

# CHAPTER 2: ALTERNATIVES

This chapter describes and compares the alternatives considered for the Martin Basin Rangeland Project. It includes a description of each alternative considered. This section also presents the alternatives in comparative form, providing a clear basis for choice among options by the deciding official and the public.

## ALTERNATIVE 1 – CURRENT MANAGEMENT

Under Alternative 1 (Current Management), current allotment management plans (AMPs) and Forest Plan proper use criteria would continue to guide livestock grazing management within the project area. The management systems, numbers of animals, and season of use would remain the same under this alternative (Table 1). There are currently 5,305 cattle and 25 horses permitted within the project area (i.e., 20,639 head months (HMs) of cattle and 95 HMs of horses).

**Table 1. Summary of Allotment Data under the Current Management Alternative.**

ALLOTMENT	STATUS	TYPE *	PERMITTED NUMBERS	CURRENT SEASON	MANAGEMENT SYSTEM
<b>Bradshaw</b>	Open	C/H	Vacant	June 6 -September 27	Deferred Rotation
<b>Buffalo</b>	Open	C/H	255 cow/calf pairs	June 16 - August 31	Rest Rotation
<b>Buttermilk</b>	Open	C/H	1,303 cow/calf pairs	May 22 -September 30	Rest Rotation
<b>Granite Peak</b>	Open	C/H	1,050 cow/calf pairs	May 21 -September 30	Rest Rotation
<b>Indian</b>	Open	C/H	301 cow/calf pairs	June 16 -September 30	Rest Rotation
<b>Martin Basin</b>	Open	C/H	1,935 cow/calf pairs 25 horses	June 6 - September 27	Deferred Rotation
<b>Rebel Creek</b>	Open	C/H	Vacant	June 1 - September 1	Rest Rotation
<b>West Side Flat Creek</b>	Open	C/H	461 cow/calf pairs	June 1 – August 25	Rest Rotation

\*C/H = Cattle/Horse.

## Design Features

Alternative 1 (Current Management) includes design features for cultural resources and sensitive/rare plants as detailed below:

- Implementation of the Rangeland Memorandum of Understanding (MOU) between the Forest Service and the Nevada State Historic Preservation Office (SHPO) would continue.
- Future planned activities that are likely to concentrate livestock use, such as salting, placement of watering sources, and placement of temporary handling facilities, shall not occur any closer than 0.25 miles of known sensitive and rare plant locations. Future livestock concentrating activities would not occur in potential habitat for sensitive plant species until surveys are performed. Where placement has already affected known sensitive and rare plant locations, the activity would be evaluated for adverse effects and a determination made about whether mitigation is required to provide adequate protection. Surveys in potential habitat would also include existing activities that concentrate livestock use
- Permittees would not place livestock on the Forest when soil moisture levels would result in damage to soils and would use appropriate management practices such as temporary fences, where practical, to protect soils sensitive to impacts from livestock grazing.
- Precipitation data would be analyzed prior to the beginning of the grazing season in order to determine drought status. If drought conditions exist, adjustments would be made to numbers of animals or length of time on the allotments.
- State of Nevada and Forest Service Intermountain Region Best Management Practices (BMPs) would be used to meet the requirements of the Clean Water Act. A listing of BMPs that would guide this project can be found in Appendix G.

## Management Standards

Levels of allowable utilization are established for both upland and riparian vegetative communities on all allotments. In 2005, seeps and springs were categorized in accordance with Amendment 2 of the Humboldt National Forest Land and Resource Management Plan<sup>4</sup>. Utilization limits have been established for riparian areas, seeps and springs, uplands, riparian browse, and upland browse, and are taken from Amendment 2 of the Forest Plan as summarized in Table 2.

Seeps and springs were classified on a scale from I to V, where the highest value seeps and springs are in Class I. As shown in Table 2, allowable forage utilization levels are often less in the vicinity of the higher quality seeps and springs.

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<sup>4</sup> Copies of the maps and documentation for the seeps and springs categorization have been included in the project record.

**Table 2. Allowable Utilization under the Current Management Alternative\*.**

VEGETATION ATTRIBUTE	GRAZING SYSTEM	STREAM CLASS SEEPS AND SPRINGS	MAXIMUM UTILIZATION
<b>Riparian Herbaceous Species</b>	Season Long	Highest to High (I-II)	35%
		Moderate to Limited (III-IV)	50%
		Low (V)	55%
	Deferred Rotation	Highest to High (I-II)	45%
		Moderate to Limited (III-IV)	55%
		Low (V)	65%
	Rest Rotation	Highest to High (I-II)	45%
		Moderate to Limited (III-IV)	60%
		Low (V)	65%
	High Intensity Short Duration (Early Season)	Highest to High (I-II)	55%
		Moderate to Limited (III-IV)	65%
		Low (V)	70%
<b>Riparian Browse<sup>5</sup></b>	All	NA	35%
<b>Upland Herbaceous Species<sup>5</sup></b>	All	NA	65%
<b>Upland Browse<sup>5</sup></b>	All	NA	50%

\* Table B-1 found in Appendix B outlines allowable use on all allotments by stream for Alternative 1. Appendix B, Riparian Category Definitions, outlines the definitions of the riparian categories associated with Amendment 2 to the Humboldt National Forest Land and Resource Management Plan.

## Monitoring

Under this alternative, monitoring would occur at varying levels on every allotment every year. The Forest would prepare an annual report regarding the previous year’s range management activities, including the result of any monitoring that has occurred, both short-term and long-term, within each allotment.

### **Short-Term Monitoring (Implementation)**

Herbaceous and browse utilization measurements would be measured at designated key areas within riparian areas and uplands in priority allotments and pastures annually.

Annual schedules and annual operating instructions (AOIs) would be monitored for compliance each grazing season. Terms and conditions in the grazing permits would be monitored annually.

