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Environmental Assessment Big Grayback Allotment Management Plan Update

Applegate and Illinois Valley Ranger Districts

Rogue River-Siskiyou National Forest

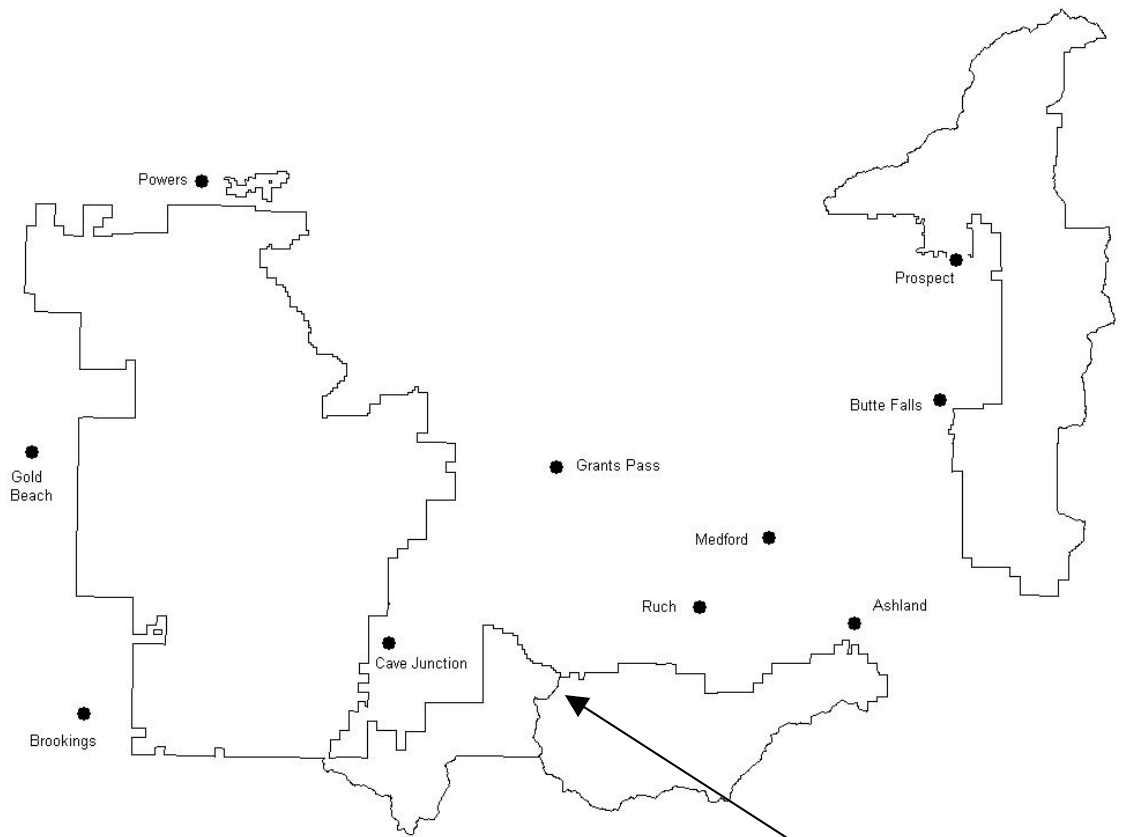
The legal description of the Big Grayback Allotment is: T.41 S., R.5 W., portion of Section 6; T.40 S., R.6 W., portions of sections 1-3, 10-14, 23-27, 35 & 36; T.40 S., R.5 W., portions of sections 1-24, 28-32; T.39 S. R.6W., portions of section 35; T. 39 S, R. 5W., portions of sections 31 & 32; Willamette Meridian, in Josephine County, OR, and T.40 S., R.4 W., portions of sections 5-8, 17-18; Willamette Meridian, Jackson County, OR.

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Vicinity Map



Rogue-River Siskiyou National Forest



Big Grayback Allotment Area

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**Big Grayback
Allotment Management Plan Update
Environmental Assessment**

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I. INTRODUCTION

A. Document Structure

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and alternatives. The document is organized into four parts:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's Proposed Action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on Key Issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a summary and comparison table for each alternative considered in detail.
- *Affected environment and Environmental Consequences:* This section describes the environmental effects of implementing the Proposed Action and other alternatives. This analysis is organized by Key and Other Issues, as identified in Chapter I. Within each section, the affected environment is described first, followed by the effects of the No-Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment. Included are range background information, biological evaluations and reports, soils report, heritage findings, Port-Orford cedar report, and cumulative watershed effects analysis.

B. Background

The Big Grayback Cattle & Horse (C&H) Allotment, within the Applegate Ranger District and the Illinois Valley Ranger District of the Rogue River-Siskiyou National Forest is being analyzed for an update of its allotment management plan (AMP). This analysis was first started in 1995 with a release of an Environmental Assessment for public comment. For many reasons, a Decision Notice was not signed and the analysis was placed on hold until funding became available in fiscal years 2004 and 2005.

The Big Grayback Allotment straddles the boundary between the two districts about 10 miles south of Williams, Oregon (see Vicinity Map for general location and legal description). The allotment includes approximately 19,703 acres, of which about 16,894 acres are located on the Applegate Ranger District, and about 2,809 acres located on the Illinois Valley Ranger District. The Applegate Ranger District is responsible for the administration of the allotment and closely coordinates with resource specialists and District Ranger on the Illinois Valley Ranger District.

The area analyzed in this document is entirely National Forest system land, located in Jackson and Josephine counties, Oregon.

The Big Grayback Allotment contains a wide variety of ecotypes, some of which include riparian areas, high elevation meadows, and forestlands. The area is characterized by mostly rough mountainous topography with openings and meadows in the higher elevations.

Allotment management plans are the basic guiding documents for the management of cattle and horse allotments. The Big Grayback AMP was last updated in 1962. Since that time, changes in livestock management direction have occurred through the administration of the term grazing permits and Annual Operating Instructions (AOI).

The 1962 AMP established an initial level of 141 head for two months with a recommendation that the ultimate use of the allotment should be a stocking level of 200 head for a season from 7/15 through 9/15, given the completion of range improvements and improved management practices. An Animal Unit Month (AUM) is the quantity of forage required by one mature cow (1,000 pounds), or the equivalent for one month, based on an average daily forage consumption of 26 pounds of dry matter per day.

A search of administrative records from this period failed to show that these recommendations were ever fully implemented. The 1963 records show identical stocking level and season as those preceding the 1962 AMP (200 head from 7/1 - 9/30) and, in fact, for the period of 1954 - 1989, the maximum permitted stocking level was 200 head from 7/1 - 9/30. The highest permitted cattle use on record was in 1935, where 304 cattle grazed from 7/1 - 10/31 for a total of over 1,300 Animal Units. The earliest permit on record started in 1916 and permitted 150 Animal Units from 6/1 - 10/31.

In 1985, the Permittee on the allotment began taking personal preference non-use for a portion of his allocated number of head until 1990, when he was issued a 1-year term permit for 65 head. In 1991, he was issued a 10-year term grazing permit for 70 head with the season from 6/1 - 9/30. In the 1994 grazing season, the Permittee turned out 48 head on the allotment out of the 70 permitted. In 1995 the Permittee turned out 43 head along with two other temporary permits issued for 31 head, bringing the Big Grayback Allotment total to 74 permitted head.

In 2003, the Permittee ran 70 head of cattle from 6/1 - 10/20. For the past few years, the Permittee has been issued temporary term grazing permits allowing him to extend the grazing season one additional month. This increases the animal month figures depending on the range resource availability during the month of October.

The Rogue River and Siskiyou National Forests each have approved Land and Resource Management Plans (LRMP) that require the completion of updated allotment management plans. In 2003, the two Forests combined and are now managed as one administrative unit.

Prior to 1995, controversy existed over whether there was any need to consider a grazing permit a federal action requiring review under the National Environmental Policy Act as well as the adequacy of the progress toward getting allotment NEPA decisions completed. To resolve the issue, Congress included language in the 1995 Rescissions Act (Public Law 104-19, Section 504) that requires the Forest Service to identify all allotments for which NEPA analysis is needed, and to prepare and adhere to a schedule for conducting an assessment of grazing actions under NEPA. Section 504(b) and (c) allows the Forest Service to issue permits for nearly expired and waived permits on allotments listed on the schedule, but have not gone through a NEPA analysis, as long as the terms and conditions of the permit are not changed. In a reply to Congress, the Forest Service established a fifteen-year schedule for completion of this work.

Grazing actions on public land must be viewed as an on-going action. In order to understand the context of grazing activity today, one must have an appreciation of the history of grazing in the West. Prior to the 1930s, extensive unregulated grazing on public land was a major problem until Congress enacted laws that required grazers to own a local home ranch to qualify for a permit to graze. The Granger-Thye Act of 1950: P.L. 81-478 (April 24, 1950) established the direction for National Forest System allotment management, including the authorization to issue grazing permits for terms up to 10 years; authorization to use grazing fee receipts for rangeland improvement; and the establishment of grazing advisory boards. Also, requirements, including base property and commensurability, were also designated by statute to ensure economic stability to local communities, but also to foster stewardship toward the public land resources and to actually manage the rangelands for sustainability. The period of unregulated grazing resulted in adverse environmental consequences such as soil loss and watershed modifications that created many of the permanent and semi-permanent impacts seen today. Some of these impacts, such as the capability for sites to restore native vegetation communities, must be clearly recognized and understood to ensure that unrealistic expectations for management are not part of the action alternatives.

This assessment of vegetation and watershed conditions takes into account the historical level of use that occurred on these allotments prior to the establishment of management and control of livestock numbers with the enactment of the Granger-Thye Act of 1950. The purpose of both the Granger -Thye Act for USFS and Taylor Grazing Act for BLM was to establish controls and stewardship toward the public land grazing resource, with the core of that stewardship creating a linkage of the use of public land to an established private landowner who would bring stability to the community and bring these lands into a sustainable level of production for both forage and wildlife habitat.

C. Desired Future Range of Ecological Conditions (DFREC)

The desired future ecological condition describes desirable characteristics of various lands within the allotment. The 1989 Siskiyou National Forest Land and Resource Management Plan (LRMP) and the 1990 Rogue River National Forest LRMP establish overall management direction and standards and guidelines for land administered by the USDA Forest Service.

DFRECs further specify and define the Forest Goals identified in Chapter 4 of the LRMPs. Not all statements apply to all acres. The LRMP envisions a time when the goals for each management strategy will be achieved. The activities proposed under this analysis are expected to contribute to achieving these goals.

This description of a desired future ecological condition of the Big Grayback C & H Allotment was developed as a theoretical goal. None of the alternatives are expected to fully achieve all that is described here. Some of these goals are beyond the current capability of the ecosystem to fully achieve, and others are affected by activities not related to the AMP update being analyzed (i.e., recreation, roads, timber harvest, fires, etc.).

The short-term strategy under this AMP Update analysis is to move toward the desired future ecological condition specifically by allowing attainment of the Aquatic Conservation Strategy, the range utilization standards, the LRMP standards, and by improving range conditions.

FOR ALL RANGELANDS IN THE ALLOTMENT:

- Non-native species would not spread appreciably beyond their current distribution and would not appreciably increase in abundance on sites they already occupy.
- Desirable native forage plants on primary and secondary range would have an opportunity to successfully reproduce a number of times during their lifespan.
- Annual forage utilization would be at levels that maintain, or move rangelands toward, the desirable ecological conditions described here.
- Rangelands not currently exhibiting the ecological conditions described here would be moving toward them.
- Northwest Forest Plan standards and guidelines would be met.
- Plant species composition would be within the range of variation expected under the influence of native flora and fauna, and natural disturbance cycles.
- Percent cover of native vegetation would be close to what the soil and physical characteristics of the site would allow.
- Soil structure, infiltration capacity, fertility, soil flora and fauna, and percent bare ground (or bare moss) would be similar to what would develop normally under the influence of the parent geologic material, climate, native life forms and natural disturbance cycles (without the presence of cattle).

FOR SPECIFIC RANGELAND HABITATS:

Perennially saturated wetlands:

- Stocking levels, season of use, and forage utilization in surrounding drier habitats would be such that livestock are less attracted to perennially saturated wetlands.
- Native sedges, rushes, forbs, and bulrushes would continue to be the dominant herbaceous vegetation. Species composition would shift over time to include a lesser percentage of forbs that do well in disturbed environments. Some areas may include a higher (than current) percentage of wetland grasses and willows.

Seasonally saturated wetlands:

- Stocking levels, season of use, forage availability, and livestock distribution in surrounding drier habitats would be such that livestock prefer to graze elsewhere until the soil is dry and firm enough to support their weight without affecting soil structure.
- Herbaceous vegetation would be a mix of sedges, grasses, rushes and forbs. Grass and sedge cover would increase over time and forb cover would decrease. Decreasers (native plant species that decrease in abundance under sustained grazing) would return as a significant component of the plant communities. Places that are currently dominated by coneflower, false hellebore, goldenrod, senecio and aster in the drier portions of this habitat would shrink in extent and contain a higher proportion of native grasses.
- Tree and shrub cover would increase somewhat over time, but the percentage of open habitat would not decrease dramatically over time. Shrub heights would be adequate to allow individual shrub plants to survive and new plants time to mature.

Streamside riparian areas:

- Shade over streams, and large woody material in streams would increase over time. Suitable range acres would decrease somewhat over time as tree and shrub canopies provide shade and livestock forage production declines.
- Stream banks and channels would be in a stable functioning condition.

Drier (well-drained) meadows & other natural openings:

- Herbaceous vegetation would be a mix of grasses, dry land sedges and forbs. Native grass cover would increase over time and forb cover would decrease in areas with good soil fertility. Decreasers would return as a significant component of the plant communities.
- Natural or prescribed fire may play a role in maintaining the overall acreage in these areas, and may be used as a tool to restore a more desirable plant community composition.

Transitory range:

- Livestock would not hinder the growth or survival of desirable tree species.
- Opportunities to utilize transitory range forage would be sought when this action could reduce grazing pressure on more heavily used primary and secondary range.

Range

- A grazing system is in place and functioning to obtain relatively uniform cattle distribution, use of forage, and maintenance of plant vigor. A large percentage of meadow vegetation consists of desirable native forage species. Suitable range areas throughout the allotment show improvements due to utilization of grasses and shrubs at allowable levels. Gullies and erosion points are re-vegetated and produce palatable forage. Riparian areas are predominantly vegetated with woody shrubs and trees.
- Management of the available suitable livestock range on the Forest includes full utilization of forage available for livestock during the growing season. A grazing system is in place and functioning to obtain relatively uniform cattle distribution, use of forage, and maintenance of plant vigor.
- Management of rangeland resources within the allotment provides for grazing at levels within the context of the Northwest Forest Plan and the LRMP standards and guidelines to support local rural economies.

D. Purpose and Need for Action

The **purpose** of this Proposed Action is to continue authorization of livestock grazing in a manner that is consistent with the Rogue River and Siskiyou Forest Plans. Authorization is needed on this allotment because:

Where consistent with other multiple use goals and objectives there is Congressional intent to allow grazing on suitable lands. (*Multiple Use Sustained Yield Act of 1960, Wilderness Act of 1964, Forest and Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy and Management Act of 1976, National Forest Management Act of 1976*).

The allotment contains lands identified as suitable for domestic livestock grazing in the Rogue River and Siskiyou Forest Plans and continued domestic livestock grazing is consistent with the goals, objectives, standards, and guidelines of these forest plans.

It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans. (**FSM 2203.1**).

It is Forest Service policy to continue contributions to the economic and social well being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood. (**FSM 2202.1**).

By regulation, “forage producing lands” will be managed for livestock grazing where consistent with land management plans. (**36 CFR 222.2 (c)**).

There is a **need** for change from current management as portions of the allotment have been documented as trending toward desired conditions, however not all resource aspects or allotment areas are identified as trending toward desired conditions identified in the Forest Plans and further developed as DFREC herein.

While the objective of current management is to meet the Forest Plan standards and guidelines, utilization checks and observations up to 1993 indicated that certain areas of the allotment were being over-utilized. The completion of an analysis of the range condition in 1993 indicated that enough forage is being produced to support the permitted number of livestock; however, there is uneven distribution of cattle and concern for grazing in Botanical Areas. Management actions are needed to bring forage utilization further into compliance with standards and guidelines and DFRECs (see EA Appendix A). There is also a need to maintain existing range management facilities, such as a stock gathering corral that requires reconstruction.

E. Proposed Action

The Applegate Ranger District, in cooperation with the Illinois Valley Ranger District, proposes to implement activities as identified in Appendix A as amended by Forest Plan Amendment # 4 (March 5, 1993, page A-21) of the RRNF Forest Plan. An allotment management plan update is proposed for the Big Grayback C&H Allotment that would describe how the range resources would be managed. This section briefly describes and summarizes the Proposed Action; for more detail, see Chapter II.

The objective of the **Proposed Action (Alternative 3a in this EA)** is to continue grazing within the allotment while providing for improved conditions within riparian areas and Botanical Areas. This alternative is designed to improve control over livestock movements from low elevation to mid and high elevation pastures; and to increase forage utilization in the under-utilized lower elevation areas.

The Proposed Action would continue to allow livestock grazing in portions all Botanical Areas with a revised utilization standard set at (a maximum of) 20% through the Annual Operating Instructions (AOI). Exclusionary fencing would be required in the Bigelow Lakes area. This is designed to further reduce grazing pressure and enhance the Botanical Areas while maintaining a grazing operation. Special attention (range administration and monitoring) would be placed on the glade above Bigelow Lakes, Krouse Cabin meadow, Fish Lake meadow, and the Windy Gap area.

Under the Proposed Action, the stocking level on the allotment would remain at the current maximum permitted level of 280 Animal Units, which consists of 60 head of cattle over a grazing season from 6/1 - 10/20. The acres permitted for grazing however, would increase to around 26,740 to better distribute the allocated number of animals over a larger controlled grazing area. The grazing season would be formally extended into the month of October to better reflect current management and actual range conditions. It would eliminate the need to grant a temporary term grazing permit for this time period, which has been granted since 1979/1980. Implementation of the updated AMP could begin the first grazing season after approval by the Responsible Official.

F. Decision Framework

Based on the interdisciplinary analysis presented in this EA, the Applegate District Ranger is the responsible official who will decide whether or not to continue authorization of grazing on the Big Grayback Allotment.

The Applegate District Ranger is responsible for the administration of the allotment (in close coordination with the District Ranger on the Illinois Valley Ranger District), and is responsible for all administrative matters including analysis and decisions under NEPA (per letter of delegation; File Code 1900, April 7, 2005). If the decision is to continue to authorize grazing, it will also include deciding the kind and number of livestock, approximate season of use, and measures (terms and conditions) intended to mitigate any environmental effects.

G. Management Direction

The 1989 Siskiyou National Forest Land and Resource Management Plan (LRMP) and the 1990 Rogue River National Forest LRMP establishes overall management direction and standards and guidelines for land administered by the USDA Forest Service. It also specifies management goals, as well as management prescriptions for each management strategy. The Record of Decision (ROD) for *Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, (also know as the Northwest Forest Plan) amended the LRMPs in 1994, by creating additional land allocations and certain standards and guidelines.

This document *is tiered to* the Final Environmental Impact Statement (FEIS) and Record of Decision for the Rogue River and Siskiyou NF LRMPs as amended by the Northwest Forest Plan. The Proposed Action was designed using the procedural and substantive requirements of the 1994 Northwest Forest Plan, the Endangered Species Act, the National Forest Management Act, the National Environmental Policy Act, and other legal requirements. This document is also tiered to the FEIS and Record of Decision and Land and Resource Management Plan Amendment for Management of Port-Orford-Cedar in Southwest Oregon, Siskiyou National Forest (March 2004) and the FEIS and Record of Decision To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (March 2004). This document is also tiered to the FEIS and Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl (March 2004). That decision clarified provisions relating to the Aquatic Conservation Strategy. As described in these documents, the Proposed Action occurs within many land allocations that are shown in Map 1 and listed in Table 1.

Management Allocations: The allotment contains a number of Management Strategies with specific goals, standards and objectives. A complete list of all Management Strategies present in the area is shown below. A detailed description of these Management Strategies can be found in the Rogue River and Siskiyou National Forest Land and Resource Management Plans, and the Northwest Forest Plan.

The allotment boundary associated with the Proposed Action (Alternative 3a and 3b) incorporates all of the (the greatest extent of) alternative boundaries being considered in detail and is displayed below to portray the land management allocations associated with the Big Grayback Allotment.

Map I-1. Land Management Allocation Map

Land Allocations Big Greyback Range Allotment
Alternative 3

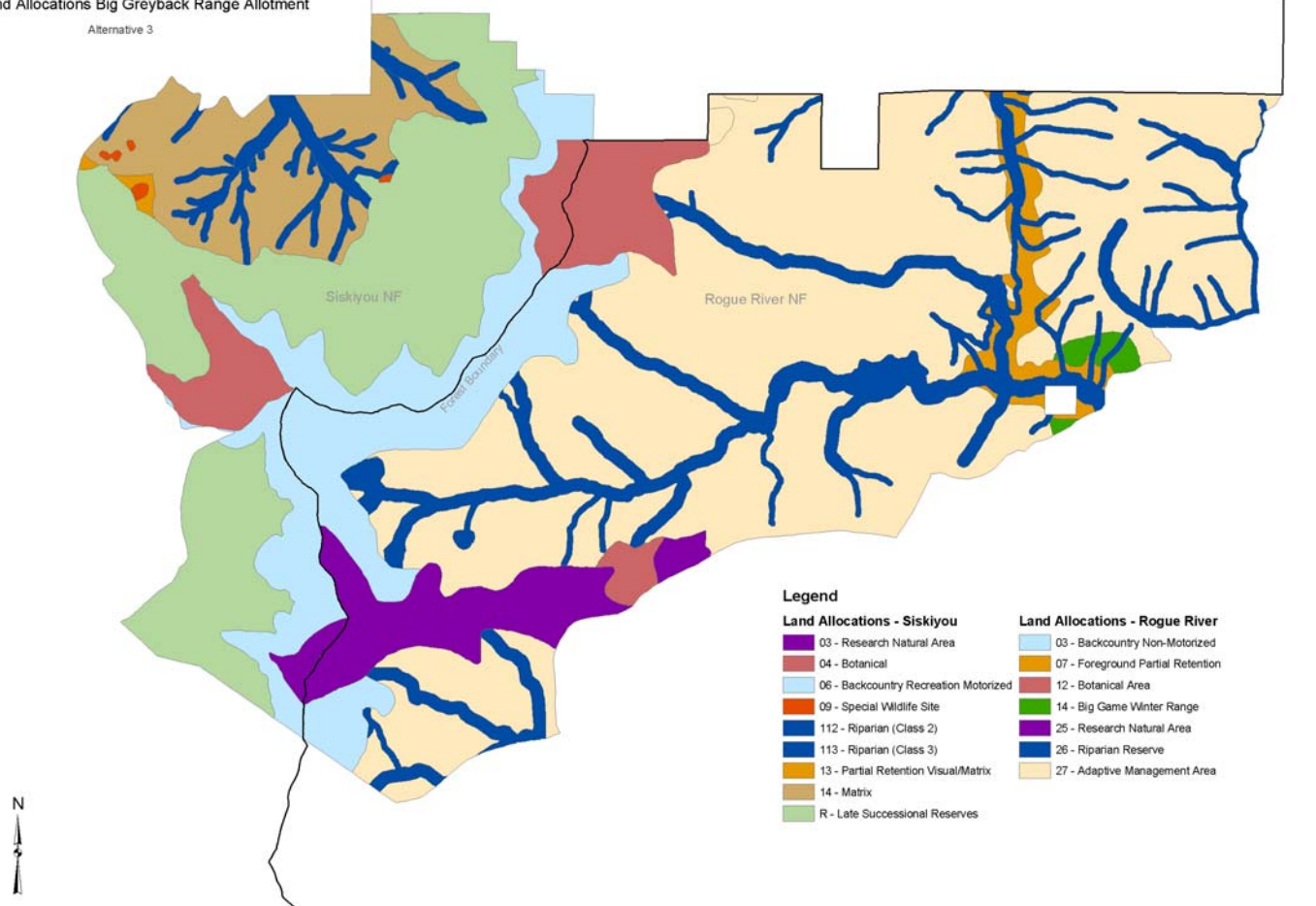


Table I-1. 1990 Rogue River and 1989 Siskiyou National Forest Plan Management Strategies within Big Grayback Allotment

MA = Management Area: all values are expressed in acres.
Total Acres Within the Big Grayback Allotment = 26,678 (Alternatives 3a and 3b)

Rogue River National Forest (RRNF) LRMP Allocations for Big Grayback Allotment								
Backcountry Non-Motorized (MA 03)	Foreground Partial Retention (MA 07)	Botanical Area (MA 12)	Big Game Winter Range (MA 14)	Research Natural Area (MA 25)	Riparian Reserves (MA 26)	Adaptive Mgmt. Area (MA27)	Private Lands	Total Acres on the RRNF
1,450	360	734	108	1,102	2,935	10,817	45	17,551

Siskiyou National Forest (SNF) LRMP Allocations for - Big Grayback Allotment									
Research Natural Area (MA 03)	Botanical Area (MA 04)	Backcountry Recreation (MA 06)	Special Wildlife Area (MA 09)	Riparian Stream Class 2 (MA 112)	Riparian Steam Class 3 (MA 113)	Partial Retention Visuals (MA 13)	General Forest (MA 14)	Late Successional Reserve (MA 28)	Total Acres on the SNF
99	687	1,592	26	265	353	43	1,597	4,465	9,127

Forest-wide management objectives for the Rogue River National Forest are listed in the Forest Plan in Chapter IV, beginning on page 4-1, with goals for each management strategy/area beginning on 4-34. The Siskiyou National Forest management objectives are listed in the LRMP (Chapter IV, starting on page IV-1) and specifically outlined on page IV-65 through IV-143 under Management Prescriptions, where 14 Management Areas are described with their objectives.

The Emphasis of the **Applegate AMA** is to develop and test variations on established management practices including partial cutting, prescribed burning and low-impact approaches to forest harvesting, so as to provide for a broad range of forest values, including late-successional forests and high quality riparian habitat.

Riparian Reserves are a component of the Aquatic Conservation Strategy (ACS) (see page B-9 in the Northwest Forest Plan), which was designed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Activities may occur within Riparian Reserves, including managed grazing.

All of the lands within all of the alternatives have been analyzed by watershed analyses, and these documents have been used for this AMP update. Portions of the Big Grayback Allotment on the Illinois Valley Ranger District are designated as Key Watersheds and are within the Upper Sucker Creek Key Watershed and the Cave/Grayback Key Watershed. A Pilot Watershed Analysis Area (WAA) inventory was conducted in 1995 covering these Key Watersheds and resulted in the Grayback/Sucker Key Watershed Analysis. These documents are incorporated by reference to this analysis.

Late-Successional Reserve (LSR): The Big Grayback Allotment is located outside of any established (allocated) LSR on the Rogue River National Forest, and is within the East IV/Williams LSR on the Siskiyou National Forest. A 1995 FS/BLM Southwest Oregon LSR assessment (incorporated by reference) was conducted and contains information applicable to the Big Grayback Allotment (page 148).

Botanical Areas (formal allocations designated under the Rogue River or Siskiyou National Forest Plans) are managed to protect areas of the Forest with important botanical resources. The goal of these areas is to protect and enhance exceptional botanical values. Botanical Areas are an important component of the sensitive species management program and also provide a cornerstone for maintaining biological diversity.

According to the **Siskiyou NF LRMP**, “Livestock grazing shall be prohibited in Botanical Areas, except where such use is part of an existing allotment. Bigelow Lakes is the only recommended Botanical Area with an existing grazing allotment (Big Grayback Allotment, administered by the Applegate Ranger District of the Rogue River National Forest). Cattle shall be prevented from reaching the Lakes area by a drift fence. The effects of grazing in the Bigelow Lakes basin shall be monitored, and corrective action taken as necessary.” (Standard and guideline MA 4-6; RANGE LRMP page IV-88).

According to the **Rogue River NF LRMP**, “Livestock grazing will be controlled in order to benefit or maintain the botanical resource. This control can range from limited or no livestock grazing to seasonal adjustments to benefit the target species. Forage utilization standards will be based on this direction.

Range improvements and vegetative manipulation will not be permitted unless they will benefit the botanical resource. No exotic species will be seeded or placed in botanical areas. Provide fences and stock control devices when necessary to protect resource. Provide annual Permittee plans for livestock distribution and use patterns which reflect management direction. Write range allotment plans to reflect management direction for all lands within the allotment boundary. Allotment planning procedures are documented in FSM 2210.” (Standards and guidelines 1-5, MA 12; RANGE LRMP page 4-153).

