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Environmental Assessment

Bottle Grazing Allotment Management

**Verde Ranger District, Prescott National Forest
Yavapai County, Arizona**

All or portions of:

Township 15 North, Range 2 ½ East, Sections 25 & 36
Township 14 ½ North, Range 3 East, Sections 31 & 32
Township 14 North, Range 2 East, Sections 1-4, 9-16, 22-27
Township 14 North, Range 2 1/2 East, Sections 1, 12, 13, 24, 25
Township 14 North, Range 3 East, Section 4-9, 16-21, 28-30

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TABLE OF CONTENTS

Chapter 1 – Purpose of & Need for Action	
Introduction.....	3
Background.....	3
Purpose of & Need for Action.....	5
Desired Conditions / Resource Objectives.....	6
Forest Plan Direction.....	7
Public Involvement.....	10
Scoping Response / Issue Identification.....	10
Permit & Consultation Requirements.....	11
Decision to be Made – Decision Framework.....	12
Future Review of the Decision.....	12
 Chapter 2 – Proposed Action & Alternatives	
Vicinity Map.....	13
Alternative 1 – Proposed Action.....	14
Alternative 2 – No Action / No Grazing.....	20
Comparison of Alternatives & Effects Table.....	21
 Chapter 3 – Existing Environment & Environmental Effects	
Past, Present & Future Activities Table.....	23
Range Vegetation Resources.....	24
Soils Resources.....	31
Water & Riparian Resources.....	33
Air Resources.....	39
Wildlife, Rare Plant, Fish & Aquatic Resources.....	40
Heritage Resources.....	46
Recreation Resources & Inventoried Roadless Areas.....	47
 Chapter 4 – Coordination & References	
Coordination.....	49
References.....	50
 Appendices.....	52
Allotment Map.....	A1-1
Actual Use Tables & Range Condition Information.....	A2-1
List of Existing Improvements.....	A3-1
Grazing Guidelines & Best Management Practices.....	A4-1
Cumulative Effects Analysis Area Map.....	A5-1
Glossary of Terms.....	A6-1

CHAPTER 1 – PURPOSE OF & NEED FOR ACTION

Introduction

The Prescott National Forest Interdisciplinary Range Analysis Team has conducted an environmental analysis and prepared this Environmental Assessment (EA) documentation in order to describe alternatives considered for management of the Bottle Grazing Allotment and the Goat Peak Pasture of the Goat Peak Grazing Allotment on the Verde Ranger District and the potential effects associated with each alternative. These two areas together will be referred to as the Bottle Allotment in this document. The document is provided for public review and comment and for review and consideration by the decision maker when making the decision. The analysis has been conducted in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations.

The EA is based upon background information about the allotment including current and past surveys and monitoring data, the desired condition of resources on the allotment derived from direction and guidelines in the Prescott NF Land and Resource Management Plan (1986), as amended, as well as from Resource Specialist's knowledge of the allotment. This information, provided in Chapter 1, forms the basis for the Forest Service's Proposed Action and the current analysis. Chapter 2 provides detailed descriptions of the Forest Service's Proposed Action Alternative for management of the allotment and the No Action (No Permit Issued/No Grazing) Alternatives. Chapter 3 includes descriptions of the current condition of the range allotment being analyzed, and of the direct, indirect and cumulative effects of applying each of the alternatives on the allotment and on the resources present. Chapter 4 lists the members of the Interdisciplinary Analysis Team and others consulted with before and during the analysis. Supporting documents, including Resource Specialists' Reports containing details of the existing condition and resource effects, are listed in the References section and are included in the Project Record maintained in the Verde District Office of the Prescott National Forest, Camp Verde, Arizona. Appendices contain maps as well as background range data, range monitoring results and lists of existing structural improvements.

Background

The Forest Plan has determined that Management Areas 3 and 4, which contain this allotment, are suitable for livestock grazing. Range management in Management Area 3 - Chaparral, is to be at Level E which seeks to realize maximum livestock production and utilization of forage allocated for livestock use consistent with maintaining the environment and providing for multiple use of the range. Substantial increases in new structural and nonstructural developments [will be] made to help achieve these objectives (Forest Plan, pgs. 58 and 125). Range management in Management Area 4 - Pine, will generally be at the current level or below, with an emphasis on improving and maintaining watershed condition (Forest Plan, pg. 61).

Authority to manage rangeland resources is derived from laws enacted by Congress that authorize the Secretary of Agriculture to administer National Forest System (NFS) lands

and issue necessary regulations¹. Where consistent with the goals, objectives, standards and guidelines of Forest Plans, federal regulations² direct the Forest Service to manage forage-producing lands for livestock grazing.

The Bottle Allotment is located on the Verde Ranger District of the Prescott National Forest. The allotment runs south from Mingus Mountain, east of Prescott and southwest of Cottonwood, AZ. (See Vicinity map in Chapter 2 and Allotment Maps in Appendix 1.) The present Bottle Allotment contains approximately 23,582 acres of National Forest System (NFS) lands. The Goat Peak Pasture of the Goat Peak Allotment which is proposed to be added to the Bottle Allotment contains approximately 2,729 acres, bringing the new allotment total to approximately 26,311 acres. This combined area represents the project area for this environmental analysis.

