artemisia tridentate*) communities with significant grass cover are considered to be part of the Great Basin vegetation type. Tree junipers may also occur here. Other sagebrush species that occur with big sagebrush include black sage (*Artemisia arbuscula*) and Bigelow sage (*Artemisia bigelovii*). Based on forest GIS vegetation layers there are 12,000 acres of this habitat within the analysis area. Highest priority species include loggerhead shrike, sage thrasher, Bendire’s thrasher and sage sparrow.

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Burrowing Owl	FWS	See Forest Service sensitive species.	
Loggerhead Shrike	PIF	<ul style="list-style-type: none"> • Shrub component within grassland habitat is critical. • Nest height above-ground depends on shrub height. • Shrubs with spines or barbed wire fence useful for impaling prey before eating. • Diet consists of birds, insects, 	<ul style="list-style-type: none"> • Sagebrush treatments would improve the overall habitat conditions of approximately 6000 acres of tall sage. The project area is located in an even aged monoculture of tall decadent sagebrush. Objectives are to set back seral stage of sagebrush in the

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Sage Thrasher	PIF	<p>and small mammals.</p> <ul style="list-style-type: none"> • Sagebrush obligate species that prefers sage-dominated grasslands and shrubby arid lands. • Prefers nesting substrates larger than 70 cm, with minimal bare ground present. Nests are placed in areas of dense shrubland with a concealing vegetative canopy cover. 	<p>treatment area, leaving unburned fingers of sage but surrounding areas would not be treated to insure age class and size class diversity within sagebrush stands.</p>
Bendire's Thrasher	PIF/ FWS	<ul style="list-style-type: none"> • Prefers relatively open grassland with large scattered shrubs and/or trees (cholla, junipers, or sagebrush are usually present); may use dense vegetated washes or riparian areas. • Breeds in relatively open, degraded grasslands with a moderate to dense shrub component. • Nests are typically placed 2 feet to 5 feet in height above the ground in semidesert shrubs, cacti, or trees. 	
Sage Sparrow	PIF/ FWS	<ul style="list-style-type: none"> • Prefers semi-open habitat with tall (3-7 feet), evenly spaced, large canopy shrubs of big sagebrush either alone or interspersed with butterbush, saltbush, shadscale, rabbitbrush or greasewood, occasionally in sagebrush-juniper habitat. 	<ul style="list-style-type: none"> • Sage sparrow may have longer term effects since they prefer larger canopies for nesting. Untreated areas would serve as cover and treated areas would serve as improved foraging areas. Nesting habitat would remain adjacent to the project area minimizing the loss of nesting habitat. Long term affects would also benefit nesting habitat once sagebrush is re-established with increased herbaceous cover for insect production then what currently exists in the project area.

Migratory Birds Associated with Piñon Juniper Habitat

Piñon-juniper woodland habitat type is found throughout the state above desert or grassland vegetation and below pine forest, ranging from 4,500 to 7,500 in elevation. There is 39,600 acres of this habitat in the analysis area in the Upper Placitas, Lower Placitas, El Rito North, Perro, Lopez, Sage, Manzanares, Comanche, and Madera pastures. Highest priority species include ferruginous hawk, gray flycatcher, gray vireo, Bendire’s thrasher and black-throated bray warbler (Carson 2001).

Species	FWS /PIF	Important Features and Life History Considerations	Effects
<p>Ferruginous Hawk</p>	<p>FWS PIF</p>	<ul style="list-style-type: none"> • Needs close proximity to high quality grasslands or irrigated agricultural lands in NM. Encountered in grasslands and other open habitats at lower elevations (2,800-5,500’) and open to dense stands of shrubs and low trees at middle elevations (5,000-7,500’). • Prefers forest edge or mature, isolated, flat-topped junipers, with thick support branches for nest in NM • Highly sensitive to human disturbance • Prey mainly small to medium-sized mammals in NM 	<ul style="list-style-type: none"> • Alternative 2 would establish and increase cool season grasses and a rotation system that brings Upper Placitas, Lower Placitas, El Rito North, Perro, Lopez, Sage, Manzanares, Comanche, and Madera pastures into fair and eventually (10 years +) good condition. Brush treatments Upper Placitas, Lower Placitas, Perro, Sage and Madera pastures to help increase the amount of herbaceous forage and improve the trend in the analysis area. Immediate effects include loss of nesting habitat for each species. Brush hogging would set back piñon/juniper encroachment to sagebrush communities but would not have any lasting effects to these species since high densities of piñon and juniper stands occur in the adjacent to the analysis area as well as throughout the forest. • All new fence and water development would not have any long-term negative impacts to any of these species.
<p>Gray Flycatcher</p>	<p>PIF</p>	<ul style="list-style-type: none"> • Prefers open pinyon-juniper forest, often with interspersed ponderosa • Shrub cover cannot be too dense; prefers approximately 60% • Logging and fire may create new habitat after several years • Appears to cluster in some areas 	
<p>Piñon Jay</p>	<p>FWS</p>	<ul style="list-style-type: none"> • Needs large stands of large trees over extensive area: need to move from crop to crop, as pine nut production is sporadic. • Pine seed availability is the primary factor in breeding site 	

Species	FWS /PIF	Important Features and Life History Considerations	Effects
		selection <ul style="list-style-type: none"> • Nests in dense, mature stands of pinyon-juniper • Up to 8mi (13km) daily range • Loose, colonial, and early breeder 	
Black-throated Gray Warbler	FWS PIF	<ul style="list-style-type: none"> • Prefers large stands of pinyon-dominated woodland • Often found in dense forest with a canopy • Understory can be variable • Uses edges: tree/shrub or tree/grass 	
Bendire's Thrasher	PIF/ FWS	<ul style="list-style-type: none"> • Prefers relatively open grassland with large scattered shrubs and/or trees (cholla, junipers, or sagebrush are usually present); may use dense vegetated washes or riparian areas. • Breeds in relatively open, degraded grasslands with a moderate to dense shrub component. • Nests are typically placed 2 feet to 5 feet in height above the ground in semidesert shrubs, cacti, or trees. 	<ul style="list-style-type: none"> • See Great Basin desert shrub

Migratory Birds Associated with Ponderosa Pine Habitat

Ponderosa pine forest habitat type is found in mountainous areas throughout the state at elevations of 6,000 to 9,000 feet. There is 21,200 acres of this habitat in the analysis area. Highest priority species include northern goshawk, Mexican spotted owl, flammulated owl, greater pewee, olive warbler, Virginia's warbler and Grace's warbler (Carson 2001). The Mexican spotted owl is not found in ponderosa pine habitat on the Carson National Forest. The greater pewee and the olive warbler are not found on the Carson National Forest.

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Northern Goshawk	PIF	<ul style="list-style-type: none"> • See sensitive species write-up 	
Flammulated Owl	FWS PIF	<ul style="list-style-type: none"> • Most closely associated with open ponderosa pine forest, but may use Douglas- or white fir and blue spruce. Often also associated with aspen or larger shrub oaks, and clearing • A secondary cavity nester. In NM, nest holes used are made by acorn woodpeckers, northern flicker or sapsuckers. • Appears somewhat colonial but may be more related to specific nesting requirement than behavior, i.e. availability of appropriate nest cavities • Almost exclusively insectivorous, U.S populations are highly migratory 	<ul style="list-style-type: none"> • There would be no effect to the flammulated owl since it is strictly insectivorous.
Virginia's Warbler	FWS PIF	<ul style="list-style-type: none"> • Ponderosa pine forest, piñon-juniper woodlands, or riparian thickets, occasionally Douglas-fir forests; always open with well-developed herbaceous or woody understory • Dense understory is critical and scrubby hillsides considered a special requirement; high litter cover and high shrub species richness are also associated with nesting area. Uses a variety of understory species when not nesting but especially Gambel oak • Percentage of dead trees is negatively correlated with nesting area. Nests built on ground, in a depression or at base of a shrub, concealed by dead leaves or overhanging 	<ul style="list-style-type: none"> • Maintaining a 4 inch stubble height in riparian areas would provide cover needs required for Virginia's warbler. • The proposed action is designed to minimize time in the higher pastures to improve existing condition from current management. • Forage utilization will be maintained at conservative use levels (20-40 percent utilization).

Species	FWS /PIF	Important Features and Life History Considerations	Effects
		foliage or grasses.	
Grace's Warbler	FWS PIF	<ul style="list-style-type: none"> • Ponderosa pine forest sometime with a scrub oak component. Considered a mature pine obligate; preference given to robust, mature or old-growth forest • Feeds in the upper portions of robust pines on branches, occasionally aerially • Nests found in trees form 20-60ft (6-18m) above the ground. Removal of trees 40-70ft (12-21m) tall may have a detrimental effect on populations. • Territories can be as small as 0.6ac (0.24ha) to 2.1ac (0.83ha). 	<ul style="list-style-type: none"> • No effect to Grace's warbler since this species nests high in pine canopy and feeds on the upper canopies as well.

Migratory Birds Associated with Mixed Conifer Habitat

Mixed conifer forest habitat type is found in all higher mountain ranges in New Mexico, including the Sacramento and Animas Mountains, generally between 7,500 to 10,000 feet. Highest priority species include northern goshawk, Mexican spotted owl, Williamson's sapsucker, olive-sided flycatcher, dusky flycatcher and red-faced warbler (Carson 2001). The red-faced warbler is not found on Carson National Forest.

Acres identified as mixed conifer in the analysis area are Douglas-fir and white fir. The Sierra and Amarilla pastures consist of 3,754 acres, La Jara Pasture contains 1,717 acres, and Potrero Pasture contains 244 acres of mixed conifer habitat. Drainages in La Jara Pasture are greater than 40% slopes and the mixed conifer in this pasture is predominantly in the center and northeast section of the pasture. In the Potrero Pasture there are two islands of mixed conifer surrounded by ponderosa pine. The larger island is in the north part of the pasture with large amounts of steep slopes potentially suitable as MSO habitat. The second island, along Cañon Largo, a tributary to El Rito Creek, is surrounded by steep slopes and riparian bottoms making this small island potentially suitable habitat for MSO.