Oliver Mathews Research Natural Area: Forest plan goals for Research Natural Areas (RNAs) are to “provide areas with undisturbed ecosystems for research, observation, and study. Protect the areas from human-caused disturbances to allow for change through natural processes.” Maintenance of natural processes within each area is the prime consideration. The main purposes of RNAs are to provide: (1) baseline areas against which effects of human activities can be measured; (2) sites for study of natural processes in undisturbed ecosystems; and (3) gene pool preserves for all types of organisms. According to the Siskiyou National Forest LRMP 9 (page IV-82, Range), no grazing of domestic livestock shall be permitted within a Research Natural Area.

According to the Rogue River National Forest LRMP (page 4-294, RANGE), Grazing may be allowed when the Director of the Forest and Range Experiment Station authorizes such a management practice as essential to maintain a specific vegetation type. It also states “Where Research Natural Areas are located adjacent to or within grazing allotments, the boundaries will be marked and physical barriers constructed around the area to prohibit livestock entry, if needed.”

Aquatic Conservation Strategy (ACS): On March 22, 2004, Mark Rey, U.S. Department of Agriculture Under Secretary for Natural Resources and the Environment, and Rebecca Watson, U.S. Department of the Interior Assistant Secretary for Lands and Minerals Management, signed an amendment to the 1994 Northwest Forest Plan (NWFP) Record of Decision (ROD). The amendment removed the ambiguous and confusing language in the 1994 NWFP ROD and provided new provisions with clear meaning. This amendment clarifies that the Aquatic Conservation Strategy (ACS) objectives are not ROD Standards and Guidelines.

These limited changes clarify that the proper scale for federal land managers to evaluate progress toward achievement of the ACS objectives is the fifth-field watershed and broader scales. These changes also clarify documentation requirements for land managers to demonstrate that projects follow the ACS. It removes the expectation that all projects must achieve all ACS objectives, but reinforces the role of watershed analysis in providing context for project planning. The decision clarifies that the nine ACS objectives are to be attained at the fifth-field watershed scale and not at the project or site level. All site-scale projects would continue to meet the protective measures in the Standards and Guidelines such as Riparian Reserve widths.

Survey and Manage: The Survey and Manage Standards and Guidelines were originally added to agency land and resource management plans as part of the 1994 Northwest Forest Plan. The Survey and Manage mitigation measure was added to the basic elements of the Northwest Forest Plan to provide benefits for rare and little known species. In January 2001, the Agencies modified the Survey and Manage Standards and Guidelines by identifying needed management, clarifying language, eliminating inconsistent and redundant practices, and establishing an annual species review process.

The Secretaries of Agriculture and the Interior proposed to remove the Survey and Manage Standards and Guidelines by amending 28 land and resource management plans within the range of the northern spotted owl. USDA Forest Service and USDI Bureau of Land Management jointly prepared a Final Supplemental Environmental Impact Statement *To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*. This FSEIS was completed in January 2004. A Record of Decision was signed by Mark Rey, Under Secretary for Natural Resources and the Environment, USDA; and Rebecca Watson, Assistant Secretary for Land and Minerals Management, USDI, on March 22, 2004.

None of the species that were covered by the Survey and Manage Mitigation Measure standards and guidelines are listed as Threatened or Endangered under the Endangered Species Act, nor are any proposed for listing. In a recent court finding, a judge determined that the NEPA planning documents on which the March 22, 2004 Record of Decision was based, failed to analyze certain effects. This makes it unclear whether the agencies should now be planning and managing former S&M species under S&M guidelines or FS/BLM Special Status/Sensitive Species guidelines. Accordingly, the most recent S&M lists were reviewed to determine if there are any additional S&M species for which pre-disturbance surveys would have been required that could occur in the geographic area of the allotment, or in habitats used by livestock, that would be vulnerable to effects of livestock grazing.

All of the Survey and Manage species were evaluated for inclusion in the agencies' Special Status Species Programs. For those that qualify, agencies must ensure that actions are consistent with the conservation needs of those species and that the actions do not cause the species to be listed under the Endangered Species Act.

Roadless Area Conservation: The Big Grayback allotment overlaps areas of the Oregon portion of the Kangaroo Inventoried Roadless Area (IRA). Portions of the Kangaroo IRA, outside of the Big Grayback Allotment, are adjacent to the federally-designated Red Buttes Wilderness Area. The allotment is not adjacent to, contiguous to or near any other area previously or currently inventoried as roadless. The area, as described in Appendix C of the 1990 RRNF LRMP, has not experienced any management activities in the form of timber harvest and/or road building. Grazing was identified (in RRNF LRMP Appendix C) as an ongoing use of this IRA.

FSM Interim Directive No. 1920-2001-1 (Roadless Area Conservation Rule - Federal Register January 12, 2001) temporarily revised decision authority for certain projects in IRAs. The 2001 interim directive reserved to the Chief of the Forest Service, the decision authority for timber harvest projects in IRAs unless the project met one of the exception situations specified in the interim directive. Effective July 16, 2004, Federal Register (69 FR 42648), this Interim Directive (ID) was reinstated, with two changes, the direction previously issued in ID No. 1920-2001-1 to implement the Chief's 1250/1920 letter of June 7, 2001, regarding Delegation of Authority/Interim Protection of Roadless Areas.

There is no timber harvest or road construction associated with this update to the Big Grayback AMP. This action does not require revised decision authority nor does it procedurally require NEPA documentation through an Environmental Impact Statement analysis process, because there would be no significant character changes to these lands described and inventoried as roadless.

H. Public Involvement (Scoping)

Issues associated with this proposal were identified by an interdisciplinary team (IDT) through a scoping process. This process included a review and evaluation of information gathered through specialist input and public correspondence received. Letters requesting public comment were sent in April and October of 1991 to individuals and organizations who requested to be notified of all planning activities on the Applegate Ranger District. Two public open houses were conducted in May 1991 to discuss planning actions scheduled for the District. A project-specific (AMP update) open house was also held in December 1991. After determining that more field data collection and analysis was required, the IDT delayed further project analysis until this data could be collected. Several informal meetings with the Permittee and the Forest Service were conducted to discuss annual operating plans and preliminary alternatives.

As the AMP update process resumed in 1993, an additional public scoping letter was sent (April 1993) and open house conducted (May 1993) regarding the AMP updates. An invitation to comment on the proposed project was published in the Legal Notice section of four local newspapers. The newspapers and the dates of publication of the legal notices were: the Medford Mail Tribune (4/29/93), Ashland Daily Tidings (4/29/93), Grants Pass Daily Courier (4/29/93), and the Siskiyou Daily News (Yreka, CA; 4/28/93). Many responses were received.

An Environmental Assessment (EA) for the Big Grayback allotment was available for public comment and was advertised in the Medford Mail Tribune Legal Notice section on September 28, 1995. The comment period ended on October 28, 1995. Seven letters were received with comments from individuals or interested groups. A summary of the comments by letter was prepared and is part of the analysis files. Site-specific and informational comments were used to identify new and specific project issues. They have been retained in the analysis files and were used for this ongoing analysis.

On September 24, 2003 a legal notice was published in the Medford Mail Tribune newspaper announcing the re-opening of the scoping process for the Big Grayback AMP update. This analysis was also announced in the Rogue River Schedule of Proposed Actions (SOPA) during 2003 and 2004.

An EA was developed in February 2005. Copies of the February 2005 Big Grayback Allotment Management Plan Update Environmental Assessment (EA) and Appendices, along with an invitation to comment, were mailed to those individuals and organizations who were involved with this project or who had requested a copy of the EA. A Legal Notice published in Medford's Mail Tribune newspaper February 13, 2005 established a Comment Period under 36 CFR 215. The Comment Period began on February 14 and ended March 15, 2005, a period of 30 days.

Seventy-one comment letters (and/or E-mails) were received during the Comment Period. The comment letters were read and coded based on content and intent by a three person Forest Service planning team, with District Ranger/Responsible Official oversight, review and concurrence. The original comment letters and letters containing the Forest Service review and coding are made a part of the Project Record (incorporated by reference) and are available upon request.

Comments received on the previous EAs (released for previous public comment in September 1995 and February 2005) were utilized as scoping input and substantive comments were incorporated into the September 2005 EA.

Under provisions of 36 CFR 215, the September 2005 EA has incorporated changes, corrections, clarifications, and revisions from the February 2005 EA Comment Period. **This revised EA (September 2005) is the basis of this decision and supercedes all other EAs previously developed.** A Response to Comments section prepared under 36 CFR 215 (and containing specific responses to all substantive comments received) was added to the EA Appendices (Appendix I).

Throughout the public scoping process, issues important to this allotment were identified and tracked. For this analysis, the Forest Service separated issues into three groups: Key Issues, Other Issues, and Issues Determined to be Out of Scope. Maps, resource details, range utilization inventories, a complete list of all identified issues, public scoping responses and process records are available in the Analysis File of the Environmental Assessment for the Big Grayback Allotment Management Plan Update at the Applegate Ranger District office.

Key Issues include points of discussion, debate or dispute expressing key, substantive cause-effect relationships to the quality of the human environment, which are also relevant to the timing and context of the decision to be made. They were used to design alternatives, unique alternative mitigation, and/or facilitated the clear display of important environmental consequences to aid in later decision-making.

Other Issues include points of discussion, debate or dispute expressing no effect OR minor, substantive cause-effect relationships to the quality of the human environment, which are also relevant to the timing and context of the decision to be made.

KEY ISSUES

The following site-specific issues were identified as being **key** to designing alternative methodologies to implement the Proposed Action for update of the Big Grayback C&H Allotment. Following the description of each issue, indicators are identified which are used to compare the effects of each alternative with regard to that issue in Chapter III. The discussion in Chapter III includes a current condition description and consequences discussion for each Key Issue. (Note: Key Issues are not in order of significance)

1. Livestock grazing within riparian areas (Riparian Reserves) may cause adverse physical and biological effects.

This Key Issue incorporates multiple resource concerns in terms of riparian resource values. The loss of riparian vegetation, adverse effects on water quality and fisheries habitat degradation are all inter-related and were grouped into this overarching issue. Some of the riparian areas (streams and wetlands) within the allotment are in unsatisfactory condition due to the impacts of livestock grazing. These include areas where loss of vegetation through livestock trampling and consumption have exposed the stream to direct sunlight, which increases water temperature and also reduces recruitment of organic material. In some areas streambanks have collapsed where livestock have traveled them to obtain water.

The indicators for this issue are direct and indirect effects to streams, streambanks, wetlands, and to riparian vegetation. Indicators also include response to NWFP Riparian Reserve Standards and Guidelines and cumulative watershed effects.

2. Grazing may conflict with objectives associated with the Grayback/Sucker Key Watersheds.

Portions of the Big Grayback Allotment on the Illinois Valley Ranger District are designated as a Key Watersheds and are within the Upper Sucker Creek Key Watershed and the Cave/Grayback Key Watershed. Watershed Analysis is a key component for implementing the ACS.

While grazing can be an acceptable practice within Key Watersheds, the Northwest Forest Plan has designated these areas for greater protection. Over utilization or over grazing, water quality (sedimentation and organic contamination), and potential changes to species composition are some of the main aspects of this issue. This issue is partially incorporated with Key Issue #1, but is further emphasized by consideration of potential impacts outside of riparian areas that contribute to the overall health of areas designated as Key Watershed.

The indicator for this issue is the presence of cattle and range utilization on the Key Watershed portion of the allotment.

3. Grazing may conflict with objectives associated with the Bigelow Lakes, Grayback Mountain (a.k.a. Grayback), and Miller Lake Botanical Areas.

The local viability of some rare plants in these Botanical Areas could be adversely affected by grazing. Some species in the Bigelow Lakes and Grayback Mountain Botanical Areas, particularly wetland mosses and liverworts, may be intolerant of even moderate disturbance from livestock grazing. The future composition of native plant communities in these Botanical Areas may be influenced by grazing. Visitors to Botanical Areas may find the presence of livestock detracts from their enjoyment of the flora. Current or proposed livestock management in the Bigelow Lakes Botanical Area and Grayback Mountain Botanical Area may be perceived as inconsistent with Forest Plan goals or Forest Plan standards and guidelines for these areas.

The indicator is the % of range utilization standard within the Botanical Areas, the extent of allowable grazing within (and/or exclosure of) grazing within Botanical Areas, and applicable mitigation.

4. Grazing may affect the Oregon Caves National Monument (OCNM) domestic water supply and water quality.

The Oregon Caves National Monument (OCNM) domestic water intake is located below the Bigelow Lakes in the Lake Creek area. There exists the potential for adverse cattle impacts to this watershed and water quality leading to the surface-water intake sites. Livestock are currently permitted to graze around the lakes. Adverse effects can occur in regard to the lack of control of livestock in the areas associated with this portion of the allotment. Water quality concerns specifically include the potential for *Cryptosporidium*, *e. coli* and turbidity.

The indicator for this issue is the risk of adverse water quality effects to OCNM municipal water.

5. Economic Consequences and Forest Service Costs for Grazing Administration.

This issue is viewed from two perspectives: 1) cost and effectiveness of the alternatives analyzed in regard to costs to Permittee operations and 2) cost and effectiveness of the alternatives analyzed in regard to costs to the Forest Service for administration of the allotments. The cost of administering the grazing program needs to be within projected federal budgets. The alternatives analyzed provide varying effects on Permittee operations, which could affect economic efficiency (and viability) of operations.

The indicators for this issue are the total cost by alternative associated with the range Permittee, and the total administration costs associated with this allotment for the USDA Forest Service.

OTHER ISSUES

The following site-specific issues were identified as being relevant to the Proposed Action for update of the Big Grayback C&H Allotment, and categorized as **Other Issues**. Chapter III includes a description and consequences discussion for each other issue. (Not in order of significance).

Livestock grazing may conflict with Late-Successional Reserve objectives.

Livestock grazing may conflict with Oliver Mathews Research Natural Area objectives.

Livestock grazing may adversely affect the composition, structure, and function of native plant communities.

Livestock grazing may affect human social and recreational values (including those associated with Inventoried Roadless Areas and/or other unroaded areas).

Livestock grazing may directly and indirectly affect resident and anadromous fish and aquatic species.

Livestock grazing may adversely affect rare plant species and their habitats, including Forest Service Sensitive plant species.

Livestock grazing may increase the potential for introduction and spread of non-native and undesirable (noxious) weeds.

Livestock grazing may affect Proposed, Endangered, Threatened or Sensitive animal species or their habitats.

Livestock grazing may affect neotropical bird nesting habitat.

Livestock grazing may affect Forest Plan Management Indicator Species or their habitats.

Existing plantations progeny sites, and seed orchards created by past management actions may be affected by livestock trampling, or from a change in competition for moisture with grasses and forbs.

Livestock grazing may increase soil compaction and displacement that could lead to loss of site productivity.

Erosion from cattle grazing on seeding/stabilization projects (cut and fill slopes on Forest Service roads, etc.).

Livestock grazing may affect level of fire hazard.

Livestock grazing may increase the risk of spreading *Phytophthora lateralis*, the pathogen that causes root disease on Port-Orford cedar.

Livestock grazing or improvements may have effects on Heritage resources.

OUT OF SCOPE ISSUES

Out of Scope issues include points of discussion, debate or dispute including those that cannot be addressed with a project level analysis, issues already decided by law, regulation, or other higher level decisions, issues, and/or issues received from the public that were found to be conjectural or non-substantive. A discussion and rationale for identifying them as Out of Scope follows:

Livestock grazing on National Forests is unacceptable

This issue is raised by many citizens who responded to public scoping efforts and feel that the use of national forest lands for livestock grazing is inappropriate. The primary reasoning behind this sentiment relates to the perception that grazing damages resources, degrades visitor enjoyment of the Forest, and has become a dominant use at the expense of other resources. All forest visitors and users may not share this opinion and many comments have expressed different ideas on this subject.

Grazing is by law and policy, an appropriate use of the National Forest and is allowable in this allotment with acceptable resource conditions. Grazing on National Forests is not appropriately analyzed at the project scale. Under Forest Service policy, a no-grazing alternative is specifically analyzed for Big Grayback, but the issue of grazing on the National Forests is not germane to this analysis.

The cost of administering livestock grazing may be greater than the return from grazing fees

This concern was raised by a number of people who feel that the cost of administering livestock grazing on this allotment should not exceed the return from grazing fees. The Forest Service does not set grazing fees, and this issue is outside the scope of project-specific analysis for the Big Grayback Allotment.

Lack of enforcement of Forest Plan standard and guidelines and annual operating instructions

Based on 1991 - 1993 range surveys, some of the meadows, riparian areas, and grasslands which comprise the bulk of the suitable range on the allotment, are in unsatisfactory condition. This is due to the allotment having sustained past grazing pressure in excess of the level that can maintain satisfactory range conditions.

The present proposal and analysis is aimed at achieving compliance with all Forest Plan standard and guidelines, as well as restoring areas that have been adversely impacted by livestock grazing. This process will suggest systematic monitoring of utilization on key areas and strict adherence to utilization standards established for certain areas designed to help recovery and maintenance of satisfactory range conditions.

While this unsatisfactory situation may be responsible in part to the current purpose and need for AMP update, there is no provision to accommodate (or penalize) past practices.

II. ALTERNATIVES CONSIDERED

A. Introduction

This chapter describes the process used to develop alternatives. It also describes alternatives considered in detail and those proposed but not considered in detail. It concludes with a comparison of the alternatives and a summary of mitigation measures applicable to action alternatives to minimize environmental effects.

Forest Service policy requires that all projects undertaken on National Forest land must comply with their respective land and resource management plans (LRMPs), as well as the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (Northwest Forest Plan ROD) and *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (S&Gs). The Big Grayback Allotment Management Plan (AMP) must meet the objectives, goals, and standards of both the SNF and RRNF LRMPs, as amended by the Northwest Forest Plan ROD and S&Gs.

In addition, the Allotment Management Plan must address emerging resource management issues and concerns and it must include a strategy for managing riparian areas for a mix of resource uses. This includes adherence to the LRMP standards and guidelines and monitoring to validate the effectiveness of mitigation measures. Grazing guidelines contained in the Management Allocations for the Rogue River and Siskiyou National Forests will be followed. Where grazing is not appropriate in certain management allocations, it will not be permitted and will be considered excess use and permit action(s) will be taken.

When season of use figures are shown, they represent optimum dates subject to the effects of climatic conditions and range readiness, and are adjusted yearly if needed. Also, when season of use, number of head, and AUM values are displayed in the following alternative summary tables, they represent the optimum numbers permitted for range utilization. Actual numbers that the Permittee uses on the allotment and sub-pastures may vary, but will not exceed the maximum numbers shown for each alternative. The permitted allotment total values displayed on the alternative summary tables are calculated on the entire allotment for the annual grazing season, and are not the cumulative total of the figures in the table.

B. Development of Alternatives

The Purpose and Need and Key Issues identified during scoping were used to develop the range of alternatives and actions considered in this EA. This range is intended to: a) provide clear choices for the decision-maker, b) respond to the scoping comments, c) respond to management direction, including the Northwest Forest Plan, and d) respond to the Purpose and Need for action. The No-Action Alternative (Alternative 1) is designed to address all the above except factor d), and provides a benchmark against which to evaluate the other alternatives.

During the entire scoping process, comments about this proposal were received from the public. Following scoping, the project's interdisciplinary team (IDT) categorized these comments into five Key Issues, and several "Other Issues". Key Issues were then used to frame possible alternatives. Alternatives were created by designing actions that would reduce or eliminate possible adverse or undesirable consequences associated with the current condition, as identified by the Key Issues, and to attain the stated Purpose and Need, and move conditions toward desired future ecological conditions.

C. Alternatives Considered but Eliminated from Detailed Study

NEPA requires that Federal agencies explore all reasonable alternatives and briefly discuss the reasons for eliminating any alternatives that were explored but not developed in detail (40 CFR 1502.14 (a)). The following alternatives or actions within alternatives have been eliminated from detailed study for the reasons stated and/or because they would not meet the Purpose and Need for this project.

Increase Permitted Livestock

An alternative that would increase the number of Animal Unit Months (AUMs) on the Big Grayback Allotment was considered. The preponderance of evidence from field investigations and monitoring indicates that current conditions are not meeting management direction in all cases and are not clearly headed toward desired future ecological conditions in all areas. Existing conditions and resulting impacts to environmental resources indicate that some change in livestock management or in numbers of AUMs are needed for this allotment. An increase in AUMs is not likely to cause a trend toward improved resource conditions. Therefore, the potential to increase AUMs on any one of the allotments was not considered feasible or logical, and was dropped from further study.

Exclusion of All Sensitive Areas

An alternative that would fence every sensitive area and provide alternate water sources away from riparian areas was considered. This would require extensive fencing around riparian areas, lakes, wetland areas, Botanical Areas, Research Natural Areas along large portions of the Illinois Valley Ranger District. This proposal was not considered practical, since this amount of fencing would be prohibitively costly (estimated to be over \$500,000) to construct and maintain. Fences at higher elevations often require expensive maintenance due to snow damage. Because this alternative was considered infeasible and illogical, it was dropped from further study.

Rest Rotation and Deferred Rotation Alternatives

Alternatives that would utilize different management techniques or grazing systems were considered. These included the "rest rotation grazing system", where each year a portion of the range allotment would be rested. This system requires fences to divide the allotments into pastures. The cost of construction and maintenance of fences to implement this alternative would similarly be prohibitive. Additionally, fencing over the terrain and between trees and other terrain features would be very difficult within this particular allotment.

Secondly, the "deferred rotation system" was considered. Under this system, all portions of the allotment are grazed, but at different times of the grazing season. This system also requires fencing or intensive herd management. The fencing would be expensive, as stated above. Intensive herd management requires a range rider to move cattle to new pasture daily, a costly herding technique for Permittees.

Finally, a management system of using mobile water sources was considered. Under this strategy, livestock would (presumably) follow a water supply vehicle that would move to new areas as utilization standards are met. This management practice would not likely be effective in these allotments due to the abundance of natural water. Because of the above stated reasons in addition to costs, these management and grazing systems were not analyzed in further detail.

Grazing Other than Cattle

An alternative that would have required the introduction of other forms of livestock such as sheep to achieve specific vegetation objectives on the allotments was considered. There is not current or historical demand for sheep grazing allotments and this alternative would have prohibited cattle grazing on this allotment; it therefore would not have met the stated Purpose and Need for the action and was also eliminated from detailed study.

Electronic Boundaries

While a potentially viable control and mitigation technique, the use of electronic ear tags and/or collars is currently only in experimental stages. Because it is not readily available, nor its success validated, it was not considered in detail under this analysis.

Also considered was the use of electric fencing, powered by solar energy in remote locations. This was dropped from detailed consideration due to the overall cost of such an operation, physical limitations, and snow conditions due to terrain in this area.

Exclusive Use of Range Riders

While range riders are currently used and use would continue under grazing alternatives considered in detail, exclusive use of range riders for control of livestock was not considered. In the Big Grayback Allotment, the tree canopy and understory vegetation is too thick for effective management exclusively with range riders.

Retire Public Lands from Grazing with Compensation

This alternative would require appropriate compensation to Permittees for the allotted National Forest grazing lands. Grazing would be abandoned on the National Forest in the areas described and analyzed under this EA. This alternative would completely and permanently remove grazing.

This alternative is infeasible as it is not in alignment with the Forest Service mission, and various policies. Further, there are no federal funds available to value and compensate current permitted grazing on National Forest System Lands for the purpose of retiring public lands from grazing; it was therefore eliminated from detailed consideration.

Inclusion of the Adjacent and Vacant Carberry Creek C&H Allotment

The Carberry Creek allotment is located to the southwest of the Big Grayback allotment and has been vacant since 1988. No cattle have been permitted to graze within this allotment due to the conflicts of cattle grazing on/near private lands, the lack of suitable grazing areas due to the low elevation conditions, and the steepness or the difficult topographical environment. The economics of the Carberry allotment did not justify detailed analysis unless the Permittee owned many of the private acres near County Road 777 (Carberry Creek Road). The former long-term Permittee passed away and the family has sold the property. For these same reasons, only a small addition to the Big Grayback Allotment was considered near the Little Bear Ranch to be included as part of all grazing alternatives.

D. Alternatives Considered In Detail

The goal of the IDT was to design alternatives that would attain the Purpose and Need, respond to the Key Issues, and trend toward attainment of Desired Future Range of Ecological Conditions (DFREC) for the various resources in the Big Grayback Allotment, or meet procedural requirements.

The following pages describe, summarize and display a map for each alternative considered in detail (Alternative 5 is not mapped).

For alternatives that include continued grazing, the alternative maps show two categories of fences, existing fence locations, and proposed fence construction. For each alternative there is a listing of type of fence, length and estimated cost of each segment. The formula for sharing in the cost of building and maintaining a fence varies by alternative and is listed under each alternative description. The Forest Service and Permittee would share equally (50/50 for labor and supplies etc.) in the construction of all fences, the corral and cattleguard. Actual construction could be any mix that results in equal share of expenditures.

The Permittee would be responsible for the timely raising and lowering of let-down fences and normal maintenance of all fences. For fence installation, the overall goal is to minimize direct effects to the soils resource. Therefore, mule packing or off road vehicles (e.g., 4-wheel machines) would only be allowed on existing roads or trails. Where access does not permit this equipment or methodology, non-impactive methods (e.g., helicopters) would be utilized to haul in materials. Helicopter costs are a factor in the cost of fencing. All actual fence installation would be by hand labor with portable power tools. While costs are figured at highest level (e.g., use of helicopters), any method that results in the same or less impacts will be considered at time of construction.

Alternative 1 (the No-Action Alternative) was developed as a requirement of the National Environmental Policy Act (NEPA) and is used to compare the effects of implementing the other alternatives.

ALTERNATIVE 1 (No-Action)

Function

For purposes of updating allotment management plans, "no action" is typically defined as the status quo under the existing and approved allotment management plan. For the Big Grayback allotment, the current AMP dates to 1962 and doesn't reflect changes in allotment management that have occurred over the years with modifications to grazing seasons, allotment boundaries, and voluntary animal reductions or stocking levels cuts. A NEPA process has not documented the changes associated with this evolution. Since the adoption of LRMPs for SNF and RRNF, specific standards and guidelines and management area strategies that address range resources have been in place. Movement toward full compliance with these requirements has been a priority for range managers on the Applegate and Illinois Valley Ranger Districts. The LRMPs do not specify range utilization standards for Botanical Areas.

Stocking Level/Season of Use

The 1962 Allotment Management Plan (2/5/62) permitted 200 head of cattle to graze from July 1 to September 30, for a total of 600 AUMs. The evolution of actual practices (voluntary Permittee reductions) and Annual Operating Instructions (AOIs) have resulted in conditions that are substantially different than as outlined in the 1962 Allotment Management Plan. The Forest Service has managed the stocking level and grazing season and boundaries while creating a trend toward compliance with LRMP standards and guidelines, the Aquatic Conservation Strategy, and forage utilization standards. Over the past few years, temporary term grazing permits were issued (based upon resource conditions/utilization rates) that extended the season one additional month in October.

According to existing records, the allotment boundary has evolved and changed to reflect the actual use patterns of the cattle. Annual operating instructions have approved changes to the number of head, season of use, and permitted allotment boundaries from the 1962 Allotment Management Plan.

Therefore, **for this analysis, the No-Action Alternative assumes continuance of management of the Big Grayback Allotment according to the approved 1962 guidelines, and its current actual authorized use (as identified and approved in the current AOI, Term and Temporary Grazing Permits).** This includes the current stocking levels, grazing season and allotment boundaries. The Forest Service believes this is a logical and correct point of reference for Alternative 1 (current condition) under this analysis. It would not be logical to assume, for example, 200 head under Alternative 1, which has not occurred on this allotment for nearly 25 years.

Under this analysis, No-Action would not update the Allotment Management Plan. No new fences or improvements are proposed. Conditions would continue status quo.

Table II-1. Alternative 1 (No-Action) Summary

Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Currently Authorized Allotment (Term Permit) Total	70	06/01 – 09/30	280	24,280*
Historical Authorized Temporary Permit Total	70	10/1-10/31	70	
Total Current Actual Use	70	06/01 - 10/31	350	24,280

Changed by voluntary Permittee reductions and AOI management change. Area includes 19,703 acres from the 1962 AMP plus 4,577 acres from the Bigelow Lakes (Buck Peak Agreement): total = 24,280 acres

Existing range improvements are identified in Table II-2, below. These existing facilities are common to all alternatives.