Elevations on the allotment run from approximately 4,800 at the south end where Ash Creek leaves the allotment to near 7,800 feet on Mingus Mountain. The vegetation follows typical elevational bands with ponderosa pine with grass openings in the higher elevations, and piñon/juniper woodlands and chaparral at the lower elevations. The primary livestock forage species include blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), black grama (*B. eriopoda*), mountain muhly (*Muhlenbergia montana*), pine dropseed (*Blepharoneuron tricholepis*), Junegrass (*Koeleria macrantha*), mountain mahogany (*Cercocarpus* sp.), and turbinella oak (*Quercus turbinella*). The allotment currently has eight pastures.

The major drainages located within the allotment are Burnt Canyon, Ash Creek, Cherry Creek, Black Canyon and Gaddes Canyon. None of the drainages has perennial flow throughout, though Ash Creek and Cherry Creek do have reaches that are perennial. These drainages are largely intermittent or ephemeral with riparian vegetation present, consisting of native and non-native herbaceous and wood species. Perennial flow may extend from some of the springs on the allotment for few or up to several hundred yards. Emergent riparian vegetation is present at some of the springs and seeps.

The current year-round term grazing permit provides for the use of up to 1,440 AUMs of forage each year under a deferred rotation system. An animal-unit-month (AUM) is used here as a measure of the amount of forage used by one cow for one month³. One AUM represents use of approximately 26 pounds of dry vegetative matter each day for a month. Specific information on current and past livestock stocking levels on the Bottle Allotment is provided in Chapter 3 and Appendix 2.

Management over the last approximately 24 years under the Prescott National Forest Land and Resource Management Plan (Forest Plan), applying forage use standards and guidelines for key forage species (Forest Plan, pg. 155-156), has provided for a rangeland

¹ Summaries of these laws and regulations are found in the Forest Service Manual (FSM) 2201. Forest Service objectives and policies for rangeland management are found in FSM 2202 and FSM 2203.

² 36 CFR 222.2 [c]

³ The Prescott NF has chosen to describe the amount of forage to be permitted for use each year on an allotment in Animal Unit Months (AUMs); one AUM reflects the amount of forage used by one mature cow in one month. To calculate this yearly allocation, the number of mature cattle is multiplied by the number of months they are present on the allotment, giving animal months (AMs), a figure representing the actual use for a year on the allotment. (See Appendix 2 for the actual use table for this allotment). This actual use figure is then multiplied by a factor of 1.0 to calculate the AUMs.

management status⁴ of satisfactory across the allotment. Soil conditions have been determined to be satisfactory across the allotment except in burned areas in the Powell, Slickrock and Goat Peak Pastures, and in one Terrestrial Ecosystem Survey (TEUI) (USDA Forest Service, 2000) mapping unit in the Walnut Pasture. The approximate ecological status of the allotment was found to have mid- to high similarity to potential natural (plant) communities (PNC), except in burned areas of the Powell Pasture where the similarity was low. The apparent trend⁵ of the ecological status was found to be toward the PNC in the Powell Pasture, not evident in the Holding Pasture and in one mapping unit in the Walnut Pasture where apparent trend could not be determined, and static in all of the other pastures.

Purpose of and Need for Action

The purpose of and need for the actions being proposed by the Verde District Ranger are to continue to authorize livestock grazing on the Bottle Allotment in a manner consistent with federal laws and regulations and the Forest Plan and to apply adaptive management principles to management of the allotment to provide for movement toward or maintenance of desired resource conditions. Continuation of the livestock grazing authorization, under the described proposed action, is needed for the Bottle Allotment because:

- Where consistent with other multiple use goals and objectives, there is Congressional direction to provide for livestock grazing on suitable lands under the Multiple Use Sustained Yield Act of 1960, the Wilderness Act of 1964, the Forest and Rangeland Renewable Resources Planning Act of 1974, and the Federal Land Policy and Management Act of 1976, as amended.
- It is Forest Service policy to continue to make contributions to economic and social well-being by providing opportunities for economic diversity and by promoting stability for communities that depend on range resources for their livelihood (FSM 2202.1).
- 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, 36 CFR 222.2 (c)).
- The lands making up the Bottle Allotment are identified as suitable for domestic livestock grazing in the Forest Plan and continued domestic livestock grazing is consistent with the goals, objectives, standards, and guidelines of the Forest Plan.
- There is a need to provide for management flexibility in order to address changing ecosystem conditions and site-specific concerns and desired conditions provided by the Forest Plan, as amended.
- There is a need to incorporate formally into the administration and management of this allotment the adaptive management principles established in 2004 as Forest Service Policy in Chapter 90 of Forest Service Handbook (FSH) 2209.13.

⁴ **Rangeland Management Status** is described as satisfactory when the existing vegetation community is similar to the desired condition or short-term objectives are being achieved to move the rangeland toward the desired condition. USDA Forest Service, Southwestern Region, *Rangeland Analysis and Management Training Guide*, 1999.

⁵ **Apparent trend** is an interpretation of trend based on observation and professional judgment at a particular point in time. *Forest Service Handbook R3 2209.21 Chapter 40*.

Trend expresses the direction of change, if any, in status in response to past and existing livestock management practices and land use activities combined with other environmental factors. The trend of a rangeland area may be judged by noting changes in vegetation attributes such as species composition, density, cover, production, and frequency. *USDA/USDI, Interagency Technical Reference, 1996*.

- There is a need to utilize existing and new range improvements to facilitate herd management and address resource conditions and concerns.