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Northern Goshawk	PIF	<ul style="list-style-type: none"> • See sensitive species write-up 	
Mexican	PIF	<ul style="list-style-type: none"> • See federally listed species write-up 	

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Spotted Owl			
Williamson's Sapsucker	FWS PIF	<ul style="list-style-type: none"> • Specializes in sap and phloem; breeders switch to a diet of ants during the nesting season, especially carpenter and wood ants. • Mid- to high-elevation coniferous forests and mixed deciduous/conifer forests. Aspen is an important nesting substrate • Wounded or scarred live conifers most frequently used for feeding • Availability of suitable nesting sites critical component, preferring snags or cavities in live aspen. Nests in conifers infected with the fungus <i>Fomes igniarius</i>, or aspens with heart rot. Drainage bottoms preferred over ridge tops. In NM, nests have been found in ponderosa pine and spruce. Nests were from 9-48ft (3-16m) above the ground. 	<ul style="list-style-type: none"> • Range improvements would improve the overall distribution of livestock throughout the analysis area. • Potential populations within these pastures are anticipated to persist over the next 10 years. • Alternative 2 would not cause a decline in population of these species. • Alternative 2 would not affect flycatchers or Williamsons sapsucker.
Olive-sided flycatcher	PIF	<ul style="list-style-type: none"> • Subalpine forest with Englemann's spruce, ponderosa pine, Douglas-fir and aspen • Need forest edges for foraging and increases in density with a decrease in canopy cover • Needs snags or tree tops near open areas or above canopy as diet consists mainly of larger flying insects, primarily bees • Nests in coniferous trees generally far out from the trunk. 	
Dusky	PIF	<ul style="list-style-type: none"> • Uses mixed conifer or ponderosa pine forest with a 	

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Flycatcher		shrubby understory. Also occupies scrub and brushy areas and open areas with scattered trees. Shrub component appears to be critical in NM <ul style="list-style-type: none"> • Uses early succession habitat following a disturbance, such as fire • Nests built form 3-16ft (1-5m) averaging about 6.5ft (2m); nest height tends to correspond to shrub height. Tends to choose shrubs with denser foliage for nesting. • Openings near shrubs needed for forage. 	

Migratory Birds Associated with Plains, Mesa Grasslands Habitat

Great Basin grasslands, or Mesa Shortgrass areas, are found in the northwest quadrant of the state and the Rio Grande valley. These include the Plains of San Agustin and mix with Plains grassland over a large area of northwestern and north-central New Mexico (Brown 1994). In climax condition, these grasslands are composed almost entirely of grasses. The few shrubs and forbs constitute less than 10% of the vegetation. Blue grama (*Bouteloua gracilis*) is the most common component of these grasslands in New Mexico. It codominates with western wheatgrass (*Agropyron smithii*) or galleta (*Hilaria jamesii*) on northern mesas. On fine-textured soils in the north, indian ricegrass (*Oryzopsis hymenoides*), New Mexico feathergrass (*Stipa neomexicana*), and needle and thread (*Stipa comata*) may be important components/codominants. Other areas may be dominated by threeawns (*Aristida* spp.) or side-oats grama (*Bouteloua curtipendula*).

Shrubs often occur where the soil is calcareous. Rabbitbrush (*Chrysothamnus* spp.) and sagebrush (*Artemisia* spp.) replace broom snakeweed in the disclimax communities caused by overgrazing in Great Basin Grasslands. Livestock grazing in the early part of the century resulted in extensive and rapid succession of these grasslands toward shrubland. Great Basin grasslands tend to be more arid than Plains Grasslands and mix with Great Basin desert shrub at lower elevations.

There is 3,800 acres of habitat in the analysis area. The remaining grasslands are being encroached upon by piñon, juniper, and sagebrush in the lower elevation pastures and by pine and mixed conifer in the higher elevation pastures. Highest priority species include ferruginous hawk, prairie falcon, mountain plover, long-billed curlew, scissor-tailed flycatcher, lark bunting, dickcissel, and cave swallow. BCR list also includes northern harrier, Swainson's hawk, golden eagle, marbled godwit, short-eared owl, and chestnut-collared longspur. The forest is out of the range for the scissor-tailed flycatcher, lark bunting, dickcissel, long-billed curlew, cave swallow, and chestnut-collared longspur. The short-eared owl and the marbled godwit used the forest for migration only.

Species	FWS /PIF	Important Features and Life History Considerations	Effects
Ferruginous Hawk	FWS PIF	<ul style="list-style-type: none"> • Needs close proximity to high quality grasslands or irrigated agricultural lands in NM. Encountered in grasslands and other open habitats at lower elevations (2,800-5,500') and open to dense stands of shrubs and low trees at middle elevations (5,000-7,500') • Prefers forest edge or mature, isolated, flat-topped junipers, with thick support branches for nest in NM • Highly sensitive to human disturbance • Prey mainly small to medium-sized mammals in NM 	<ul style="list-style-type: none"> • See Piñon Juniper Habitat
Bendire's Thrasher	PIF/ FWS	<ul style="list-style-type: none"> • Prefers relatively open grassland with large scattered shrubs and/or trees (cholla, junipers, or sagebrush are usually present); may use dense vegetated washes or riparian areas. • Breeds in relatively open, degraded grasslands with a moderate to dense shrub component. • Nests are typically placed 2 feet to 5 feet in height above the ground in semidesert shrubs, cacti, or trees. 	<ul style="list-style-type: none"> • Great Basin Desert Shrub Habitat
Prairie Falcon	FWS PIF	<ul style="list-style-type: none"> • Prefers open grasslands and shrub-grassland. • Ledges and cavities in cliffs or bluffs are common nest sites. Nesting sites are highly limiting. • Ground squirrels are an important breeding food source. • Horned larks and 	<ul style="list-style-type: none"> • All new fence and water developments would not have any long term effects to these species. No long term effects of fencing or water developments are anticipated on any species. • Populations of these species within the analysis area are anticipated to persist over the

Species	FWS /PIF	Important Features and Life History Considerations	Effects
		meadowlarks are important non-breeding food sources.	next 10 years. This alternative would not cause a decline in population of these species. The proposed improvements would minimize time in the higher pastures to improve existing condition from current management.
Mountain Plover	FWS PIF	<ul style="list-style-type: none"> • Requires substantial amount of bare ground. Cover can be extremely short. Some shrubs or junipers are tolerated. Some denser or lusher grasses necessary for young. • Cattle grazing effects may be too uniform for this species. • Can be associated with prairie dog towns. Is loosely colonial. 	
Swainson's Hawk	PIF	<ul style="list-style-type: none"> • Hawks are normally found in grasslands, riparian woodlands and shrublands at lower elevations of 2,800-5,500' and middle elevations of 5,000-7,500' • Forages in open stands of grass dominated vegetation, sparse shrublands, and small, open woodlands. Prey species are small mammals and some larger insects. • Nest near streams. • 	
Golden eagle	FWS	<ul style="list-style-type: none"> • Breeds in open and semiopen habitats upto about 11,900'. • Nest in cliffs near open habitat. Human disturbance can cause abandonment of nest site. • Territories may be abandoned due to major fires in areas. • Jackrabbits are a primary food source in shrub-steppe habitats. 	
Northern Harrier	FWS	<ul style="list-style-type: none"> • Breeding adults usually have a marsh or some type of wet meadow near by, but sometimes nest in sagebrush 	

Species	FWS /PIF	Important Features and Life History Considerations	Effects
		or under shrubs on grassland. Nest are on the ground. Upper elevation range is ~7500'. <ul style="list-style-type: none"> • Shortage of suitable nesting habitat in NM • Possible tramping of nest from livestock foraging. 	

Cumulative Effects on Wildlife

The cumulative effects of past and present activities (table 3) such as past vegetation treatments, Madera Prescribe Burn, and grazing on adjacent allotments are reflected in the previous effects discussions of federally listed, Forest Service sensitive, management indicator, and migratory bird species. Future activities may include fuelwood gathering, logging, prescribed fire, and small product sales such as latilla and viga sales. These activities may disturb wildlife on a short-term basis, but in the long term may open up areas improving prey base habitat.

The Pine Canyon Fire of 2005 burned 4,500 acres in the Madera Pasture. This fire burned primarily through piñon and juniper, exposing the understory for early seral stages of herbaceous vegetation that have improved production. Improved production is benefiting wildlife, because cattle stay longer at lower elevations allowing forage in higher elevation to become range ready and available to wildlife.

Historic fire suppression has increased forage competition for livestock and wildlife on remaining forest openings. Even with past and future activities, the analysis area may be at risk from catastrophic fires. Moderate fuel loads in mixed conifer woodlands, ponderosa pine and oak habitat would contribute to fires and result in a shift from forested (mid to late seral) habitat to grasses and forbs (early seral) habitat, changing habitat type for many species of wildlife.

The Carson National Forest is in the process of designating roads and trails open to motorized travel and prohibiting cross-country travel by motorized vehicles. Proposed road closures would benefit wildlife by reducing disturbance. Proposed new roads would only be identify roads already exist; therefore there would be no addition cumulative effect to wildlife. There are no cumulative effects of the seasonal road closure since it is during the winter months when cattle are not on the analysis area.

Heritage Resources

Review of existing heritage resource information, discussions with range and other resource specialist's and field inspections were conducted to identify heritage resources on the analysis area. Approximately 15% of the analysis area has been surveyed and 372 archaeological sites have been recorded. Sites considered to be sensitive to grazing impacts (ruins with free-standing walls, historic structures, rock shelters and rock art sites) were evaluated and no significant grazing impacts were discovered. One historic site with free-standing walls was previously fenced to exclude livestock. Forty-four locations (existing water sources) where livestock are likely to congregate were inspected. Disturbance to heritage resources was discovered at one location, Comanche Spring.

Consultation with the State Historic Preservation Officer has determined that continued grazing would have no adverse effect on heritage resources. It is recognized that heritage resources on the analysis area have been subject to grazing for hundreds of years, and that some degree of impacts may have already occurred.

Alternative 1

Under this alternative no livestock grazing would be permitted. This alternative would have no effect on heritage resources.

Alternative 2

This alternative includes relocating a water trough and fencing the area at Comanche Spring in the Comanche Pasture. Cattle are causing erosion to this archaeological site. Relocating the water trough away from the site and fencing the area would prevent any further erosion and protect the site. Continued grazing along with other proposed improvements would have no other effects on heritage resources.

Cumulative Effects

The cumulative effects of past and present activities (table 3), such as, water trough and spring in Comanche Pasture, are reflected in the previous discussion on non-sensitive sites. There would be cumulative effects to heritage resources.

Wild and Scenic Rivers

The 1968 National Wild and Scenic Rivers Act requires the Forest Service is required to evaluate rivers for their potential inclusion in the system. The eligibility criteria for inclusion are that a river must be free-flowing and, with its adjacent ¼ mile land area, must possess one or more “outstandingly remarkable” values (ORVs). Within the El Rito Watershed, there are three segments of rivers that are eligible for designation as a “Wild and Scenic River”: 1) El Rito Creek, from 15 Springs to Forest Road (FR) 106 bridge (~8 miles), 2) El Rito Creek tributaries, from 15 Springs to FR 106 bridge, and 3) El Rito Creek, from FR 106 bridge to the confluence with Rio Chama (~25 miles).

El Rito Creek from 15 Springs to FR 106 bridge is the only section of river that maintains a native Rio Grande cutthroat trout fishery. Although 15 Springs is the source of most of the water flowing into the main stem of El Rito Creek, the tributaries play a role in providing additional water during spring runoff when the cutthroat are spawning. The outstandingly remarkable value that makes the upper reaches of El Rito Creek eligible for wild and scenic designation is the native cutthroat fishery.