Table II-2. Existing Range Improvements - Big Grayback Allotment

Number	Type of Improvement	Location	Kind of Construction	Origin	Units
0C0045	Thompson Creek corral	T40S R5W S1 NWNE	Wooden posts and poles. With Loading Chute.	1980	1 ea.
0D0193	Deer Creek Trail	T40S R5W S18 S1/2	Stock Trail. Check on status and condition.	1990	1 mi.
0F0044	Thompson Creek drift fence. Roadside.	T40S R5W S1 NWNE	4 strand barbwire and metal posts. Connects to 0L0043 & 0C0045	1980	1 mi.
0F0040	Humpy Triangle/Sugar Lark fence	T40S R5W S1 N1/2, S2 NE	4 strand barbwire and metal posts. Connects to 0L0043	1990	1 1.4 mi
0F0047	Larkspur fence	T40S R5W S12 N1/2 SE	4 strand barbwire and metal posts. 1005 road. Connected to 0L0049.	1984	1 1/4 mile
0F0051	O'Brien trail fence and gate	T40S R5W S4 S1/2 SE	4 strand barbwire and metal posts	1980	1/4mi.
0F0052	Sturgis Creek/Miller Lake Drift Fence	T40S R5W S15 SWSW, S16 SESE, S21 NENE, S22 NWNW	4 strand barbwire and metal posts. Two cattleguards - 0L0053 and 0L0054. Flood damaged the Miller fence 1997. 1020-401, 1020, 1020-405	1980, 1984, 1991	1/4mi.
0L0043	Thompson Creek Cattleguard	T40S R5W S1 NWNE	Double wide. Connected to 0F0044 and 0F0040.	1990	1 ea.
0L0049	O'Brien Cattleguard	T40S R5W S12 N1/2 SE	Single wide. Connected to 0F0047.		1 ea.
0L0053	Sturgis Creek Cattleguard	T40S R5W S15 SWSW	Single wide. 1020 road. Needs to be repaired or removed.	1980	1 ea.
0L0054	Miller Lake Cattleguard	T40S R5W S21 NENE	Single wide. 1020-405 road. Will be removed when bridge is replaced.	1982	1 ea.

Big Grayback Allotment
Alternative 1

Grayback Mountain Botanical Area
Big Grayback Botanical Area
Bigelow Lakes Botanical Area
Miller Lake Botanical Area
Oliver Matthews Research Natural Area

Snake River NP
Snake River NP

Legend

- Current Allotment Boundary *Rus Buck Peak Agreement*
- Original 1962 Allotment Boundary
- Roads
- Trails
- Forest Boundary
- Private Ownership
- Existing Fences
- Barbed Wire

Alternative 1 = 24,280 acres

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ALTERNATIVE 2a

Function

Alternative 2a proposes to manage the allotment with objectives of lessening grazing impacts to the Cave/Grayback Creeks and the Upper Sucker Creek "Key Watershed" (Grayback/Sucker Creek WAA); Bigelow Lakes and Grayback Mountain Botanical Areas on the Illinois Valley Ranger District; the Oregon Caves National Monument (water system and trails) and general recreational use on the Illinois Valley Ranger District portion of the Big Grayback Allotment.

Boundary Changes

The allotment boundary would be moved back to coincide with the boundary between the Rogue River and Siskiyou National Forest, which would eliminate grazing on the Illinois Valley Ranger District portion of the allotment. A boundary change (called the Little Bear Addition) would enlarge the allotment by transferring about 720 acres from the now vacant Carberry Allotment to the southeast corner of Big Grayback, near Little Bear Ranch. The allotment boundary under this alternative would include a total of 17,551 acres.

Fence Construction and Maintenance

This alternative's resultant boundary would utilize some natural barriers, but the majority of the western portion of the allotment would require the construction of a fence (buck and pole was utilized for the cost estimate) along the divide/crest between the two Ranger Districts. In addition, a fence would be constructed in the Thompson Creek area to reduce drift to the high country earlier in the season. This fence along with the existing Seed Orchard area would also offer opportunity to help in gathering cattle at the end of the season. The Little Bear Addition would require a boundary fence. The purpose of the fence is to keep the cattle within the allotment. The location was selected as the most logical based on topography, i.e., using natural boundaries. All existing fences would be retained and maintained by the Permittee (see Alternative 1, Table II-2). Refer to Table II-4 for a summary of new fencing information.

Stocking Level/Season of Use

This alternative would maintain the fencing projects as outlined above, and continued level of Permittee cooperation in managing livestock. The following table displays the stocking levels, grazing seasons and pasture utilization system designed for this alternative. Under this alternative, no temporary grazing permit would be issued to extend the grazing season. All utilization would follow Forest Plan standards and guidelines.

Botanical Areas and Research Natural Area

The grazing utilization would be set at 20%¹ in all Botanical Areas (the Bigelow Lakes Botanical Area would be excluded from the allotment). No grazing would be permitted within the Oliver Mathews Research Natural Area (RRNF portion).

¹ The utilization rate for Botanical Areas is set at 20%, based on field observations, monitoring results, and botanical objectives. Utilization rates are not currently established in the LRMPs; this level represents a level of grazing that is at or below the levels currently observed in Botanical Areas.

Table II-3. Alternative 2a Summary

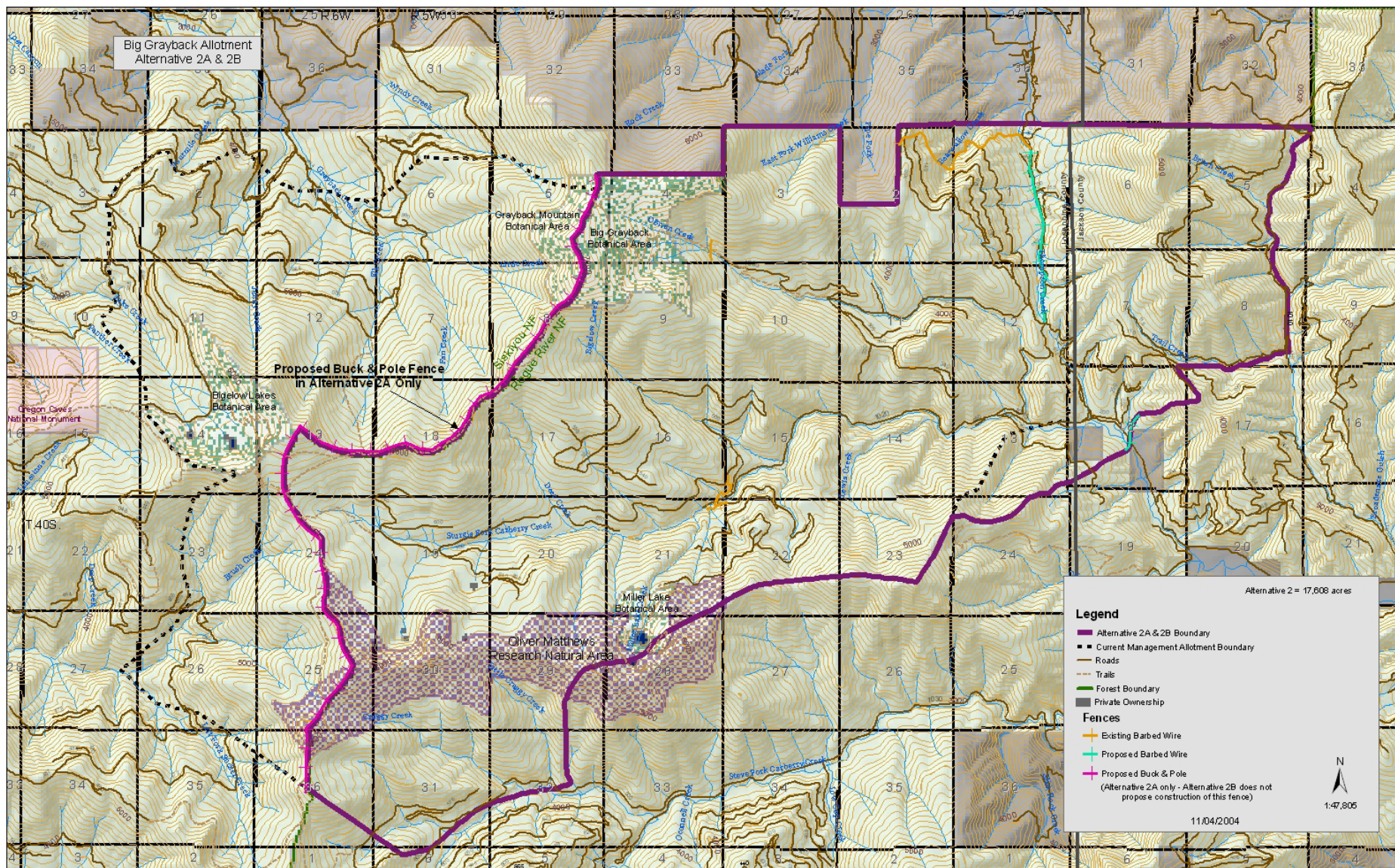
Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Permitted Allotment Total	70	06/1 - 09/30	280	17,551

Table II-4. Alternative 2a - Summary of New Fencing Information

Fence Section Description	Type of Fence and Other Information	Miles of Fence	Cost Estimate	Responsibility
Applegate RD/Illinois Valley RD Crest Fence	Buck and Pole ²	~ 8.3	(\$40,000/mile) \$332,000	FS to build & supply material, Permittee maintain w/ FS material.
Thompson Creek Fence	Fence extension (4-strand barbed wire with metal T-posts)	1.7	(\$8,050/mile) \$13,685	FS to supply material, Permittee to build & maintain.
Little Bear Fence/Cattleguard	Cattleguard and wing fences (4-strand barbed wire with metal T-posts)	~ 0.4	(\$8,050/mile) (Cattleguard = \$7,475) \$10,695	FS to supply material, Permittee to build & maintain.
Total		10.4	\$356, 380	

² For cost estimating/comparison purposes, a buck and pole fence was assumed and is probably the most effective type for this area, however, similar effective fencing methods could be employed.

MAP II-2. Alternative 2a and 2b



ALTERNATIVE 2b

This alternative is similar to Alternative 2a and differs only in regard to the fence construction along the crest dividing the Applegate and Illinois Valley Ranger District. This alternative would not construct the approximate 8.3-mile buck and pole fence (utilized for the cost estimate) and would rely on Permittee control of livestock to prevent them from grazing on the Illinois Valley Ranger District. The number of cattle, season of use, Animal Units, and allotment acres do not change from Alternative 2a. Other features and fencing requirements are the same as Alternative 2a.

Due to the costs associated with Alternative 2a, the line officer directed the IDT to analyze and show the effects, impacts, and feasibility of not building the fence along the crest.

The grazing utilization would be set at 20% in all Botanical Areas (the Bigelow Lakes Botanical Area would be excluded from the allotment). No grazing would be permitted within the Oliver Mathews Research Natural Area (RRNF portion).

No additional map is presented to show this alternative. Please refer to the map for Alternative 2a and 2b, and understand that this alternative includes no proposed fence preventing cattle from crossing to the Illinois Valley Ranger District under this alternative.

Table II-5. Alternative 2b Summary

Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Permitted Allotment Total	70	06/1 - 09/30	280	17,551

Table II-6. Alternative 2b – Summary of New Fencing Information

Fence Section Description	Type of Fence and Other Information	Miles of Fence	Cost Estimate	Responsibility
Thompson Creek Fence	Fence extension (4-strand barbed wire with metal T-posts)	1.7	(\$8,050/mile) \$13,685	FS to supply material, Permittee to build & maintain.
Little Bear fence/cattleguard	Cattleguard and wing fences (4-strand barbed wire with metal T-posts)	~ 0.4	(\$8,050/mile) (Cattleguard = \$7,475) \$10,695	FS to supply material, Permittee to build & maintain.
Total		2.1	\$24,380	

ALTERNATIVE 3a

Function

Alternative 3a is identified as the Proposed Action. The objective of Alternative 3a is to continue grazing within the allotment similar to current levels, while providing for improved conditions within riparian and Botanical Areas. This alternative is designed to improve control over livestock movements from low elevation to mid and high elevation pastures, and to increase forage utilization in the under-utilized lower elevation areas.

This alternative would continue to allow livestock grazing in portions of all Botanical Areas with a utilization standard of 20% (see EA footnote 1). Key utilization areas are established on the glade above Bigelow Lakes, Krouse Cabin meadow, Fish Lake meadow, and the Windy Gap area (see Monitoring section).

Boundary Changes

Included in this alternative are several allotment boundary changes. One boundary change called the Little Bear Addition, would enlarge the allotment by transferring about 720 acres from the now vacant Carberry Allotment to the southeast corner of Big Grayback, near Little Bear Ranch. This boundary change would slightly enlarge the allotment in the southeast corner utilizing natural barriers. This boundary change is designed to better control cattle use and make monitoring easier, as it would be adjusted to a physical topographic ridgetop location (as opposed to midslope).

Continuing the boundary adjustment (initiated by the Buck Peak Agreement, of 1980, and AOIs), an additional boundary change would incorporate approximately 4,530 acres of the Illinois Valley Ranger District. This boundary adjustment would better represent traditional cattle use patterns and would help the monitoring and administration of the area because of its topographic location. Other minor adjustments to the western boundary reflect actual topographic features (such as ridge lines) to better locate them on the ground and allow better administration of the allotment (i.e., making it easier to determine if cattle are within the allotment). The acreages would remain essentially the same, but would be better defined on the ground.

A third boundary change would add approximately 1,756 acres in the northwest corner of the allotment and is designed to better manage livestock distribution within the physical boundaries (steep topography, dense vegetation and creeks) and the Forest boundary. Another objective of this boundary change would be to change the boundary along existing roads (currently unmanageable) to topographical features. The allotment boundary under this alternative would include a total of 26,678 acres.

Fence Construction and Maintenance

This alternative would require an exclusionary fence around Bigelow Lakes (within the Botanical Area). The first fence would be constructed around the Upper (and larger) Bigelow Lake as an exclusionary fence, tying into existing topographic features (e.g. rock outcropping, for approximately 1/2 mile). A second Bigelow Lakes area fence would continue from the first fence around the glade above Upper Bigelow Lake, again tying in to topographic features. (approximately 3/4 mile). These fences would effectively exclude all domestic livestock (cattle, horses, mules, llamas, etc.) from the fenced enclosure area, to further enhance Botanical Area values and to preserve native and rare plant species.

The type of fence is not specified but must be effective in meeting this objective. For cost estimating purposes, a wooden buck and pole fence was analyzed for the first fence, and a barbed-wire let down fence was analyzed for the second fence.

A third fence (analyzed as a barbed-wire let down) would be required around the Lower and smaller) Bigelow Lake (beginning along the old road) if utilization levels did not meet standards and guidelines set forth by the Annual Operating Instruction Letter (AOI) for Botanical Areas.

In addition, a fence would be constructed in the Thompson Creek area to reduce drift to the high country earlier in the season. Although not the primary purpose of installing this fence, this fence along with the existing Seed Orchard area would offer an opportunity to help in gathering cattle at the end of the season. The Little Bear Addition would require installation of a cattleguard with wing fences to define the boundary. The purpose of the fence would be to keep the cattle within the allotment. All existing fences would be retained and maintained by the Permittee (see Alternative 1). An existing stock corral located at the road junction of FS Road 70 and 968 (approximately ½ mile SW of Pepper Camp) would be reconstructed. Refer to Table II-8 for a summary of new fencing information.

Stocking Level/Season of Use

Under Alternative 3a, the stocking level on the allotment would remain at the current actual permitted level of 280 Animal Units, and 60 head of cattle over a grazing season from 6/1 - 10/20. The acres permitted for grazing however, would increase to 26,678 and likely better distribute the allocated number of animals over a larger controlled grazing area. The grazing season would be formally extended into the month of October to better reflect current management, actual range conditions, and would reduce the need for annual temporary grazing permit that extended the grazing season until October 31. All utilization would follow Forest Plan standards and guidelines.

Botanical Areas and Research Natural Area

The grazing utilization would be set at 20% in all Botanical Areas (portions of the Bigelow Lakes Botanical Area would be excluded from grazing by fencing). No grazing would be permitted within the Oliver Mathews Research Natural Area.

The following table displays the stocking levels, grazing seasons and pasture utilization system designed for this alternative.

Table II-7. Alternative 3a Summary

Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Permitted Allotment Total	60	06/01 – 10/20	280	26,678

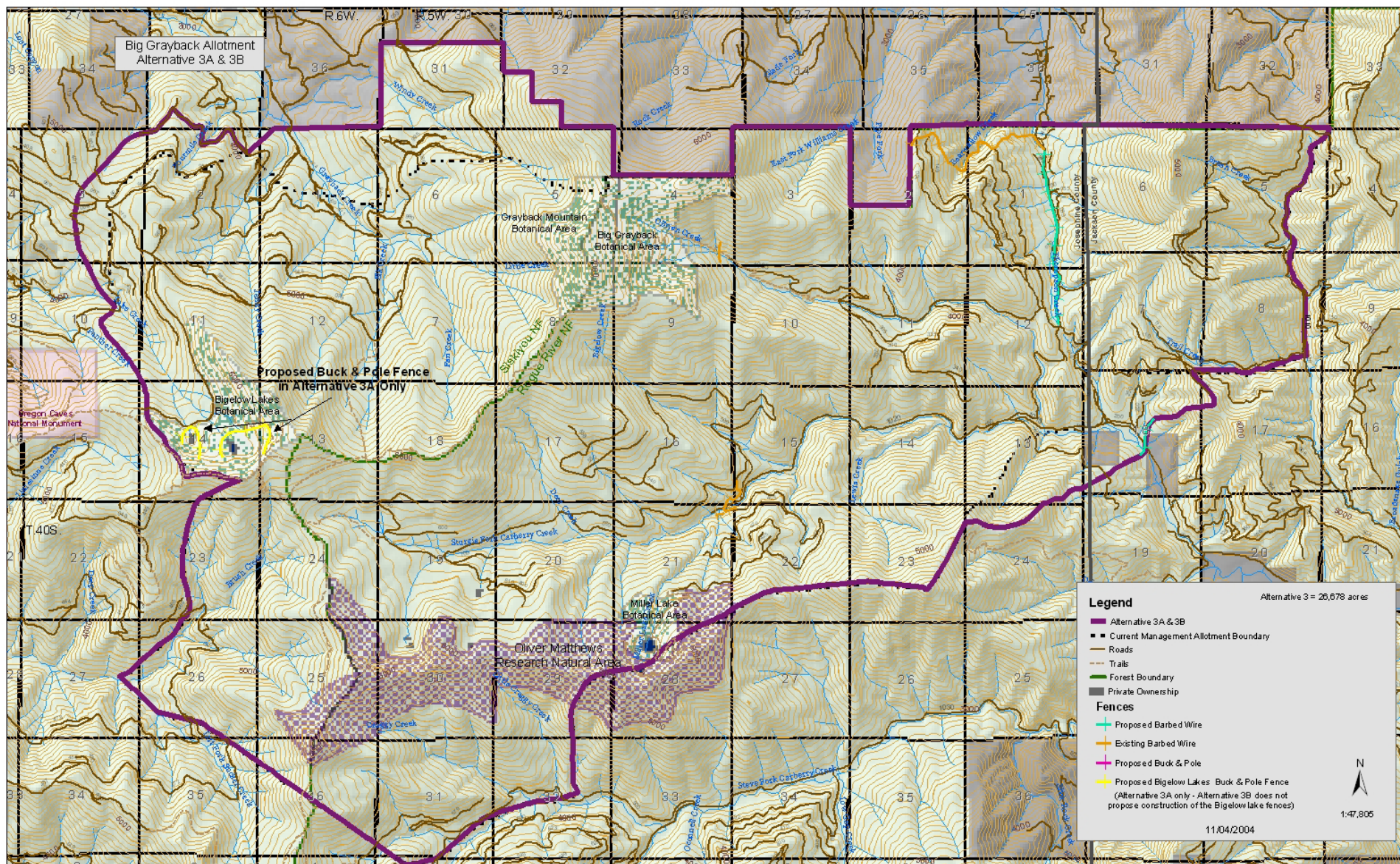
The following table displays a summary of additional fencing requirement of this alternative. Costs, type of fence, and installation methodology are displayed as a “maximum scenario”. Any type of fence or installation methodology could be utilized that met the effectiveness objectives of the fence, and met resource objectives for its installation.

Table II-8. Alternative 3a – Summary of New Fencing Information

Fence Section Description	Type of Fence and Other Information	Miles of Fence	Cost Estimate	Responsibility
Bigelow Lakes Fences	Buck and Pole	~ 1.35	³ \$26,843	FS to supply material and will build, Permittee will maintain w/ FS material.
Thompson Creek Fence	Fence extension (4-strand barbed wire with metal T-posts)	~ 1.7	(\$8,050/mile) \$13,685	FS to supply material, Permittee to build & maintain.
Little Bear Fence/Cattleguard	Cattleguard and wing fences (4-strand barbed wire with metal T-posts)	~ 0.4	(\$8,050/mile) (Cattleguard = \$7,475) \$10,695	FS to supply material, Permittee to build & maintain.
70/968 Road Corral Reconstruction	Wood post corral	N/A	\$2,000	FS to supply material, Permittee to build & maintain.
Total		3.5	\$53,223	

³ Bigelow Lakes fences. For cost estimating purposes only: Upper Bigelow Lake -.5 mile buck pole fence @ \$40,000/mile = \$20,000; plus .7 mile barbed wire let-down @ \$8,050/mile = \$5,635. Lower Bigelow Lake: barbed wire drift fence .15 mile @ \$8,050/mile = \$1,208 (includes material, labor and helicopter flight time and 10% misc.). Total cost \$26,843.

MAP II-3. Alternative 3a and b



ALTERNATIVE 3b

This alternative is similar to Alternative 3a and differs in the proposed construction of the fences around the Bigelow Lakes. No fences are proposed around Bigelow Lakes and relies on Permittee management of control, location and distribution of livestock. The Permittee would be responsible for moving the animals to nearby areas to meet utilization levels set forth by the AOI. The number of cattle, season of use, Animal Units, utilization, and allotment acres do not change from Alternative 3a. Key utilization areas are established on the glade above Bigelow Lakes, Krouse Cabin meadow, Fish Lake meadow, and the Windy Gap area (see Monitoring section).

Due to the feasibility and economics of maintaining the fences around Bigelow Lakes, the line officer directed the IDT to analyze and show the effects, impacts, and feasibility of not building the fences around Bigelow Lakes. Selection of this alternative may require a Forest Plan Amendment regarding the exclusionary fence requirement described in the Siskiyou NF LRMP.

No additional map is needed to show this alternative. Please refer to the map for Alternative 3a and 3b, and understand that this alternative includes no proposed fences preventing cattle from grazing in the Bigelow Lakes area. The grazing utilization would be set at 20% in Botanical Areas and no grazing would be permitted within the Oliver Mathews Research Natural Area; all utilization would follow Forest Plan standards and guidelines.

In addition, a fence would be constructed in the Thompson Creek area to reduce drift to the high country earlier in the season. Although not the primary purpose of installing this fence, this fence along with the existing Seed Orchard area would offer an opportunity to help in gathering cattle at the end of the season. The Little Bear Addition would require installation of a cattleguard with wing fences to define the boundary. The purpose of the fence would be to keep the cattle within the allotment. All existing fences would be retained and maintained by the Permittee (see Alternative 1). An existing stock corral located at the road junction of FS Road 70 and 968 (approximately ½ mile SW of Pepper Camp) would be reconstructed. Refer to Table II-10 for a summary of new fencing information.

Table II-9. Alternative 3b Summary

Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Permitted Allotment Total	60	06/01 – 10/20	280	26,678

Table II-10. Alternative 3b – Summary of New Fencing Information

Fence Section Description	Type of Fence and Other Information	Miles of Fence	Cost Estimate	Responsibility
Thompson Creek Fence	Fence extension (4-strand barbed wire with metal T-posts)	1.7	(\$8,050/mile) \$13,685	FS to supply material, Permittee to build & maintain.
Little Bear Fence/Cattleguard	Cattleguard and wing fences (4-strand barbed wire with metal T-posts)	~ 0.4	(\$8,050/mile) (Cattleguard = \$7,475) \$10,695	FS to supply material, Permittee to build & maintain.
70/968 Road Corral Reconstruction	Wood post corral	N/A	\$2,000	FS to supply material, Permittee to build & maintain.
Total		2.1	\$26,380	

ALTERNATIVE 4

Function

Alternative 4 would eliminate livestock grazing in the high elevation areas through the use of low and middle elevation fencing. It is designed to address several Key Issues and results in elimination of cattle grazing on the Illinois Valley Ranger District and the Grayback/Sucker Creeks Key Watersheds, the Bigelow Lakes, Grayback Mountain, and Grayback Botanical Areas, and the dispersed recreation trails and areas in the higher elevations. This alternative is also designed to increase the protection of the OCNM water supply on Lake Creek.

Boundary Changes

The boundary of the allotment would be adjusted to exclude all of the Illinois Valley Ranger District portion of the allotment and the western part (high elevation portion on the Applegate Ranger District), and would enlarge the allotment by transferring about 720 acres from the now vacant Carberry Allotment to the southeast corner of Big Grayback, near Little Bear Ranch (the Little Bear Addition). This boundary change would slightly enlarge the allotment in the southeast corner utilizing natural barriers. This boundary change is designed to better control cattle use and would facilitate monitoring as it would be adjusted to a physical topographic boundary. This boundary change would be designed to conform to areas that cattle traditionally use.

Approximately 14,652 acres on the Applegate Ranger District would be deleted from the allotment to respond to some of the high elevation resource impacts from cattle grazing. This new proposed boundary adjustment would not permit cattle use in higher elevation areas. The allotment boundary under this alternative would include a total of 10,287 acres.

Fence Construction and Maintenance

Sections of drift fencing would be required to control cattle distribution in specific parts of the western part of the allotment (Sturgis and O'Brien Creek - refer to Alternative 4 map for locations). In addition, a fence would be constructed in the Thompson Creek area to reduce drift to the high country earlier in the season. Although not the primary purpose of installing this fence, this fence along with the existing Seed Orchard area would offer an opportunity to help in gathering cattle at the end of the season.

The Little Bear Addition would require installation of a cattleguard with wing fences to define the boundary. The purpose of the fence would be to keep the cattle within the allotment. All existing fences would be retained and maintained by the Permittee (see Alternative 1). Refer to Table II-12 for a summary of new fencing information.

Stocking Level/Season of Use

This alternative would require the elimination of the 8/1-9/30 portion of the grazing season, since the high elevation areas would not be available and the lower elevation forage would have dried out by August 1 (a loss of about 140 AUMs from current). Therefore, the permitted grazing season would run from 6/1 to 7/31 for 70 head. The following table displays the stocking levels, grazing seasons and pasture utilization system designed for this alternative.

Botanical Areas and Research Natural Area

Under this alternative, there would be no grazing in Botanical Areas because the allotment boundary would exclude them. Cattle would also not be permitted to graze the Oliver Matthews Research Natural Area (RNA).