The Bottle Allotment is scheduled for an environmental analysis of grazing management practices at this time in order to comply with section 504 of the Emergency Supplemental Appropriations and Rescissions Act of 1995, as amended (the Burns Amendment, P.L. 104-19, 109 Stat. 212).

Desired Condition & Resource Objectives_____

The desired conditions and resource objectives for resources and infrastructure on this grazing allotment, based on the Forest Plan and the work of the Interdisciplinary Analysis Team, include:

- rangeland management that can respond to local or national demands for livestock production while maintaining air, soil and water resources at or above minimum local, State or Federal standards (Forest Plan, pg. 11);
- range administration that provides for the maintenance of satisfactory rangeland management status with a static or upward apparent trend (Forest Plan, pg. 32);
- management of the grazing operations using a system that is responsive to changing climatic or environmental conditions;
- the maintenance of vegetation with mid- to high similarity to the potential natural plant community (PNC) providing for ecological functionality and resiliency following disturbance while sustaining long-term productivity of the land;
- the installation and maintenance of structural improvements, such as water-supply systems, that enhance management control and flexibility and allow for effective distribution of forage use;
- the control of noxious weeds which is managed under the Tri-Forest Noxious or Invasive Control Plan;
- the maintenance of soils in satisfactory condition over the long-term with improving conditions in areas departing from satisfactory condition;
- the maintenance of satisfactory conditions for water resources that meet total maximum daily load (TMDL) and other State water quality objectives;
- the maintenance of functioning spring-fed riparian systems, and saturated soils where potential exists, that support vegetation within site potential and provide habitat for riparian-dependent plants and animals while providing water sources for wildlife and livestock needs;
- the maintenance of fully functional riparian systems supported by herbaceous and multi-age woody vegetation, within site potential, that provides for geomorphically stable stream channels and banks and habitat for riparian-dependent plants and animals. Functional riparian systems support water quality and both hydrogeomorphic and biological attributes and processes;
- protection and preservation of important historic and cultural sites; and
- the maintenance of suitable habitats for Management Indicator Species, Migratory Bird Treaty Act species, federally Threatened and Endangered species, Forest Service Sensitive species, and for indigenous plant and animal species.

Forest Plan Direction

The Prescott Forest Plan provides the following guidance, management direction and standards and guidelines for management activities:

All Resources:

- The forest is managed with a primary emphasis on healthy, robust environments with productive soils, clean air and water, and diverse populations of flora and fauna. (pg. 11)
- Cross-country travel by any vehicle is prohibited, with the following exception(s): Approved resource management activities (employees/permittees) (pg. 19).
- Implement appropriate [access restriction] measures to ensure that significant long-term resource damage does not occur (page 20).
- Management projects within riparian areas will be in accordance with legal requirements regarding flood plains, wetlands, wild and scenic rivers, cultural and other resources and will be in accordance with standards and guidelines identified in the Southwestern Regional Guide. (pg. 30)

Range Management:

- Provide forage to grazing and browsing animals to the extent benefits are relatively commensurate with costs without impairing land productivity, in accordance with management area objectives. (pg. 12)
- Identify key ungulate forage monitoring areas. These key areas will normally be one-quarter to 1 mile from water, located on productive soils on level to intermediate slopes, and be readily accessible for grazing. Size of the key forage monitoring areas could be 20 to 500 acres. In some situations such as high mountain meadows with perennial streams, key areas may be closer than one-quarter mile from water and less than 20 acres. Within key forage monitoring areas, select appropriate key species to monitor average allowable use. (pg. 155, Prescott Forest Plan, as amended, and *Record of Decision for Amendment of Forest Plans*, USFS Southwestern Region, 6/96)
- Manage to bring all grazing allotments to satisfactory management by the end of the first decade (1986-1995). Satisfactory management occurs on allotments where management actions are proceeding according to a schedule (allotment management plan), which leads to fair or better range condition with an upward trend. (pg. 32)
- Increased stocking will be permitted only as demonstrated capacity is created and management capability is proven. Any increased number must allow for protecting or enhancing long-term productivity of the land under the multiple-use concept. See Forest Service Handbook (FSH) 2209.21 for further guidelines. (pg. 33)
- Manage livestock grazing to achieve soil and water protection objectives. Make use of cost effective range improvements and management techniques. (pg. 32)
- Control livestock grazing through management and/or fencing to allow for and favor adequate establishment of riparian vegetation and elimination of overuse. (pg. 32)

- Implement grazing systems and/or methods that will advance the ecological objectives for riparian dependent resources, and require sufficient recovery rest to meet the physiological needs of the plants and plant associations. (pg. 35)
- Eliminate yearlong grazing in riparian areas. (pg. 35)
- Proper allowable use within riparian areas will not exceed 20 percent on woody species. (pg. 35)
- Salting within a quarter mile of riparian areas for the purpose of management of livestock is prohibited. This includes the use of salt to gather livestock. (pg. 35)
- Ensure permittee maintenance of existing structural improvements on an annual basis to ensure full life of projects. (pg. 34)
- Manage range resources at the current level or below throughout Management Area 4 – Pine, but with an emphasis on improving and maintaining watershed condition. (pg. 61)

Soils, Watershed and Riparian Areas:

- Protect and improve the soil resource. (pg. 13)
- Restore all lands to satisfactory watershed condition. (pg. 14)
- Give riparian-dependent resources preference over other resources. (pg. 14)
- Improve all riparian areas and maintain in satisfactory condition. (pg. 14)
- Maintain riparian communities by providing water for wildlife and livestock away from sensitive areas. (pg. 31)
- Livestock will be utilized to achieve soil and water protection objectives when:
 1. The ability of livestock to achieve these objectives has been substantiated by verifiable monitoring and/or independent research;
 2. Use of livestock is the most cost-effective means of achieving these objectives; and
 3. Use of livestock will not lead to unacceptable levels of conflict with other resources or management area direction. (pg. 34)
- Minimize impacts to soil and water resources in all ground-disturbing activities. Where disturbance cannot be avoided, provide stabilization and revegetation as part of the project. (pg. 39)
- Through the use of best management practices (BMPs), the adverse effect of planned activities will be mitigated and site productivity maintained. (pg. 40)
- Watershed condition will be improved and maintained in the majority of Management Area 3 – Chaparral acres. (pg. 58)
- Meet the following riparian standards in the Southwestern Regional Guide for 80 percent of riparian areas by the year 2030: (pg. 30)
 - Maintain at least 80 percent of the potential overstory crown closure of obligate riparian species.

- Manage resources to create or maintain at least three age classes of woody riparian species with at least 10 percent of the woody plant cover in sprouts, seedlings and saplings where site potential exists.
 - Maintain at least 80 percent of the potential stream shading along perennial cold-water streams.
 - Maintain adequate emergent vegetation to ensure compliance with the goals of the strategic plan.
 - Maintain 80 percent of spawning gravel surface free of occlusive inorganic sediment.
 - Maintain at least 80 percent of streambank linear distance in stable condition.
 - Retain snags in riparian areas that are not a safety hazard.
- Projects impacting riparian areas will be designed to protect the productivity and diversity of riparian-dependent resources. Emphasize protection of soil, water, vegetation, wildlife and fish resources. (pg. 30)
 - Riparian-dependent resources will have preference over other resources. Other resource uses and activities may occur to the extent that they support the objective of riparian enhancement. (pg. 30)
 - Construct adequate exclosures to protect key riparian areas from livestock grazing where rest rotation or time control grazing fails to provide adequate protection to the riparian areas. (pg. 31)
 - Manage the ground surface layer to maintain satisfactory soil conditions (*i.e.*, to minimize soil compaction) and to maintain hydrologic and nutrient cycles. (pg. 145)

Wildlife, Rare Plant, Fish & Aquatic Species Management:

- Manage for a diverse, well-distributed pattern of habitats for wildlife populations and fish species. (pg. 13)
- Meet threatened and endangered species requirements in all range or grazing activities. (pg. 35)
- Forage use by grazing ungulates will be maintained at or above a condition that assures recovery and continued existence of threatened and endangered species. (pg. 155, Prescott Forest Plan, as amended, and *Record of Decision for Amendment of Forest Plans*, USFS Southwestern Region, 6/96)
- Integrate wildlife habitat management activities into all resource practices through intensive coordination. (pg. 13)
- All water developments will consider small game and nongame needs and escape devices. (pg. 27)
- All fencing will be to wildlife standards and consider local species" needs. (pg. 27)
- Limit human activity in [Mexican Spotted Owl] protected activity centers [PACs] during the breeding season. Breeding season is March 1 to August 31. (pgs. 137-138)
- Emphasize maintenance and restoration of healthy riparian ecosystems through conformance with Forest Plan riparian standards and guidelines. Management strategies should move degraded riparian vegetation toward good condition as soon

as possible. Damage to riparian vegetation, streambanks and channels should be prevented. (pg. 141)

- Implement Forest Plan forage utilization standards and guidelines to maintain owl prey availability, maintain potential for beneficial fire while inhibiting potential destructive fire, maintain and restore riparian ecosystems, and promote development of owl habitat. Strive to attain good to excellent range conditions. (pg. 141)
- Sustain a mosaic of vegetation densities (overstory and understory), age classes, and species composition across the landscape. (pg. 145)
- Establish and delineate on a map a post-fledgling family area that includes six nesting areas per pair of nesting goshawks for known nest sites, old nest sites, areas where historical data indicates goshawks have nested there in the past, and where goshawks have been repeatedly sighted over a 2-year or greater time period but no nest sites have been located. (pg. 145)
- Limit human activity in [northern goshawk] nesting areas during the breeding season. The breeding season extends from March 1 through September 30. (pgs. 145-146 & 150, Prescott Forest Plan, as amended and *Record of Decision for Amendment of Forest Plans*, USFS Southwestern Region, 6/96)

Heritage Resources:

- The forest will comply with the National Historic Preservation Act, Executive Order 11593, the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the Programmatic Agreement regarding cultural resources protection and responsibilities executed by the New Mexico, Arizona, Texas and Oklahoma State Historic Preservation Officers (SHPO), the advisory Council on Historic Preservation, and the USDA Forest Service, Southwestern Region. (pg. 21)

Public Involvement

Notice of the intention to initiate the present analysis of the proposed action for this allotment was provided in the Schedule of Proposed Actions (SOPA) as of April 2009 at <http://www.fs.fed.us/sopa/>. A letter, dated 12/21/09, describing the proposed action for management of this allotment, was sent to the permit holder of the allotment under consideration, to adjacent allotment permit holders, to members of the public and non-profit groups and other entities who have expressed interest in livestock grazing activities. It was also sent to state and federal government entities and to six Native American Tribes interested in activities in the area inviting them to provide information regarding concerns or opportunities related to the proposal.