<sup>5</sup> Browse species refer to shrubs and small trees as opposed to herbaceous species which includes non-woody plants such as grasses and forbs.

### **Long-Term Monitoring (Effectiveness)**

Long-term monitoring would be used to determine if the standards and guidelines in the Forest Plan, as amended, and allotment management plans are effective in moving resources toward desired condition and ensuring an upward or stable trend in resource conditions.

Upland vegetation monitoring methods may include, but are not limited to the Matrices (see Alternative 2, Rangeland Ecological Condition), nested frequency trend studies, line intercept, ground cover, photo points, ocular analysis, benchmark analysis, density/canopy cover, and visual observation.

Riparian and stream monitoring methods may include, but are not limited to the Matrices (see Alternative 2, Rangeland Ecological Condition), riparian level II and III studies, green line, multiple indicator methods (MIMs), properly functioning condition (PFC), photo points, general aquatic wildlife surveys (GAWS), water quality monitoring, and other methods.

Wildlife monitoring would focus on habitats for threatened, endangered, sensitive, and management indicator species (MIS). Population monitoring would generally be conducted in cooperation with the Nevada Department of Wildlife (NDOW).

A monitoring schedule for key areas on each allotment would be incorporated as an attachment to the allotment management plan for each allotment. The allotment management plans would implement the decision for the Martin Basin Rangeland Project and all of its requirements. The Santa Rosa Ranger District would maintain monitoring files for each allotment.

## **ALTERNATIVE 2 – PROPOSED ACTION/PREFERRED ALTERNATIVE**

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Alternative 2 (Proposed Action) was developed to meet the purpose and need for the Martin Basin Rangeland Project. The objective of the alternative is to manage grazing on National Forest System lands to provide an economic value to permittees while protecting essential ecosystem functions and values.

This alternative relies on the ecological condition of the rangelands to set and make adjustments to grazing use and grazing practices and strategies. By looking at the rangeland resource as a whole, this alternative would protect the natural resources and fish and wildlife habitat of the Forest, while providing a sustainable rangeland resource for domestic livestock grazing.

This alternative would set proper use criteria (for this project, utilization) for habitat groups based on three possible ecological conditions (functioning, functioning-at-risk, and non-functioning). A two stage monitoring plan would be used to ensure that the proper use criteria are being adhered to and that the ecosystem is responding as expected. Predetermined modifications would allow us to change management in response to unanticipated or changed conditions on the ground and to make these changes in a way that is predictable and transparent to the permittee and interested members of the public.

Alternative 2 (Proposed Action) would do the following:

- ✓ Reauthorize grazing on the eight allotments in the project area.
- ✓ Use proper use criteria for each allotment to determine when livestock must be removed. The proper use criteria, set out below in Table 3, are based on the current ecological condition for each habitat group within each allotment or pasture within the allotment.

- ✓ Apply design features to minimize the impacts or potential impacts of grazing and associated activities.
- ✓ Conduct short-term and long-term monitoring to determine if adjustments to grazing are necessary.
- ✓ Adjust proper use criteria based on the long-term monitoring.
- ✓ Update allotment management plans to include the above items and key areas and benchmarks for monitoring compliance with proper use criteria.
- ✓ Authorize grazing on private lands within the boundary of the Santa Rosa Ranger District that have been or are proposed to be purchased by the Forest Service. These lands have been considered during this analysis and include, but are not limited to, the recently purchased Nevada First properties and the Rebel Creek properties.

Table 3 sets the proper use criteria (for this project, utilization) for each allotment or pasture within an allotment within the project area. The highest utilization rates for each habitat group are assigned to allotments or pastures that are in functioning condition. Utilization at these levels is expected to maintain these areas in functioning condition. Utilization for habitat groups that are in functioning-at-risk or non-functioning condition are lower than the functioning category. Utilization at these lower rates is expected to allow these habitat groups to move toward and become functioning.

**Table 3. Ecological Conditions and Proper Use Criteria by Habitat Group and Allotment (Pasture).**  
(F=Functioning, FR=Functioning-at-Risk, NF=Non-functioning).

ALLOTMENTS/ Pastures	HABITAT GROUP/PROPER USE CRITERIA											
	UPLANDS**			WYOMING BIG SAGE		ASPEN		RIPARIAN AREAS*			COTTONWOOD	
	Ecological Condition	Utilization		Ecological Condition	Utilization	Ecological Condition	Utilization	Ecological Condition	Utilization		Ecological Condition	Utilization
		Herbaceous	Browse		Herbaceous		Browse		Herbaceous	Browse		Browse
<b>BRADSHAW ALLOTMENT</b>												
Bradshaw	F	50%	35%	F	40%	F	20%	FR	35%	20%		
<b>BUFFALO ALLOTMENT</b>												
Andorno	F	50%	35%			F	20%	F	45%	30%		
Buffalo	F	50%	35%	FR	30%	F	20%	F	45%	30%	FR	10%
Chimney Canyon	F	50%	35%			F	20%	F	45%	30%	FR	10%
Falls Creek	F	50%	35%			F	20%	F	45%	30%	FR	10%
Horse Canyon	F	50%	35%	FR	30%	F	20%	F	45%	30%		
Porcupine	F	50%	35%			F	20%	F	45%	30%		
<b>BUTTERMILK ALLOTMENT</b>												
Spring City	FR	40%	25%	FR	30%	N/A		FR	35%	20%		
Black Ridge	F	50%	35%	F	40%	F	20%	FR	35%	20%		
Buttermilk	F	50%	35%	F	40%	F	20%	F	45%	30%		
Lye Creek	F	50%	35%			F	20%	F	45%	30%		
<b>GRANITE PEAK ALLOTMENT</b>												
Lower Willow Creek	FR	40%	25%	FR	30%	N/A		FR	35%	20%		