El Rito Creek from the FR 106 Bridge to Rio Chama has a number of diversions and flows through private land. The outstandingly remarkable value of this segment is a cultural feature, Sapawe ruins, a large “classic” pueblo covering 26 acres along the stream course. The site is located on State land and private land surrounded by analysis area. Between 400-500 years ago the structure included several plazas and more than 2,000 rooms, making it the largest pueblo ever found in the Southwest.

The previous sections for Rio Grande cutthroat trout and heritage resources do not identify effects to Rio Grande cutthroat trout or the Sapawe Ruins that could affect the eligibility of the El Rito Creek segments.

Economics

The grazing operation for the analysis area is a “community allotment” operation. The permittees use private lands to graze their livestock when they are not on the analysis area. For most of the permittees, livestock grazing supplements their income from their full time jobs, but there are a few permittees that are solely dependent on livestock grazing as their income.

For the past 6 years the average stocking for the analysis area has been 425 head of cattle for 7 months annually. This would generate an estimated \$161,268 gross annual income from the time livestock spend on the analysis area. This is a very general estimate of income, not profit, and doesn't include the various expenses that normal livestock operations require, such as veterinarian fees, equipment maintenance (trucks and trailers) etc., which can be extremely variable between operations. It gives a general idea of income being generated from the livestock operation on the analysis area and is a basis for comparison of alternatives. The calculations take into account an estimate of the operation's calf crop percentage, cull rate, and weight of animals sold. The value per animal (cow, calf, steer) is estimated from weekly livestock reports located by the USDA Agriculture Marketing Service.

Effects of Alternatives

Under alternative 1, with no permitted livestock no income would be generated from use of the analysis area. This alternative would have the largest impact on the permittees. Under Alternative 2, an estimated \$161,268 would be the portion generated from the time livestock would spend on the analysis area (7 months would be 3/4 of their operation), if 654 cow/calf pairs are stocked.

Social Environment

Small-scale producers stress the importance of the quality of life that ranching provides them and their families. Owning livestock is an important way of reaffirming ties to their ancestral lands and heritage. Preserving this working relationship with the land so it can be passed on to their children along with a feeling of self-sufficiency is a cornerstone of their values. Generally speaking, the more rural and remote the community, ranching becomes more important.

Alternative 1

Under alternative 1, the effect on the permittees would depend on how well they could adjust their operations. The permittees would have to find alternate sources for the placement of their livestock, reduce the numbers of animals in their herds, or completely cease operations. Eliminating grazing completely may also create the impression of unfairness or "taking" by the Federal government.

Alternative 2

Continued grazing under this alternative would allow existing traditions, sense of community and personal identity to continue. The permittees would continue to have responsibility for checking up on their grazing animals and maintaining improvements on the analysis area, but this investment of time and cost would generally be considered worthwhile in order to retain authorization for grazing. This alternative would meet the purpose and need of contributing to the social and well-being of affected livestock operators and their families.

Environmental Justice

Executive Order 12898 (1994) requires federal agencies to address environmental justice of their actions on minority and low-income populations. This analysis considers demographic, economic, and human health risk factors. A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice and civil rights. As required by law and Executive Order, all Federal actions should consider potentially disproportionate effects on minority or low-income communities. Potential impact or change to low-income or minority communities within the study area due to the proposed action should be considered. Where possible, measures should be taken to avoid negative impacts to these communities or mitigate the adverse effects.

Native Americans have been present in the area for at least the past 1,000 years and Spanish settlers arrived in the area about 400 years ago. Many families in the study area trace their ancestry back to these original inhabitants. As such, there are strong ties to the land and a reliance on the natural resources of the forest.

All the communities within the El Rito area would fall under the minority and/or low-income populations identified in the Environmental Justice Executive Order 12898. Generally, environmental justice is concerned with identifying these communities and ensuring that they are involved in and understand the potential effects of the proposed action. The people in the study area communities are interested in maintaining their historic and subsistence lifestyle, using the surrounding area to gather resources needed. Elimination of livestock grazing on national forest system lands would negatively affect this lifestyle.

Alternative 1

This alternative could impact minority and low-income populations. Eliminating the opportunity to graze cattle on the analysis area would adversely affect the permittees and their families by changing traditional use of the land and causing an economic hardship to those individuals who rely in part on the income generated from their long-term cattle operations. Losses in income could potentially be offset by enabling the individual to pursue other job opportunities closer to their home.

Alternative 2

Selection of this alternative would not result in adverse or disproportionate effects on low income or minority populations. The opportunity to graze cattle on El Rito Lobato East and West allotments would not affect the permittees and their families by changing traditional use of the land or causing an economic hardship to those individuals who rely in part on the income generated from their long-term cattle operations. There would be no displacement of minorities, changes of land use, or increases in taxes that would constitute an economic hardship.

Chapter 4 - Consultation and Coordination

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal and State Officials and Agencies

New Mexico State Historical Preservation Office (NM SHPO)
State of New Mexico Department of Game and Fish
State of New Mexico Environment Department
US Department of the Interior, Fish and Wildlife Service

Local Government

Rio Arriba County Commissioners

Tribes

Pueblo of Jemez	Pueblo of Taos
Jicarilla Apache Nation	Pueblo of Tesuque
Pueblo of Nambe	Pueblo of Zuni
Pueblo of Picuris	The Hopi Tribe
Pueblo of Pojoaque	The Navajo Nation
Pueblo of San Ildefonso	Southern Ute Tribe
Pueblo of San Juan	Ute Mountain Ute Tribe
Pueblo of Santa Clara	Comanche Tribe

Organizations

Wildearth Guardians	Northern New Mexico Stockman's Association
Center for Biological Diversity	Carson Forest Watch
Wild Watershed	Forest Trust
Sierra Club Santa Fe Group	New Mexico Cattle Grower's Association
New Mexico Trout	NM Wilderness Alliance
El Rito Water Association	10 Cattle Associations
Continental Divide Trail Society	Continental Divide Trail Alliance
The Wilderness Society	Vallecitos Ranch Mountain Refuge

Individuals

Celerino Archuleta	Gallegos Ranch (Sam & Steve Gallegos)
Pete C. Archuleta	J & R Partnership (Ronnie Garcia)
Tony A. Archuleta	Felipe D. Martinez
Michael J. Garcia	Joe C. Martinez
Tony M. Herrera	Lupe & Delfin Moya
Cornelio R. Lopez	Erik Ryberg
Johnathon C. Martinez	Larry Varoz
Ernest R. Suazo	Zenitram Industries, Inc (Donald Martinez)
Triple A Farms (Robert Archuleta)	

Chapter 5 - References

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(<http://www.hawksaloft.org/pif.shtml>)

Chapter 6 – List of Preparers

Interdisciplinary Team Members:

Alberta D. Maez	Interdisciplinary Team Leader
Craig Newman	West Zone Range Staff (Rangeland Vegetation)
Joseph Lujan	West Zone District Wildlife Biologist (Wildlife)
Ezequiel Rael	El Rito District Range Technician (Range Data)
Robert Lawrence	El Rito District Archaeologist (Heritage)
Juan Martinez	Forest Fisheries Biologist (Fisheries)
Sandra Imler-Jacquez	El Rito District Biological Technician (Soils, Water, Air, GIS)
Travis Moseley	Canjilon District Ranger

Appendix A. Project Record Index

These documents include meeting notes, technical reports, letters, photos and other documents generated in the analysis of the proposed El Rito Lobato East and El Rito Lobato West Grazing Allotments Project. They are available for review at the El Rito Ranger District, P.O. Box 56, El Rito, NM 87530, (575) 581-4554.

No.	DATE	DOCUMENT	AUTHOR	RECIPIENT
01	86.09	Environmental Impact Statement, Carson Land & Resource Management Plan (LRMP)	USDA Forest Service (FS)	Project File
02	86.09	Carson National Forest Plan as amended	USDA FS	Project File
03	86.10.31	LRMP Record of Decision	USDA FS	Project File
04	87.08.01	Terrestrial Ecosystem Survey of the Carson National Forest	USDA FS	Project File
05	04.01	2004 Annual Operating Instructions	USDA FS	Project File
06	05.01	2005 Annual Operating Instructions	USDA FS	Project File
07	06.01	2006 Annual Operating Instructions	USDA FS	Project File
08	06.10	October 2006 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
09	07.01	2007 Annual Operating Instructions	USDA FS	Project File
10	07.01	January 2007 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
11	07.04	April 2007 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
12	07.06	Management Indicator Species	USDA FS	Project File
13	07.07	July 2007 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
14	07.07.02	El Rito Ranger District Range Monitoring Plan	Ezequiel Rael, Range Technician	Project File
15	07.10	October 2007 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
16	07.10.03	Meeting Notes	Alberta D. Maez, IDT Leader	Project File
17	07.11.30	Project Initiation Letter	District Ranger, Diana M. Trujillo	Project File
18	08.01.17	January 2008 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
19	08.01.24	2008 Annual Operating Instructions – El Rito Lobato East	USDA FS	Project File
20	08.01.25	2008 Annual Operating Instructions – El Rito Lobato West	USDA FS	Project File
21	08.02.08	Letter: Regarding Grazing Allotment Association	Robert J. Archuleta, President El Rito Lobato West Grazing Association	Project File
22	08.02.18	Letter: Formal Request Seeking an Appropriate Management Solution for El Rito East Side Association from Gallegos Ranch	Sam and Steve Gallegos, East Side Permittees	Project File
23	08.02.20	Meeting Notes: El Rito East/West Meeting Concerning the Environmental Assessment	Melissa Velasquez, Range Clerk	Project File

No.	DATE	DOCUMENT	AUTHOR	RECIPIENT
24	08.02.29	Letter: Comments Regarding the Use of the Perro Unit by the East-Lobato Allotment Permittees for Cattle Grazing	Celerino Archuleta	Project File
25	08.04	April 2008 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
26	08.05.12	Meeting Notes on Proposed Action	Alberta D. Maez, IDT Leader	Project File
27	08.05.19	Grazing Capacity Estimates of El Rito Lobato East and West Allotments Forage Allocation Model Estimates	Travis Moseley, Canjilon District Ranger	Project File
28	08.05.22	Agenda and Handouts from May 22, 2008 Meeting with Permittees	Diana M. Trujillo, District Ranger	Project File
29	08.05.28	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
30	08.06.05	Letter: El Rito Lobato East and West Permittees Sam Smallidge RITF and Section 7 Consultation and "Guide to NEPA and ESA Involvement"	Diana M. Trujillo, District Ranger	Project File
31	08.06.05	Email regarding cactus identification	Charlie Macdonald, Regional Botanist	Project File
32	08.06.10	Letter: Requesting Applicant Status from Gallegos Ranch	Sam and Steve Gallegos, East Side Permittees	Project File
33	08.06.16	Letter: Initiation of scoping to El Rito Lobato East and El Rito Lobato West Grazing Allotments	Diana M. Trujillo, District Ranger	Mailing List
34	08.06.16	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
35	08.06.17	Initial Consultation Letter, with Tribal mailing list	Diana M. Trujillo, District Ranger	Tribal Mailing List
36	08.06.17	Email: FWS to USFS regarding suitable habitat	Debra Hill, Fish and Wildlife Biologist	Project File
37	08.06.20	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
38	08.06.24	Letter: Response to Scoping	Gabriel J. Lopez	Project File
39	08.06.26	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
40	08.07	July 2008 Schedule of Proposed Actions, with mailing list	USDA FS	Project File
41	08.07.02	Response to initial Tribal consultation letter	Navajo Nation	Project File
42	08.07.02	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
43	08.07.03	Letter: Response to Scoping from ELW Grazing Association	Robert J. Archuleta, President	Project File
44	08.07.03	Letter: Response to Scoping from Gallegos Ranch	Sam and Steve Gallegos, East Side Permittees	Project File
45	08.07.03	Letter: Response to Scoping from Donald Martinez Jr.	Donald Martinez Junior, El Rito	Project File