Scoping Response / Issue Identification

Sixteen responses were received from fifteen respondents in response to the scoping period for this project. The AZ Department of Environmental Quality indicated their support for the rangeland management being proposed for this allotment. They also shared a concern for the potential for livestock to contribute to sediment transport and turbidity in streams and suggested the use of Best Management Practices (BMPs) and additional management related to non-point source pollution. The Hopi Tribe responded and requested survey reports for any archaeological sites that will be adversely affected by proposed range improvements. The Ft. McDowell Yavapai Nation responded without noting any concerns. The Arizona Wilderness Coalition responded sharing concerns

regarding livestock management impacts or new improvements could affect the future review of Inventoried Roadless Areas and their characteristics. Ten members of the public responded sharing concerns for the current management of livestock on the allotment, the maintenance of fences and other improvements, and effects on vegetation and riparian resources. A response was also received from a representative of the current grazing permit holder on the allotment asking questions regarding administration of the allotment. Concern was also expressed regarding the forage use guidelines and monitoring methods described in the proposed action.

The purpose of scoping is to provide an opportunity for the public to share concerns or issues they may have regarding an action being proposed by the Forest Service. Issues are defined as concerns about the effects of a proposed action that are not addressed by the project design or alternatives to the proposed action. The subject of an issue must be within the scope of the proposed action and relevant to the decision to be made, not already decided by law, regulation or higher-level decisions, and must be supported by scientific or factual evidence. Concerns or issues that meet these criteria, and that also reach a geographic extent, duration or intensity of concern, may be determined to be key or significant issues and may drive the development of alternative actions for analysis if they have not been resolved or addressed in an alternative already.

On June 30, 2010 the Legal Notice for the 30-day comment period on the Environmental Assessment was published in the Daily Courier. There were three comment letters received during the comment period.

No responses received during scoping or the comment period have shared concerns that will not be addressed through implementation of the proposed action within the framework of the direction, standards and guidelines of the Prescott Forest Plan. The Interdisciplinary Team and Responsible Official have determined that none of the responses contain concerns that represent key or significant issues that would lead to the need for the development of additional alternatives.

Permit and Consultation Requirements

Consultation with the Arizona State Historic Preservation Office, in compliance with the National Historic Preservation Act of 1966, will be completed before a decision is made regarding this allotment. Consultation with the Hopi, Hualapai, Tonto Apache and Yavapai Prescott Tribes, and the Fort McDowell Yavapai and Yavapai-Apache Nations has been completed.

Consultation with the US Fish and Wildlife Service (FWS) is being conducted because of the presence of threatened Mexican spotted owl and its habitat, as indicated in the Wildlife, Fish and Rare Plant Report and Biological Assessment included in the project record. Further review of effects findings will be conducted if new species are proposed or listed and may occur in this area, or if and other currently listed species begin to occupy the area. This review could result in re-initiation of consultation with the FWS at a future date if effects findings so indicate.

State of Arizona permits, if required for the new water system structures, will be acquired prior to construction.

The selected alternative for management of this allotment will be implemented through Allotment Management Plans (AMPs) and Annual Operating Instructions (AOIs), issued by

the District Ranger, under a Term Grazing Permit issued for up to 10 years. Additional permits may be issued as long as desirable resource conditions continue to be maintained or are moving toward desired conditions.

Decision to be Made – Decision Framework

The Verde District Ranger is the responsible official who will decide, based upon the Purpose and Need for this action, the information provided in this EA, the project record and other considerations, whether to continue livestock grazing on the Bottle Allotment; if so, under what conditions; whether the Goat Peak Pasture will be incorporated into the Bottle Allotment; and whether new improvements including fences and water-supply systems will be constructed. The decision will also include a determination of consistency with the Forest Plan, National Forest Management Act, National Environmental Policy Act and applicable laws, regulations and executive orders.

In addition to this decision, the Ranger will make a finding on the significance of the environmental effects anticipated from the implementation of the selected action and whether an environmental impact statement (EIS) will need to be prepared.

Future Review of the Decision

Adaptive management, as described in this document, is based on the cycle of implementation of a course of action, monitoring of conditions and results, and adjustment of management as needed to continue to steer a stated course. Monitoring of adaptive management is designed to answer the question “Is acceptable progress being made towards attainment of resource management objectives and thus desired conditions?” Changes in management actions are considered and implemented as appropriate when monitoring indicates that current actions are not being effective in reaching defined objectives. Through the implementation of a NEPA decision that includes adaptive management principles and which identifies an array of possible management practices, the grazing permit, AMP and/or AOI may be administratively modified or re-issued over time, based on monitoring, as long as the modified permit, AMP and/or AOI are within the bounds of the original adaptive management decision and supporting NEPA analysis and documentation. (FSH 2209.13, Section 92.23b)