ALLOTMENTS/ Pastures	HABITAT GROUP/PROPER USE CRITERIA											
	UPLANDS**			WYOMING BIG SAGE		ASPEN		RIPARIAN AREAS*			COTTONWOOD	
	Ecological Condition	Utilization		Ecological Condition	Utilization	Ecological Condition	Utilization	Ecological Condition	Utilization		Ecological Condition	Utilization
		Herbaceous	Browse						Herbaceous	Browse		
Upper Willow Creek	F	50%	35%			F	20%	FR	35%	20%		
Upper Indian Creek	F	50%	35%			F	20%	F	45%	30%	FR	10%
Lower Indian Creek	FR	40%	25%	FR	30%	FR	20%	FR	35%	20%	FR	10%
Solid Silver Creek	F	50%	35%			F	20%	F	45%	30%	FR	10%
Tom Basin	NF	30%	15%	NF	20%	N/A		N/A				
<b>INDIAN ALLOTMENT</b>												
North	FR	40%	25%	FR	30%	N/A		FR	35%	20%		
South	F	50%	35%	FR	30%	F	20%	FR	35%	20%		
<b>MARTIN BASIN ALLOTMENT</b>												
Long Valley	FR	40%	25%	FR	30%	F	20%	F	45%	30%		
Cabin Creek	F	50%	35%			F	20%	F	45%	30%		
Siard	F	50%	35%			F	20%	NF	25%	10%		
North Fork	F	50%	35%			F	20%	FR	35%	20%		
Cold Springs	F	50%	35%	FR	30%	F	20%	FR	35%	20%		
Blackridge	F	50%	35%	FR	30%	F	20%	FR	35%	20%		
<b>REBEL CREEK ALLOTMENT</b>												
Rebel Creek	F	50%	35%	F	40%	F	20%	FR	35%	20%		
Wood Canyon	F	50%	35%			F	20%	F	45%	30%		
McConnell Creek	FR	40%	25%	FR	30%	F	20%	FR	35%	20%		
<b>WEST SIDE FLAT CREEK ALLOTMENT</b>												
North	FR	40%	25%	FR	30%	F	20%	FR	35%	20%	FR	10%
South	F	50%	35%	FR	30%	F	20%	FR	35%	20%	FR	10%

\*\* Includes Mountain Mahogany and Sagebrush

\*Includes Moist-Dry Meadows, Wet Meadows, Stream/Riparian

## Design Features

Alternative 2 (Proposed Action) includes design features for sage grouse, sensitive/rare plants, cultural resources, pygmy rabbits, and drought as detailed below:

### All Allotments:

- Implementation of the Rangeland MOU between the Forest Service and the Nevada State Historic Preservation Office (SHPO) would continue.
- Livestock concentrating activities, such as placement of salt blocks, watering sources, or other range supplements would be approved before placement on an allotment and would be placed to avoid potentially eligible heritage resource sites.
- Future planned activities that are likely to concentrate livestock use, such as salting, placement of watering sources, and placement of temporary handling facilities, shall not occur any closer than 0.25 miles of known sensitive and rare plant locations. Future livestock concentrating activities would not occur in potential habitat for sensitive plant species until surveys are performed. Where placement has already affected known sensitive and rare plant locations, the activity would be evaluated for adverse effects and a determination made about whether mitigation is required to provide adequate protection. Surveys in potential habitat would also include existing activities that concentrate livestock use.
- Sage grouse critical breeding complexes (leks and nesting habitat within 2 miles of each lek) are not grazed during the reproductive season. Additionally, grazing restrictions may apply to any other critical habitat, such as critical wintering areas.
- On sage grouse brood-rearing meadows that are in non-functioning condition, grazing restrictions would be implemented during brooding season. Implementation would include the use of letdown fences around critical habitats such as leks, removing livestock grazing from the critical areas, or changing the season of use in critical areas.
- Transects would be established within one year in the high priority sage grouse nesting habitats to meet the following objectives:
  - 1) Document and ensure that sufficient residual herbaceous vegetation exists within nesting habitats to provide adequate cover to conceal nests.
  - 2) Identify and document the presence of nesting sage grouse along the transects.
  - 3) Identify and document any damage to nests or other concerns associated with livestock grazing that may occur during the late spring or early summer.
- Grazing would not be authorized in riparian areas during the hot season (mid-July through August) for at least 1 out of 3 years.
- Permittees would not place livestock on the Forest when soil moisture levels would result in damage to soils and would use appropriate management practices such as temporary fences, where practical, to protect soils sensitive to impacts from livestock grazing.
- Natural Resource Conservation Service (NRCS) precipitation data would be analyzed prior to the beginning of the grazing season in order to determine drought status. If drought

conditions exist, adjustments would be made to numbers of animals or length of time on the allotments.

- State of Nevada and Forest Service Intermountain Region Best Management Practices (BMPs) would be used to meet the requirements of the Clean Water Act. A listing of BMPs that would guide this project can be found in Appendix G.

**Specific Allotments:** Bradshaw, Buttermilk, Granite Peak, Indian, Martin Basin, and West Side Flat Creek.

- Future planned activities that are likely to concentrate livestock use, such as salting, placement of watering sources, and placement of temporary handling facilities, would avoid known locations of pygmy rabbit burrows. Before livestock concentration activities such as salting, trailing, and water developments are placed within potential pygmy rabbit habitat, these areas would be surveyed for denning areas. These areas are mapped and included in the project record.

The following sections provide a more detail discussion of these key elements of Alternative 2 (Proposed Action).

## Rangeland (Ecological) Condition

Rangeland, or ecological, condition is identified using the terms functioning, functioning-at-risk, or non-functioning rangelands. The Intermountain Region Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21, Ch. Zero Code) defines these terms as follows:

**Functioning Rangelands.** A condition where a rangeland has the capability across the landscape for renewal, for recovery from a wide range of disturbances, and for retention of its ecological resilience. They are also meeting a desired condition identified in long-term specified management objectives, standards, and/or guidelines.