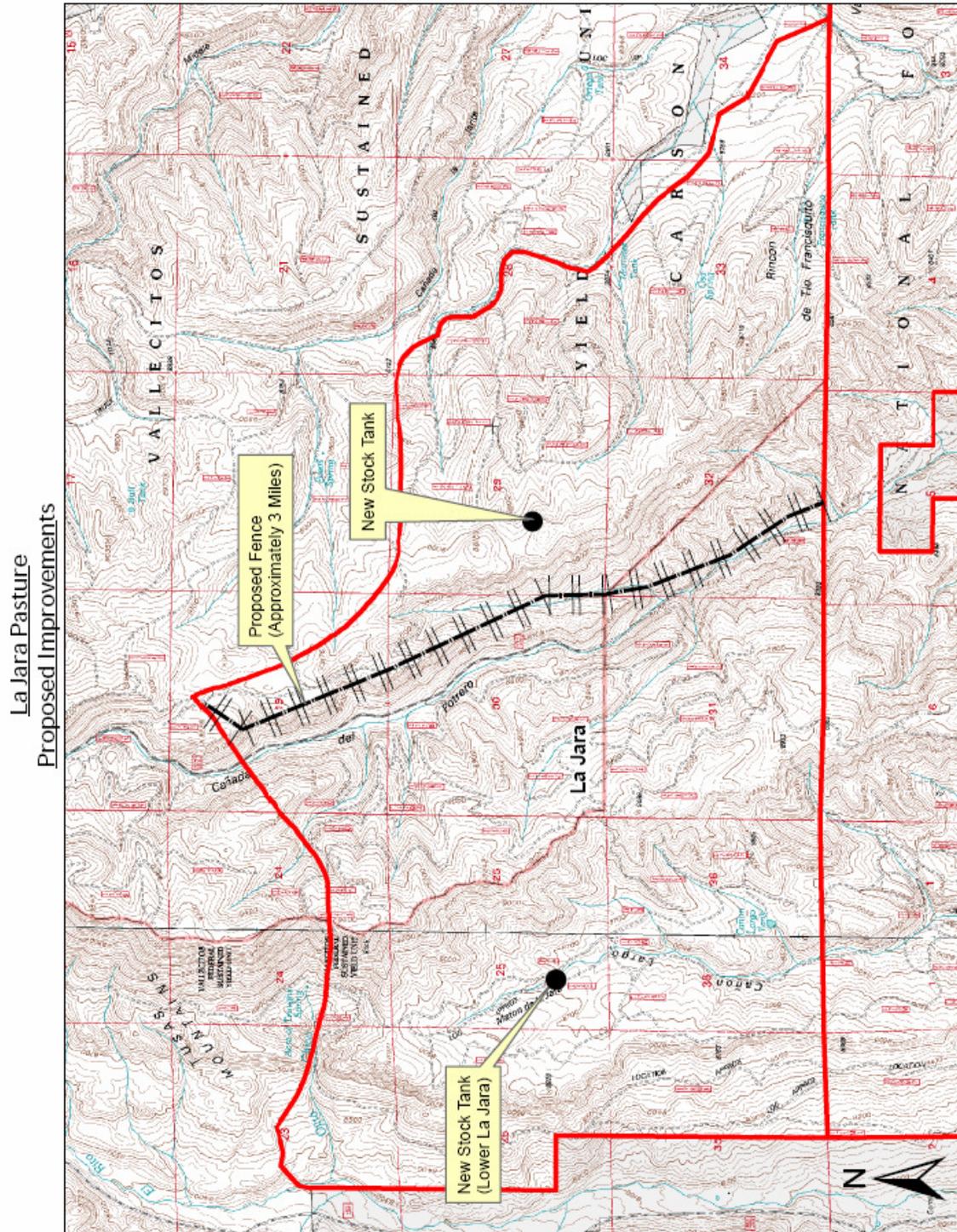
No.	DATE	DOCUMENT	AUTHOR	RECIPIENT
			Lobato West Permittee	
46	08.07.09	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
47	08.07.14	List of non-significant issues	Diana M. Trujillo, District Ranger	Project File
48	08.07.15	ID Team Meeting Notes	Sandra Imler-Jacquez,	Project File
49	08.07.18	Consideration of Comments from the Scoping Letter	Alberta D. Maez, IDT Leader	Project File
50	08.07.22	Heritage Resources Report for El Rito Lobato East and El Rito Lobato West Grazing Allotments Report #2008-02-063	Robert Lawrence, District Archeologist	Project File
51	08.07.24	News Article: Regarding El Rito Grazing Plan	Taos News	Project File
52	08.07.24	Letter: Providing Proposed Action for 30-day Comment Period for the El Rito Lobato East and El Rito Lobato West Grazing Allotments	USDA FS	Project File
53	08.07.24	Letter: Providing Proposed Action for 30-day Comment Period – Tribal Consultation for El Rito Lobato East and El Rito Lobato West Grazing Allotments	USDA FS	Project File
54	08.07.24	Legal Notice for Proposed Action for El Rito Lobato East and El Rito Lobato West Grazing Allotments	Rio Grande Sun	Project File
55	08.07.28	Biological Assessment for El Rito Lobato East and West Grazing Allotments	Joseph Lujan, Wildlife Biologist	Project File
56	08.07.29	Letter: Granting Applicant Status to Gallegos Ranch	Diana M. Trujillo, District Ranger	Project File
57	08.07.29	Memo Requesting Letter of Concurrence from US Fish and Wildlife Service	Diana M. Trujillo, District Ranger	Project File
58	08.07.30	Response to 30-day Comment Period for El Rito Lobato East and El Rito Lobato West Grazing Allotments	Donald Martinez Jr. Permittee	USDA FS
59	08.08.01	Inventory Standards and Accounting Form for El Rito Lobato East and West Grazing Allotment Management Plan	Robert Lawrence, Archeologist	State Historic Preservation Office
60	08.08.04	Response to 30-day Comment Period for El Rito Lobato East and El Rito Lobato West Grazing Allotments	New Mexico Environment Department	USDA FS
61	08.08.05	Meeting Notes regarding cumulative effects	Alberta D. Maez, IDT Leader	Project File
62	08.08.14	Biological Evaluation for the El Rito Lobato East and El Rito Lobato West Grazing Allotments	Joseph Lujan, Wildlife Biologist	Project File
63	08.08.22	Response to 30-day Comment Period for El Rito Lobato East and West Grazing Allotments.	El Rito Lobato West Association, Josh Archuleta	Project File
64	08.08.23	Letter: Regarding Consultation Request	Brian Millsap, State Administrator	USDA FS

No.	DATE	DOCUMENT	AUTHOR	RECIPIENT
65	08.08.25	Response to 30-day Comment Period for El Rito Lobato East and El Rito Lobato West Grazing Allotments	Erik B. Ryberg	Project File
66	08.09.05	Response to 30-day Comment Period for El Rito Lobato East and El Rito Lobato West Grazing Allotments	New Mexico Environment Department	USDA FS
67	08.09.08	Grazing Monitoring for El Rito Lobato East and El Rito Lobato West Grazing Allotments including data sheets and photos	Craig Newman, Range Staff	Project File
68	08.09.23	Letter: Concurrence from US Fish and Wildlife Service	David Campbell, Acting Field Supervisor	USDA FS
69	08.09.26	Soil Effects Report	Sandra Imler-Jacquez	Project File
70	08.09.26	Riparian, Water Quality and Wetlands Effects Report	Sandra Imler-Jacquez	Project File
71	08.09.26	Wetlands Effects Report	Sandra Imler-Jacquez	Project File
72	08.09.26	Air Quality Effects Report	Sandra Imler-Jacquez	Project File
73	08.09.26	Forage Allocation Model and Capacity Estimates for El Rito Lobato East Allotment	Travis G. Moseley, District Ranger	Project File
74	08.09.26	Forage Allocation Model and Capacity Estimates for El Rito Lobato West Allotment	Travis G. Moseley, District Ranger	Project File
75	08.09.26	Term Grazing Permits for El Rito Lobato East	Ezrquiel Rael, Range Technician	Project File
76	08.09.26	Term Grazing Permit for El Rito Lobato West	Ezrquiel Rael, Range Technician	Project File
77	08.09.27	Environmental Justice Effects Report	Alberta D. Maez, IDT Leader	Project File
78	08.09.27	Wild and Scenic Rivers Effects Report	Alberta D. Maez, IDT Leader	Project File
79	08.09.27	Social Effects Report	Alberta D. Maez, IDT Leader	Project File
80	08.09.27	Economics Effects Report	Alberta D. Maez, IDT Leader	Project File
81	08.09.27	Heritage Effects Report	Robert Lawrence, District Archeologist	Project File
82	08.09.27	Fisheries Effects Report	Juan Martinez, Fish Biologist	Project File
83	08.09.27	Federally Listed Species Effects Report	Joseph Lujan, Wildlife Biologist	Project File
84	08.09.27	Forest Service Sensitive Species Effects Report	Joseph Lujan, Wildlife Biologist	Project File
85	08.09.27	Management Indicator Species Effects Report	Joseph Lujan, Wildlife Biologist	Project File
86	08.09.27	Migratory Birds Effects Report	Joseph Lujan,	Project File