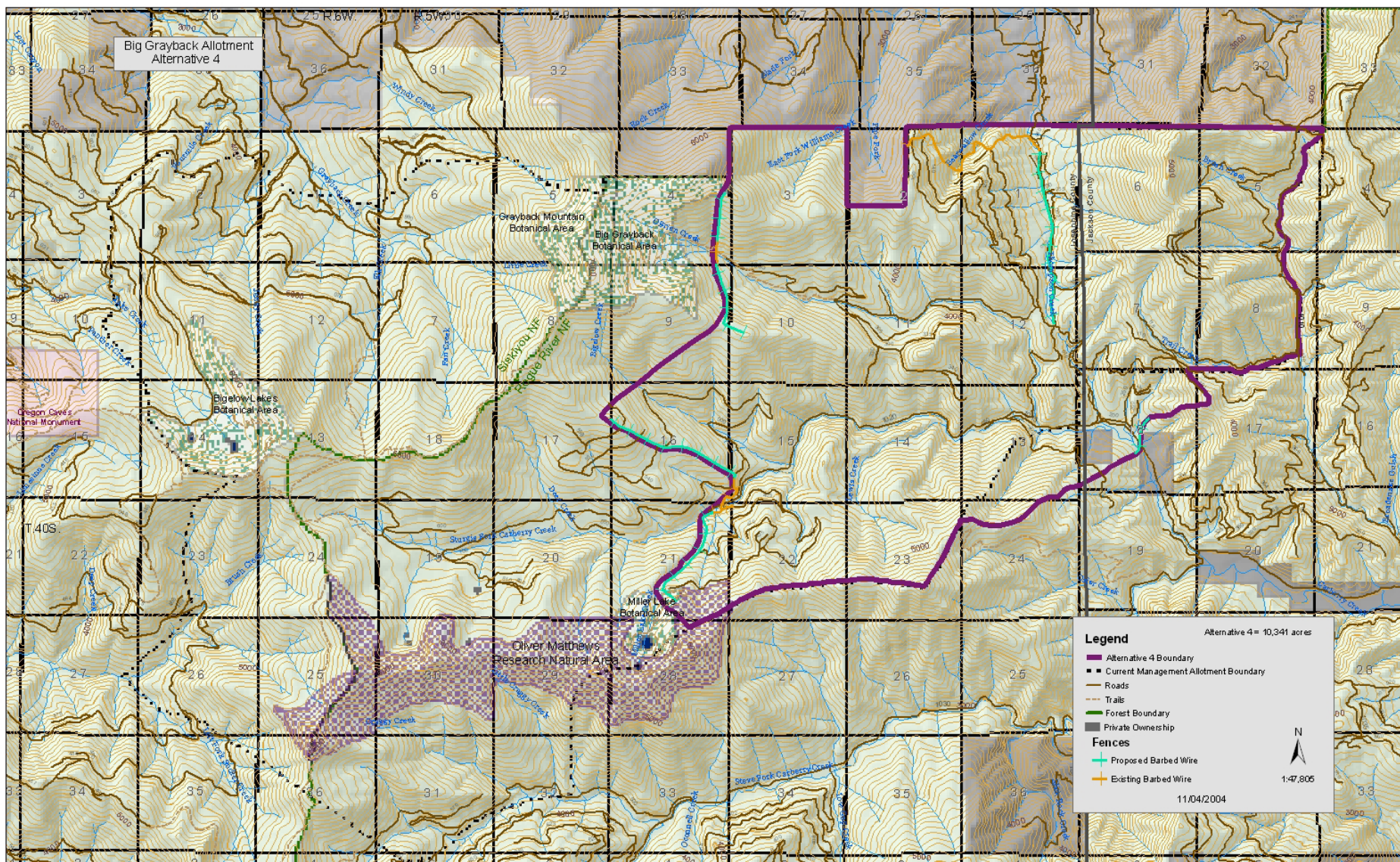
Table II-11. Alternative 4 Summary

Big Grayback Allotment	# Head	Season of Use	AUMs	Acres
Permitted Allotment Total	70	06/01 - 07/31	140	10,287

Table II-12. Alternative 4 – Summary of New Fencing Information

Fence Section Description	Type of Fence and Other Information	Miles of Fence	Cost Estimate	Responsibility
Sturgis Fence	Drift fence	2.1	(\$9,200/mile) \$19,320	FS to supply material, Permittee to build & maintain.
O'Brien Creek Fence	Drift fence	1	(\$9,200/mile) \$9,200	FS to supply material, Permittee to build & maintain.
Thompson Creek Fence	Fence extension (4-strand barbed wire with metal T-posts)	1.7	(\$8,050/mile) \$13,685	FS to supply material, Permittee to build & maintain.
Little Bear Fence/Cattleguard	Cattleguard and wing fences (4-strand barbed wire with metal T-posts)	~ 0.4	(\$8,050/mile) (Cattleguard = \$7,475) \$10,695	FS to supply material, Permittee to build & maintain.
Total		5.2	\$52,900	

MAP II-4. Alternative 4



ALTERNATIVE 5

Function

Under Alternative 5, no livestock grazing would be authorized on the Big Grayback allotment. Grazing would be phased out over a three-year period to minimize the impacts to the Permittee. The current grazing permit would be cancelled. Existing range improvements would remain as they currently are, with no further maintenance or activity occurring by the affected Permittee.

Adverse effects resulting from current grazing and past grazing would be allowed to change and/or recover naturally within the affected range allotment. This alternative is analyzed as a procedural requirement for range update proposals and to respond to Key and Other Issues related to effects of grazing in the Big Grayback Allotment.

Description

Under Alternative 5:

- No new fencing projects would occur;
- Ongoing annual Forest Service monitoring would only continue if funding is available;
- The Forest Service would be responsible (after three years) for all range improvement maintenance and/or removal of improvements;
- No livestock would be permitted on the Big Grayback Allotment after a three-year phase-out schedule developed by the Forest Service and the Permittee; and
- Natural (passive) restoration of range resources would occur.

Since grazing is currently an authorized use of the Rogue River-Siskiyou National Forest, selection of this alternative may require a Forest Plan Amendment and/or a change in current law or policy.

E. Mitigation Measures and Management Requirements

1. Best Management Practices (BMPs) are required under the Clean Water Act; they have been prescribed to attain water quality goals. BMPs are defined as "Methods, measures or practices selected by an agency to meet its non-point control needs. BMPs include but are not limited to structural and non-structural controls or operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters" (RRNF-LRMP, 1990).

Required Best Management Practices associated with range and grazing alternatives are as follows: (See EA Appendix A for more complete description of applicable BMPs)

RM-1. Title: Range Analysis, Allotment Management Plan, Grazing Permit System, and Permittee Operating Plan

RM-2. Title: Controlling Livestock Numbers and Season of Use

RM-3. Title: Controlling Livestock Distribution Within Allotments

RM-4. Title: Rangeland Improvements

W-1. Title: Watershed Restoration

W-8. Title: Management by Closure to Use (Seasonal, Temporary, and Permanent)

2. There are likely to be rare plant species and/or populations on the allotment that are not currently known to the Forest Service. In order to insure protection for important rare plant populations that may be discovered in the future, the following provisions will be incorporated into the allotment management plan:
 - Site-specific measures to protect rare plant populations may include 1) exclusion of livestock from a portion of the allotment or 2) changing the grazing intensity and/or season on a portion of the allotment.
 - Locations of specific range improvement projects proposed in the future will receive further rare plant field reconnaissance before the project is implemented if there is a possibility that known or currently unknown populations may be affected.
3. If an alternative is chosen that provides for construction of fences at Bigelow Lakes, a Botanist should aid in locating the exact fenceline to reduce impacts to rare plants in the Bigelow Lakes area.
4. Best Management Practices recommended in the February 17, 2002, Best Management Practices – Interim Direction for the Prevention and Management of Noxious Weeds, Port-Orford-Cedar Root Disease, and Sudden Oak Death, will be incorporated in this Allotment Management Plan. In particular, any material brought on to the forest (hay/straw) will be noxious weed-free material.
5. Salting will not be permitted within mapped Riparian Reserves, nor within Key Utilization Areas or Research Natural Areas.

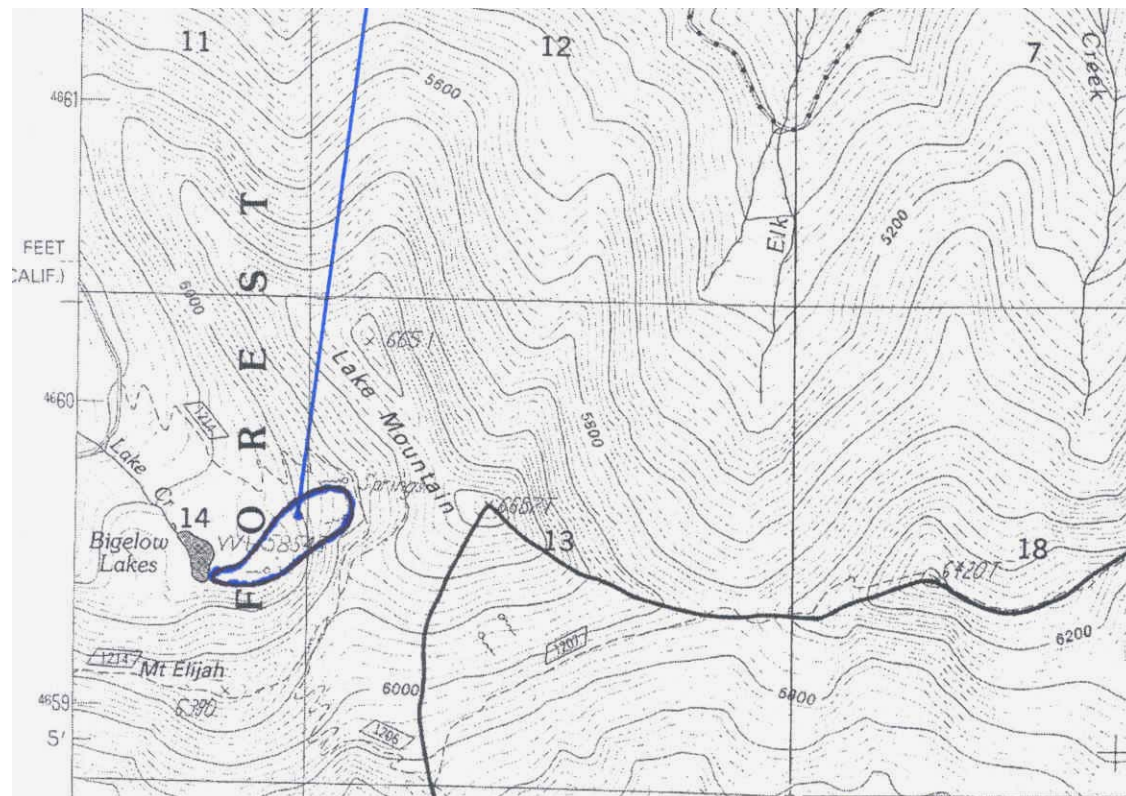
6. To further prevent the potential of *Phytophthora lateralis* from infesting Port-Orford Cedar (POC) trees, Forest Service personnel should work with the Permittee to share information about the location of existing infestations and the mechanism of transporting spores from infested POC communities. If there is any possibility that the Permittee's vehicles (trucks, trailers, motorcycles etc.) or animals might have been in infested areas, those vehicles will be cleaned (visible soil removed) before coming to the allotment or animals will be kept off the allotment until the spores are removed from the animals, or are no longer viable.
7. Mule packing or off road vehicles (e.g., 4-wheel machines) will only be allowed on existing roads or trails. Where access does not permit this equipment or methodology, non-impactive methods (e.g., helicopters) will be utilized to haul in materials. All fence installation will be by hand labor with portable power tools.
8. The Big Grayback allotment will be administered by the Applegate Ranger District and all decisions will be the responsibility of the Applegate District Ranger (in coordination and consultation with the Illinois Valley District Ranger).

F. Monitoring

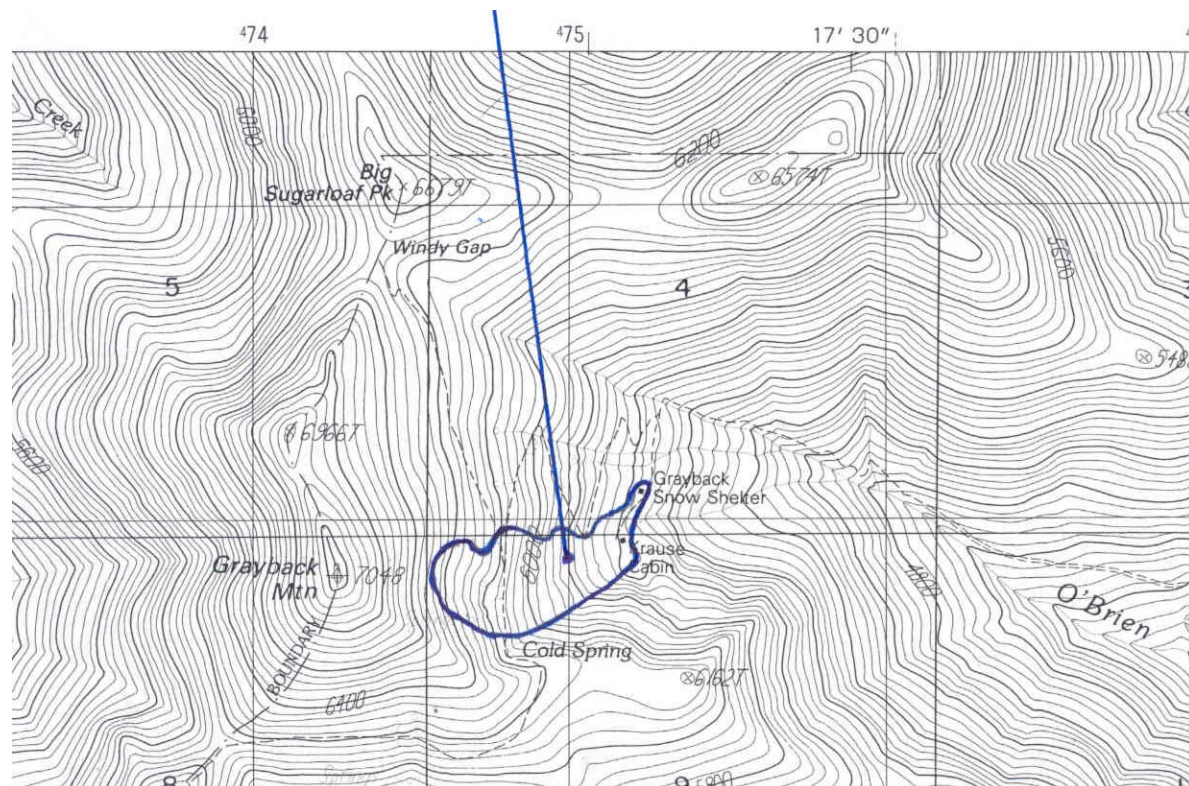
The following monitoring program framework (depending on the final decision) will be initiated and stocking rates would be evaluated and adjusted if necessary at the end of a three-year period. If an adjustment in Animal Months is necessary, a supplement to the AMP would be prepared.

1. Record grazing system for each year. Include move dates, numbers, and any special instructions. Include a map of the system.
2. Record all activities in allotment over the season, activities that would affect grazing, carrying capacity, forage utilization, etc. Include timber sale activities, projects, developments, recreation activities, hunting season, anything that would potentially impact the environment.
3. Involve the Permittee on recording. Gather information on problems (gates, corral, efforts, maintenance, herding) or observations and recommendations.
4. Check utilization in key utilization areas (identified below). Note areas of heavy, moderate and light use and record on a map of ecotypes. Involve Permittee, discuss interpretation of heavy, moderate and light use, record estimated percent forage utilization. Note available water, salting areas, etc. (See Maps II-5-8, next pages)
 - the large meadow above upper Bigelow Lake,
 - the meadow above Krouse Cabin,
 - livestock presence in the southwest portions of the Oliver Matthews RNA, as well as the Fish Lake meadow and riparian area, and
 - the moist flat meadow immediately adjacent to the dry open decomposed-granite upland in the Sugarloaf/Windy Gap area.
5. Conduct a complete census survey for population trends of Elegant Gentian, Vanilla grass and lousewort.
6. A an annual monitoring report will be completed for each of the first three years, summarizing the findings of all of the above elements.

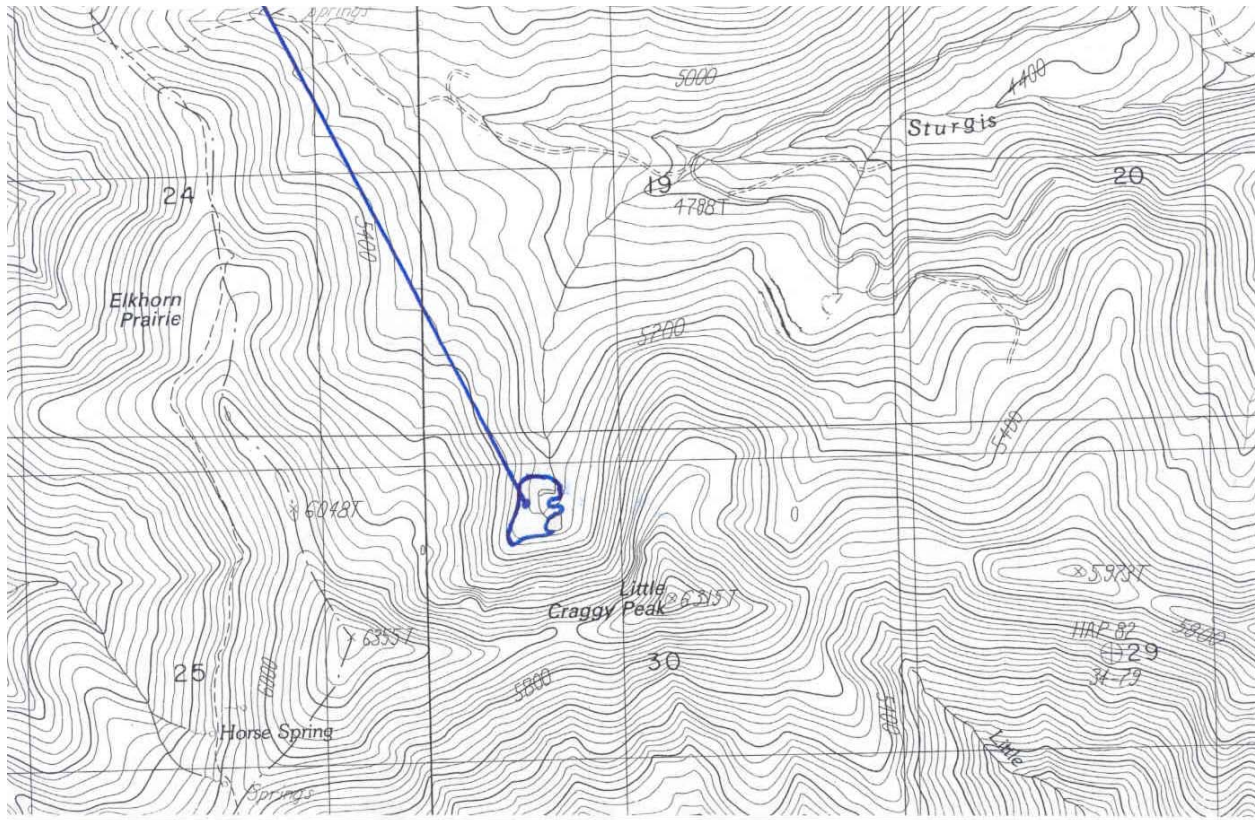
MAP II-5. Key Utilization Area: Bigelow Lakes Meadow (not precise)



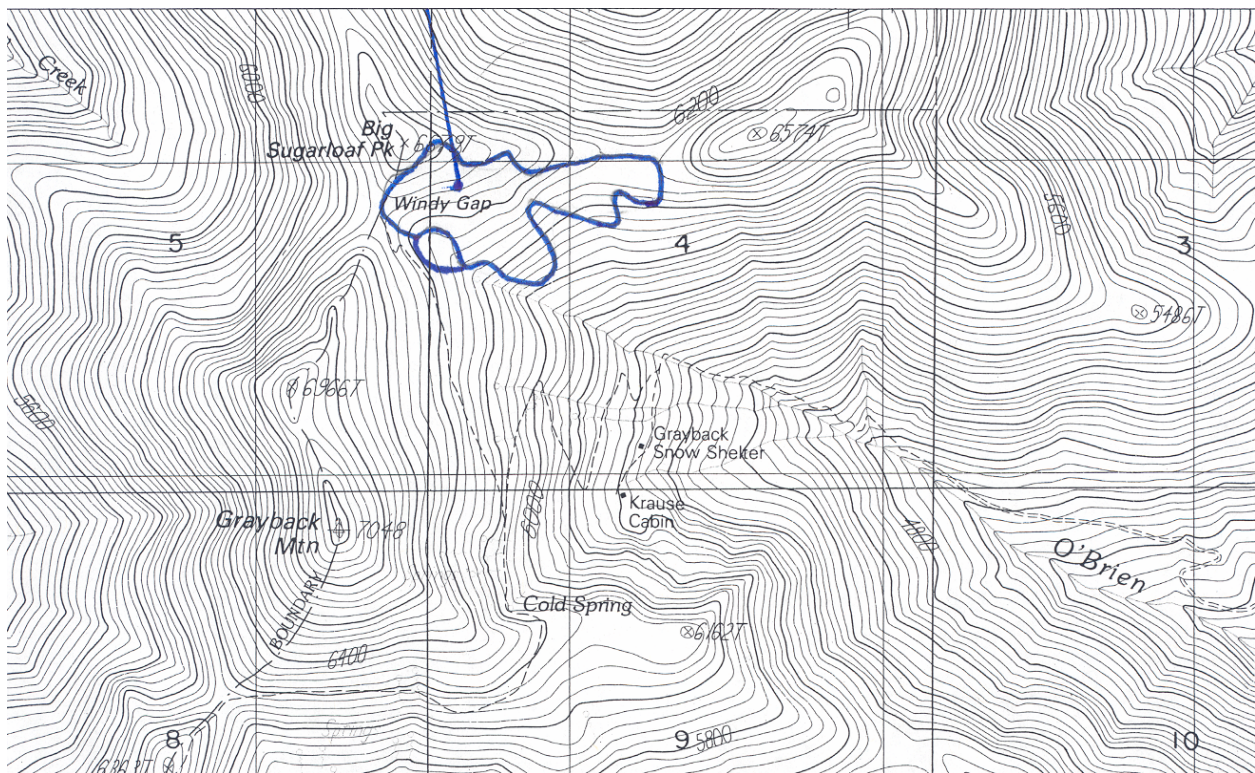
MAP II-6. Key Utilization Area: Krouse Cabin Meadow (not precise)



MAP II-7. Key Utilization Area: Fish Lake Meadow (not precise)



MAP II-8. Key Utilization Area: Sugarloaf/Windy Gap (not precise)



G. Comparison of Alternatives

Table II-13. Alternative Comparison and Summary - Features

Features	Alt 1	Alt 2a	Alt 2b	Alt 3a	Alt 3b	Alt 4	Alt 5
Number of Animals	70	70	70	60	60	70	0
Permitted Animal Unit Months	280 (350) ^A	280	280	280	280	140	0
Grazing Season (Months)	06/01-09/30 (06/01-10/31) ^B	06/01-09/30	06/01-09/30	06/01-10/20	06/01-10/20	06/01-07/31	None
% Change from Alternative 1: Number of Head AUMs	N/A N/A	NC -20%	NC -20%	-14% -20%	-14% -20%	NC -60%	-100% -100%
Allotment Acres	24,280 ^C	17,551	17,551	26,678	26,678	10,287	0
New Fencing Requirements	N/C	10.4 miles Total Cost \$356,380	2.1 Miles Total Cost \$24,380	3.5 Miles Total Cost \$53,223	2.1 Miles Total Cost \$26,380	5.2 Miles Total Cost \$52,900	N/A
Botanical Area Requirements	No Utilization Standards - No Fences	20% Utilization Standard - Fence on Rogue River-Siskiyou Boundary in Grayback Allotment	20% Utilization Standard - No Botanical Area Fences	20% Utilization Standard - Upper Bigelow Lakes Buck and Pole; Upper Lake Let Down Fence. Let down Around 2nd Small Lake Dependent on Utilization	20% Utilization Standard - No Botanical Area Fences	Botanical Areas Excluded from Allotment	No Grazing N/A

N/A = Not Applicable

NC = No Change

^A Permitted Animal Unit Months would be 350 if the Temporary Grazing Permit numbers were counted.

^B Historically, a Temporary Grazing Permit extended the season one additional month at the end of the season (until October 31)

^C 19,703 acres from the 1962 AMP plus 4,577 acres from the Bigelow Lakes (Buck Peak Agreement) = 24,280 acres

Table II-14. Alternative Comparison - Response to Key Issues

Key Issues	Alt. 1 No Action	Alt. 2a	Alt 2b	Alt. 3a	Alt 3b	Alt. 4	Alt. 5
Livestock grazing within riparian areas (Riparian Reserves) may cause adverse physical and biological effects.	Current conditions and trends would continue.	No permitted grazing on the IVRD	No permitted grazing on the IVRD;	Fewer permitted animals over a larger allotment base would reduce concentrations of cattle use in riparian areas.	Fewer permitted animals over a larger allotment base would reduce concentrations of cattle use in riparian areas.	Higher elevation riparian areas would not have permitted grazing. Lower elevation streams are historically less impacted.	No impacts from grazing in riparian areas.
Grazing may conflict with objectives associated with the Grayback/ Sucker Key Watershed.	Current conditions and trends would continue.	No grazing would be permitted within the Key Watershed.	No grazing would be permitted within the Key Watershed.	Fewer permitted animals over a larger allotment base would reduce concentrations of cattle use in the Key Watershed.	Fewer permitted animals over a larger allotment base would reduce concentrations of cattle use in the Key Watershed.	No grazing would be permitted within the Key Watershed.	No impacts from grazing to the Key Watershed.
Grazing may conflict with objectives associated with the Bigelow Lakes, Grayback Mountain, and Miller Lake Botanical Areas.	Current conditions and trends would continue.	No grazing would be permitted within the Botanical Areas on the IVRD.	No grazing would be permitted within the Botanical Areas on the IVRD.	Fencing of the Bigelow Lakes area would eliminate grazing impacts behind the exclosure fence. Botanical Area impacts would be minimized, but would continue.	Fencing not required but Botanical Area impacts would be reduced, through permittee management to keep cattle out of Bigelow Lakes area.	No grazing would be permitted within Botanical Areas.	No impacts from grazing to Botanical Areas.
Grazing may affect the Oregon Caves National Monument (OCNM) domestic water supply and water quality.	Current conditions and trends would continue.	No grazing would be permitted on the IVRD or near the OCNM.	No grazing would be permitted on the IVRD or near the OCNM.	Current conditions would continue; risks would be reduced from exclosure fence at Bigelow Lakes.	Current conditions would continue; risks would be reduced, through permittee management to keep cattle out of Bigelow Lakes area.	No grazing would be permitted on the IVRD or near the OCNM.	No impacts from grazing to the OCNM
Economic Consequences and Forest Service Costs for Grazing Administration.	Current conditions and trends would remain the same.	Acres to administer would be reduced while maintaining a viable grazing operation. Fence construction & maintenance costs would be highest of all grazing alternatives. Total new fencing cost \$356,380	Acres to administer would be reduced while maintaining a viable grazing operation. Total new fencing cost \$24,380	Animal Units are the same as Alt 2a & 2b. Fence construction and maintenance costs would be 2 nd highest of grazing alternatives. Total new fencing cost \$53,223	Animal Units are the same as Alt 2a & 2b. Fence construction and maintenance costs would be lower than Alt 3a. Range administration would be important to keep animals within the allotment. Total new fencing cost \$26,380	Animal months would be reduced to 140 and the allotment size would almost be cut in half. Total new fencing cost \$52,900	Minimal Forest Service costs (maintenance). Permittee would find alternative areas for grazing.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

A. Introduction

This chapter describes the environmental effects of implementing the Proposed Action and the other alternatives analyzed in detail. This analysis is organized by Key and Other Issues, as identified in Chapter I. Within each section, the affected environment (Background) is described first, followed by the effects of the No-Action Alternative that provides a baseline for evaluation and comparison of the other alternatives considered in detail. Within each section, the direct, indirect and cumulative effects of the alternatives are also presented in terms of the Key and Other Issues.

The terms “effect” and “impact” are used interchangeably in this chapter. An effect is described as any change in physical, biological, social or economic factors, which directly or indirectly results from implementation of an action being considered under this EA. Effects may be adverse or beneficial, depending on the type of change. Unless specifically identified as beneficial, most environmental consequences can be assumed to be adverse. The following effect/impact definitions are used:

Short-term Effect: an effect that occurs during the implementation of the action and/or for up to two years (or seasons) thereafter.

Long-term Effect: an effect that continues for an extended period (over two years). May also be permanent.

Direct Effect: an effect caused by the action (activities) and occurs at the same time and place.

Indirect Effect: an effect which is caused by the action (activities), and are later in time or farther removed in distance, but are still reasonably foreseeable.

Cumulative Effect: an effect on the environment which results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

Mitigation measures for all ground disturbing activities are required by the Forest Plan. Additional site-specific measures are described in Chapter II. The following assessment of effects assumes the application of these measures. It provides the decision maker with information needed to compare alternatives and select an appropriate course of action.

This assessment of environmental effects assumes compliance with federal laws, national policies, regional standards and guidelines, and compliance with the land and resource management plans for both the Rogue River and Siskiyou National Forests.

The following discussions relate directly to the objectives and identified Key Issues documented in the previous sections. This is the scientific and analytical basis for the comparisons summarized in Chapter II. Table II-14 can be used as a simple comparison of the alternatives response to the Key Issues.

B. Effects of Implementation: Key Issues

1. Riparian Reserves

Livestock grazing within riparian areas (Riparian Reserves) may cause adverse physical and biological effects.

Background

Livestock grazing has occurred within the general area of the Big Grayback allotment for a long time (since 1916). Cattle numbers and season of use have been reduced through recent years as a direct reflection of efforts to improve the condition of riparian areas. Within the area of consideration, there are no Water Quality Limited (WQL) water bodies within the Carberry Creek Watershed on the Applegate Ranger District per direction provided in Section 303(d) of the 1972 Federal Clean Water Act (CWA), as amended.