**Functioning-at-Risk.** Rangelands that have a reversible loss in capability and increased vulnerability to irreversible degradation based upon evaluation of current conditions and processes.

**Non-functioning Rangeland.** A condition where a rangeland has lost the capability across the landscape for ecological resilience. Non-functioning rangeland health occurs when the desired condition is not being met and short-term objectives are not being achieved to move the rangeland toward the desired conditions.

Rangeland conditions can be determined using the *Humboldt-Toiyabe National Forest's Ecological Condition Matrices* (Matrices). The Matrices provide an ecological approach and include measurable parameters for soil, vegetation, hydrology, and disturbance factors that indicate whether a vegetation community, and the wildlife habitat it represents, is functioning, functioning-at-risk, or non-functioning. The Matrices supply quantitative measures for field personnel to use to determine the ecological condition of various community types (for example, mountain big sagebrush, wet meadows, aspen, and mountain mahogany). Through the Matrices, a community type would be correlated to a plant association (i.e., mountain big sagebrush/Great Basin wild rye) at the field data collection level. The Matrices are based on field research, literature reviews, and National Resources Conservation Service (NRCS) ecological site descriptions. The criteria and process included in the Matrices were reviewed by peer scientists. Additional information on the Matrices can be found in Appendix A.

The ecological condition of various vegetative communities within each allotment or pasture has been established utilizing the best available information as summarized in the Vegetation Specialist Report, which is available in the project record. Review of all available data sources, site visits, and professional expertise and knowledge was used to determine condition of each pasture based on the attributes listed in the Matrices (Appendix A). Table 3 includes the current rangeland conditions for each of the allotments or the pastures within the allotments in this project.

## Proper Use Criteria

Under Alternative 2 (Proposed Action), proper use criteria (which could include forage herbaceous utilization, browse utilization, stream bank disturbance, compaction, etc.) would be set for each allotment or pasture within the allotment based on current rangeland ecological conditions. For this project, we have chosen herbaceous and browse utilization as the proper use criteria. The Intermountain Region Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21, Ch. Zero Code) defines proper use criteria as the:

“limiting factor or factors which will be measured on a particular site to determine if the site has been properly used. It could be residual forage, impact on other resources or uses, or any other measurable factor on a particular site”.

Proper use criteria are guides for managing livestock movement and for assessing resource use impacts at the end of growing season. Assessment of proper use criteria determines if grazing use left resources in an appropriate condition for moving toward objectives. Generally, proper use criteria cannot by themselves determine whether a particular grazing system is contributing to recovery, or conversely, contributing to degradation. This is especially true of a single year’s values. Long-term monitoring is used to determine the ecological condition and trend of the rangelands resources. Additional information on long-term monitoring is discussed below.

The proper use criteria would be incorporated into term grazing permits as soon as the decision is implemented. The proposed proper use criteria are designed to manage livestock grazing levels in a way that would move the resources towards desired condition. The proper use criteria are not desired conditions, they are limits on grazing that would allow the landscape features to meet or move towards desired conditions.

Many proper use criteria could be used. For this project, utilization at the end of the growing season was selected for the proper use criteria. Utilization considers the physiological response of the plants being grazed and can be important in changes in soil, water, and vegetation resources when used appropriately (Smith et al. 2005). Although utilization could be exceeded on occasional years without a dramatic effect on ecological condition, routine and repeated excess utilization of herbaceous and woody species would have detrimental effects on ecological condition. Thus, annual utilization levels are set to give us an indication of whether current grazing management would maintain or improve ecological condition over the long term.

The proper use criteria for each rangeland condition are listed below in Tables 4 (herbaceous vegetation) and 5 (woody vegetation). As shown in those tables, utilization may be more restrictive if a habitat group is functioning-at-risk or non-functioning, than it would be if the community was in functioning condition. Specific proper use criteria for each allotment are assigned by habitat groups within each pasture of an allotment. These proper use criteria for each allotment and/or pasture can be found in Table 3 and Appendix C.

Under Alternative 2 (Proposed Action), the proper use criteria may limit either herbaceous or browse utilization. The proper use criteria have been adjusted to more appropriately reflect levels of use that would protect resources and ensure stable and upward trends in vegetation conditions. Tables 4 and 5 display the maximum utilization levels for various vegetative groups in the project area. Utilization

measurements would be based on end of growing season conditions. The specific proper use criteria for Table 4 and 5 would vary by allotment based on the habitat groups and condition in each allotment.

Riparian areas that are currently being managed at a utilization level below 45 percent, to comply with Amendment 2 of the Forest Plan or with previous Section 7 Consultations, would remain under that standard.

Under this alternative, specific proper use criteria have been established for each allotment, or the individual pastures within the allotment (Table 3 and Appendix C). These proper use criteria were established based upon the most current information available regarding the conditions and trends of resources within each allotment. These proper use criteria are based on an extensive review of scientific literature on grazing and its affect on vegetation. An annotated bibliography of the research that was reviewed is located in the project record.