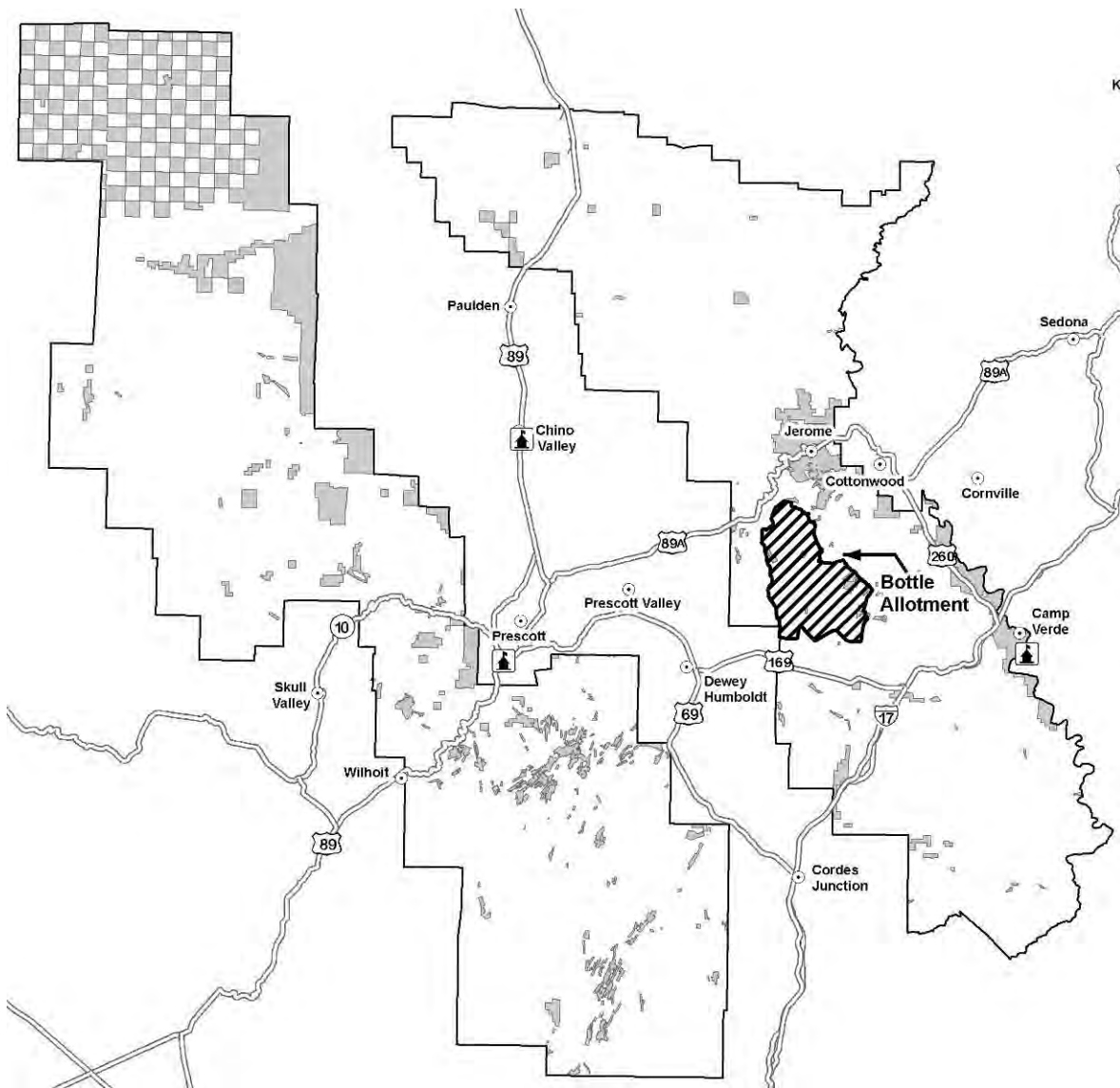
A project-level, NEPA-based decision, such as the decision to be made based upon this analysis, remains valid as long as the authorized activity complies with laws, regulations and the Forest Plan, and is within the scope of the decision. Reviews of existing project-level decisions must be conducted on an interval of at least 3-5 years to determine if the grazing activity, permit(s), AMP and AOIs are consistent and within the bounds of the existing NEPA documentation, if that analysis and documentation continue to remain valid, or if new information exists that requires some further analysis and potential modification of the activity. If the responsible official determines that correction, supplementation, or revision is not necessary, implementation of existing decisions shall continue. The findings of the review shall be documented in the program or project file. (FSH 1909.15, Section 18 and FSH 2209.13, Sec. 96)

CHAPTER 2 – Proposed Action and Alternatives

This chapter describes the alternatives considered for the management of the Bottle Allotment. The alternative descriptions provide the basis for a comparison of alternatives and define the differences between actions which would be taken with each. Monitoring to be conducted is also described.

A map showing the location of the allotment is provided here. A detailed map of the allotment showing pastures and proposed improvements is provided in Appendix 1.

Vicinity Map - Bottle Allotment



Alternative 1 – Proposed Action

Proposed Action

The following Proposed Action has been developed to meet the project's purpose and need for action. The Proposed Action consists of five components: Adaptive Management, Resource Protection Measures, Authorization, Structural Range Improvements, and Monitoring. The Proposed Action follows current guidance from Forest Service Handbook 2209.13, Chapter 90 (Grazing Permit Administration; Rangeland Management Decision-making).

Adaptive Management

The Proposed Action includes the application of adaptive management principles. Adaptive management is designed to provide sufficient flexibility to allow management to address changes in climatic conditions, seasonal fluctuations in forage production and other dynamic influences on the ecosystem in order to effectively make progress toward or maintain desired conditions of the rangeland and other resources. Adaptive management will also include the implementation of resource protection measures described below.