No.	DATE	DOCUMENT	AUTHOR	RECIPIENT
			Wildlife Biologist	
87	08.09.28	Wilderness Areas, Wilderness Study Areas and Inventoried Roadless Areas Effects	Alberta D. Maez, IDT Leader	Project File
88	08.09.29	El Rito Lobato East and El Rito Lobato West Grazing Allotments 30-day Comment Period Analysis	Alberta D. Maez, IDT Leader	Project File
89	08.09.29	Rangeland Effects Report	Craig Newman, Range Staff	Project File
90	08.09.30	El Rito Lobato East Allotment Map of Analysis area With Proposed Improvements	Alberta D. Maez, IDT Leader	Project File
91	08.09.30	El Rito Lobato West Allotment Map of Analysis Area with Proposed Improvements	Alberta D. Maez, IDT Leader	Project File
92	08.09.30	Annual Grazing Monitoring Detail	Ezrquiel Rael, Range Technician	Project File
93	08.09.30	Environmental Assessment for the El Rito Lobato East and El Rito Lobato West Grazing Allotments	USDA FS	Project File
94	08.09.30	Decision Notice and Finding of No Significant Impact for El Rito Lobato East and El Rito Lobato West Grazing Allotments	Diana M. Trujillo, District Ranger	Project File
95	08.09.30	Cover Letter to El Rito Lobato East and El Rito Lobato West Grazing Allotments Permittees, sending DN and FONSI with 251 Appeal Language	Diana M. Trujillo, District Ranger	Project File
96		Legal Notice for the DN and FONSI for the El Rito Lobato East and El Rito Lobato West Grazing Allotments	Rio Grande Sun	Project File