**Table 4. Proper Use Criteria for Herbaceous Vegetation.**

HABITAT GROUP	ALLOWABLE UTILIZATION AS A % BY WEIGHT (HERBACEOUS)		
	Functioning	Functioning-at-Risk	Non-Functioning
Moist-Dry Meadow	Up to 45%	Up to 35%	Up to 25%
Wet Meadow	Up to 45%	Up to 35%	Up to 25%
Stream/Riparian/Cottonwood	Up to 45%	Up to 35%	Up to 25%
Aspen	Up to 45% or 20% of available suckers browsed	Up to 35% or 20% of available suckers browsed	Up to 25% or 20% of available suckers browsed
Wyoming Big Sagebrush	Up to 40%	Up to 30%	Up to 20%
Mountain Big Sagebrush	Up to 50%	Up to 40%	Up to 30%
Mountain Brush/ Mountain Mahogany	Up to 50%	Up to 40%	Up to 30%

**Table 5. Proper Use Criteria for Woody Vegetation.**

HABITAT GROUP	ALLOWABLE UTILIZATION AS A % OF AVAILABLE CURRENT YEAR'S GROWTH (ASSOCIATED WOODY VEGETATION)		
	Functioning	Functioning-at-Risk	Non-Functioning
Stream/Riparian (willow)	Up to 30%	Up to 20%	Up to 10%
Mountain Brush/ Mountain Mahogany	Up to 35%	Up to 25%	Up to 15%
Aspen	Up to 20% of available suckers browsed	Up to 20% of available suckers browsed	Up to 20% of available suckers browsed
Cottonwood	Up to 20% of available suckers browsed	Up to 10% of available suckers browsed	No browsing of available suckers

## Monitoring

Monitoring has the dual purpose of ensuring compliance with the proper use criteria for an allotment or pasture and determining whether the current management of the allotment is maintaining or moving the area toward functioning condition. Implementation and focused effectiveness monitoring are critical to determine when or if management changes should be made and to guide the direction that those changes occur. Under Alternative 2 (Proposed Action), monitoring would occur at varying levels on every allotment every year. Monitoring would follow Forest Service Handbook (FSH) accepted methodologies, including establishing photo points where appropriate. The Forest Service would invite participation from rangeland users and other interested parties where feasible. The Forest Service would prepare an annual report regarding the previous year's range management activities, including the results of any monitoring that occurred, both short-term and long-term, within each allotment.

The responsibility for ensuring that livestock moves occur on time remains with the permittee. The Forest Service would work with the permittee(s) throughout and immediately following the grazing season to determine the final outcome for each pasture for that season. Permittees are encouraged to participate in allotment monitoring and to collect data on their allotment(s) every year. Data collection can be done in cooperation with the Forest Service or entirely on their own. Any data collected by the permittees would be collected using Forest Service approved methodologies or protocols. The Forest Service would fully review all data collected by the permittees to determine the quality and reliability of the data. All data collected would be stored in the allotment monitoring files at the Santa Rosa Ranger District.

### **Annual/Implementation Monitoring (Short-Term)**

Short-term monitoring would be used to determine if the actions described under Alternative 2 (Proposed Action) are being implemented as planned and are meeting the proper use criteria and design criteria. Short-term monitoring encompasses a wide variety of monitoring activities.

Overall monitoring of conditions on the Santa Rosa Ranger District, including the project area, occurs every year. This kind of monitoring is based on general observations of rangeland conditions by the Forest Service and reports from other visitors to the project area. This work is done in conjunction with rangeland management, as well as other resource management activities (i.e., fisheries, wildlife, archaeology, etc.). This information would be evaluated to determine if additional monitoring emphasis is desirable in a particular allotment.

On an annual basis, the permittees would be responsible for monitoring proper use criteria and complying with the AOIs, which could include design features, improvement maintenance, and other standards, guidelines, and terms and conditions in the grazing permits. Permit administrators would review monitoring information provided by the permittee to ensure compliance and prepare for the next grazing season. Monitoring information may include documentation of utilization measurements, photos, or other relevant documentation.

Proper use criteria observations would be conducted as needed on riparian habitats and upland key areas as identified within the AMPs. The Forest Service would conduct proper use criteria observations on every allotment every 1 to 2 years. Annual operating instructions and terms and conditions would be monitored for compliance. The responsibility for ensuring that livestock moves occur on time remains with the permittee. The Forest Service would work with the permittee(s) throughout and immediately following the grazing season to determine the final outcome for each pasture for that season. Compliance monitoring would occur annually, either through overall monitoring efforts for the District or through implementation or effectiveness monitoring. The Forest Service would invite participation from other rangeland users and interested parties.

Every 1 to 3 years, each allotment would be monitored utilizing protocols such as rapid assessment, utilization, proper functioning condition, and photo points. Allotments and/or pastures where problems have occurred or are persisting would be emphasized.

Priorities for monitoring would occur in the project area following the criteria identified below:

First priority for monitoring of allotments would be:

- Allotments with Endangered Species Act (ESA) requirements or sensitive species.
- Allotments with non-compliance remedy requirements and legal action (unauthorized use) follow-up.

The second priority for monitoring allotments would be:

- Allotments with resource problems or user conflicts.
- Allotments with historic non-compliance problems.
- Allotments with unauthorized use.

Because the acreages these allotments cover is vast and we cannot monitor soil and vegetation parameters on every part of an allotment, we would use the “key area concept” in our short-term monitoring efforts. A key area is a relatively small portion of rangeland that because of its location, grazing or browsing value, and/or use, serves as a monitoring and evaluation site. A key area guides the general management of the entire area of which it is a part, and would reflect the overall acceptability of current grazing management over the range. Key areas can be a short segment of stream or a small upland area. A key area can also be an entire stream reach or large upland basin. The locations of the key areas for each allotment would be included in the AMPs as described in Appendix C.

Short-term monitoring would be conducted in these key areas. Key areas are chosen by the Forest Service rangeland management personnel with input from other disciplines and permittees. Locations of key areas for short-term monitoring may change or adjusted over time as conditions change or new information becomes available.

### ***Management Adjustments Based on Short-Term Monitoring***

Based on the successes or failures observed through short-term monitoring, adjustment to grazing strategies would be made. These adjustments would be included in the next year’s AOIs. Adjustments would include a temporary reduction in the proper use criteria for the allotment (or pasture) or any of the various livestock management tools discussed in greater detail in Appendix D. New grazing improvements, such as fencing or water developments, would require additional environmental analysis.