Sucker and Grayback Creeks on the Illinois Ranger District were at one time listed as WQL for summer temperatures, as determined by the Oregon Department of Environmental Quality (DEQ). Both Grayback and Sucker Creeks were listed for temperatures from their mouths to their headwaters. This means that summer temperatures exceeded the DEQ 7-day average maximum standard of 64-degrees F.

To address summer temperature recovery in Sucker and Grayback Creeks, Total Maximum Daily Loads (TMDLs) and a Water Quality Management Plan (WQMP) was approved by the EPA on May 30, 2002. This plan essentially establishes a framework for shade (and ultimately temperature) recovery afforded by conifers in these predominantly forested watersheds. With the completion of the Water Quality Management Plan, the above mentioned streams were removed from the State's 303(d) list.

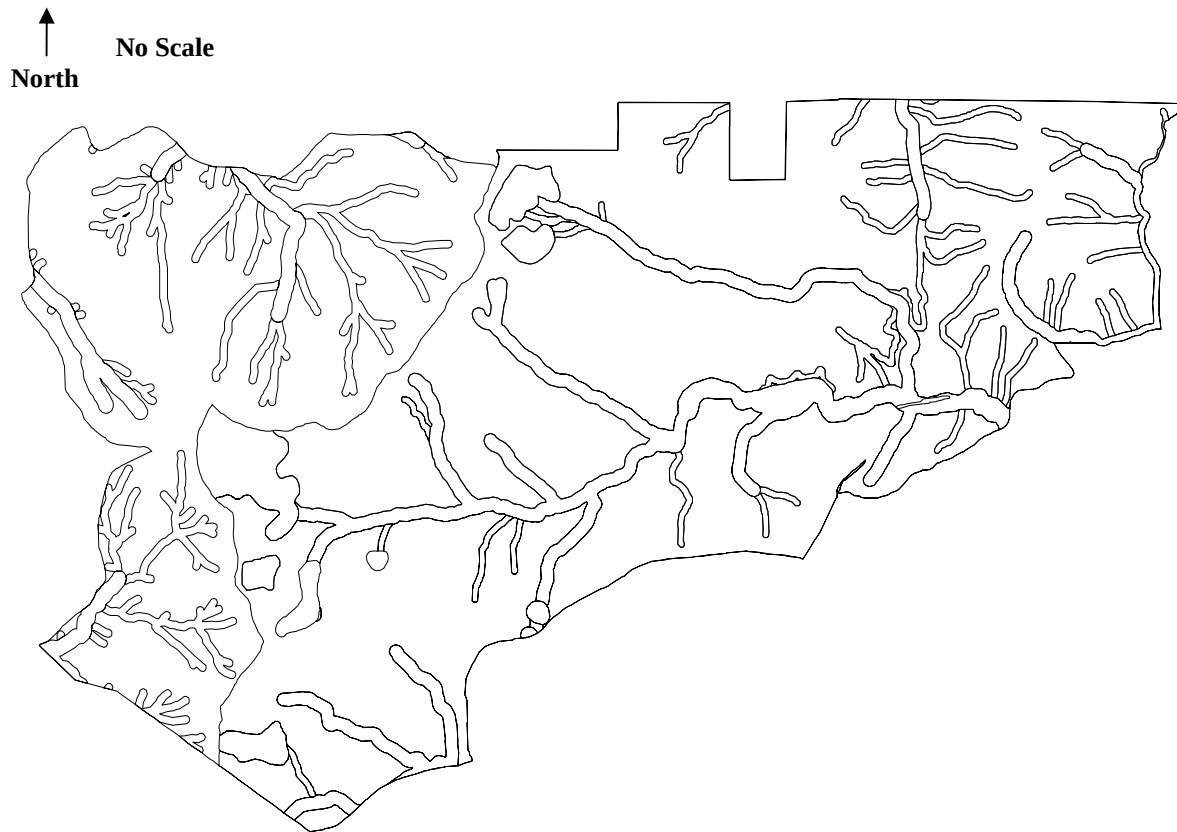
Thompson Creek has been 303(d) listed for dissolved oxygen (DO). Dissolved oxygen can become limited in a water body either directly by addition of heated water, or indirectly by increased stream temperatures from reduced shading or by addition of organics which utilize oxygen in the decay process.

Riparian Reserves and Stream Channels

Riparian Reserves (RRs) within the area of consideration are dominated by conifer vegetation types. Of the approximately 3,553 acres or 13.3% of the allotment (Alternative 3a & 3b) that are classified as RRs, most are conifer-dominated where there are very minor amounts of forage that is preferred by cattle. The minor amounts of RRs that are not dominated by conifers have large components of alder patches, willows, and sedges, which are typically not preferred by cattle, in addition to the preferred grass species. Stream channels are generally stable (Rosgen A-2, A-3, B-2, and B-3) channels, meaning they have moderately steep-to steep gradients and a substrate dominated by boulders and cobbles. The well-armored channels and relative lack of streamside forage preferred by cattle has resulted in very little direct/indirect impacts to these channels.

Riparian Reserve widths are either 150 or 300 feet (depending on whether it is fish-bearing or not) from each side of the average high water mark of the watercourses and total 3,553 acres (based on allotment area associated with Alternative 3a and 3b).

MAP III-1. Riparian Reserves Within the Big Grayback Allotment



Direct and Indirect Effects

Current grazing utilization within riparian areas has been within allowable Forest Plan standards and guidelines overall for many years. Some higher use riparian areas may show signs of overuse but impacts are short-term and seasonal, and have been mitigated by the Permittee by moving his animals as necessary. All alternatives that include grazing prohibit salting within riparian areas to minimize concentrated cattle use and the contamination of water sources. The riparian overstory, or vegetation other than grass and forbs near the streams, has not been affected by cattle use. All grazing alternatives address the indirect issue of water turbidity and sedimentation from cattle impacts. The higher elevation streams are used more frequently because the cattle travel to these areas soon after being released near Thompson Creek. During the hottest part of the season, cattle seek shade and water from streams particularly when the streams are near the road systems, which channel the animals to the higher elevation areas.

Since there is very little browse species and thus only light grazing activity adjacent to channels and within Riparian Reserves, and since current grazing use (Alternative 1 – No Action) has not resulted in or contributed to significant channel degradation, the other alternatives which include improved management, reduced number of animals, or reduced allotment area for grazing are expected to result in an improving trend within Riparian Reserves. Accordingly, riparian vegetation and streambank stability would not substantially change from current conditions. In addition, habitat for resident and anadromous fish species would not be affected because of the inherently stable channels and due to the lack of grazing impacts on the availability of large wood for recruitment to streams.

CWA Section 303(d) Listing

Since cattle prefer browse species (grasses and forbs) that don't provide streamside shade, and since there is very little browse species and thus very little grazing activity adjacent to channels, none of the alternatives would change or adversely affect the previous Section 303(d) temperature listing of Grayback and Sucker Creeks, or the dissolved oxygen listing of Thompson Creek. Neither would these water quality parameters be affected in those subwatersheds in Carberry Creek that are not listed. Other measures (see WQ BMPs under Mitigation Measures) would serve to minimize over-utilization of ground cover, and thus guard against erosion and sedimentation.

Response to NWFP Riparian Reserve Standards and Guidelines

Grazing management is discussed on pages C-33 and C-34 of the NWFP ROD. Specifically:

GM-1 Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.

GM-2 Locate new livestock handling and/or management facilities outside of Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.

GM-3 Limit livestock trailing, bedding, watering, loading, and other handling efforts to those acres and times that will ensure Aquatic Conservation Strategy objectives are met.

Current conditions (Alternative 1, No-Action) are not preventing attainment of the ACS at the fifth-field scale. Alternatives that improve range conditions and management would improve conditions regarding GM-1 and ACS. No grazing (Alternative 5) would allow greatest (natural and passive) improvement and long-term attainment of ACS Objectives. An existing stock handling facility (corral) is planned for reconstruction that is outside of a Riparian Reserve and is located at a heavily impacted road junction. Compliance with GM-2 and GM-3 for all grazing alternatives is anticipated.

Cumulative Watershed Effects

The Big Grayback Allotment falls within two 5th field watershed analysis areas; the Carberry Creek Watershed and the Grayback/Sucker Watershed. The Carberry Creek watershed analysis area is approximately 74.2 square miles (47,503 acres) in size and is one of the primary tributaries to the Applegate River. Carberry Creek flows eastward from its headwaters near Grayback Mountain into Applegate Lake. The analysis area ranges in elevation from slightly less than 2,000 feet at the confluence of Carberry Creek and Applegate Lake, to just over 7,000 feet atop Grayback Mountain. The Grayback/Sucker watershed analysis area covers approximately 96.9 square miles (62,000 acres) and flows into the Illinois River basin. Elevations range between 1,400 at the mouth of Sucker Creek to around 7,000 feet on the Applegate Divide.

A cumulative watershed effect is any response to multiple land-use activities that is caused by, or results in, altered watershed function. For the purpose of assessing the overall health of the two watersheds in relation to the Big Grayback Allotment, a cumulative effects analysis was conducted using the US Forest Service Region 5 Equivalent Roaded Area (ERA) Model.

The ERA Methodology utilizes GIS analysis of land use activities to convert roads, timber harvest, fire, and other disturbances within each watershed to equivalent roaded areas based on coefficients that are regionally specific. The resulting equivalent roaded area within each watershed is divided by the acres of each watershed to calculate a relative disturbance rating, which is called the percent ERA. Then, the percent ERA is compared to a Threshold of Concern (TOC) for each watershed. Model inputs were obtained and calibrated via field visits, forest resource specialist knowledge, and from forest spatial data relating to past and current watershed events. Appendix H to this EA includes a report on the analysis and assumptions utilized in association with the ERA Model.

For this analysis, Landsat TM satellite imagery was modeled with various vegetation classes assigned an ERA coefficient. Past activities are accounted for in the vegetative mapping that was used (i.e., past timber harvest), and are described by the current condition. The imagery was also updated to account for activities that have changed vegetative conditions since the satellite imagery was obtained (1993). Projects on Forest Service lands that have occurred since the mapping was completed, including present and reasonably foreseeable activities have been accounted for in this analysis. The only foreseeable actions within the Carberry Creek Watershed are the activities associated with Steamboat Mountain Mining Operations (other timber sales, e.g. Sturgis Fork are not planned or scheduled at this time and are therefore not foreseeable), and an approximate two-acre Baker Cypress enhancement project. There are no foreseeable activities within Forest Service lands in the Grayback/Sucker Watershed, owing to its status as Late-Successional Reserve.

The total ERA value for the current condition within the watershed, is divided by the total area of the watershed to calculate a relative disturbance rating, which is called the percent ERA. The following percent ERA values were determined for the current condition in the Carberry Creek and Grayback/Sucker Watersheds.

Table III-1. Percent ERA

	Carberry Creek Watershed	Grayback/ Sucker Watershed
Total acres	47,503	62,104
ERA acres	2,264	3,281
Percent ERA	4.77%	5.28%

Threshold of Concern

To establish a threshold of concern (TOC), or the point at which there is a high risk for adverse cumulative effects, for this watershed analysis area, the 1996 Carberry Creek Watershed Analysis and the 1995 Grayback/Sucker Watershed Analysis were reviewed. The analysis of overall watershed conditions was utilized and a correlation between ERA values and the watershed ratings was established. Based on this correlation, it was determined that for both watersheds, an ERA value between 5 and 7% would lower the watershed rating to “POOR”. This range of values is utilized as the TOC for the respective watersheds.

When the percent ERA approaches or is greater than the TOC, it serves as a “yellow flag” indicator of increasing susceptibility for significant adverse cumulative effects occurring within a watershed. Susceptibility of cumulative watershed effects generally increases from low to high as the level of land disturbing activities increase toward or past the TOC. Watersheds with a “yellow flag” rating are not in eminent danger of unacceptable cumulative watershed effects, but these watersheds may contain enough disturbance to “warrant a closer look”.

Big Grayback Allotment Analysis

The approach used for this analysis of cumulative effects generally over-estimates disturbance levels and as such, is a conservative approach that takes a “worst case” look at current and foreseeable watershed conditions. An example is the stands mapped as being less than 60% canopy closure. These were assumed to be in this condition as a result of treatment when in fact, many are naturally occurring.

The Equivalent Roaded Area model does not give a quantifiable number (output) for sedimentation, tons of soil eroded/detached, or any other similar item. This model does generate a percent ERA value that can be used to evaluate and compare the proposed actions against the current condition. If the ERA for the watershed is below the threshold of concern, the current condition is not considered to be a problem. As the ERA approaches or is over the threshold of concern then cumulative effects may be a problem.

In this case, for current conditions, ERA is below TOC for the Carberry Creek Watershed. Current conditions for the Gray/Sucker Watershed result in a percent ERA that is slightly over (0.28%) the TOC. The current condition for the Big Grayback Allotment and both watersheds is based on and includes grazing, which has been ongoing for decades. The ERA model includes coefficients for proposed disturbances, including factors for road construction, vegetation management, logging systems effects, and site preparation/fuels treatment effects. If grazing were to have a measurable effect, it would not exceed low disturbance values and would not likely change the percent ERA more than 0.01 percent.

Although the Grayback/Sucker Watershed is currently slightly over the threshold of concern (TOC) for cumulative watershed effects, ongoing grazing is not measurably adding this condition, and likewise, elimination of grazing would not measurably reduce the watershed rating values. Because of the conservative nature of the vegetation analysis (discussed above), in combination with the degree that the current condition is found to be over the TOC (0.28%), a more in-depth analysis was not conducted. It should be noted that any future management action within the Grayback/Sucker Watershed beyond that which is considered foreseeable at this time, could warrant a more detailed analysis.

Since no alternatives analyzed under Big Grayback propose additional numbers of animals and the current condition ERA analysis includes grazing, it is not expected that there would be any change or increase in risk of adverse cumulative effects associated with continued grazing in the Big Grayback Allotment for either watershed.

2. Key Watersheds

Grazing may conflict with objectives associated with the Grayback/Sucker Key Watersheds.

Background

All of the lands within all of the alternatives have been analyzed by a Watershed Analysis and have been used during the analysis of this AMP update. Portions of the Big Grayback Allotment on the Illinois Valley Ranger District are designated a Key Watersheds and are within the Upper Sucker Creek Key Watershed and the Cave/Grayback Key Watershed. A Pilot Watershed Analysis Area (WAA) inventory was conducted in 1995 covering these Key Watersheds and resulted in the Grayback/Sucker Key Watershed Analysis.

Direct, Indirect, and Cumulative Effects

Alternative 1 takes no additional action to mitigate impacts to the Key Watershed. Alternatives 2a and 2b, 4, and 5 eliminate permitted grazing on the Illinois Valley RD where the Grayback/Sucker Key Watershed exists. Alternative 3a and 3b expands the permitted area of grazing by increasing the allotment boundary (primarily within the Key Watershed) to better reflect actual cattle use and distribute cattle over a larger area. The effects of this alternative would be the same or less than current conditions.

The effects for all alternatives would be similar to the ones discussed with Key Issue #1. This Key Issue represents other than riparian impacts to the watershed and Alternatives 1, 3a, and 3b are the only alternatives that would permit grazing within the Grayback/Sucker Key Watershed. Current conditions are within acceptable levels set by Forest Plan standards and guidelines.

3. Botanical Areas

Grazing may conflict with objectives associated with the Bigelow Lakes, Grayback, Grayback Mountain, and Miller Lake Botanical Areas.

This issue is discussed by each Botanical Area; included is background and direct, indirect, and cumulative effects for each area, occurring on the Rogue River and Siskiyou National Forest. Botanical Areas are managed to protect areas of the Forest with important botanical resources. The goal of these areas is to protect and enhance exceptional botanical values. Botanical Areas are an important component of the Sensitive species management program and also provide a cornerstone for maintaining biological diversity. Botanical Areas are classified as Special Recreation Designations (FSM 2370) and hence a secondary goal of Botanical Areas is the enjoyment of visitors who come to appreciate the attributes of the area.

Bigelow Lakes Botanical Area

The 1989 Siskiyou National Forest LRMP Management Goal for Botanical Areas is:

“The goal is to protect, preserve, and enhance the exceptional botanical features of these areas” (Siskiyou NF LRMP Standards and Guidelines, page IV-87).

The LRMP Desired Future Condition for Siskiyou NF Botanical Areas is:

“Natural physical and biological processes will prevail without human intervention. Plant and animal life inhabiting these unique ecosystems will continue to flourish” (Siskiyou NF LRMP Standards and Guidelines, page IV-87).

Specific LRMP direction for managing livestock in Siskiyou NF Botanical Areas is:

“Livestock grazing shall be prohibited in Botanical Areas, except where such use is part of an existing allotment. Bigelow Lakes is the only recommended Botanical Area with an existing grazing allotment (Big Grayback Allotment, administered by Applegate Ranger District of the Rogue River National Forest). Cattle shall be prevented from reaching the Lakes area by a drift fence. The effects of grazing in the Bigelow Lakes basin shall be monitored, and corrective action taken as necessary” (Siskiyou NF LRMP Standards and Guidelines, page IV-88 and 89).

The moist and wet meadows around the lakes and the large moist/wet meadow system above the upper lake have traditionally been used by livestock. Historical grazing has altered the original plant species composition, structure, and cover. The area has had reduced livestock numbers in the last 1-2 decades and may be in a stage of recent limited recovery. Important botanical resources in the moist/wet meadows potentially affected by grazing alternatives are a rare Gentian (*Gentiana plurisetosa*), an uncommon grapefern (*Botrychium simplex*), the American sawwort (*Saussurea americana*) and a relatively intact wet meadow flora. The dry or vernal moist meadow flora surrounding the wetlands has a highly altered species composition as is typical of this habitat on rangelands in the eastern Siskiyou.

Under current management in **Alternative 1**, the lakes and meadow area gets light-moderate use by livestock most years. No fences currently exist. Soils in wetlands, moist meadows and at the lakeshores are disturbed to some degree each year. A moderate amount of native herbaceous vegetation is consumed in these areas with some of the more palatable species consistently targeted by livestock. The drier and vernal moist meadows get somewhat more use (at least the lower, flatter ones), presumably because the footing is better here in the first half of the season and because a few particularly choice grasses and dryland sedges are present. Under Alternative 1, a few of the more vulnerable vascular plants and a fair percentage of the wetland moss and liverwort flora are probably suppressed to some degree by the continued livestock use.

The local viability of a few of the wetland mosses and liverworts may be threatened due to the current level of disturbance to their substrate. Under Alternative 1, the eventual composition and structure of the native flora in this Botanical Area would still reflect the effects of livestock grazing and disturbance to some degree. Botanically-interested recreation users are likely to find the semi-disturbance and presence of livestock somewhat detracting to their enjoyment of the flora. The gentian is presumably doing fine under Alternative 1. It is less certain how the grapefern and sawwort are faring under current conditions. This alternative is judged by the Forest Botanist to partially meet the LRMP Management Goal and Desired Future Condition for Siskiyou NF Botanical Areas.

Under Alternative 3a, exclusionary fences would be built around the Upper Bigelow Lake and the large moist/wet meadow system above the upper lake. This is the part of the Botanical Area that has always been the most visited by recreationists and has the majority of “exceptional botanical features”. Under Alternative 3a, the known rare vascular plants and the majority of the wetland moss and liverwort flora would be protected from livestock. The composition and structure of the large wetland and meadow plant community within the fenced area would be free to develop without the influence of livestock grazing.

Under this alternative, a fence would also be built, if needed, to exclude or limit livestock presence at the lower Bigelow Lake (where cattle use is currently light). Within the fenced areas, botanically-interested visitors would find native plant communities and their recreation experience undisturbed by livestock. Outside of fenced areas, conditions of various botanical resources would be similar to those described for Alternative 1. Alternative 3a is judged by the Forest Botanist to meet the LRMP Management Goal, Desired Future Condition, and specific direction for managing livestock in Siskiyou NF Botanical Areas.

Conditions in the Bigelow Lakes Botanical area under **Alternative 3b** would be similar to Alternative 1. There would probably be a slight drop in livestock use within the Bigelow Lakes Botanical Area during most years, and the heavier usage that occurs in occasional years is less likely to happen due to more frequent monitoring and management by the Permittee. This alternative is judged by the Forest Botanist to partially meet the LRMP Management Goal and Desired Future Condition for Siskiyou NF Botanical Areas. It does not however, require the fencing in the Bigelow Lakes area that is implied by the Siskiyou NF standards and guidelines.

Livestock grazing would not occur in the Bigelow Lakes Botanical Area under **Alternatives 2a, 2b, and 4**, due to exclusion of this area from the allotment, and no-grazing under **Alternative 5**. These alternatives would provide the most benefit and most opportunity for recovery of botanical resources in this Botanical Area and are judged by the Forest Botanist to fully meet Siskiyou NF LRMP standards and guidelines for botanical areas.

Grayback Mountain Botanical Area (Applegate Ranger District Portion)

The 1990 Rogue River National Forest LRMP Management Goal for Botanical Areas is:

“Protect and enhance exceptional botanical values. Encourage compatible scientific, educational, and recreational use” (Rogue River NF LRMP Standards and Guidelines, page IV-149).

Specific LRMP direction for managing livestock in Rogue River NF Botanical Areas is:

- “1. Livestock grazing will be controlled in order to benefit or maintain the botanical resource. This control can range from limited or no livestock grazing to seasonal adjustments to benefit the target species. Forage utilization standards will be based on this direction.
2. Range improvements and vegetative manipulation will not be permitted unless they will benefit the botanical resource. No exotic species will be seeded or placed in botanical areas.
3. Provide fences and stock control devices when necessary to protect resource.” (Rogue River NF LRMP Standards and Guidelines, page IV-153).

Around and prior to 1980 this portion of the allotment was in poor ecological condition. It had a long history of heavy use by livestock. Range and watershed ecological conditions have steadily improved in the Botanical Area since livestock usage was sharply reduced in the early 1980s. Since then, the Permittee has kept livestock usage low in the Krouse Cabin Meadow. The plant community in this meadow was a primary reason for designating this Botanical Area.

Wetlands have healed and the native species composition has recovered as much as is possible in 20 years. The *Gentiana plurisetosa* population appears to have increased and the rare grass, *Hierochloe odorata*, has re-appeared. The Botanical Area generally is in a state of recovery, both of its watershed and soil condition, and of its botanical resources in the moist meadow portion.

Recovery seems to be much slower in the sensitive open granitic uplands in the northern portion of the Botanical Area (see Effects of Implementation – Other Issues, in the discussion of composition of native plant communities, the sub-section called “Dry Subalpine Decomposed Granite Slopes in the Sugarloaf/Windy Gap area).

Under current management in **Alternative 1**, the Meadow above Krouse Cabin has been only lightly grazed or not grazed under Alternative 1 for roughly 20 years. All the rare plants there are expected to be unaffected by livestock grazing if this level of livestock use were to continue, even though at least two species are close to extirpation. Livestock grazing continues to limit recovery and could lead to further declines in ecological condition in the open decomposed granite uplands in the Sugarloaf/Windy Gap area. For this reason, Alternative 1 is judged by the Forest Botanist to only partially meet the LRMP Management Goal and specific direction in the standards and guidelines for managing livestock in Rogue River NF Botanical Areas.

Alternatives 2a, 2b, 3a, and 3b set a maximum forage utilization not to exceed 20% in botanical areas. In the opinion of the Forest Botanist, this may be an increased level of livestock usage in the meadow above Krouse Cabin compared to Alternative 1 and increases the risk of extirpation of the vanilla grass (*Hierochloe odorata*) and the yellowish lousewort (*Pedicularis bracteosa* var. *flavida*) (see species-specific discussions in Effects of Implementation- Other Issues, in rare plants and their habitat sub-section). Besides those two species, a few of the more vulnerable vascular plants and a fair percentage of the wetland moss and liverwort flora would be suppressed to some degree by continued livestock use.

The local viability of a few of the wetland mosses and liverworts could be threatened due to disturbance to their substrate. The eventual composition and structure of the native flora would reflect the effects of livestock grazing and disturbance to some degree. There would be botanically-interested recreation users who find the semi-disturbance and presence of livestock detracting to their enjoyment of the flora.

For the open decomposed granitic uplands in the Sugarloaf/Windy Gap area, recovery is likely to happen under Alternatives 2a, 2b, 3a, and 3b if forage utilization in the adjacent moist meadow is held to the maximum 20% as specified. Since livestock would tend to use this flatter ground with more desirable forage first, it is likely that utilization in the dry barren uplands would be about 10%, a level which should permit recovery of the soil resource and, over time, the vegetation cover. Primarily because of potential effects to botanical resources in the meadow above Krouse Cabin, Alternatives 2a, 2b, 3a, and 3b are judged by the Forest Botanist to meet the LRMP Management Goal and specific direction in the standards and guidelines for managing livestock in Rogue River NF Botanical Areas, except in the Krouse Cabin Meadow where vanilla grass and yellowish lousewort could experience more grazing than in recent years.

Alternatives 4 and 5 would provide the most protection for the Grayback Mountain Botanical Area because grazing would not occur in this Botanical Area, under these alternatives. These alternatives are judged to fully meet the Rogue River NF LRMP management goal and standards and guidelines for Botanical Areas.

Grayback Mountain Botanical Area (Illinois Valley Ranger District portion)

The lower slopes of this high elevation Botanical Area are forested with Douglas-fir, white fir and noble fir. Upper slopes are more open with shrub-fields, talus and outcrops dominating. This area was allocated under the Siskiyou Forest Plan to provide an extension to the Grayback Mountain Botanical Area designated by the Rogue River NF on the east side of the mountain.

Cattle do not frequent this area since it is steep and there is not much desirable forage. None of the alternatives are expected to affect botanical resources on this portion of the Grayback Mountain Botanical Area.

Miller Lake Botanical Area

This Botanical Area is surrounded on three sides by the Oliver Matthews Research Natural Area (RNA). It might have been incorporated within the RNA if it weren't for the human-made conditions which include an old road (decommissioned and turned into trail) and an earthen dam that increased the lake's water level. The vegetation includes: Douglas-fir, Brewer's spruce, white fir, Saddler's oak, *Pedicularis howellii*, and an uncommon stonecrop, *Sedum divergens*.

Under **Alternative 1**, cattle don't appear to use this area often since much of the surrounding area is forested which doesn't provide much forage.

A level of livestock similar to Alternative 1 would occur under **Alternatives 3a and 3b**.

Alternatives 2a and 2b may increase livestock use since the Illinois Valley RD side of the allotment would be excluded from grazing and there may be more grazing pressure on the Applegate RD portion of the allotment. However, this use is not expected to exceed the 20% maximum forage utilization figure that would become established in Alternatives 2a and 2b.

Alternative 4 would exclude use from most of the botanical area via fencing.

Alternative 5 would exclude grazing in the Botanical Area.

Because there are no exceptional botanical resources in the Miller Lake Botanical Area that are attractive to cattle, the level of forage utilization and grazing management outlined under all alternatives would fully meet the Rogue River NF LRMP management goal and standards and guidelines for Botanical Areas, as judged by the Forest Botanist.

Alternative Summary

Botanical Areas are relatively small isolated areas designed to protect a very specific resource. Some of the direct effects are from cattle eating certain plants of concern and cattle trampling plants of concern while grazing on grasses in meadow areas. The only cumulative effect identified for Botanical Areas is that of human presence associated with recreation (of minor and insignificant extent). This effect is seasonal and areas of concern tend to recover from year-to-year.

4. Oregon Caves Domestic Water

Grazing may affect the Oregon Caves National Monument (OCNM) domestic water supply and water quality.

Background

The OCNM collects surface water from Lake Creek at two different locations for domestic use. One site is for the administrative buildings and the Ranger's house, and the other is for the lodge (see map contained in response to Comment #1, EA Appendix I, for location of the lodge water source, within the Big Grayback allotment). The Monument has obtained permits from the State of Oregon granting approval for appropriation of surface water through construction of the diversion on Lake Creek for purposes of "domestic, hotel, and fire protection".

The OCNM is responsible for monitoring of their water and regularly samples the quality using standard and approved methods. The Forest Service has not been notified about any recent violations regarding the quality of OCNM domestic water. There is a certain level of risk associated with all surface waters used for domestic water supplies. This risk comes from the endemic population of animals in any watershed, and from domestic animals and humans. As long as there is unrestricted access to surface water there is the potential for contamination from bacteria, other micro-organisms, and increased sediment and turbidity. It is the responsibility of the water user, not the owner or manager of the land on which the water exists, to treat the water to acceptable standards. That being said, it is incumbent on the landowner or manager to be a responsible steward and not to allow water quality conditions to deteriorate to a level that the water user would have to resort to excessive treatment measures prior to use. The landowner is responsible for meeting instream state water quality standards, which are not the same as state drinking water quality standards.