Under the adaptive management approach, regular/annual monitoring of short-term indicators may suggest the need for administrative changes in livestock management. The need for adaptation would be based on the magnitude or repeated re-occurrence of deviations from guidelines provided, or due to indications of a lack of progress toward desired resource conditions. The timing of such management changes would reflect the urgency of the need for adaptation. Annual Operating Instructions and the Allotment Management Plan may be modified as appropriate to adapt management within the parameters of this proposed action.

If monitoring indicates that progress toward desired conditions is not being achieved on the allotment, management will be modified in cooperation with the permittee. Modifications may include adjustments in timing, intensity and duration of grazing. Timing is the time of year the livestock are present in a pasture. Intensity is the degree to which forage is removed through grazing and trampling by livestock. Duration is the length of time livestock are present in a given pasture.

These modifications would be made through administrative decisions such as: the specific number of head stocked on the allotment annually or in a particular season; the class of animals stocked (cow/calf pairs vs. yearlings, steers or heifers, etc.); specific dates of grazing; livestock herd movement; and/or periods of rest, deferment or non-use of portions or all of the allotment for an appropriate period of time, as conditions warrant. Such changes will not result in exceeding the AUMs authorized for livestock use included in this proposed action.

Future proposals to use other resource management tools such as prescribed fire or mechanical vegetation treatments will be subject to additional project-specific analysis under the National Environmental Policy Act. Adaptation of livestock management may be applied to accommodate use of these vegetation management tools.

Resource Protection Measures

The proposed action is designed to comply with Forest Plan standards and guidelines, as amended. Resource protection measures will be incorporated into the project as design features to protect forest resources such as soil, water, vegetation, riparian habitats,

heritage resources and wildlife, as well as to maintain or make progress toward desired conditions. Field surveys for Federally Threatened or Endangered species and Forest Service Sensitive plant and animal species will be conducted prior to extensive reconstruction of, or the construction of new range improvements. Adjustments will be made in the location of improvements, or the timing of construction, as appropriate, in order to avoid adverse effects to these species. Consultation with the US Fish & Wildlife Service will be conducted as appropriate. Best Management Practices will be implemented to comply with the Clean Water Act.

Allotment-wide Measures: On those portions of the allotment where no specific resource concerns were identified by the Interdisciplinary Team, livestock will be managed with the objective of maintaining or improving the condition of rangeland resources through the use of grazing intensity guidelines. Holechek and Galt (2000⁶, 2004⁷) provide a comprehensive review of studies related to residual leaf lengths on southwestern forage species and growth forms as indicators of grazing intensity. They concluded that grazing at moderate or conservative intensities will generally result in maintaining or improving rangeland conditions over time. Stubble height guidelines for riparian herbaceous species are used as a short-term indicator of whether grazing effects are resulting in meeting or moving towards long-term riparian management objectives. The proposed stubble heights should be considered a starting point for initiating improved riparian management. Clary and Leininger (2000⁸) concluded that stubble heights ranging from 7 cm. to 20 cm. (3" – 8") may provide for adequate riparian system function depending on the type of site. The stubble height guidelines listed here may be adjusted to allow for attainment of the riparian management objectives described for this project.

Grazing intensity guidelines will be applied across the allotment to provide rangeland managers with information needed to adapt management through adjustments, as may be needed, on an annual basis. Examples of appropriate grazing intensity and forage use guidelines for areas of the allotment that are generally described to be in satisfactory condition include:

- Conservative grazing intensity (31-40% use) on key herbaceous species during the spring and summer growing periods (typically April 1 to September 30);
- Moderate grazing intensity (41-50% use) on key herbaceous species during the dormant season;
- Moderate grazing intensity (50-60% leaders browsed) on key upland woody species;
- Five-inch minimum stubble height on key riparian herbaceous species;
- Up to 20% use on key woody species within riparian areas.

Grazing intensity will be determined using key herbaceous and browse species within key areas.

Site-specific Measures: Through the allotment analysis process undertaken by the Interdisciplinary Team, critical areas have been identified where the current condition of soils and vegetation components are in less than the desired condition. Critical areas are

⁶ Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22 (3):11-14.

⁷ Holechek, J. and D. Galt. 2004. More on Stubble Height Guidelines. *Rangelands* 26 (4):3-7.

⁸ Clary, W.P. and W.C. Leininger. 2000. Stubble Height as a Tool for Management of Riparian Areas. *J. Range Manage.* 53:562-

573.

defined as areas which must be treated with special consideration due to inherent site factors including size, location, condition, values or significant potential conflicts among users.

Soil conditions were determined to be at some risk for the loss of soil function at certain sites in the Holding and Walnut Pastures, as well as in one area in the Slick Rock Pasture. At certain of these sites in the Holding and Walnut Pastures, the herbaceous component of the vegetation was observed to be in satisfactory condition however, no apparent trend in vegetative condition could be detected.

Riparian areas identified as having reduced function due to inadequate herbaceous bank cover will be managed so as to increase herbaceous vegetation in order to stabilize streambanks and to capture and retain sediment from overbank flows. Areas having reduced function due to inadequate age-class distribution of woody riparian vegetation will be managed to improve age-class distribution. Guidelines will be site-specific for riparian critical areas due to variations in herbaceous species present, stream channel configurations, the size and frequency of sediment-carrying flows expected from upstream watersheds and the presence of native woody riparian species.

Resource management objectives are concise statements of measurable, time-specific outcomes intended to achieve desired conditions. For the resource areas identified as having specific concerns, site-specific management objectives were developed by the appropriate specialist.