In some instances, if short-term monitoring reveals that specific vegetation conditions have changed as a result of grazing strategies, the Matrices would be applied to determine the current ecological condition and the appropriate adjustment would be made regarding proper use criteria.

If short-term monitoring efforts identify a habitat group that was not included in Table 3, it would still be managed consistent with this alternative. The best available information would be used to determine the ecological condition of the habitat group and the appropriate utilization rate(s) from Tables 4 and 5 would be applied. For example, if cottonwood were identified (discovered, etc.) in the Bradshaw Allotment, its condition would be determined and the appropriate utilization rates from Tables 4 and 5 would be used to manage grazing activities in that habitat group.

### **Long-Term Monitoring (Effectiveness)**

Long-term monitoring would be used to determine if the proper use criteria and grazing management guidelines included in this alternative and the AMPs are effective in moving resources towards desired conditions and ensuring an upward or stable trend in resource conditions. Long-term

monitoring would gauge the success of allotment management by comparing evaluations on rangeland condition and trend against previous evaluations. Rangeland condition (functioning, functioning-at-risk, non-functioning) has been discussed in detail above. Trend is characterized as “toward potential,” “away from potential,” or “static” (SRM 1989) or “direction of change over time” (FSH 2209.21). The appraisal of trend is simply the recognition of the nature, rate, and direction of ecological change (USDA-FS 1951).

Current conditions and trends have been identified in the project area using a variety of data and monitoring techniques which include ecodata plots located at benchmark locations, nested frequency studies, GAWS, consideration of attributes in the Matrices, and photo point analysis.

Long-term monitoring sites have been identified at benchmark locations and were chosen by the District rangeland management staff and reviewed by the Forest ecologist and other resource specialists. Sites are representative of the dominant soil and vegetation types on the allotments. In some cases, they are in the same location as benchmarks that have been used for several decades for long-term monitoring. The locations of the benchmark sites for each allotment would be included in the AMPs, as described in Appendix C. Benchmark locations may be added or modified over time to adjust to new and/or updated information.

The benchmarks would be reevaluated approximately every 5 years to determine rangeland condition, using the Matrices described in Appendix A. To determine actual trend, the benchmarks would be reevaluated using the appropriate methodology (nested frequency, multiple indicator monitoring (MIM), the Matrices, photo points, line intercept, etc.).

Detailed monitoring protocols describing methods, time frames, locations, and a key to identify the vegetative groups have been included in the project record. These protocols would guide monitoring activities. The condition and trend information, along with other data would be used to evaluate any needs for change in management, including adjustments to the proper use criteria or season of use. Allotment specific information and locations would be included within the individual AMPs, as described in Appendix C. The AMPs would also include a long-term monitoring schedule.

In addition to monitoring rangeland condition and trend, wildlife monitoring would continue, focusing on habitats for threatened, endangered, sensitive, and management indicator species. Population monitoring would generally be conducted in cooperation with NDOW. The Forest Service would continue to cooperate with NDOW to complete GAWS stream surveys on various streams within the project area. Streams identified with current or recently existing Lahontan cutthroat trout populations would normally be assessed on a 5 to 10 year schedule. The South Fork of Indian Creek would be monitored once every 2 years to determine the effectiveness of the proper use criteria and other management activities.

While long-term monitoring using the Matrices and other appropriate protocols to measure trend would generally occur on a 5 year cycle, individual attributes contained within the Matrices may be monitored more frequently at select locations to more closely track trends. Other long-term monitoring methods such as photo points would be done annually at select locations throughout the allotments. Allotment specific monitoring schedules and priorities would be included within the AMPs, as described in Appendix C. Monitoring would be done using the approved method(s) from the Rangeland Ecosystem Analysis and Management Handbook (FSH 2209.21). If the methods for evaluating condition or trend have changed by the time of the monitoring, adjustments would be made to ensure that data can be “cross-walked” between the different methodologies so actual long-term trend can be determined. Monitoring files would be established for each allotment and would be stored at the Santa Rosa Ranger District.

### ***Management Adjustments Based on Long-Term Monitoring***

If the long-term monitoring shows that rangeland condition on an allotment, or a pasture within an allotment, has not changed and actual long-term trends are stable or upward, no changes would be made to the proper use criteria applied to that allotment or pasture.

If the long-term monitoring indicates that rangeland condition on an allotment has changed, then the proper use criteria for the allotment would be adjusted, using Tables 4 and 5 above, to coincide with the new ecological condition. Additional adjustments to various livestock management tools, including a temporary reduction in proper use criteria for the allotment, would be implemented to ensure improvement and/or maintenance of the ecological condition of the allotment. If the rangeland condition is or has become non-functioning, then appropriate restoration strategies and/or activities and allotment management adjustments would be implemented to improve the ecological condition. If restoration strategies and/or activities are not feasible at the time, then adjustments to allotment management would be made to prevent any further decline in ecological condition until restoration strategies and/or activities can be implemented. Allotment management adjustments would include a temporary reduction in the non-functioning proper use criteria for the allotment, any of the various livestock management tools discussed in Appendix D, or removal of cattle from the allotment. Implementation of some restoration strategies and/or activities may require additional analysis.

If the rangeland condition has not changed, but actual long-term trend is downward on any allotment, then changes in annual livestock management would be implemented to improve the trend. Livestock management changes would include a temporary reduction in the non-functioning proper use criteria for the allotment, any of the various livestock management tools discussed in Appendix D, or removal of cattle from the allotment.

## **Allotment Management Plans**

New AMPs would be developed for each allotment and would include the proper use criteria, key and benchmark areas, and monitoring schedules described in Appendix C. These allotment management plans would implement Alternative 2 (Proposed Action) and all of its requirements. Allotment management plans and AOIs would be the tools to guide the day to day and on the ground implementation of the Record of Decision.