Appendix B Proposed Improvement Maps

Figure 1. La Jara Pasture Proposed Improvements



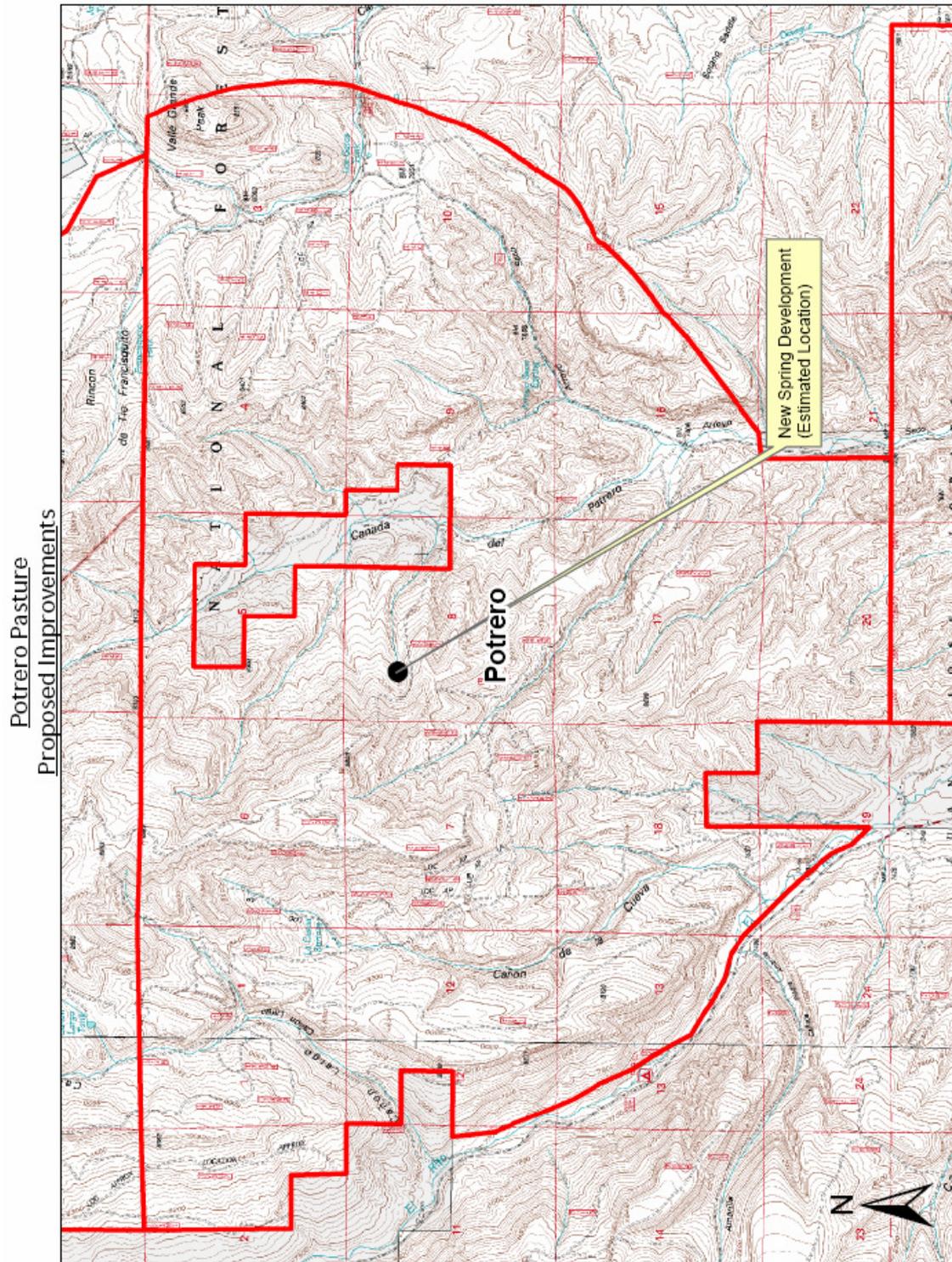


Figure 2. Potrero Pasture Proposed Improvements

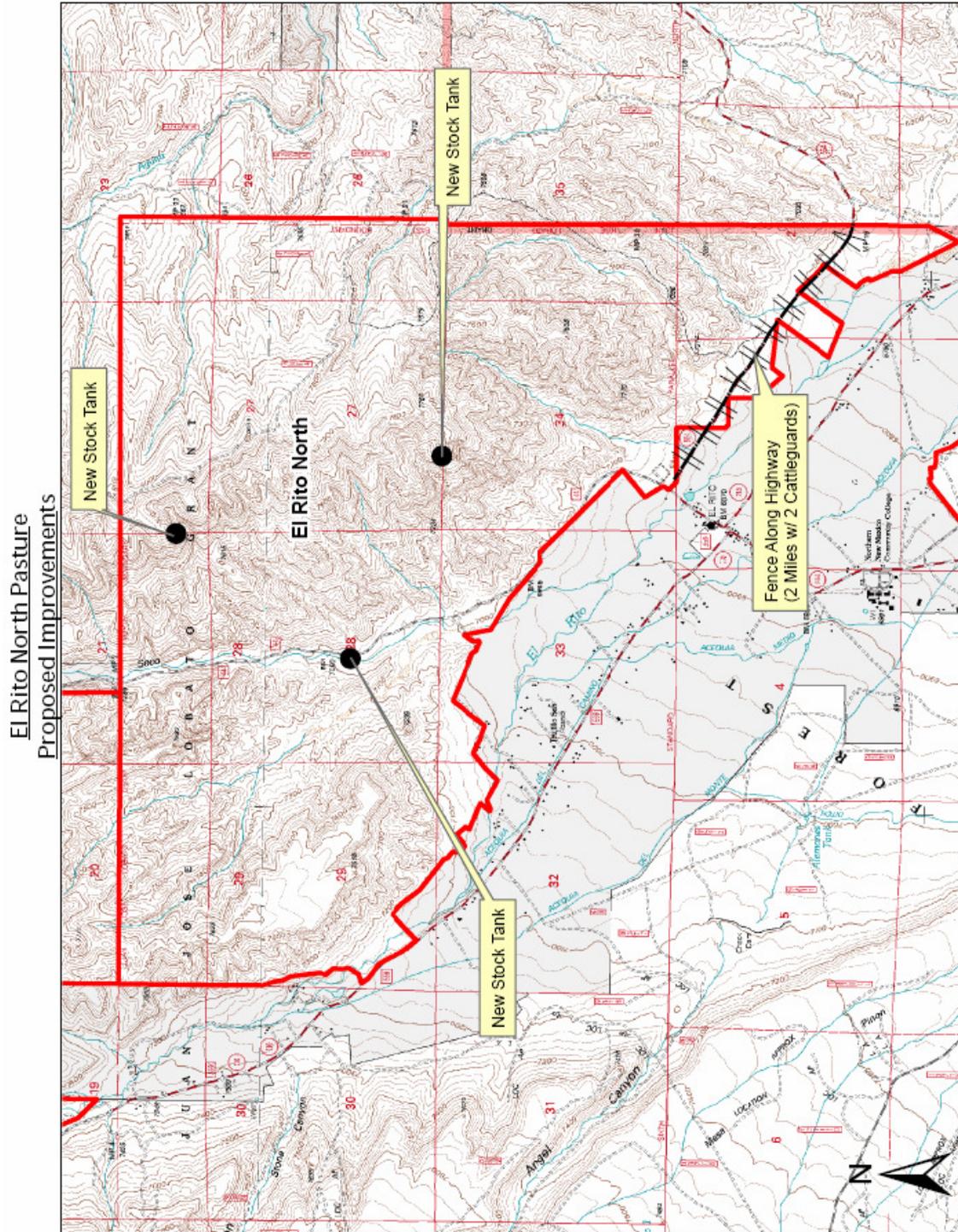


Figure 3. El Rito North Pasture Proposed Improvements

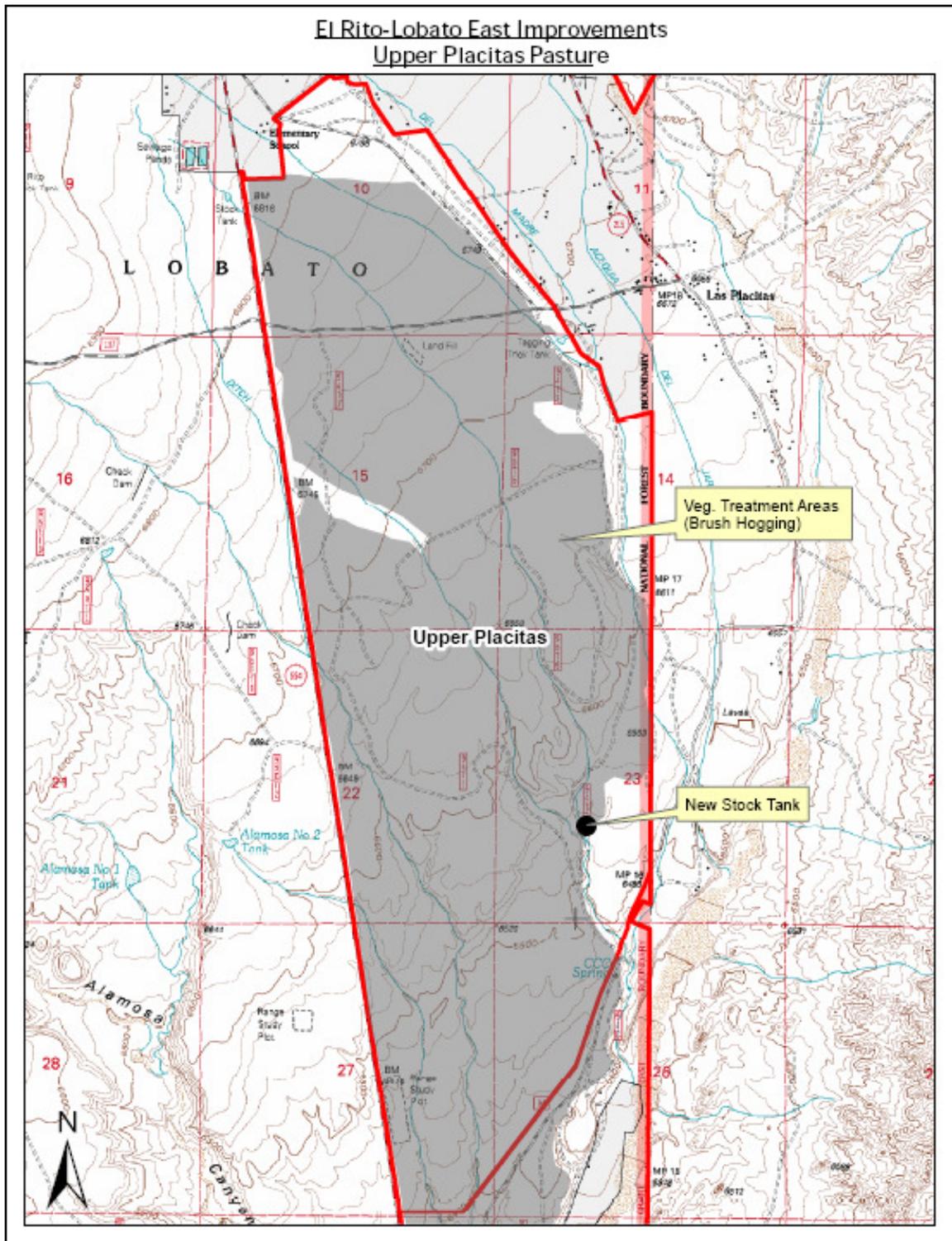


Figure 4. Upper Placitas Pasture Proposed Improvements