Relative to public safety, the Forest Service currently employs many different preventative methods - pamphlets, brochures, and education programs in an attempt to inform the public that water in the streams and lakes on the National Forest should not be considered suitable for drinking without some form of treatment. All animals that live in National Forest watersheds have the potential of introducing pathogens into waterbodies and users need to be aware of this, and act accordingly. In some areas, springs have been fenced to keep wildlife and cattle from direct access, but even in these instances, it is up to the user to provide some treatment prior to consumption. The user accepts the risk by not treating water prior to consumption.

It is the responsibility of the Forest Service as land managers to meet instream water quality standards. As purveyors of treated water for OCNM employees and visitors, it is the responsibility of the National Park Service to treat their water to defined standards for human consumption to prevent disease outbreaks (regardless of presence of cattle). Under the Oregon Open Range Laws, it is the responsibility of OCNM to fence or otherwise control their boundary if cattle entry on their lands becomes a problem. Cattle presence on the OCNM has not been identified as an issue and the Permittee has been very active in monitoring and controlling cattle to prevent entry into the OCNM.

Direct, Indirect, and Cumulative Effects

Alternative 1 would allow continued grazing in the area around the OCNM water intake.

Alternatives 2a, 2b, 4 and 5 would eliminate permitted grazing near the OCNM water intake and would require action if unacceptable effects on plants or utilization were noticed.

Alternative 3a would fence cattle (exclude them) from Bigelow Lakes area but would not protect Lake Creek where OCNM withdraws surface water for domestic use. **Alternative 3b** would require the Permittee to move cattle from Bigelow Lakes if utilization standards did not meet 20%, but would not protect withdrawal sites or the headwaters of Lake Creek.

Direct effects include both physical and biological effects from cattle near the water intake points. Managing the risk of contamination directly relates to the number and timing of cattle in the Lake Creek drainage. Alternatives that eliminate cattle from the area eliminate some of the risk. Wildlife and recreational livestock use, and human use would continue around Bigelow Lakes. Managing cattle use within specified utilization levels (as in Alternative 3a and 3b) within the Lake Creek Watershed and continuing to treat the water according to approved standards would also result in no adverse effects on OCNM water supply and quality.

The proposed changes in the Allotment Management Plan do not change the risk to the water supply for OCNM. If anything, some of the alternatives would lessen this risk by reducing the numbers of domestic livestock. Additionally, cattle management would follow specified Best Management Practices designed to protect water quality. Cattle, as well as wildlife and humans, have access to Lake Creek and other surface water above OCNM's intake. All of these sources can contaminate the stream with fecal material, and damage streambanks, which could increase sediment and turbidity. OCNM can reduce the risk to their water supply by fencing off an area around their water diversion. This would keep channel disturbance down, but would not change the fact that bacteria or other micro-organisms would be in the water and treatment of the water prior to domestic use would still need to be provided.

The cumulative impacts from cattle, other livestock (horses, llamas mules etc.), wildlife, and human contamination sources is difficult, if not impossible to predict (and manage). Even Alternative 5 (the no grazing alternative), would not eliminate the threat of contamination to the OCNM domestic water supply.

The risk and potential for *Cryptosporidium* and *E. coli* contamination to the domestic water sources used by OCNM is extremely difficult to isolate and associate to any single contaminant source. Since there has not recently been any reported case of either contaminant, Alternatives 1, 3a and 3b are likely to continue to present the same degree of risk for contamination to the Lake Creek domestic water source used by OCNM.

5. Economics

Economics associated with grazing on the Big Grayback Allotment.

Background

This issue can be viewed from two perspectives: 1) cost and effectiveness of the alternatives analyzed in regard to the costs to the Permittee and 2) cost and effectiveness of the alternatives analyzed in regard to costs to the Forest Service for construction and maintenance of existing and proposed facilities and improvements, and the costs of administration for the allotment. The indicators for this issue are the total cost by alternative associated with the range Permittee, and the total administration costs (including construction and maintenance of facilities) associated with the USDA Forest Service. These indicators are used for relative comparison and actual costs could vary to some degree. Costs, type of fence, and installation methodology are analyzed as a "maximum scenario". Any type of fence or installation methodology could be utilized that met the effectiveness objectives of the fence, and met resource objectives for its installation.

Direct and Indirect Effects

Under **Alternative 1**, no additional costs would be incurred. Alternatives 2a and 4 construct the greatest amount of new fences and would be the most expensive to both the Permittee and the Forest Service. Alternative 3a includes 3.5 miles of fence at a cost slightly less than Alternative 4. Alternatives 2b, and 3b would require less fencing and have lowest costs of the alternatives that allow grazing.

Under **Alternative 2a**, this analysis assumed a buck and pole fence along the district boundary would be constructed with Forest Service funds and maintained by the Permittee; two additional fences (four strand barbed wire with metal posts) are also proposed (Forest Service funded/Permittee maintained).

Total fencing costs for Alternative 2a would be approximately \$356,380, with additional costs (material and labor) for future maintenance anticipated. For the boundary fence, the Forest Service would likely supply future material needs and the Permittee would provide the labor for maintenance.

Under **Alternative 2b**, total estimated fencing costs would be approximately \$24,380. Fencing costs do not include the exclusionary fences in the Bigelow Lakes area, but do include other fences that would assist in management of livestock.

Under **Alternative 3a**, up to three exclusionary fences are required in the Bigelow Lakes area. The fence around the small lake would be required only if established utilization levels for the Botanical Area were not obtained through increased management and control of livestock. Two additional fences (analyzed as a four strand barbed wire with metal posts) are proposed (Forest Service supplies the material and the Permittee would build and maintain); the Thompson Creek fence and the Little Bear fence, a cattleguard, and a corral reconstruction. The total costs for Alternative 3a would range from approximately \$52,000 to \$53,3000 (dependent on the need for the third Bigelow Lakes fence).

Alternative 3b would not include the Bigelow Lakes fences and would have a total cost of approximately \$26,380.

Alternative 4 includes fence extensions of about 2.1 miles to the Sturgis fence and about 1 mile to the O'Brien Creek fence would be required with this alternative, in order to control cattle movement up to the high elevation pasture. Total fencing costs with this alternative are approximately \$52,900.

The total (direct) costs of fencing from Alternative 5 would be the same as Alternative 1; no costs would be incurred by either the Forest Service or the Permittee. Future (indirect) costs may be incurred from long-term maintenance activities and/or removal of existing improvements.

Refer to the Summary of New Fencing Information Tables listed with Alternative 2a (Table II-4), Alternative 2b (Table II-6), Alternative 3a (Table II-8), Alternative 3b (Table II-10), and Alternative 4 (Table II-12), for a further description and display of fencing costs to the Permittee and the Forest Service.

The following table displays and summarizes estimated Forest Service and Permittee fencing costs by alternative, including maintenance costs (an indirect effect). These indicators are used for relative comparison and actual costs could vary to some degree. Costs, type of fence, and installation methodology are analyzed as a “maximum scenario”.

Table III-2. Forest Service and Permittee Costs by Alternative

Alternative	1	2a	2b	3a	3b	4	5
Forest Service Fencing Costs	\$0	\$178,190	\$12,190	\$28,812	\$13,190	\$26,450	\$0
Permittee Fencing Costs	\$0	\$178,190	\$12,190	\$28,811	\$13,190	\$26,450	\$0
Total Fencing cost	\$0	\$356,380	\$24,380	\$53,223	\$26,380	\$52,900	\$0
Miles constructed	0	10.4	2.1	3.5	2.1	5.2	0
Forest Service Maintenance Costs (Estimated Range)	\$0	\$0-3,000	\$0-3,000	\$0-1,000	\$0-1,000	\$0-1,000	\$0-5,000
Permittee Maintenance Costs (Estimated Range)*	\$100-1,000	\$1,000-10,000	\$1,000-10,000	\$1,000-8,000	\$0-5,000	\$0-5,000	\$0

Note: Maintenance costs in the above table are based on an average year under typical (normal) weather conditions and typical effects on improvements requiring maintenance. Costs are estimated to trend toward the high end of stated range as improvements age with time. Maintenance costs could increase beyond these estimates if extreme weather conditions occurred.

Range improvement projects required under Alternatives 2a, 2b, 3a, 3b, and 4, when implemented, would assist the recovery of range conditions and allow better management of livestock. Additional fencing improvements could be required under Alternative 3a depending on the demonstrated need as allotment management is monitored and as directed through the Annual Operating Instructions. Identified range improvement projects would be implemented over the next several (3-5) years, as funding became available and the workforce could be scheduled.

Alternative 5 would eliminate all economic benefits derived from the management of livestock on the allotments. Alternative 5, since it eliminates livestock grazing on the allotments, would phase out grazing over a three-year period, after which the allotment would cease to generate grazing receipts, or provide the same level of jobs in range management.

The cost to the government for administering livestock grazing permits on this allotment under Alternatives 1, 2a, 2b, 3a, 3b and 4 would be greater than the return from grazing fees. Current law and policy do not require cost-effectiveness as the sole criteria for allowing livestock grazing on National Forest System lands. The Forest Plans contain established goals and objectives to provide forage for domestic livestock in a manner consistent with other resource objectives and environmental constraints.

Although funding for federal grazing administration fluctuates and has been declining in recent years, a priority would be placed on monitoring and administration of critical needs associated with Forest Service administration of an updated AMP for the Big Grayback Allotment, if authorized by this analysis and a subsequent decision in accordance with NEPA procedures.

C. Effects of Implementation - Other Issues

The following site-specific issues were identified as being relevant to the Proposed Action for update of the Big Grayback C&H Allotment, and categorized as **Other Issues**. This section includes a description and consequences discussion for each Other Issue. (Not in order of significance)

Grazing may conflict with Late-Successional Reserve (LSR) objectives

Background

There are approximately 4,750 acres of LSR allocated within the Illinois Valley Ranger District portion of the Big Grayback allotment. Within this area are approximately 815 acres of meadows (MA-9) that may provide forage habitat for livestock and wildlife. These areas do not contribute to the overall effectiveness of the LSR and grazing of forage in these 815 acres does not measurably affect LSR function or habitat conditions.

The standards and guidelines for Management of Habitat for the Northwest Forest Plan on page C-17 state: "Range Management - Range-related management that does not adversely affect late-successional habitat will be developed in coordination with wildlife and fisheries biologists. "Adjust or eliminate grazing practices that retard or prevent attainment of reserve objectives. Evaluate effects of existing and proposed livestock management and handling facilities in reserves to determine if reserve objectives are met. Where objectives cannot be met, relocate livestock management and/or handling facilities."

Since most of the very limited range activities on the Illinois Valley Ranger District portion of the allotment are associated with meadows, range resource utilization would not affect the late-successional habitat. Also, by following the direction in the Forest Plan, the unique habitats found in the meadows would be maintained. Grazing is also an accepted practice within LSRs, but the concerns recorded focus on meeting or maintaining the vegetation needed for an effective Late-Successional Reserve. Cattle trampling seedlings and damaging root systems of conifer trees are some of the main aspects of this issue. Livestock grazing and the effects on the development of late-successional habitat through trampling in young plantations is discussed in a separate Other Issue.

Direct, Indirect, and Cumulative Effects

Alternative 5, the No Grazing alternative would have no direct, indirect, or cumulative impacts on late-successional reserves since no livestock grazing would occur. For all other alternatives, the Southwest Oregon Late-Successional Reserve Assessment (USDA FS/USDI BLM 1995) analyzed the effects of grazing within LSRs (LSR P.148):

“Very little range resource is available on the LSRs. Most of the range resource is associated with pastures in natural openings along the Rogue River and other meadows. The Medford BLM Area Plan and the Siskiyou LRMP state the acceptable annual utilization levels for the meadow sites.

Cumulative Effects: Since most of the very limited range activities on the SNF are associated with meadows, range resource utilization would not affect the late-successional habitat (the LSR Assessment has received Regional Ecosystem Office review). Also, by following the direction in the Forest Plan, the unique habitats found in the meadows would be maintained.”

Grazing may conflict with Oliver Mathews Research Natural Area objectives

Background

Forest Plan goals for Research National Areas (RNAs) are to “provide areas with undisturbed ecosystems for research, observation, and study. Protect the areas from human-caused disturbances to allow for change through natural processes.” Maintenance of natural processes within each area is the prime consideration. The main purposes of RNAs are to provide: (1) baseline areas against which effects of human activities can be measured; (2) sites for study of natural processes in undisturbed ecosystems; and (3) gene pool preserves for all types of organisms.

Most of the Oliver Mathews RNA is not currently used appreciably by livestock. An exception is the southwest corner of the RNA in the following areas: on the Illinois Valley RD side, around Horse Spring and the moist meadow system just north of Craggy Mountain, and on the Applegate RD side east of the Boundary Ridge, the moist meadow system at the headwaters of Craggy Creek, which is immediately adjacent to the above area.

Current livestock utilization varies from light to moderate in these areas, mostly concentrated in a few wet areas and more on the Illinois Valley RD side. The moist meadow at the headwaters of Craggy Creek is in good ecological condition. The Illinois Valley RD portion shows more evidence of alteration by historical livestock grazing. At current use levels, grazing doesn't appear to be downgrading ecosystem health within the RNA (Botanist observation).

The Forest Service Manual allows the Pacific Northwest Forest and Range Experiment Station director to set a level of livestock grazing compatible with the natural area features in an RNA. This would normally be done when the RNA establishment record is finalized (not done yet for Oliver Matthews RNA). The Siskiyou National Forest Plan does not allow grazing in RNAs. The Rogue River NF Forest Plan can allow grazing if the Experiment Station director authorizes it as essential to maintain a specific vegetation type. However there are no plant communities or keystone species in this RNA which need grazing to maintain them.

Grazing as it currently occurs in Alternative 1 is not affecting any of the attributes for which the RNA was established and is not affecting ecological conditions in any major way within the RNA (Botanist observation). However it is not consistent with the management direction described above.

Since current conditions are not meeting criteria to allow continued grazing, no livestock grazing would be permitted on the Applegate Ranger District's portion of the Oliver Mathews RNA under all alternatives that include grazing. Because the Permittee would be responsible for keeping livestock out of the RNA, Forest Plan Standards and Guidelines would be followed under both Forest Plans under Alternatives 2a, 2b, 3a, 3b, and 4. If cattle were found to be either in the Illinois Valley Ranger District's portion, or the Applegate Ranger District's portion of the Oliver Mathews RNA, the Permittee would be notified and required to move the cattle from the RNA.

Direct, Indirect, and Cumulative Effects

Grazing in the RNA is not allowed under any of the other alternatives (2a, 2b, 3a, 3b, 4, 5). Therefore, if properly implemented, none of these alternatives would affect plants or plant communities in the Oliver Matthews RNA.

Under Alternative 2a, a physical barrier would prevent livestock from reaching the portion of the RNA on Illinois Valley Ranger District but they would still have access to the Craggy Creek headwaters within the RNA on the Applegate side.

Under Alternative 2b, no physical barrier would be used. Herding and other non-structural measures would be employed to keep cattle off of the Illinois Valley portion of the allotment, including the parts of the RNA on that side of the crest. It is likely that the Craggy Creek headwaters on the Applegate side would also be left undisturbed if the provisions of this alternative are successful.

Under Alternatives 3a and 3b, the Forest Service and the Permittee would be required to keep cattle out, and limit their presence to isolated transitory visits by livestock. The meaning of “isolated” is non-planned presence of one or a few cattle, passing through the RNA area (i.e., “transitory”). While not allowed in the RNA, this extent of presence of livestock is disclosed as the only (maximum) extent of effect that could occur and would be managed, and would cease when detected. “Isolated transitory visits” would therefore have no effect on RNA ecological or research values, therefore there should be no adverse RNA effects.

Under Alternative 4 a physical barrier would keep cattle out of the portion of the RNA that they currently use. Therefore there would be no effects to the RNA.

Under Alternative 5 no grazing would be allowed anywhere on the allotment, including in the RNA, therefore there would be no RNA effects.

Livestock grazing may change composition of native plant communities

Described below are plant communities that have experienced changes in species composition and/or cover, due largely or in part to livestock grazing. This discussion includes current conditions by prominent plant community types, and direct, indirect and cumulative effects associated with the alternatives considered in detail.

Low-mid Elevation Dry Grasslands

Non-native grasses and forbs have replaced native plant species on most sites where low-mid elevation dry grasslands occur on the Big Grayback allotment. Most of the remaining native examples of this plant community are in the process of being converted. No sites are entirely free of non-natives but a few are relatively pristine. Factors contributing to the invasion are pre 1980s livestock over-grazing, purposeful introduction of non-native species, and the ability of these species to spread aggressively whenever disturbance occurs. Once non-native species are established on these sites, there seems to be no practical way to eliminate them on any substantial acreage.

None of the alternatives considered in detail that allow grazing would allow full recovery of original native species composition on these sites. The best that can be expected under any alternative would be to maintain the few remaining sites that have a relatively intact native flora, slow the conversion of sites where non-natives are now increasing, and promote an increased presence of native plants on sites that are currently dominated by non-natives. Even with these limited objectives, there is no consensus among botanists and rangeland conservationists about how the altered communities would respond to changes in range management.

Alternative 5 might provide some limited opportunity to arrest the degradation of this plant community where it occurs on this allotment. Since there is very little of this habitat on the allotment, it is prudent to focus more closely on moist mountain meadows, and dry decomposed granite subalpine slopes, discussed below.

Moist Mountain Meadows

A 2003 literature search for empirical studies that measured effects of cattle grazing (or removal of cattle) on native vegetation in moist meadows did not yield any abstracts that appeared to be pertinent to the interactions of cattle and meadow vegetation on this allotment. The background and estimated effects described below are based on the Forest Botanist's knowledge and observations made in moist mountain meadows on this allotment, and elsewhere on the Forest during the past 17 years.

Most moist mountain meadows no longer support the species composition or structure that they had prior to their long history of livestock grazing. They are dominated by 'increaser' species (those that are unpalatable or otherwise do well under grazing pressure). More palatable and less resilient native plant species, some of which may have dominated these meadows in the past, have declined and in some spots only exist in microsite refugia.

Purposeful introduction of non-native forage species has occurred. Other non-native species have encroached on their own, capitalizing on the grazing disturbance. Perennially saturated portions of these meadows are often in better shape, in terms of plant species composition, than the seasonally moist portions. This is probably because livestock avoid the extremely wet areas until late every season. However, trampling can seriously affect the hydrology of the wetlands and adversely affect individual plants. Only a few small remote moist mountain meadows on the allotment can be found that approximate an original plant community composition.

Rest is clearly effective as a restoration tool for moist mountain meadows on this allotment (see Botanical Area discussion). The rest provided under Alternatives 4 and 5 for high elevation moist meadows would provide the most effective means of restoring the native plant species composition and structure of moist mountain meadows on the allotment.

Alternative 1 may continue downward ecological trends in some moist mountain meadows on the allotment. Under Alternatives 2a and 2b, the Bigelow Lakes area and other moist meadow areas on the Illinois Valley RD side of the allotment are expected to benefit because of boundary adjustments. However, these alternatives could concentrate existing livestock numbers on the same habitat on the Applegate RD side of the allotment and potentially increase the decline of this habitat there. For this reason, Alternatives 2a and 2b may not provide any net benefit to this plant community on the allotment. Alternatives 3a and 3b would spread out the effects of livestock grazing over the allotment. Alternatives 4 and 5 have the most beneficial effect on moist mountain meadows on the allotment because grazing would not occur in these habitats.

Ecological condition of moist mountain meadows on this allotment has improved in recent years except perhaps in some parts of upper Sturgis Fork drainage and on south slopes of Lake Mountain. Actual livestock numbers have been less than permitted numbers in some years. The Permittee and Forest Service have worked diligently to reduce the presence of cattle in the Bigelow Lakes area and Krouse Cabin Meadow.

Dry Subalpine Decomposed Granite Slopes in the Sugarloaf/Windy Gap Area

The open high south aspects of Big Sugarloaf Peak/Windy Gap support a sparse native plant community on un-cohesive infertile decomposed granite soil. The soils at Windy Gap and the uplands of Bigelow Lakes are type 26F, Cryumbrepts - cold, young soils with little cation availability (see soils maps and descriptions in EA Appendix E). Preventing and arresting soil erosion is a continuing concern here.

Soil field surveys were conducted near Bigelow Lakes and Windy Gap in the spring and summer 2004. Soil management direction is contained in the Standards and Guidelines from the 1990 Rogue River National Forest Land and Resource Management Plan for soil quality, as well as the 1998 Regional Supplement to the Forest Service Manual (FSM 2521 R-6 Supplement 2500-98-1, Effective August 24, 1998), dealing with soil resource protection. No detrimental soil erosion was found.

The plant community is dominated by *Eriogonum diclinum*, a Klamath Mountains endemic buckwheat, as well as squirreltail, needlegrass, Roehmer's fescue, and a dryland sedge. Overall vegetation cover is less than desirable for holding the soil in place. It is likely that past livestock grazing has influenced plant species composition here and/or caused a decline in overall vegetation cover.

Under Alternative 1, because this site is so fragile, soil disturbance and grazing of existing plants by livestock is probably hindering recovery and stabilization of this area. Recovery is likely to occur under Alternatives 2a, 2b, 3a, and 3b if forage utilization in the adjacent moist meadow is held to a maximum 20% as specified for Botanical Areas under these alternatives. Since livestock would tend to use this flatter ground with more desirable forage first, it is likely that utilization in the dry barren uplands would be about 10%, a level which should permit recovery of the soil resource and, over time, the vegetation cover. Alternatives 4 and 5 offer the most benefit for this site because the soil and existing plants would not be disturbed by livestock.

Livestock grazing may affect human social and recreational values (including those associated with Inventoried Roadless Areas and/or other unroaded areas)

Background

This issue was expressed by a portion of the public that feels that livestock grazing can impact public health through the generation of manure that draws flies, as well as the pollution of springs and streams utilized by hikers. The Big Grayback allotment overlaps areas of the Oregon portion of the Kangaroo Inventoried Roadless Area (IRA). The area, as described in Appendix C of the 1990 RRNF LRMP, has not experienced any management activities in the form of timber harvest and/or road building. Grazing was identified (in RRNF LRMP Appendix C) as an ongoing use of this IRA.

The moist and wet meadows associated with Bigelow Lakes Botanical Area and the large moist/wet meadow system above the upper lake have traditionally been used by the recreating public. Historical grazing has altered the original plant species composition, structure, and cover. There is a lot of recreation use in this area and the Forest Service receives frequent complaints about the presence of livestock in this Botanical Area.

Direct, Indirect, and Cumulative Effects

There is no timber harvest or road construction associated with update to the Big Grayback AMP. This action (AMP Update) does not require revised decision authority nor does it procedurally require NEPA documentation through an Environmental Impact Statement analysis process, because there would be no significant character changes to these lands described and inventoried as roadless under any alternative. There would also be no character change to non-inventoried areas that may possess unroaded values.

Under Alternative 1, the eventual composition and structure of the native flora in the Bigelow Lakes Botanical Area would still reflect the effects of livestock grazing and disturbance to some degree. Botanically-interested recreation users are likely to find the semi-disturbance and presence of livestock somewhat detracting to their enjoyment of the flora.

Alternatives 1, 2a, 2b, 3a, 3b, and 4 permit relatively the same amount of animals over different allotment boundaries and acres. The effects (in terms of flies and water quality) are expected to be about the same for these alternatives, just in different areas with varying concentrations of animals. The undesirable effects from wildlife, recreational stock (horses, llamas etc.) and people must be factored into this issue, which make isolating the effects from 60 to 70 head of cattle difficult to predict.

Alternative 4 would begin to address this issue by eliminating cattle from the more sensitive, and higher recreational use areas in the high elevation areas. Alternative 5 best addresses this issue by eliminating all cattle grazing in Bigelow Lakes Botanical Area and inventoried and non-inventoried areas with roadless character. Recreational stock use and human risks would remain.

Livestock grazing may directly and indirectly affect resident and anadromous fish and aquatic species

Background

Federally Threatened, Endangered, or Sensitive (TES) fish populations within Upper Applegate, Middle Applegate and Grayback-Sucker fifth-field watersheds, are Southern Oregon Northern California Coastal Chinook salmon (*Oncorhynchus tshawytscha*), Southern Oregon Northern California Coasts coho salmon (*O. kisutch*), Klamath Mountains Province steelhead trout (*O. mykiss irideus*), and Southern Oregon California Coasts coastal cutthroat trout (*O. clarki clarki*). Chinook salmon in the Rogue basin are part of the Southern Oregon Northern California Coastal (SONCC) (ESU), and were not warranted for federal protection under the Endangered Species Act on 9 September 1999. Essential Fish Habitat for SONCC Chinook salmon is identified under the Magnuson-Stevens Act.

Other fish species present in most of these drainages could include rainbow trout (*O. mykiss*), Pacific lamprey (*Lampetra tridentata*), and reticulate sculpin (*Cottus perplexus*) (USDI BLM 1995; USDA Forest Service 1997).

Although these streams are closed to angling, Sucker, Grayback, and Thompson Creeks are important spawning and rearing streams for salmon and steelhead contributing to sport fisheries and, to a lesser degree, commercial Chinook salmon fisheries. Grayback and Sucker Creeks have contained some of the highest densities of spawning coho salmon on the Rogue River-Siskiyou National Forest in recent years. Carberry Creek provides a consumptive fishery for naturally-producing rainbow and cutthroat trout. Bigelow Lakes do not contain fish because of their shallow depth and location above natural barriers.

No Threatened or Endangered fish species currently occur within the allotment area boundary (ODFW 2002; USDA Forest Service 2002). Sensitive steelhead and cutthroat trout use approximately 2 and 16 miles of stream habitat respectively within the allotment on the Illinois Valley Ranger District (USDA Forest Service 2002).

The upper extents of coho salmon—and its Critical and Essential Fish habitats—are located approximately 3.0 and 3.3 miles downstream of the proposed Alternative 3 boundary in Grayback and Thompson creeks respectively. The upper extents of coho and Chinook salmon—and their Essential Fish Habitat—have been observed over 6 miles downstream from the allotment area in Sucker Creek (USDA Forest Service 2002), and Chinook are located over 9.5 miles downstream in Thompson Creek (USDI BLM 1995).

The Carberry Creek drainage has not contained anadromous fishes such as salmon, steelhead, and Pacific lamprey since the early 1980s when Applegate Dam was constructed. This dam on the upper Applegate River, blocks upstream passage to migratory fishes.

The Forest Service and other agencies have recently surveyed many of the streams draining the allotment area for aquatic habitat quality and quantity. These fish habitat surveys measure physical parameters in the stream channel, stream banks, and riparian zone. Some of the surveys ended downstream of the allotment boundary because fish do not extend into the project area in some streams because of natural waterfalls or steep gradients. However, all of these surveys were conducted in the scope of the Big Grayback AMP allotment area.

In general, fish habitats in seven streams draining the allotment area were in good (four streams) or moderate (three streams) conditions. This analysis was limited to five parameters that could have been influenced by livestock grazing (e.g. Kaufmann et al. 1983; Kinch 1989; Clarkson and Wilson 1995; Knapp and Matthews 1996): pool area, pool frequency, pool depth, width to depth ratio, and amount of fine sediment in spawning riffles.

Other factors influencing fish habitat quality such as instream large wood frequency were not used in the analysis because these factors have not been shown to be adversely influenced by livestock grazing. Further, other physical conditions potentially affected by livestock grazing such as frequency of undercut banks were not used in the analysis because this information is not collected in typical Forest Service stream surveys.

Direct and Indirect Effects

Alternative 1, the No-Action alternative, would continue the current level of grazing within the current allotment boundary. Resource damage associated with grazing to sensitive cutthroat trout and aquatic habitats would continue to occur in the area near Sturgis Fork trailhead. Grazing would continue to occur in the Grayback-Sucker Key Watershed, and cattle would be allowed to enter Thompson Creek near the Forest Boundary.

This alternative poses the greatest risk of not allowing attainment of the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan (at the fifth-field scale) and the standards and guidelines of the Rogue River and Siskiyou National Forest Plans.

Alternative 2a and 2b would use the division boundary line that separates the two districts along Grayback Mountain crest as the allotment boundary, keeping cattle out of the Grayback-Sucker Key Watershed. Fences would be constructed near the eastern District boundary to keep cattle out of Thompson Creek, and near Sturgis Fork trailhead to help restore aquatic habitats in this area. Alternative 2a, 2b, 3a, 3b and 4 would add 720 acres to the current allotment boundary near the lower section of Sturgis Fork known as the Little Bear addition. This addition includes a low-gradient, alluvial section of Sturgis Fork that may be utilized by cattle in the future if fencing is not installed. Because of the fencing and/or management requirements, these alternatives would allow attainment of ACS objectives, at the fifth-field scale.