## **Communication and Cooperation**

To ensure appropriate communication, cooperation, and collaboration associated with management of grazing allotments in the project area occurs, the following actions would be taken to improve management associated with this alternative:

- Occasional field reviews may be scheduled as needed to evaluate on the ground conditions and resources.
- An annual report summarizing management actions, monitoring, and allotment administration would be completed annually and distributed and/or made available to livestock permittees, state and federal agencies, county and tribal governments, other cooperators, and interested individuals.

## **ALTERNATIVE 3 – NO GRAZING/NO ACTION**

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The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.14d) require that a “no action” alternative be analyzed in every EIS. No Action means one of two things: either 1) the proposed action, or any of the action alternatives to the proposed action, does not occur, or 2) there would be no change in current management (FSH 1909.15(14.2)). Alternative 3 is the no action alternative for this EIS.

Alternative 3 (No Grazing/No Action) would eliminate grazing on all allotments within the Martin Basin Rangeland Project area. This alternative would result in an immediate reduction of 5,305 cattle and 25 horses. This amounts to a combined total of 20,639 HMs. Existing improvements that are no longer functional or needed including interior fences, cattleguards, and water developments would be removed.

### **Monitoring**

A monitoring program would be developed to determine changes in individual vegetative communities. The area would also be monitored for unauthorized livestock.

As existing range improvements are scheduled for removal, they would be evaluated for historical significance. Appropriate measures would be taken in consultation with the State Historic Preservation Officer as required under Section 106 of the National Historic Preservation Act (NHPA) and as required under the Rangeland MOU.

## **OTHER ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DETAILED ANALYSIS**

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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 and in response to the 2005 FEIS provided additional suggestions for alternative methods to achieve the purpose and need.

### **Alternative 4 (as contained in 2005 FEIS)**

Following the remand of the Record of Decision for the 2005 FEIS for this project, it has been determined that Alternative 4 (2005 FEIS for the Martin Basin Rangeland Project) has similar components to portions of Alternative 1 (Current Management) and Alternative 2 (Proposed Action) of this analysis. Alternative 4 was developed as a very general, broad based alternative that emphasized among other elements a collaborative relationship between the Forest Service and grazing permittees and an adaptive approach to grazing management. Because Alternative 4 included many of the components and potential effects of both Alternatives 1 and 2 and lacked sufficient site specificity to be effectively analyzed within a NEPA document, it will not be carried through the analysis in this EIS. The specifics of this alternative have been included in the project record.

### **Restoration Alternative**

A “Restoration Alternative” was developed for the 2005 FEIS for the Martin Basin Rangeland Project in response to the scoping process recommendation for significant reductions in livestock numbers

and reliance on non-structural methods of livestock control and dispersion. Passive restoration techniques such as cessations in livestock use and closure of roads were also suggested. The Restoration Alternative was not analyzed through that document and is not being considered in this EIS for the following reasons:

- The suggested Restoration Alternative partially duplicates the pertinent features of Alternative 3 (No Grazing/No Action) which is analyzed in full.
- Analysis of potential road closures is outside the scope of this analysis as stated in the “Purpose of and Need for Action”. The Forest has completed environmental analysis on travel management and the potential effects of vehicle travel. Roads have been considered in the cumulative effects sections (Chapter 3 and Appendix E).
- Non-structural methods of livestock control and dispersion, such as alterations in riding patterns, are already evaluated in the analysis.
- The Restoration Alternative lacked sufficient site specificity to analyze the alternative effectively within a NEPA document.

## Fuels Reduction Alternative

An alternative to reduce fuels through grazing use was considered, but eliminated from detailed consideration because there is no research available to support the theory that grazing would be a long-term effective strategy for significantly affecting fire behavior on a large landscape basis while also maintaining or improving ecological conditions. On most of the allotments covered by this analysis, the largest portion of the fuels that carry large wildfires are live and dead woody materials that are minimally affected by cattle grazing.

## COMPARISON OF ALTERNATIVES

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The comparison of alternatives draws together the conclusions from the information and discussion presented for the issues throughout this DEIS and provides the results of the analysis in a brief summary. This section contains two summary tables. Table 6 displays a comparison between the features of Alternative 1 (Current Management) and Alternative 2 (Proposed Action). Table 7 provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. The effects of implementing each alternative are described in detail in Chapter 3.

**Table 6. Comparison of Features between Alternative 1 (Current Management) and Alternative 2 (Proposed Action).**

<b>ALLOTMENT</b>	<b>CURRENT MAXIMUM HERBACEOUS UTILIZATION RIPARIAN STREAM CLASS 1-2 / 3-5 HIGH / LOW**</b>	<b>PROPOSED MAXIMUM HERBACEOUS UTILIZATION RIPARIAN</b>	<b>CURRENT MAXIMUM BROWSE UTILIZATION COTTONWOOD &amp; ASPEN/ RIPARIAN/UPLAND</b>	<b>PROPOSED MAXIMUM BROWSE UTILIZATION COTTONWOOD &amp; ASPEN/ RIPARIAN/UPLAND</b>	<b>CURRENT MAXIMUM HERBACEOUS UTILIZATION UPLANDS</b>	<b>PROPOSED MAXIMUM HERBACEOUS UTILIZATION UPLANDS</b>
<b>Bradshaw C&amp;H*</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Buffalo C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Buttermilk C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Granite Peak C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Indian C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Martin Basin C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>Rebel Creek C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%
<b>West Side Flat Creek C&amp;H</b>	45% / 65%	45%	35% / 35% / 50%	20% / 30% / 35%	65%	50%

\* Cattle and horse

\*\*See Table 2 – Rest Rotation (High-Low Utilization)