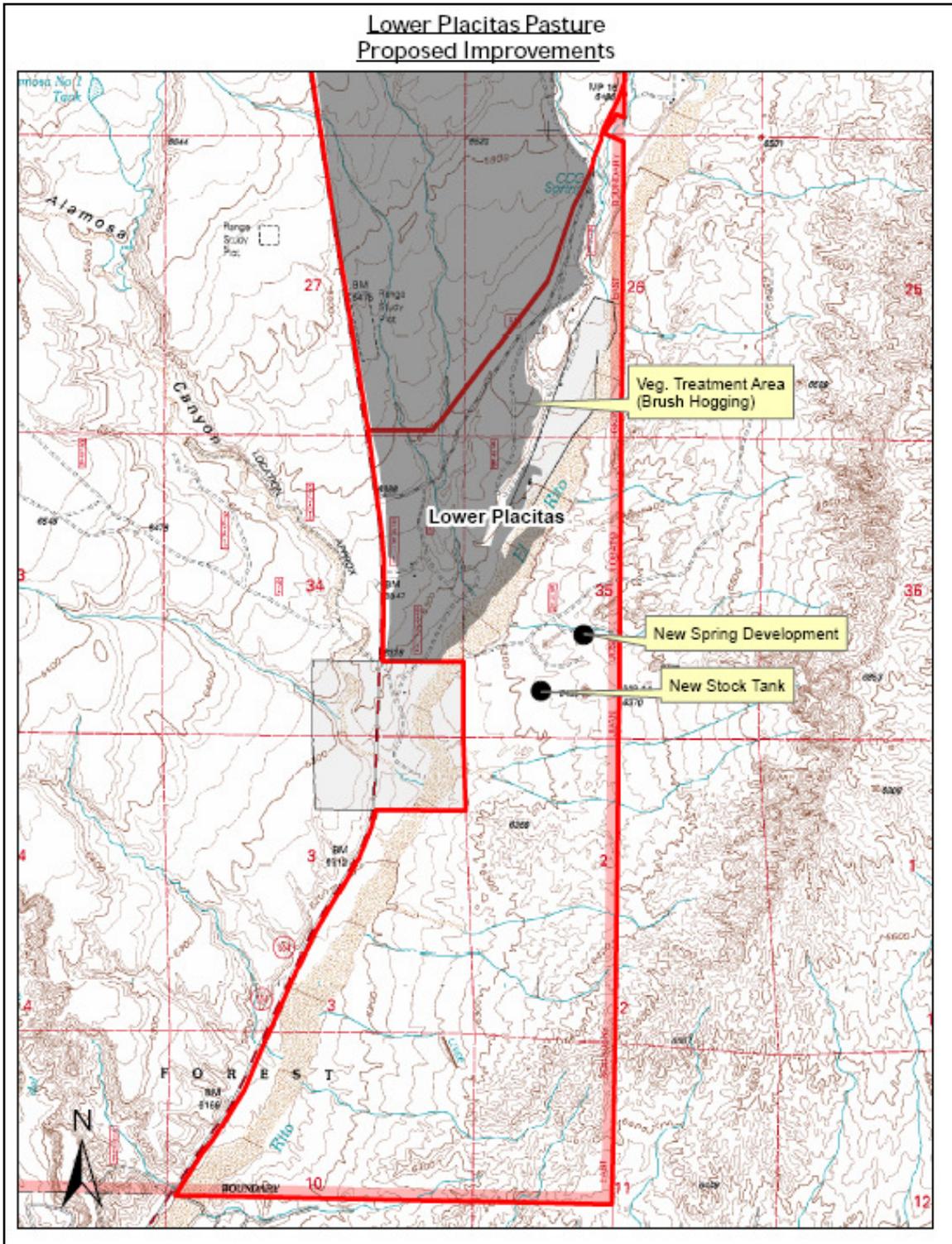


Figure 5. Upper Placitas Pasture Proposed Improvements

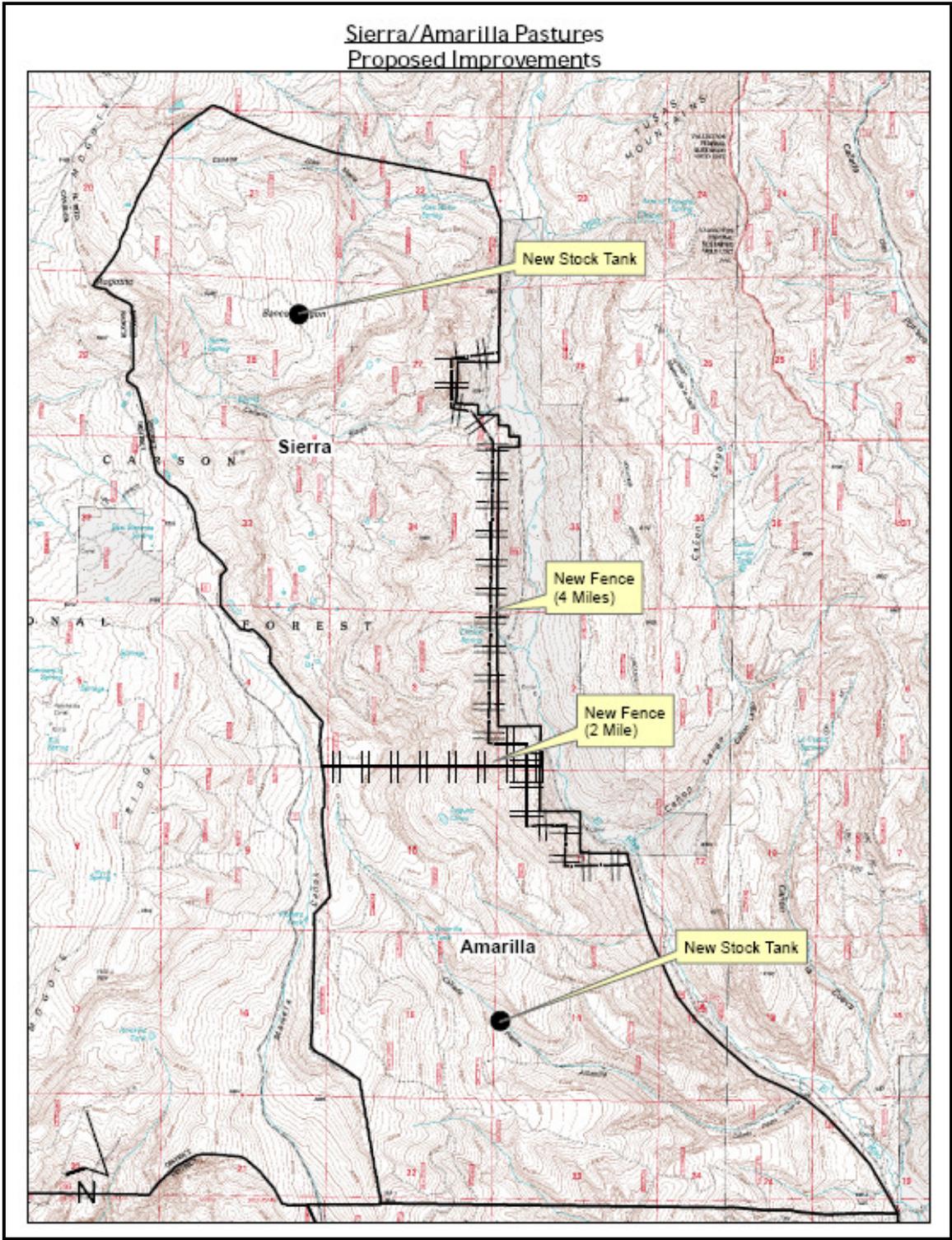


Figure 6. Sierra and Amarilla Pastures Proposed Improvements

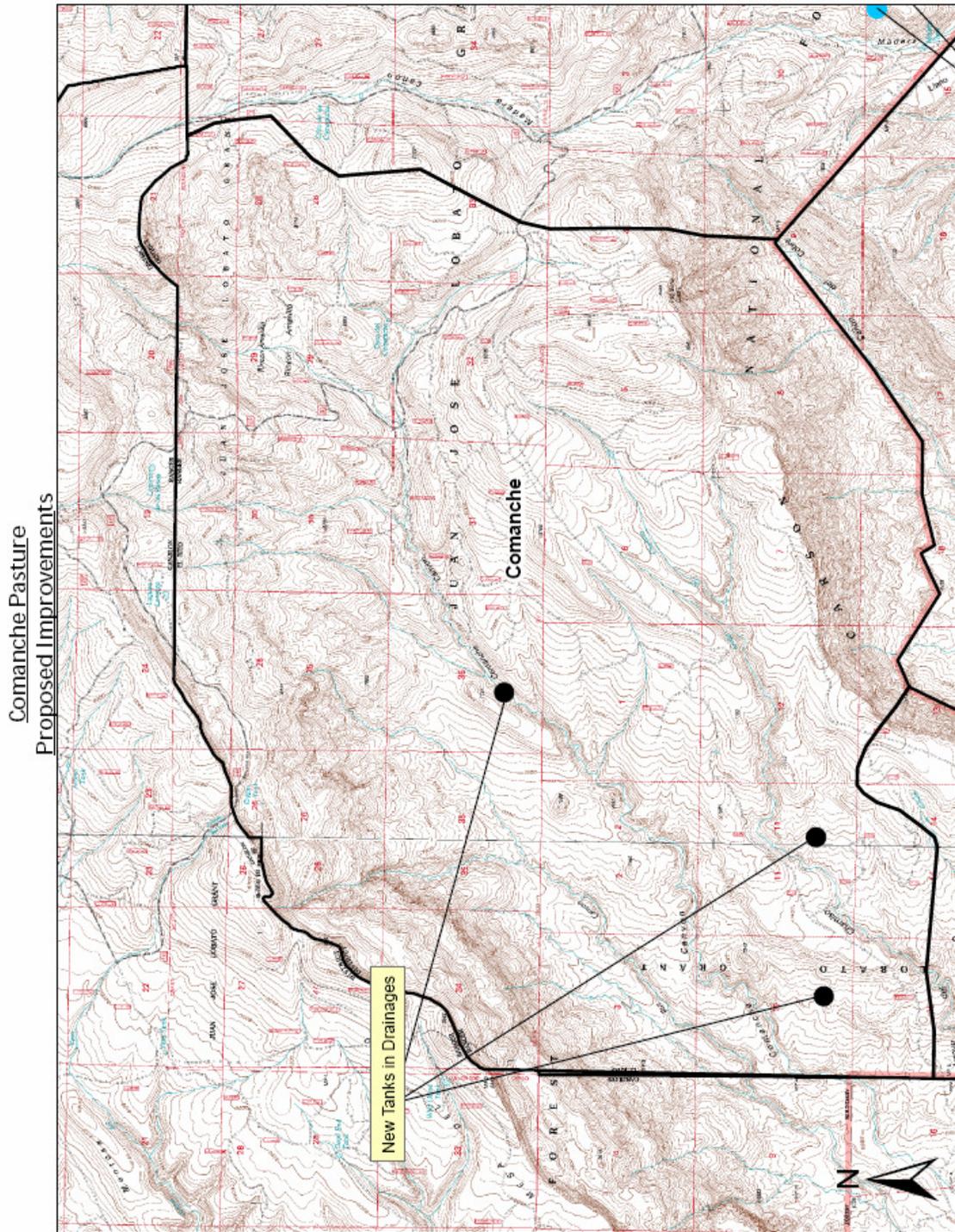


Figure 7. Comanche Pasture Proposed Improvements

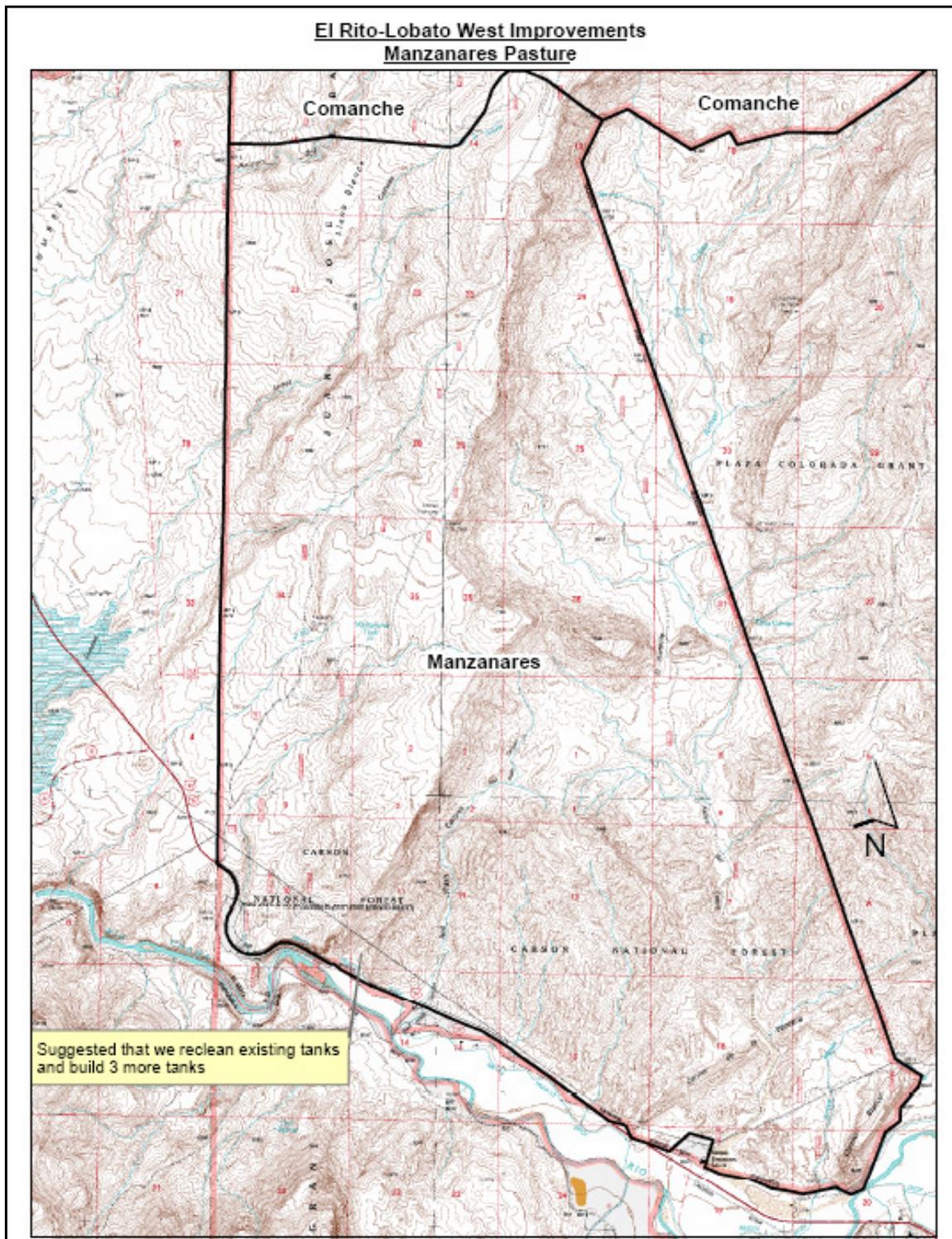


Figure 8. Manzanares Pasture Proposed Improvements