Alternative 2b would restrict cattle use to the east side of the Grayback Mountain crest without constructing fences. However, because fences would not be constructed, it is highly probable that cattle would move west into the Bigelow Lakes areas, as is currently occurring. Therefore, effect to fish and their habitat would be similar to Alternative 1.

Alternative 3a and 3b would expand the current boundary to better distribute cattle numbers over a larger area and to formalize an agreement that the Forest Service and the Permittee have had since 1980 to allow grazing in this area. This alternative would allow grazing in the Grayback-Sucker Key Watershed and in the lower section of Sturgis Fork. Cattle use in the Grayback-Sucker watershed is not expected to significantly degrade aquatic habitats in Grayback and Sucker creeks or have adverse effects to TES fishes in these systems because no damage is currently visible, and most of these riparian areas lack forage that would attract cattle. Therefore, these alternatives would allow attainment of ACS objectives at the fifth-field scale.

Alternative 4 would reduce the current allotment area by approximately 50%. This alternative would eliminate high-elevation areas from the allotment and eliminate grazing from the Grayback-Sucker Key Watershed. This alternative would also concentrate cattle use in a smaller area with less quality forage, potentially increasing grazing pressure and resource damage in riparian areas in lower Sturgis Fork. This alternative would allow attainment of ACS objectives, if cattle use does not become concentrated in riparian areas in the Sturgis Fork drainage.

Cumulative Effects

In general, major activities in addition to grazing that have historically disrupted natural processes and degraded fish habitat in watersheds draining the allotment area are; erosion and sedimentation associated with roads and landslides; channelization; removal of large wood from streams and eliminating recruitment through riparian timber harvest; hydraulic, placer, and suction dredge mining; altering natural fire return intervals; flow transfers and withdrawals; dams and other passage barriers (USDI 1995; USDA FS 1996, 1997; Bayley 2003).

Grazing has occurred in these watersheds for nearly a century. It has been restricted to relatively small portions of these watersheds with relatively low pressure, utilization, and resource damage. For the most part, grazing has not shown to play an important role in influencing fish habitat in these watersheds because it is generally low intensity and spread out over a large area. Because grazing is largely inconsequential relative to other management activities in affecting aquatic habitat and fish production in the allotment area, it plays a minor role in defining adverse cumulative effects.

Endangered Species Act Determinations

Direct, indirect, and cumulative effects from Alternatives 1-4 are determined to be “**May Affect, but Not Likely to Adversely Affect (NLAA)**” SONCC coho salmon, its Critical Habitat, and its Essential Fish Habitat, are **No Impact** to SONCC Chinook salmon and its Essential Fish Habitat, and **May Impact Individuals or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Cause A Loss Of Viability To The Population Or Species** for KMP steelhead and SOCC cutthroat trout. Alternative 5 is **No Effect** or **Impact** to any of the above species and their habitats.

Effects determinations were based on the primary facts that 1) the project proposes to keep current grazing intensity, duration, and locations constant or decrease use, 2) in general, current use is not significantly degrading riparian or aquatic habitats for TES species, and 3) most of the use is concentrated in high-elevation areas that lack fish. See EA Appendix C for more detailed information.

Alternative 3a underwent consultation with NOAA Fisheries who concurred in a letter dated 15 March 2004 that this action “May Affect”, but is “Not Likely to Adversely Affect” threatened SONCC coho salmon and their critical habitat (see EA Appendix C). The preferred alternative (3a) is NLAA for Southern Oregon Northern Oregon Coasts coho salmon and its critical habitat in addition to Essential Fish Habitat described under the Magnuson-Stevens Act. No further consultation with NOAA Fisheries is required.

Livestock grazing may adversely affect rare plant species and their habitats, including Forest Service Sensitive plant species

A Biological Evaluation (BE) was prepared for this project addressing effects of the alternatives on Federally Listed and FS Sensitive plant species. It is included as EA Appendix B. Pertinent parts of that document have been brought forward into this section.

Threatened and Endangered Plant Species

Fritillaria gentneri is a member of the Lily Family (Liliaceae) and is found in a limited area of southwestern Oregon. The main population is found in and around the town of Jacksonville but outlying populations have been found in the Applegate Valley and in other locations in southern Oregon. *Fritillaria gentneri* generally occurs in dry, mixed woodlands of Douglas-fir and/or Oregon white oak at lower elevations often in transition zones between plant communities.

The majority of known sites are located on privately owned lands and lands managed by the Bureau of Land Management. The closest known location of this species is found in the Williams vicinity, approximately six miles to the north. Potentially suitable habitat exists in some lower elevation parts of the Big Grayback allotment. However, the allotment is considered outside the expected range of this taxon.

None of the proposed activities are likely to affect *Fritillaria gentneri* populations even if they were present because:

- The oak woodland potential habitat for *Fritillaria gentneri* is normally only lightly used by livestock on this allotment;

- Cattle are not present through most of the growing season (March through June) each year. This is the period when photosynthesis and carbohydrate storage in the perennial bulbs occurs; and
- Reproduction occurs in this species mainly by formation of bulblets, occurring deep enough underground that hoof pressure on the surface would not affect it.

Arabis macdonaldiana is a member of the Mustard Family (Brassicaceae) and is found on serpentine rock and talus at high elevation about 7 miles south of the allotment in the Red Buttes Wilderness. This habitat does not occur within the allotment. Livestock would not use this habitat even if it were present because it is too rocky and there is not enough forage.

No potential habitat exists for any other federally listed plant species. Therefore this project has **No Effect** on any plant species listed under the Federal Endangered Species Act.

Forest Service Sensitive Plant Species

Sensitive Plant Species with No Conflict Under Any Alternative

Cupressus bakeri, *Cypripedium fasciculatum*, *Draba howellii*, *Eucephalus vialis*, *Hazardia whitneyi* ssp. *discoidea*, *Lewisia leana*, and *Sedum laxum* ssp. *heckneri* occur in locations and habitats on this allotment that are infrequently or not used by livestock.

Erigeron cervinus is tentatively known from an older herbarium collection on the south side of Grayback Mountain. Precise location information is not available and the identification of the specimen has not been confirmed. This species normally grows on rocky slopes or outcrops that are not accessible to cattle or do not support enough forage to attract them. For this reason, a determination of **No Conflict** was made.

Sensitive Species that could be Affected by One or More Alternatives

***Iliamna latibracteata* (California globe-mallow):**

This stout tall perennial forb in the mallow family occurs sporadically in Coos, Curry, Douglas, Jackson and Josephine counties in Oregon and Del Norte and Humboldt counties in California. There are 20-30 occurrences in southwestern Oregon and three extant occurrences in California. The majority of Oregon occurrences, with also the most acreage and number of individuals, are in the Indigo Prairie vicinity in Curry County, on the Rogue/Umpqua Divide (Douglas and Jackson Counties), and, to a lesser extent, in the Page Mountain vicinity of extreme southern Josephine County.

Its habitat is forest edge, depressions, meadows and also in clear-cuts after slash burning. There is ample evidence that periodic fire is crucial to the survival of this species (see discussion in the BE)

In general terms, the palatability of this plant to livestock is unknown and the effects of grazing/trampling of the plant and its habitat are unknown. Apparently cattle on Big Grayback allotment do eat it (this was observed recently by a FS employee) but its desirability in comparison to other forage plants is unknown.

This globe-mallow occurs on the allotment near Pepper Camp (Illinois Valley Ranger District, T40S, R6W, section 2 (west ½) and 3 (east ½)). There are several sub-populations scattered over at least 10 acres. When originally reported in 1992, there appeared to be well over 1,000 total individuals.

The majority of the reported occupied habitat here is older clear-cuts and other logged areas (transitory rangelands) with lesser amounts of natural openings. The previously-logged land is probably less used by livestock than the natural moist meadows nearby (based on observations by the Forest Botanist of other transitory rangelands on the Forest). Livestock access to much of the Iliamna habitat in the Pepper Camp vicinity is, or will soon become, limited (blocked by vigorously growing conifers).

Direct, Indirect, and Cumulative Effects

Because of the lack of attractiveness (to cattle) of the main Iliamna habitat here, and because of the rapidly diminishing livestock access to that habitat, future livestock grazing under Alternatives 1, 3a, or 3b is likely to have no more than a minor effect on the Iliamna populations in the Pepper Camp vicinity, well below a threshold where grazing would affect the viability of the local population.

Under Alternatives 2a, 2b, 4 and 5, livestock grazing would not occur in the Pepper Camp vicinity so there would be no impact attributable to grazing. Forest succession and the lack of periodic burning are likely to be the main threats to Pepper Camp Iliamna populations in the future.

***Gentiana plurisetosa* (elegant gentian)**

This perennial forb inhabits high elevation wetlands on granitic substrate and is endemic to the Klamath Mountains. The two currently known Oregon populations are in the Bigelow Lakes Botanical Area in the wet meadow above the upper lake, and in the Grayback Mountain Botanical Area in the wet meadow above Krouse Cabin. A third Oregon population in the vicinity of Bolan Lake has been reported, but its current status is unknown. This gentian is rare in the California portion of its range (its on California Native Plant Society's list 4; watch list), but found more frequently there, than in Oregon.

Suitable habitat for this plant is limited throughout its range and populations are rarely encountered whether the habitat is grazed or not. Mature plants are not usually eaten by livestock. Where grazing pressure is long term and heavy, reproduction may be depressed as young seedlings are consumed with other more palatable forage and/or trampled.

There is some evidence that this species responds positively when grazing pressure is reduced. Monitoring of the Grayback Mountain population tentatively indicates an increase in population numbers in the decade since livestock use was reduced in the early 1980s.

Populations at Grayback Mountain and at Bigelow Lakes survived sustained heavy grazing pressure for many decades before the 1980s. The current small population sizes and fragmented distribution may be due in part to long term heavy grazing in the past. These two populations are approximately equal in size at this time.

The Grayback Mountain and Bigelow Lakes populations include all the confirmed Oregon occurrences. This is a showy plant during its blooming period and much of its potential habitat in the Oregon Siskiyou has been searched without finding other populations. Viability of the species within the allotment area, on the Forests, and in Oregon, will always depend on the health and vigor of the allotment area occurrences.

Direct, Indirect, and Cumulative Effects

Current management under Alternative 1, as practiced in more recent years with light to moderate grazing at the Bigelow Lakes occurrence, and little to no grazing of the Grayback Mountain occurrence, should allow viable project area populations to persist indefinitely and may allow a gradual expansion of populations. It should be noted that grazing pressure under Alternative 1 is much less than these populations experienced in the decades before the 1980s.

Alternative 2a and 2b eliminate grazing on the Illinois Valley Ranger District portion of the allotment where the Bigelow Lakes Botanical Area is located. Maximum forage utilization levels would not exceed 20% in the Grayback Mountain Botanical Area (Applegate side) under these alternatives. This level of livestock use would allow both populations to persist indefinitely and may allow a gradual expansion of these populations.

A let-down fence under Alternative 3a excludes livestock from the gentian population in the Bigelow Lakes Botanical Area. Maximum forage utilization levels would not exceed 20% in the Grayback Mountain Botanical Area (Applegate side) under this alternative. This level of livestock use would allow both populations to persist indefinitely and may allow a gradual expansion of these populations.

Alternative 3b specifies maximum forage utilization levels in Botanical Areas not to exceed 20%. This level of livestock use would allow both populations to persist indefinitely and may allow a gradual expansion of these populations.

There would be no grazing, and therefore No Impact, on the gentian under Alternatives 4 and 5. These alternatives protect the populations and may allow gradual expansion to occur.

***Pedicularis howellii* (Howell's lousewort)**

This perennial forb occupies a variety of habitats. It is best thought of as an edge species; forest edge, wetland margins, edges of brushfields, and edges of rock outcrops. It grows in partial but not full shade and is most frequently found in small groups (a few individuals) widely scattered in its appropriate habitats. This taxon is endemic to the Siskiyou Range of the Klamath Mountains of northern California and southern Oregon. It is less frequently encountered in the allotment area than to the southwest in the heart of its range (the Bolan Lake/Tannen Lake area).

The species is most likely palatable to cattle but there is no evidence that it is a preferred forage plant. The majority of the known locations and habitats occupied by this species are not used much or are not accessible to cattle. From observations of populations on the Rogue River-Siskiyou National Forest, the taxon appears to exist in enough populations, and in enough places, that grazing poses no threat to its viability in any large portion of its range. A more in-depth discussion of this species can be found in Appendix J2 of the 1994 Final Supplemental Environmental Impact Statement of the NW Forest Plan (pages 287-290).

There are six known occurrences in the allotment area and only a few individuals in each of these occurrences. Two, or possibly three, of them are in areas that may be impacted by cattle. Allotment area populations comprise only a small fraction of the populations known on the Forest. The *Pedicularis* becomes increasingly more common in the townships immediately south and southwest of the allotment.

Direct, Indirect, and Cumulative Effects

Allotment area populations are not numerous enough or big enough to make any important contribution to viability of the species across the Forest. Alternatives 1, 2a, 2b, 3a, and 3b could impact no more than a few individuals and a small amount of habitat, and this effect is not likely to cause a loss of viability to the Forest population. Alternatives 4 and 5 would leave these occurrences undisturbed.

Rare Vascular Plant Species

Populations of the following rare plant species are known to occur on the allotment. This list includes Oregon Natural Heritage Program review and watch list species and species which are rare or threatened with extirpation locally, but more abundant elsewhere.

<i>Botrychium simplex</i>	<i>Perideridia howellii</i>
<i>Cypripedium montanum</i>	<i>Ribes marshallii</i>
<i>Eriogonum diclinum</i>	<i>Rubus nivalis</i>
<i>Eriogonum ternatum</i>	<i>Saussurea americana</i>
<i>Euonymus occidentalis</i>	<i>Sedum divergens</i>
<i>Hierochloa odorata</i>	<i>Sedum spathulifolium</i> ssp. <i>purdyi</i>
<i>Pedicularis bracteosa</i> var. <i>flavida</i>	<i>Suksdorfia ranunculifolia</i>
<i>Pedicularis contorta</i>	

A number of these species are threatened with extirpation locally due to low population numbers and threats to habitat. Of the species threatened with local extirpation, the following are most likely to be affected by livestock management and by the alternatives considered in this planning process. Information about these species is provided below:

<i>Botrychium simplex</i>	<i>Pedicularis bracteosa</i> var. <i>flavida</i>
<i>Hierochloa odorata</i>	<i>Saussurea Americana</i>

***Botrychium simplex* (little grape-fern)**

This small grape-fern, a primitive relative of ferns, occurs infrequently in moist meadows in a number of western states. Only three small populations are known in the Siskiyou Mountains of the Rogue River-Siskiyou National Forest. They are at Mt. Ashland, Steve Fork Meadow (outside the allotment) and at one location in Bigelow Lakes Botanical Area.

The Bigelow Lakes population is less than 1/10 acre in size. The grassy moist meadow area occupied by the grape-fern is used by cattle and is an area where they tend to concentrate. The grape-ferns themselves are too small to be sought after by cattle but are eaten along with other plants when forage is grazed below about two inches. Loss of individual plants to trampling by cattle may be expected. Change in moisture of the meadow due to changes in soil infiltration capacity and churning of wet ground around rivulets may also affect this species. Since these indirect effects are more likely to happen with increased grazing, there is some possibility that heavy grazing may put this population at risk.

The response of this plant to light grazing, moderate grazing, or no grazing is unknown. Since this grape-fern grows in productive moist meadows where competition from grasses and other plants is intense, there is a possibility that some level of grazing intensity could be beneficial to them. There is no evidence to support or reject this possibility. A draft Conservation Assessment being prepared now by the FS Regional Office states “no formal studies have been conducted on the impact of grazing though there are numerous anecdotal observations. Most *Botrychium* species clearly tolerate grazing, however, it is unknown how much and how frequent they will tolerate it.”

Direct, Indirect, and Cumulative Effects

Under current management in recent years (Alternative 1) the level of grazing intensity throughout the general vicinity where the grape-fern occur has been well below the threshold above which grape-ferns are likely to be at risk of extirpation. However, the microsite where the grape-ferns are actually known to occur gets grazed more heavily than the surrounding vicinity, so there is at least a slight risk that grape-ferns may experience detrimental effects in some years under this alternative.

Alternative 3b set a maximum forage utilization not to exceed 20% in Botanical Areas. If a utilization monitoring station were established directly in the grape-fern occurrence, and the results of monitoring there were used to move livestock when utilization approached 20%, the population there is likely to persist and perhaps expand. If no special attention were paid to this microsite under Alternative 3b, then effects would be roughly the same as Alternative 1.

Alternative 3a includes an exclusionary fence around the grape-fern population, so no effects from livestock grazing would occur. Alternatives 2a, 2b, 4, and 5 would eliminate grazing here also. It is not known if the entire absence of grazing is more or less beneficial than some level of light or moderate grazing. However, based on botanist observations at the other known sites on the Forest, it seems safe to assume that *Botrychium simplex* would be secure in the absence of grazing.

***Hierochloe odorata* (vanilla grass)**

This wetland grass is present in small numbers in the meadow above Krouse Cabin in the Grayback Mountain Botanical Area. This is one of three known sites in the Klamath Mountains. It is also known from the Cascades in central Oregon and becomes gradually more common north of there. It has appeared (or re-appeared) in the Krouse Cabin meadow in the last decade, since grazing intensity was dramatically lowered here in the early 1980s. The population (two to three dozen individuals) is quite vulnerable to extirpation because of its small size. One of the other sites, at Tamarack Meadow south of Dutchman Peak and outside the allotment, has at least 150 individuals. The other site is on BLM land north of Sugarloaf Mountain and presumably has only a few individuals.

Judging from its fragrance, taste, and texture, *Hierochloe odorata* is likely to be preferentially eaten by cattle if they are present. Because of its rarity in California and the south ½ of Oregon, and its apparent desirability as a livestock forage plant, vanilla grass is judged to be a “decreaser” (declines or disappears with long-term grazing), at least in this geographic area.

Direct, Indirect, and Cumulative Effects

The Krouse Cabin meadow has been only lightly grazed (see EA Appendix A) or not grazed under Alternative 1 for at least 20 years. Vanilla grass now emerges each summer free to grow and produce seed. Judging from its apparent absence before this period, and low population numbers, an assumption is made that vanilla grass was close to extirpation here, and still is, but now has a chance to expand if current management of this meadow continues.

Under Alternatives 2a, 2b, 3a, and 3b, maximum forage utilization is not to exceed 20% in Botanical Areas. Even at this relatively low grazing intensity, cattle are expected to seek out vanilla grass, hinder its growth and reproduction each year, and retain the risk of local extirpation of this species, as under the current conditions.

Alternatives 4 and 5 are predicted to offer the most chance for recovery of this species in the Grayback Mountain Botanical Area since these alternatives would allow no grazing within the population.

***Pedicularis bracteosa* var. *flavida* (yellowish lousewort)**

This wetland perennial herbaceous plant is present in the Krouse Cabin Meadow portion of the Grayback Botanical Area. It is known from one other site on the Rogue River-Siskiyou National Forest, in Douglas County at Hershberger Meadow on Prospect Ranger District. It is presumably more common farther north in Oregon. It is also present but uncommon in California, in the Marble Mountains. Only a couple of individuals are so far known from the Krouse Cabin Meadow.

It is not known if the plant is palatable or sought-after by livestock. Because there are so few plants, it is assumed that this population is vulnerable to extirpation under any alternative where livestock are likely to use the area, because of the potential to be trampled or eaten. Observations about this plant's habitat in California and in Douglas County make it obvious that this plant is not a disturbance lover.

Direct, Indirect, and Cumulative Effects

This meadow has been only lightly grazed under Alternative 1 for at least 20 years. This lousewort has appeared (or re-appeared) here during this period. Because grazing has been so light, and presumably would continue under Alternative 1, this population has an opportunity to expand, even though the threat of local extirpation will loom for at least several decades.

The potential for this occurrence to disappear as a result of livestock foraging or trampling increases under Alternatives 2a, 2b, 3a, and 3b, compared to Alternative 1, because the amount of allowable grazing in this meadow would potentially increase under these alternatives. Forage utilization would not exceed 20% under these alternatives, but if the plant is sought-after by livestock or over-sensitive to trampling, this level of grazing could be a threat to such a tiny population. Conversely, if the plant proves to be resilient to grazing or unattractive to livestock, this level of grazing intensity may not hinder the chances of population recovery and expansion.

Under Alternatives 4 and 5, no grazing would occur here and livestock would not affect the risk of local extirpation that still exists because of low population numbers.

***Saussurea americana* (American sawwort)**

This tall stout long-lived perennial herb, in the thistle tribe of the sunflower family ranges from Washington, Oregon, and Idaho to the Alaska panhandle. In Oregon, it is present in the Wallowa Mountains in northeastern Oregon and absent through the rest of the state except for about a dozen occurrences in the Siskiyou Mountains. The two known California occurrences are also in the Siskiyou Mountains, on and near the Forest.

Typical Siskiyou Mountain populations are small, usually less than a dozen individuals. Larger occurrences are in Oregon Caves National Monument, the Mt. Ashland vicinity, and on the Klamath National Forest south of White Mountain on the Siskiyou Crest.

Its habitat is wetlands. The majority of known Siskiyou Mountain populations are in areas that are heavily used by cattle. Mature plants are coarse with stiff hairs and are not palatable to cattle. This plant is sometimes found growing under alders or willows, out of reach from cattle next to wetlands where no *Saussurea* plants are found in the open. Most populations consist of a few large tough clumps in otherwise heavily grazed wetlands.

The Oregon Caves National Monument population and the Mt. Ashland population have not experienced as much grazing pressure in the last decades as the other Siskiyou Mountain occurrences. Their status as the largest Siskiyou Mountain populations suggests that mature plants are not palatable to cattle but past and present livestock grazing has seriously depressed the establishment of new individuals.

Two populations have been reported in the allotment area, at Bigelow Lakes and Elkhorn Prairie. The Elkhorn site has twice been revisited and plants not relocated. The Bigelow Lakes population is reported to have only one or two individuals. Both sites are in areas that are frequently used by cattle. These populations are important to viability of the taxon within the allotment area. This species is considered to be at risk of extirpation throughout the entire Siskiyou Mountains so these populations are important for viability of the species in our area.

Direct, Indirect, and Cumulative Effects

Current management under Alternative 1, as practiced in more recent years with fairly light or moderate grazing at the Bigelow Lakes occurrence, may or may not be suppressing recruitment of new individuals.

Alternative 3b, with maximum forage utilization not to exceed 20% in Botanical Areas, may bring slightly reduced grazing pressure on the Bigelow Lakes occurrence. This could bring slightly more opportunity for recruitment of new individuals when compared to Alternative 1.

Alternative 3a has a fence that would exclude livestock from the Bigelow Lakes sawwort site. Alternatives 2, 4, and 5 would eliminate grazing in the Bigelow Lakes vicinity. The sawwort population at Bigelow Lakes would have the most opportunity to recover and expand under these alternatives.

Unless someone can relocate the Elkhorn Prairie site, it is assumed to be a misidentification or (less likely) already extirpated, so this occurrence is not considered in the evaluation of effects.

Rare Non-Vascular Plants and Fungi

The Survey and Manage (S&M) designation of the Northwest Forest Plan was created to manage the viability of species considered rare in old-growth forests. Cattle don't often frequent old-growth forests because there's not much vegetation on the ground and not much forage there.

Cattle tend to spend much of their time along roadsides, open meadows, young plantations, or areas with scattered trees. Many S&M plant species are found on trees (lichens and bryophytes) which are inaccessible to cattle, but some are found on the ground (lichens, bryophytes, fungi). Most of these species would not be impacted by cattle.

A Record of Decision To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines was signed on March 22, 2004 and became effective April 21, 2004. This decision eliminates the S&M lists for vascular plants, bryophytes, lichens, and fungi, and moves some of these species to the Sensitive Species program.

Of the former S&M bryophytes and lichens added to the sensitive species list, only one aquatic lichen, *Dermatocarpum luridum*, might be expected to occur on this allotment in a habitat visited by livestock. However the substrate for this lichen is rocks in or barely emerged from water. Even where cattle congregate next to water, it is unlikely that livestock would spend enough time on wet rocks to physically disturb this lichen, even if it were found on the allotment. Livestock are not expected to affect water quality on this allotment under any alternative, to the degree that would adversely affect *Dermatocarpum luridum*. This is because so little of the actual in-stream environment is available to livestock due to unstable footing, obstacles, and a predominance of heavily forested riparian zones and steep incised drainages.

Some of the former S&M fungi which moved to the Sensitive list are likely to occur at the forest edge in areas used by livestock. However, it is unlikely that cattle would affect the habitat characteristics needed by these species (trees with which mycorrhizal associations can be established, forest duff and litter, shade).

In a recent court finding, a judge determined that the NEPA planning documents on which the March 22, 2004 Record of Decision was based, failed to analyze certain effects. This makes it unclear whether the agencies should now be planning and managing former S&M species under S&M guidelines or FS/BLM Special Status/Sensitive Species guidelines. Accordingly, the most recent S&M list (December 2003) was perused to determine if there are any additional S&M bryophytes, lichens or fungi for which pre-disturbance surveys would have been required (S&M Categories A and C) that could occur in the geographic area of the allotment, in habitats used by livestock, that would be vulnerable to effects of livestock grazing. It was determined that there were no additional species which had not already been considered.

Although not currently known on the Big Grayback Allotment, a few former S&M fungi which did **not** move to the FS Sensitive list, for which pre-disturbance surveys were **not** required under the S&M guidelines, could occur on the allotment in habitats which are used by livestock. It is possible that one or more of these species could be adversely affected by grazing. Unless their existence becomes known, the Forest Service has no legal obligation to search in, or protect potential habitat for these organisms.

The Oregon Natural Heritage program (ONHP) maintains lists of rare mosses, liverworts, lichens, and fungi that can be found in all of the state's natural habitats (S&M lists are more or less restricted to old growth-associated organisms). The Forest Service has no legal requirement to conduct field reconnaissance for these organisms and no specific rules about protecting known occurrences or habitat. At this time, no species on the ONHP lists are known in the allotment area, but potential habitat exists there for many of the species on these lists, and some are likely to be found in the future. Most likely to be affected by livestock management on this allotment, if present, are the ONHP-listed liverworts and mosses associated with moist mountain meadows, wetlands, and riparian zones.

Livestock grazing may increase the potential for introduction and spread of non-native and undesirable (noxious) weeds

Background

Non-native plant species are common, increasing, and a threat to native ecosystems on this allotment in low elevation dry open areas and moist open habitats at all elevations. They are also common and increasing along roadsides and in transitory rangelands. See the Applegate River Watershed Assessment: Aquatic, Wildlife, and Special Plant Habitat (a FS/BLM Adaptive Management Area document) for a more complete discussion and listing of some non-native species and noxious weeds that may be present on the allotments.

Livestock management affects the distribution and abundance of non-native species and noxious weeds. Livestock are disturbance agents that provide an opportunity for non-natives species to become established. Noxious weeds known to occur within the allotment include: Spotted knapweed *Cenaturea maculosa*, Yellow starthistle *Centaurea solstitialis*, and Tansy ragwort *Senecio jacobaea*.

A Noxious Weed Environmental Assessment was completed for the Rogue River National Forest in 1999 and noxious weed control has been conducted since that time within the Applegate RD portion of the allotment. On February 17, 2002, Best Management Practices – Interim Direction for the Prevention and Management of Noxious Weeds, Port-Orford-Cedar Root Disease, and Sudden Oak Death was signed to give direction to prevent the spread of invasive and non-native organisms. More detailed information is included in it for various types of projects including range management.

Direct, Indirect, and Cumulative Effects

None of the alternatives are designed specifically to control non-native species or noxious weeds through timed grazing. None of the alternatives offer the possibility of eliminating or drastically shrinking the distribution and abundance of these species on the allotment. Of the activities considered under this planning effort, Alternative 5 would potentially provide the most effective control on distribution and abundance of non-native species and noxious weeds. The remaining alternatives may best be evaluated based on AUMs, with fewer AUMs considered more desirable for control of the extent of non-native species and noxious weeds.

The cumulative effects to the spread of noxious weeds within the Big Grayback Allotment under Alternatives 1, 2a, 2b, 3a, 3b, and 4 are the same based on the potential introduction of noxious weeds from other sources, such as wildlife, and human carried seeds as being the same for all alternatives. No other major vegetation management projects have been identified for the foreseeable future within the allotment area.