**Table 7. Comparison of Alternatives – Effects of Implementation.**

<b>COMPARISON OF ALTERNATIVES – EFFECTS OF IMPLEMENTATION</b>			
<b>Resource</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 Proposed Action/Preferred Alternative</b>	<b>Alternative 3 No Grazing/No Action</b>
<b>ISSUE 1: WATER QUALITY</b>			
<b>Bacteria (Fecal Coliform)</b>	Continues at historic levels or increases.	Levels decrease as numbers are reduced or vegetative buffer increases.	Levels decrease quickly.
<b>Sediment/Turbidity</b>	Continues at historic levels or increases.	Levels decrease as ecological condition improves and banks stabilize.	Levels decrease as ecological condition improves and banks stabilize. Occurs at a faster rate than Alternative 2.
<b>Water Temperature</b>	Continues at historic levels or increases.	Levels decrease as ecological condition improves and riparian communities recolonize stream banks.	Levels decrease as ecological condition improves and riparian communities recolonize stream banks. Occurs at a faster rate than Alternative 2.
<b>Dissolved Oxygen</b>	Continues at historic levels or increases.	Levels improve as nutrient levels and water temperature decline.	Levels improve as nutrient levels and water temperature decline. Occurs at a faster rate than the Proposed.
<b>Nutrients (Nitrate and Phosphate)</b>	In areas of concentrated use continues at historic levels or increases.	In areas of concentrated use continues at decreased level as vegetative buffer improves and/or numbers are reduced.	Inputs from grazing no longer exist shortly after grazing ceases.
<b>ISSUE 2: SOIL QUALITY</b>			
<b>Ground Cover</b>	Loss of ground cover continues at its current rate or increases.	Ground cover improves or stabilizes.	Ground cover increases as ecological condition improves. Occurs at a faster rate than Alternative 2.
<b>Compaction</b>	Levels of compaction continue at its current rate or increases.	Levels of compaction stabilized or reduced.	Levels of compaction reduce as ecological condition improves. Occurs at a faster rate than the Proposed Action.
<b>Erosion</b>	Levels of soil erosion continue at its current rate.	Levels of soil erosion stabilized or reduced.	Levels of compaction reduce as ecological condition improves. Occurs at a faster rate than Alternative 2.
<b>ISSUE 3: FISHERIES AND WILDLIFE</b>			
<b>Bank Stability</b>	Below 80%.	Greater than 80%.	Between 80-90%.
<b>Fisheries Populations</b>	45-69% of potential population.	Increase in % population in relationship to potential populations.	Greatest increase in % population in relationship to potential populations.

<b>COMPARISON OF ALTERNATIVES – EFFECTS OF IMPLEMENTATION</b>			
<b>Resource</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 Proposed Action/Preferred Alternative</b>	<b>Alternative 3 No Grazing/No Action</b>
<b>Sage Grouse Nesting Habitat</b>	Habitat in less than satisfactory condition is unlikely to improve. Potential for nest trampling in concentrated use areas.	Habitat in less than satisfactory condition would move towards satisfactory condition. Potential for nest trampling in concentrated use areas.	Habitat in less than satisfactory condition would move towards satisfactory condition more quickly than Alternative 2. Livestock would not be present to trample nests.
<b>Sage Grouse Brood Rearing Habitat</b>	Habitat in less than satisfactory condition would not improve.	Habitat in less than satisfactory condition would move towards satisfactory condition.	Habitat in less than satisfactory condition would move towards satisfactory condition more quickly than Alternative 2.
<b>ISSUE 4: VEGETATION RESOURCES</b>			
<b>Riparian Health</b>	Downward to stable trend.	Upward trend.	Increase in trend after livestock removed and then potential for slight downward trend.
<b>Riparian – Percent Bare Ground</b>	Percent bare ground increases in area with 65% use.	Decrease in percent of bare ground in all streams.	Greatest decrease in percent bare ground.
<b>Aspen Regeneration</b>	Stable to upward trend in large stands..	Increased improvement from Alternative 1 especially in small stands functioning-at-risk.	Most increase in rate of regeneration.
<b>Upland Vegetative Composition</b>	Percentage of native, desirable species would continue in its current trend or decrease.	Percentage of native, desirable species would be stabilized or improved. As the condition improves, plant communities would be more resistant to invasive and noxious weeds.	Vegetative composition increases as ecological condition improves. Occurs at a faster rate than Alternative 2.
<b>Upland – Percent Bare Ground</b>	Percent of bare ground increases in areas with 65% use.	Percent of bare ground stabilized or reduced.	Percent bare soil decreases as ecological condition improves. Occurs at a faster rate than Alternative 2.
<b>Noxious Weeds – Trend in Number of Acres Affected</b>	Current grazing standards would continue, where livestock act as a vector for spreading noxious weeds. Current pasture function would not likely change, therefore native plant communities and bare ground remain susceptible to noxious weed invasion.	Livestock would continue to act as a vector for spreading noxious weeds. Under this alternative, bare ground would be reduced and the native plant community health would improve, reducing the susceptibility of the area to noxious weed invasion.	Livestock would not cause or spread noxious weed infestations. Bare ground would be reduced and native plant community health would improve, reducing the susceptibility of the area to noxious weed invasion.

<b>COMPARISON OF ALTERNATIVES – EFFECTS OF IMPLEMENTATION</b>			
<b>Resource</b>	<b>Alternative 1 Current Management</b>	<b>Alternative 2 Proposed Action/Preferred Alternative</b>	<b>Alternative 3 No Grazing/No Action</b>
<b>ISSUE 5: SOCIAL-ECONOMIC VALUES</b>			
<b>Permitted Animal Unit Months (AUMs) Gain or Loss</b>	No change in AUMs.	Possible loss of AUMs due to reduced utilization levels.	Loss of all (27,258) AUMs.