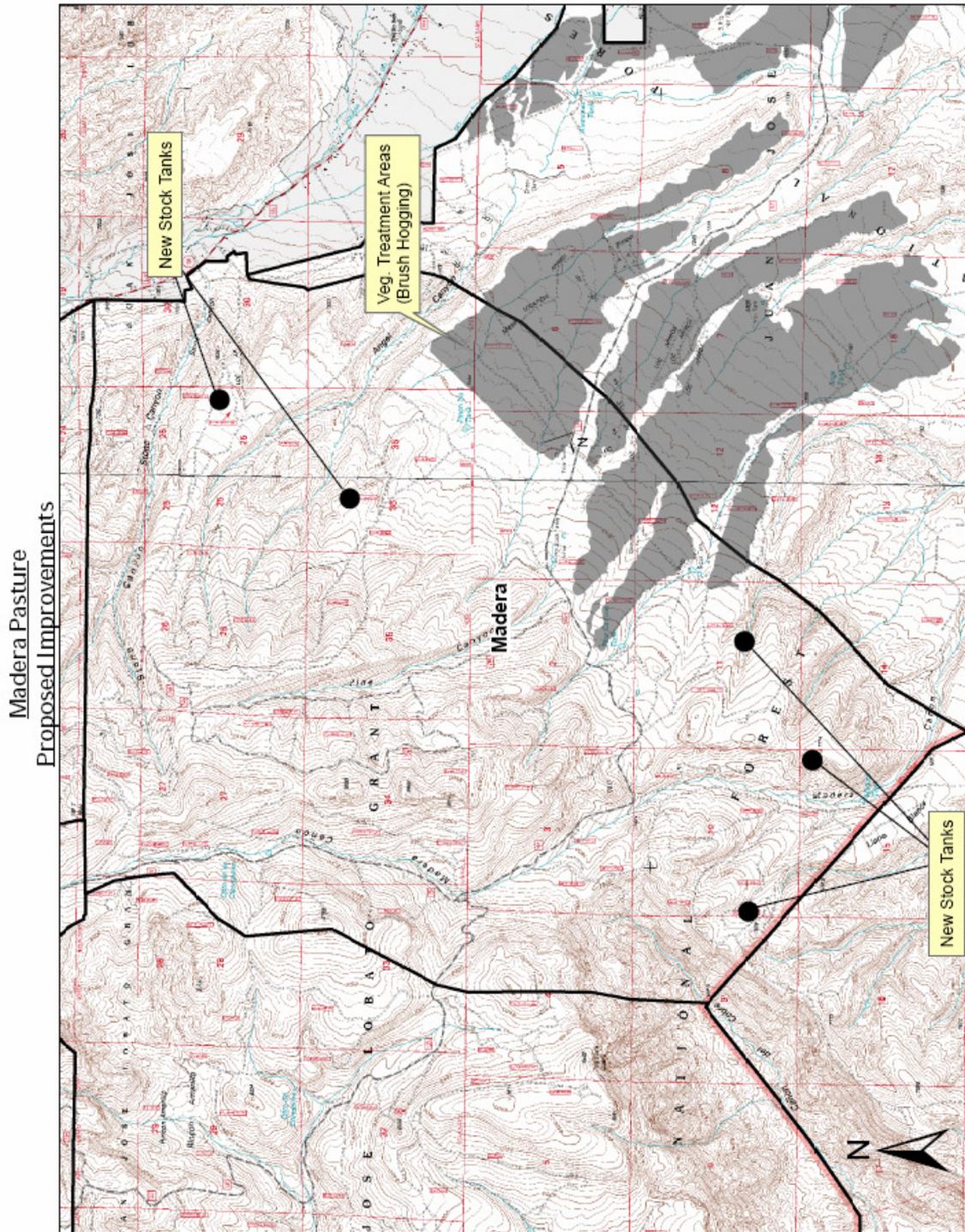


Figure 9. Madera Pasture Proposed Improvements

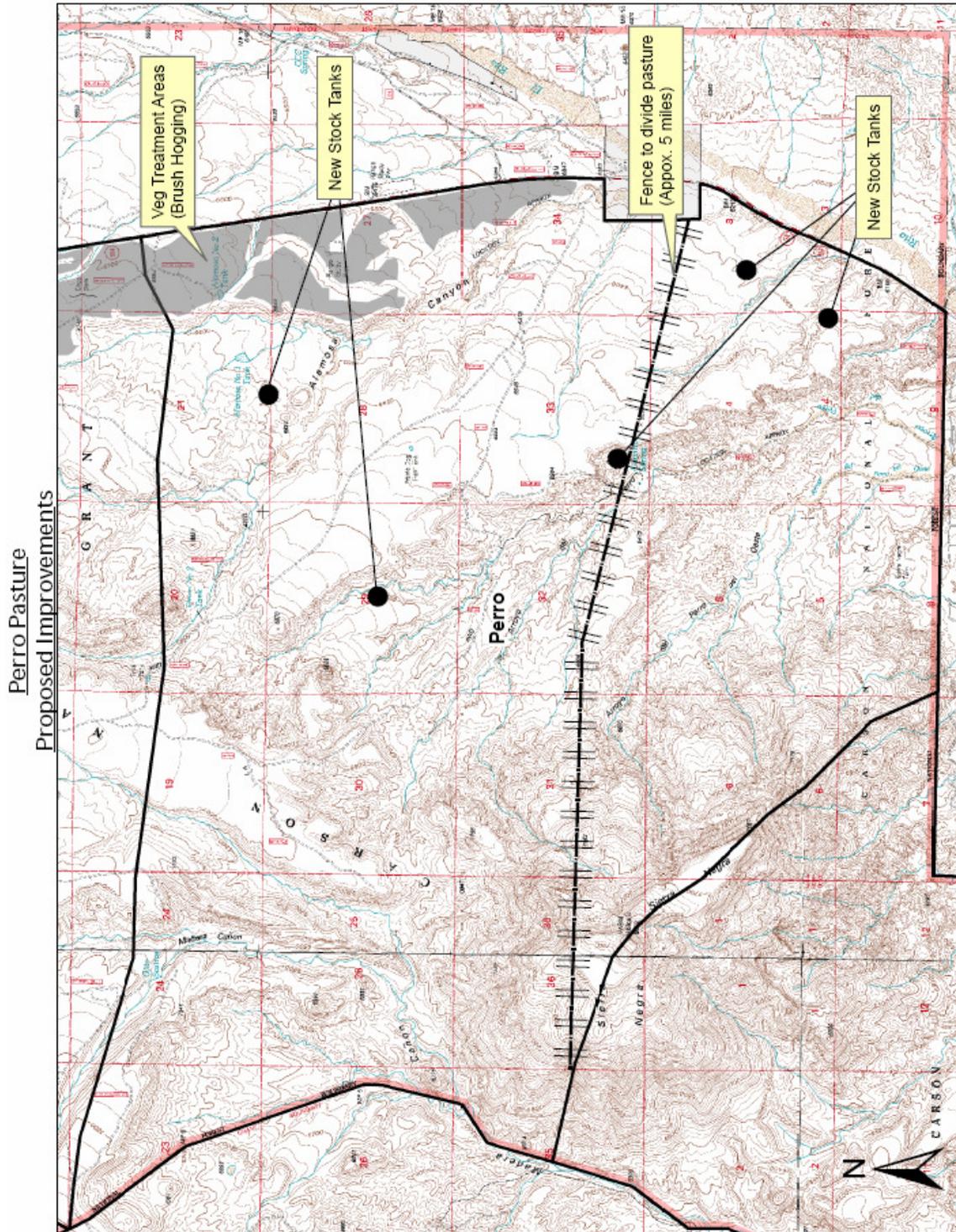


Figure 10. Perro Pasture Proposed Improvements

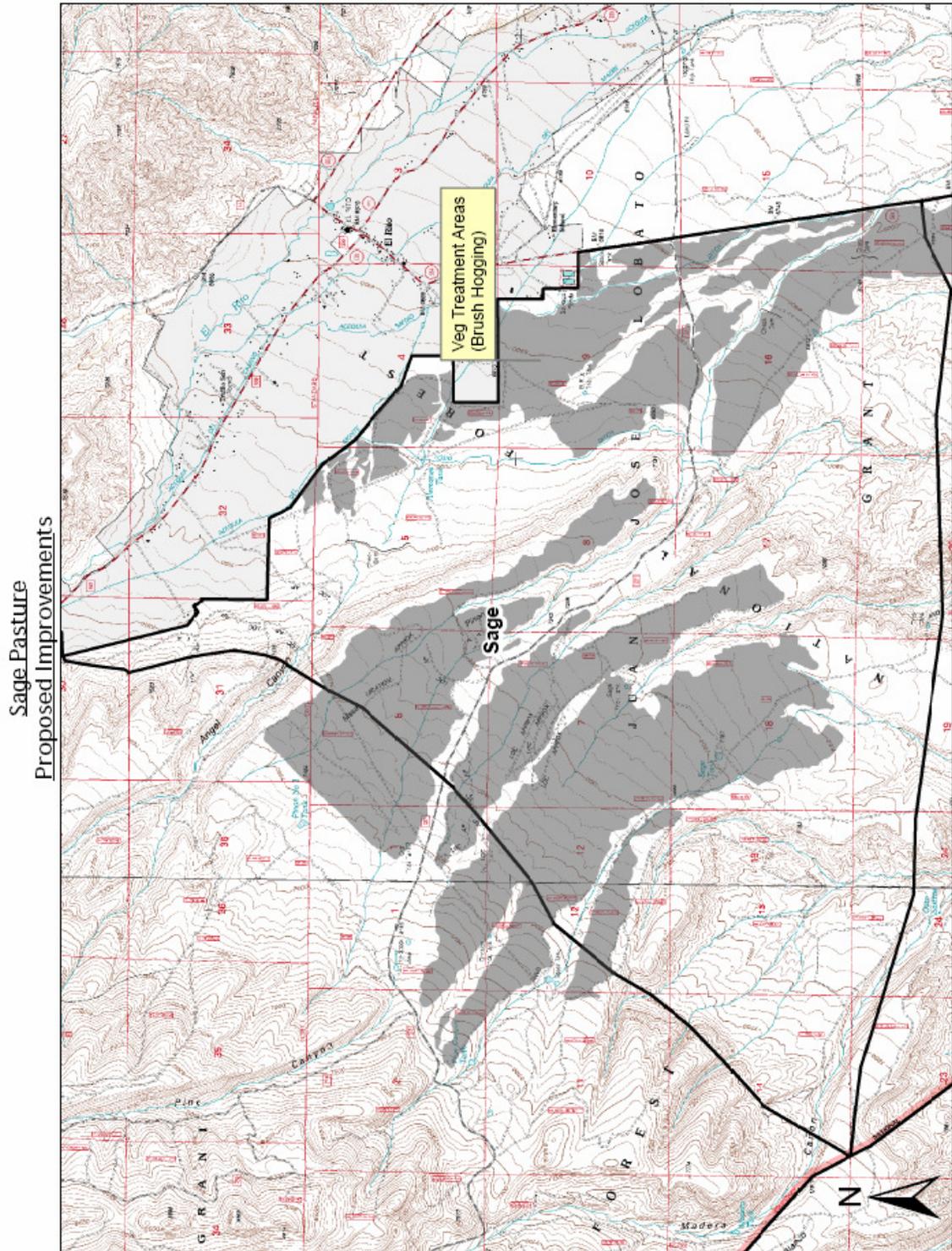


Figure 11. Sage Pasture Proposed Improvements

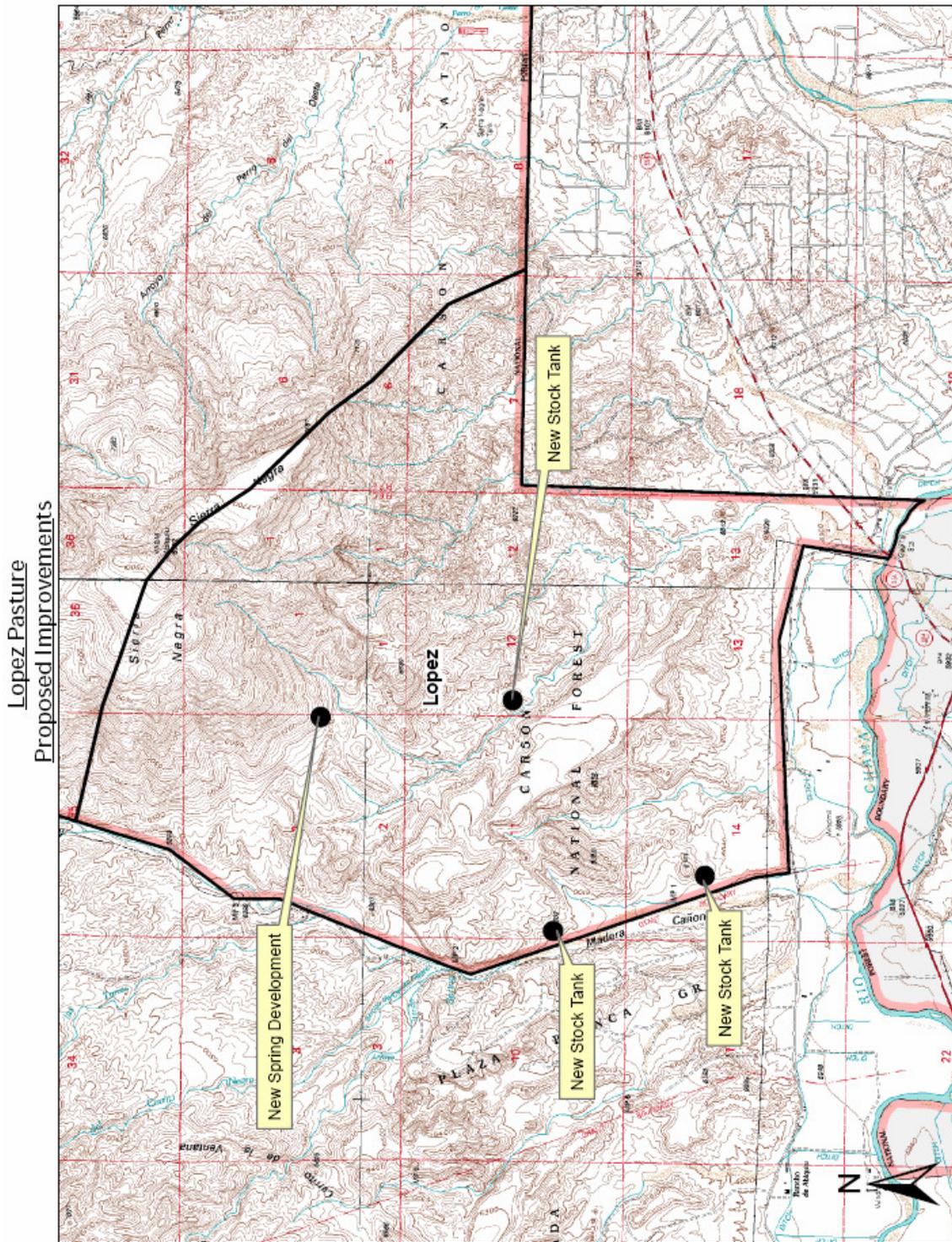


Figure 12. Lopez Pasture Proposed Improvements