Livestock grazing may affect Proposed, Endangered, Threatened or Sensitive animal species or their habitats

Background

General habitat conditions in the allotment consist of mixed conifer forest with white fir dominating the upper elevations and Douglas-fir dominating the lower elevations. Elevations range from 2,800 feet to 7,000 feet. There are also minor occurrences of Shasta red fir, ponderosa pine, sugar pine, tan oak, madrone, big-leaf maple, red alder, and incense cedar. Extensive logging has occurred in parts of the allotment on the Forest, and on lands surrounding the National Forest. Riparian areas, lakes and ponds, wetlands, rock outcrops and slopes, and meadows (both wet and dry) are also present throughout the allotment.

Numerous surveys for wildlife species have been conducted on the Applegate and Illinois Valley Ranger Districts in association with various projects, some which have been in the vicinity of the Big Grayback Range Allotment. These surveys results are documented in the Rogue River-Siskiyou National Forest WILDOBS databases, GIS, and ISMS databases. See species discussions contained in EA Appendix D for more details.

Direct, Indirect and Cumulative Effects

All proposed alternatives would have **No Effect** on Threatened or Endangered species including bald eagle, spotted owl, or marbled murrelet. There are no required terms and conditions for bald eagle, spotted owl, or marbled murrelet, due to the **No Effect** determination for each of these species. Habitat for these three species may be present within the proposed allotment area, however, grazing would not affect habitat conditions for these species. Grazing is not expected to cause disturbance to species. Therefore, impacts to listed species or habitat are not expected. Further consultation with the US Fish and Wildlife Service is not necessary for this project.

The proposed alternatives would have **No Impact** on Forest Service Sensitive species potentially associated with the Big Grayback Allotment: Chace sideband snail, Oregon sideband snail, peregrine falcon, Pacific shrew, Pacific pallid bat, Pacific fringe-tailed bat, wolverine, fisher, northwestern pond turtle, common kingsnake, black salamander, Siskiyou Mountain salamander, Del Norte salamander, southern torrent salamander, and foothill yellow-legged frog.

Implementation of an updated grazing allotment plan would have no direct, indirect, or cumulative impacts expected to occur on habitat, individuals, or populations. See species discussions for the specific analysis of effects or impacts of grazing on the above listed species is contained in EA Appendix D.

Livestock grazing may affect neotropical bird nesting habitat

A Memorandum of Understanding was signed between the USFS and USFWS to complement the January 2001 Executive Order for management of neotropical migratory treaty (land) birds (NTMB) that use forested habitats. Measures include the identification of habitats needed by priority species. Grazing on National Forest allotments differs from grassland grazing in that it occurs on isolated pockets of land across a forested landscape, and at higher elevation than the majority of grasslands in the region. In part because of this, livestock grazing has a larger component of browsing on young trees and brush species. Grazing sites typically consist of meadows, young clearcuts, roadsides, riparian areas, and in brushy openings.

Direct, Indirect, and Cumulative Effects

The no grazing alternative (Alternative 5) would have no direct, indirect, or cumulative impacts on NTMB species since no livestock grazing would occur. For all other alternatives that include grazing, the following analysis applies:

There is little in the scientific literature examining impacts to NTMB in conifer forest habitats. The only common ground nesting species found in this habitat are Townsend's solitaire and Oregon junco. Because both species build their nests under logs or other overhanging structures, they are generally not impacted by grazing or trampling.

The Rogue River-Siskiyou National Forest supports very few ground nesting birds in grassland and brush habitats (see EA Appendix D). All of these species are widespread across the forest due to the scattered pattern of their habitats. This limits the impacts of individual grazing activities, and since most of the suitable habitat across the two forests falls under a variety of grazing allotments, many members of these species are exposed to grazing impacts. Many of these birds are more common on the Rogue River valley floor where grasslands are more common and extensive (common snipe, song sparrow), or in meadow complexes, such as Edan Valley, Wildhorse Prairie, Upper Chetco, Long Ridge on the coastal districts, or Horse Creek and Sam Brown meadows area on the Galice RD. The breeding birds on National Forest lands therefore represent a very small portion of the local population (Barrett 2003).

Grazing impacts in grass and brush lands could affect nesting habitat and food sources. The majority of the research centers on breeding impacts. Some species that forage in grasslands (e.g., mountain bluebird) actually benefit from grazing as it improves the foraging substrate and they don't breed in the grasses.

Grazing reduces the seed and insect components that are critical food sources for other species, such as common yellowthroat and song sparrow (Ohmart 1996). The most serious adverse impacts deal with loss or degradation of nesting habitat (Bock et al. 1992). Because of the limited acres of dryland grass sites, the biggest impact concern with NTMB on Forest Service lands may lie in degradation of riparian habitat, and subsequent loss of brush cover favored by many species (Bock et al. 1992). Lincoln's sparrows, for example, respond adversely to heavy grazing in wet meadows (Cicero 1997).

In summary, grazing activities associated with Big Grayback Range Allotment are not expected to adversely impact neotropical migratory bird species or habitat.

Livestock grazing may affect Forest Plan Management Indicator Species or their habitats

Background

The Rogue River National Forest LRMP page 4-20 gives a list of species to be monitored as Management Indicator Species (MIS). The MIS for the Rogue River NF are:

<u>Species</u>	<u>Habitat</u>
Blacktail Deer and Roosevelt elk	forage or early seral habitat
Pine marten	mature or old growth habitat
Spotted owl	mature or old growth habitat
Pileated woodpecker and all woodpeckers	mature or old growth habitat

The Siskiyou National Forest's Indicator Species (National Forest Management Act - Forest Plan) are the same for all Districts (see 1989 Siskiyou NF FEIS, LRMP, ROD -- in the FEIS, Indicator Wildlife species are listed on page III-102; Fish are listed on page III-88). Species include: Bald eagle, Osprey, Blacktail deer, Roosevelt elk, Woodpeckers (pileated, red-headed sapsucker, red-shafted flicker, downy woodpecker, hairy woodpecker, white-headed, acorn), Northern spotted owl, Pileated woodpecker, Pine marten, Fall Chinook salmon, Steelhead, and Resident cutthroat trout

Indicator species act as barometers, indicating the health of a habitat type they represent. Monitoring presence and population trends indicate management activities impacts on them. Maintaining quality habitat conditions ensures these species and the others they represent, will maintain viable population levels. Habitat capability objectives have been established in order to meet population viability. For woodpeckers, objectives have been set in each management area, ranging from 40% to 100% capability.

Direct, Indirect and Cumulative Effects

For forage habitat and species, the no-grazing alternative (Alternative 5) would have no direct, indirect, or cumulative impacts on forage since no livestock grazing would occur. For all other alternatives, the following discussion applies.

Livestock may have a direct impact of reducing available forage in these areas for wildlife by consuming forage vegetation. This minor effect varies by the allotment area included for grazing. Livestock grazing is not expected to reduce overall habitat capability in the long-term (20 + years), and may have more of a very short-term benefit.

Cumulatively, livestock grazing within the Big Grayback Allotment Area is not expected to impact the quality or quantity of available habitat or forage in the area for deer and elk. Range improvement projects may help to benefit wildlife in the long-term by ensuring forage utilization is maintained at acceptable levels.

For mature or old-growth habitat and species, the no-grazing alternative (Alternative 5) would have no direct, indirect, or cumulative impacts on this element since no livestock grazing would occur. For all other alternatives, the following analysis applies. There would be no direct impact to these habitats by range management activities since livestock grazing would not remove, alter, or change these habitat conditions from what currently is present. There would be no indirect impacts since livestock grazing would not change suitability or distribution of these habitats on the landscape.

The effects on wildlife from construction and maintenance of fences was considered. Livestock fences (buck and pole or barbed wire) typically have minimal effects on dispersal of wildlife. The fencing used on range allotments usually incorporates design criteria such as smooth lower wire, wire spacing and height which allow wildlife to move under or over these fences. There has not been a problem to date with wildlife and fences.

Existing plantations progeny sites, and seed orchards created by past management actions may be affected by livestock trampling, or from a change in competition for moisture with grasses and forbs

The vulnerability of conifer seedlings to livestock trampling and foraging occurs up until the trees reach a height of 3-4 feet. Alternatives with fewer cows or shorter seasons of use would result in less potential damage to seedlings, although none of the alternatives would result in more than occasional minor damage.

The opposing effect is that the forage reduction in plantations may help to reduce the amount and connectivity of flashy fuels (grass) that dry by late summer. Many of these reforested areas may sustain slower growth where the grasses and shrubs compete with the young trees for needed moisture, nutrients, and sunlight. If properly managed, livestock grazing can be beneficial in reducing some of this competing vegetation, allowing growth to accelerate.

Livestock grazing generally does not present a resource concern in established plantations. There are a limited number of plantations created by past timber management actions within the allotment area, most of which are reforested with trees over 3-4 feet in height. The potential for trampling of seedlings within plantations by cattle is a concern where cattle congregate or in relation to trailing through plantations in route to water or forage. Repetitive trampling could create small pockets within these plantations where development into late-successional habitat could be retarded. The likelihood of this having measurable effects over time is low, especially in consideration of the ratio of new plantations to established plantations and naturally developed forest. The potential for damage to seedlings is approximately the same for all alternatives except Alternative 5 (which would eliminate grazing).

Livestock grazing may increase soil compaction and displacement that could lead to loss of site productivity

Background

Cattle traditionally have a relatively minor overall impact on soil compaction throughout the Big Grayback Allotment because of the relatively low number of permitted cattle and the amount of land base within the allotment. The timing of their presence (dry summer months) and the diffusion across the landscape cause very minor compaction concerns. Cattle generally utilize the existing road and trail systems (highly compacted, by design) to get to the high elevation and riparian areas where soil compaction concerns may arise.

Weather influences the amount of soil compaction or soil displacement because wet soils compact more easily than dry soils. Pore spaces in soil are disrupted by soil compaction and soil displacement. If soils are detrimentally compacted, water would concentrate on the soil surface rather than flow into the soil. Detrimental compaction is an increase in soil bulk density of 15 percent or more over the undisturbed level, a macro pore reduction of 50 percent or more, and/or a reduction below 15 percent macro porosity (FSM 2521 R-6 Supplement 2500-98-1, Effective August 24, 1998).

Different soils have different bulk densities. Under natural conditions, some soils may have a bulk density higher than other compacted soils. Table J1b - Physical Properties of Soils (see Soils Appendix - EA Appendix E) details soil properties found in the Big Grayback Allotment area for Josephine County. The Rogue River National Forest Soils Resource Inventory (SRI) portrays soils in the allotment within Jackson County. Soil mapping for the entire allotment, as well as enlargement of Bigelow Lakes and Windy Gap area are also in Appendix E.

Field surveys were conducted near Bigelow lakes and Windy Gap. Two transects of twenty-five data points were taken at each site (see Soils EA Appendix E). Information was collected on seven topics as to each data point: soil compaction at four to twelve inch depth, presence of ruts or tire imprints, mineral soil exposure, percentage of upper soil removal, presence of detrimentally burned soils, presence of rills or gullies, and alternation resulting in permanently saturated soils or standing water. No detrimental soil conditions were found at either site.

Direct, Indirect, and Cumulative Effects

Livestock grazing under all grazing alternatives would be required to meet Forest Plan standards and guidelines in order to protect the watershed and preserve long-term soil productivity. Under all grazing alternatives, monitoring, directing livestock distribution, maintaining range improvements, and managing season-of-use and livestock numbers, would allow sustainable levels of desirable forage to be produced for livestock and wildlife, without unacceptable damage to the soil resource or site productivity.

Under all grazing alternatives, some affect to the soil resource would occur in areas where livestock concentrate. Damage is minimized when the Permittee frequently move cattle out of grazed areas to new range when utilization standards are met.

Forested sites at lower elevations can be grazed from early summer through fall with reduced potential for soil compaction, displacement or loss of productivity. Sites at higher elevations can be grazed from mid/late summer to early fall.

The cumulative effects from cattle grazing and other management activities have been considered in terms of soils compaction and displacement. Primary effects of livestock grazing on soils are compaction and displacement that leads to loss of site productivity. Wet, clayey soils are subject to soil displacement and structural damage when overgrazed.

The Josephine County Soil Survey shows no wet clayey soils present within the allotment area. The soils of Harlow Meadow and upslope from Bigelow Lakes are Type 25E (Cryaquepts - cold, wet, young soils) have the highest percentage of clay in the surface layer of any soil found on the allotment. With 12 to 27 percent clay, Type 25E would be classified as having a sandy to coarse loamy to fine loamy texture (see Soils Appendix - EA Appendix E).

Effects to soils are minimized when grazing is delayed until soils are drier and more resistant to compaction and displacement. Soil compaction can make nutrients and air inaccessible to plant roots. Compaction can also be caused by recreation and wildlife trails and can also occur in previously harvested timber sale units.

Effects From Past Management Activities

Harvest methods, in order of increasing soil disturbance and erosion, are helicopter, skyline, tractor skidding, and cable skidding (Klock 1975, pg. 81). Skyline and helicopter yarding result in less soil disturbance than tractor yarding. It is estimated skyline yarding subjects up to 2.8 percent of a given unit to severe disturbance, helicopter yarding would expose about 0.7 percent, and tractor and cable yarding results in a maximum of 20 percent (as modified by Forest Service practices requiring designated skid roads).

Utilizing GIS, all previously harvested stands were analyzed using Klock's maximum estimates of soil impacts for each yarding method. A summary of this analysis identified that of the total allotment area of 26,678 acres, approximately 130 acres are currently in roads and trails, approximately 1,100 acres are in a compacted condition, and approximately 4% of the entire allotment has been disturbed by past timber harvest (see EA Appendix E). This disturbance expressed as a percent of allotment area is relatively small. As noted above, grazing does not measurably add to this disturbance. Therefore the risk of increased adverse cumulative soil effects from continued livestock grazing is low.

Erosion from cattle grazing on seeding/stabilization projects (cut and fill slopes on Forest Service roads, etc.)

Road banks, and cut and fill slopes along Forest Service roads are often seeded with grasses for stabilization of soil. Livestock are often attracted to these areas due to the availability of food. When livestock traverse these seeded areas, soil displacement is accelerated and grass cover may be reduced lessening its soil holding ability and causing increased sedimentation into streams.

Alternatives that propose fewer acres within their allotment boundaries would have less impact to road cut and fill slopes. Alternatives 2a, 2b, 4 and 5 reduce the area that cattle could impact road cut and fill slopes in the higher elevation areas, where the soils tend to be shallower and conditions more harsh for grass establishment. However, open roads not included in Alternatives 2a and 2b are approximately 2,000 feet below the ridge tops and should not be considered high elevation roads. Alternative 5 best addresses this concern by eliminating all grazing.

Indirect effects could be derived from a potential to spread non-native or noxious weeds as the animals graze the cut and fill slopes. Cattle often concentrate grazing along roads where young grass is growing and where cattle traverse. A cumulative effect on soils does occur in the Bigelow Lakes area from cattle presence and human presence. This has nothing to do with road cut and fill slopes, as there are no roads in the vicinity of Bigelow Lakes.

Alternative 3a may address this concern better than Alternative 3b by building cattle-exclosure fences. Alternatives 2a, 2b, 4 and 5 do not include the Bigelow Lakes area within their allotment boundary.

Livestock grazing may affect level of fire hazard

This issue was expressed as the beneficial effect that grazing can have on reducing fire danger. As livestock graze along the roads and throughout the allotment they reduce the height of grass that could potentially carry a fire. Shorter grass heights would cause a shorter flame length, hence may slow the spread of fire across the landscape. This effect, under all grazing alternatives would be minor and inconsequential.

Livestock grazing may increase the risk of spreading *Phytophthora lateralis*, the pathogen that causes root disease on Port-Orford cedar

Background

Port-Orford-Cedar (POC) is found in riparian areas on the west and northwest of the allotment on the Illinois Valley RD portion of the allotment but is not known to occur on the east portion of the allotment that is on the Applegate RD side (although POC is known to occur just north and downhill of this area on Bureau of Land Management managed lands).

In the 1950s a non-native fungus, *Phytophthora lateralis*, began causing root disease and death among POC trees in southwestern Oregon. Spores from *Phytophthora lateralis* (PL) are borne by water and spread through waterways or by transfer of soil (often in the form of mud). This can occur by vehicles, humans, and animals.

Within the Big Grayback allotment, PL root disease is found in Township 40 South, Range 6 west, section 1. Current inventory and mapping shows approximately 124 acres infested with PL. These acres are located primarily in Grayback creek below the 4611 Road where that road crosses the creek in the southeast corner of the section. Infected POC can also be found adjacent to the 4611 road. A secondary infested site was observed in Jenny creek, a tributary of Grayback creek. The preliminary acreage estimate for the Jenny creek infested area is about 25 acres. All of the infested areas are high risk sites, i.e., along streams and roads.

Healthy POC can be found in numerous locations inside the Big Grayback allotment. Current inventory shows approximately 1,392 acres of healthy POC inside the allotment boundary. Port-Orford-cedar can be found in Township 39 South, Range 5 West, section 31, Township 39 South, Range 6 West, section 35, Township 40 South, Range 5 West, sections 5, 6, 7, and 18, and in Township 40 South, Range 6 West, sections 1, 2, 3, 10, 11, 12, 13, 26, and 35. A total of 1,392 acres with healthy POC are inventoried in the Big Grayback Allotment.

Roughly 10% of all the acres with POC inside the allotment are infested with PL. This is slightly less than the 11% infestation rate seen for high risk sites in the Siskiyou Risk Region (USDA USDI 2004). It is also less than the infestation rate seen outside the allotment in the 5-mile buffer. About 17% of all POC acres outside of the Big Grayback allotment are infested; 15% and 17% for the Forest Service and BLM ownerships respectively.

Site visits to one of the infested areas were conducted in May 2004. Several POC were cut into to confirm the presence of PL. Classic symptoms of infection were present, i.e., discolored cambium and inner bark near the root collar and crown discoloration ranging from yellow-green crowns in trees first showing signs of the disease to reddish-brown foliage after tree death. Two meander (walk through) surveys between the 4611 Road and Grayback creek failed to locate any signs of grazing activity in the infested area.

Instead, bear damage to 9 POC was observed. Black bears peel POC to feed on the inner bark. If enough of the bark is peeled away, the tree will die. This can be a common cause of POC mortality in localized areas. No other species of tree was observed that had bear damage. Ground verification of aerial surveys for Port-Orford-cedar root disease in southwest Oregon showed that 8 out of 36 polygons investigated had both PL present and bear damage (Kanaskie et al. 2002). Jules et al. (2002) observed a non-road infection that began in an apparent bear wallow along a well-used wildlife trail.

Direct, Indirect and Cumulative Effects

On March 29, 2004, the Pacific Northwest Regional Forester signed a Record of Decision and Land and Resource Management Plan Amendment for Management of Port-Orford-Cedar in Southwest Oregon, Siskiyou National Forest. This decision requires that Port-Orford-cedar within the allotment analysis area will be managed according to the standards and guidelines adopted in this ROD. That amendment provides a risk key to clarify the environmental conditions that require implementation of one or more disease-controlling management practices. This key and further information are contained in EA Appendix G.

This key determined no appreciable additional risk and low risk in terms of infection to uninfested POC, for all grazing alternatives. Therefore no special POC management practices are required. Standard mitigation measures are prescribed and included under the grazing alternatives, as discussed in Chapter II.

Even though the area has been used by cattle for decades, and PL has been in the vicinity for years, there is no clear evidence of PL transmission other than that associated with roads. All sites with PL were adjacent to roads or streams and the likely source of inoculum is something other than human foot travel or animals, but there is no hard evidence as to exactly what that source might be.

Application of the risk key and application of standard mitigation measures make this project consistent with the mid- and large-geographic and temporal-scale effects described in the analysis in the Final Supplemental Environmental Impact Statement – Management of Port-Orford-Cedar in Southwestern Oregon, and will permit the project analysis to tier to the discussion of those effects (USDA USDI 2004).

Livestock grazing or improvements may have effects on Heritage Resources

The Big Grayback Allotment area contains one historic structure, the ca. 1944 Grayback Snow-Survey Cabin, that is currently considered potentially eligible to the National Register of Historic Places (i.e., pending a formal evaluation). This cabin receives intermittent but ongoing use by recreationsists. The recent accidental burning/destruction of the nearby Krouse Cabin (a 1945 line cabin) has eliminated that structure from the allotment. In recent years, the Krouse Cabin area has been used by the grazing Permittee for camping, but it has not been identified as necessary for Permittee use for a number of years, and it would not be allowed to be re-built. As a member of the general public the grazing Permittee would be welcome to stay at the Grayback Cabin (i.e., no special use privileges associated with the grazing permit). No structural modifications/additions of any kind to the Grayback Cabin (or new structures of any kind) would be made by the allotment permittee.

No potentially significant archaeological resources would be adversely affected by implementation of the update to the Big Grayback AMP. All alternatives are considered to be an undertaking that may be excluded from documentation based on a case-by-case review. This type of action has little to no potential to affect historic properties. Specifically, the alternatives meets the criteria in Appendix A of the *Programmatic Agreement Regarding Cultural Resource Management on National Forest Lands in the State of Oregon*. State Historic Preservation Office (SHPO) concurrence is not required (see EA Appendix F). When ground-disturbing activities or other allotment projects other than the fencing and improvements identified herein, are proposed, such proposals will need Section 106 cultural resource review.

The Rogue River-Siskiyou National Forest has in the past several years consulted with all federally recognized tribes in Oregon and California that would have had aboriginal ties to what is now the Forest, and thus might have current cultural interests or concerns for specific portions of the Forest. From these past consultation efforts, no such interests or concerns have been expressed by any tribe for the Big Grayback allotment area or its surrounding vicinity.

D. Other Effects

The following is a summary of effects that were considered during the analysis process, not necessarily as issues, and not always totally quantifiable. All effects were determined to be consistent within the standards and guidelines identified in the Rogue River and Siskiyou National Forests Land and Resource Management Plans.

Vegetative Manipulation

The proposed update to a grazing AMP would not result in stand conversion or other silvicultural activities that would lead to a need for future vegetative manipulation.

Relationships between Local, Short-term, Uses of the Human Environment and Maintenance or Enhancement of Long-term Productivity

Analysis indicates that short-term forage production and range conditions within the Big Grayback allotment would be maintained or enhanced by the implementation of grazing actions through herding of cows or reduction of the numbers of pairs or the season of use. Long-term productivity would likewise be expected to increase. This is especially true because under all alternatives (except Alternative 1), the allotments would be required to meet specific standards and guidelines and not prevent attainment of the ACS.

Analysis of existing conditions of the individual allotments, while not currently without adverse effects to certain high use areas, is not considered to have measurable adverse long-term impacts on productivity.

Irreversible or Irretrievable Commitments of Resources

Some irreversible or irretrievable loss of soil productivity may occur with grazing when riparian areas are involved. Under Alternatives 2a, 2b, 3a, 3b, and 4, grazing in riparian areas would be controlled/managed by the Permittee through fencing, or lowered by reducing the allotment size (Alternatives 2a, 2b, 4 and 5).

Adverse Environmental Effects which Cannot be Avoided

Implementation of any of the alternatives considered in detail would cause no known unavoidable or other indirect adverse effects, other than the effects already stated.

Social/economic Effects

The availability of National Forest resources contributes to the quality of life for many county residents. Many communities are closely tied to the Forest in work and recreation. These communities are directly influenced by changes in the supply of resources produced from the Forest, and by the Forest production of firewood, game, scenic resources, and recreational opportunities. Alternatives 2a, 2b, 3a, 3b, and 4 present improved opportunity for the general public to enjoy a wide variety of scenic, watershed, wildlife, and other natural values and uses of the National Forest, while continuing the opportunity for grazing on the National Forest.

Under Alternatives 1, 2a, 2b, 3a, 3b, and 4, cattle production would contribute to the livestock industry. Portions of the revenues from the sale of livestock would contribute to county and state budgets, providing economic support to the area. Economic benefits, both from direct employment and from secondary spending in the retail and wholesale trades, and finances, insurance, and real estate sectors, would result from the employment income generated by the management and production of livestock on these allotments. Under Alternative 5, the opportunity to provide cattle to the livestock industry would be foregone.

Minority groups and women should not be adversely impacted by any of the alternatives. Civil rights of all persons should not be affected. No recent religious uses of the area by Native Americans are known. Traditional uses within the allotment would not be affected by continued grazing or by eliminating grazing.

Environmental Justice

Environmental Justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner, by government programs and activities affecting human health or the environment.

One goal of Executive Order 12898 is to provide, to the greatest extent practicable, the opportunity for minority and low-income populations to participate in planning, analysis, and decision-making that affects their health or environment, including identification of program needs and designs. The Executive Order makes clear its provisions apply full to programs involving Native Americans.

Analysis for this proposed action has been conducted under Departmental regulation 5600-2, December 15, 1997, including the Environmental Justice Flowchart (Appendix E), and CEQ's *Environmental Justice - Guidance Under the National Environmental Policy Act*. The proposed action, its purpose and need and area of potential effect have been clearly defined. Scoping under NEPA has utilized extensive and creative ways to communicate. Consultation with Native American Tribes has occurred.

This proposed action and alternatives do not appear to have a disproportionately high or adverse effect on minority or low income populations, or Indian Tribes. The proposed action and alternatives do not have a disproportionately high and adverse human health effects, high or adverse environmental effects, substantial environmental hazard, or affects to differential patterns of consumption of natural resources. Extensive scoping did not reveal any issues or concerns associated with the principles of Environmental Justice. No mitigation measures to offset or ameliorate adverse affects to these populations have been identified. All interested and affected parties will continue to be involved with the comment and decision making process.

Effects on Prime Farmland, Rangeland and Forestland

No prime farmlands are affected by any of the alternatives and no adverse effects to forestland would be expected. The rangeland within the Big Grayback allotment would realize beneficial consequences from the implementation of Alternatives 2 through 4. No irretrievable or irreversible effects to rangelands would occur under any alternative.

Effects upon Wetlands and Floodplains

No floodplains, associated with Executive Order 11988, exist within the allotment. It was determined that all alternatives would constitute a "no effect" undertaking in relation to the Wetlands Executive Order 11990. All alternatives would be in compliance with RRNF and SNF LRMP standards and guidelines and would not prevent attainment of the Northwest Forest Plan Aquatic Conservation Strategy.

IV. CONSULTATION WITH OTHERS

Issues associated with these proposals were identified by an interdisciplinary team through an extensive scoping process. This process included a review and evaluation of information gathered through specialist input and ongoing public involvement and correspondence received from FY 1991 and until the Decision Notice is signed and approved.

Letters requesting public comment were sent in April and October of 1991 to individuals and organizations who requested to be notified of all planning activities on the Applegate Ranger District. Two public open houses were conducted in May 1991 to discuss planning actions scheduled for the District. A project-specific (AMP update) open house was also held in December 1991. After determining that more field data collection and analysis was required, the IDT delayed further project analysis until this data could be collected.

As the AMP update process resumed in 1993, an additional public scoping letter was sent (April 1993) and open house conducted (May 1993) regarding the AMP updates. An invitation to comment on the proposed project was published in the Legal Notice section of four local newspapers. The newspapers and the dates of publication of the legal notices were: the Medford Mail Tribune (4/29/93), Ashland Daily Tidings (4/29/93) and Grants Pass Daily Courier (4/29/93).

In FY 2003/ 2004, funding permitted the continuation of the analysis for the update of the Big Grayback AMP. Consultation with other agencies and organizations also continued with the involvement of the Oregon Caves National Monument, Medford District of the BLM, and NOAA Fisheries.

Table IV-1. List of Preparers

Interdisciplinary Planning Team	Resource Specialty
Mark Hocken	Project Leader/Range Management Specialist
Tom Lavagnino	NEPA Coordinator/Writer
Mike Zan & Jon Brazier	Hydrologists
Dave Austin	Wildlife Biologist
Barbara Mumblo	Botany
Wayne Rolle	Botany/Vegetation Management/Botanical Areas
Mark Prchal	Soils
Ian Reid	Fisheries
Dave Knutson, Mike Keown	Heritage Resources
Frank Betlejewski	Port Orford Cedar Program Manager
Additional Agency Support	Resource Specialty
Erin Connelly	Applegate District Ranger
Pam Bode	Illinois Valley District Ranger
Greg Clevenger	Forest Resource Staff Officer
Ken Grigsby	Forest Environmental Coordinator
Don Boucher	Analyst (Cumulative Watershed Effects)
Mike Nevill	Regional Office Range Consultant
Russ Holmes	Regional Botanist