Site-Specific Management Objectives for Soil Resource:

- In TES Map Unit 485 in the Holding Pasture, detect an increase of litter in interspaces between plants within 5 years;
- In TES Map Unit 490 in the Walnut Pasture, detect progress towards an increase in percent and spatial distribution of vegetative ground cover, both vertical and horizontal, within 5-7 years;
- In TES Map Unit 438 in the Slick Rock Pasture, detect improved soil condition in inclusions burned with high severity within 10 years

Site-Specific Management Objectives for the Riparian Resource:

- Ash Creek above Ash Creek well – herbaceous vegetative cover along greenline with progress toward stability detectable within 2-3 years.
- Burnt Canyon – improve bank stability and increase recruitment of woody riparian vegetation, with progress detectable within 5 years.
- Ash Creek within Walnut Pasture – herbaceous vegetative cover along greenline with progress toward stability detectable within 2-3 years.

These objectives are expected to be achieved by limiting grazing intensity at impaired and unsatisfactory sites, through the application of these site-specific measures:

1. A light grazing intensity guideline (0-30% use) during the growing season at upland impaired sites; and
2. A conservative grazing intensity guideline (31-40% use) during the dormant season at impaired upland sites;
3. Incidental use⁹ only at unsatisfactory upland sites, regardless of season.

Site-specific protection measures for riparian resources include:

4. Maintenance of 8-inch minimum stubble height on key riparian herbaceous species in identified critical areas in Burnt Canyon drainage and Ash Creek;
5. Construction of a waterlot fence around the Ash Creek well and a new water trough in the Powell Pasture (gates in the Ash Creek waterlot will remain closed when livestock are grazing in the Slick Rock Pasture);
6. Repair and maintenance of the Burnt Canyon enclosure fence.
7. Livestock enclosure fencing may be constructed at spring/seep riparian areas if desired conditions are not achieved through control of livestock grazing. (Enclosure fencing will be designed and constructed to protect important riparian vegetation while still providing for livestock watering).
8. If after 2-3 years of applying livestock distribution techniques and new water-supply points, progress toward desired conditions cannot be shown, portions of Ash Creek within the Walnut, Slick Rock, Burnt Canyon and Hayfield Pastures will be fenced to exclude livestock.

In the event that these resource protection measures do not accomplish site-specific resource objectives, additional optional measures may be implemented. These optional measures will be designed to address site-specific resource concerns and may include, but are not limited to, such things as temporary fencing, electric fencing, drift fences, livestock enclosures, temporary pipelines and water troughs, reconstruction of existing spring improvements and construction of new improvements such as spring boxes and water gaps.

Authorization

The Verde District Ranger proposes to continue to authorize livestock grazing on the Bottle Allotment (including the Goat Peak Pasture) under the following terms:

- The boundary of the Bottle Allotment will be administratively adjusted to include the Goat Peak Pasture.
- A term grazing permit will be issued providing for livestock use over a range of Animal Unit Months from 1,440 to 2,640 AUMs on a year-long basis. (An AUM is defined as the amount of forage consumed by one mature cow over a period of one month.) As an example, this would provide for livestock numbers to range from 120 to 220 head of cattle, cow/calf pairs and bulls, yearlong. Livestock will be managed under a rotational grazing system, with a potential for incremental increases in permitted stocking once certain conditions are met.

⁹ **Incidental Use:** prescribed “Light Use” (0-30%) in all seasons and restrict livestock concentration behavior and/or practices. (i.e. lounging, salting, supplements, holding, watering etc.).

- The Term Grazing Permit may be modified to provide for increases of up to 10% of the permitted numbers once the maximum number of authorized AUMs have been grazed on the allotment for three consecutive years and all of the following conditions are met:
 - (a) the District Ranger determines that monitoring indicates adaptive management and resource protection measures have resulted in adequate progress toward meeting resource objectives summarized in Chapter 1;
 - (b) existing range improvements are maintained in functioning condition; and
 - (c) proposed new structural range improvements have been constructed.

These incremental increases may continue to be authorized on three-year timeframes as resource conditions on the allotment warrant.

The term grazing permit will be issued for up to ten years. The permit will authorize livestock use within parameters identified in this proposal, and subsequent permits may be issued as long as resources continue to move further toward desired conditions or are being maintained in satisfactory condition, as appropriate.

Structural Range Improvements

Adaptive management would allow for the construction of rangeland improvements if they have been identified and are determined, through monitoring, to be necessary for achieving resource objectives. However, if some or all improvements are not implemented, the upper limits of permitted livestock numbers may not be achievable. Locations of improvements are shown on map in Appendix 1.

1. Install approximately 1 mile of 1¼" polyethylene pipe in the Holding, Walnut and Hayfield Pastures. Install 3 troughs at the ends of the pipelines and in the existing corral. Install a 5,000-gallon storage tank.
2. Install ½-mile of fence to divide Holding Pasture.
3. Clean and possibly deepen Ash Creek Well, install new steel casing, install solar pump. Construct a waterlot fence around Ash Creek well and a new water trough in the Powell Pasture.
4. Reconstruct Uncle Sam well with windmill and fence to provide water for Slick Rock, Hayfield, Holding and Pine Pastures.
5. Install approximately 3 miles of drift fence in the northwest portion of Burnt Canyon Pasture (from Mingus Springs Camp east to an existing holding pen and further northeast toward Gaddes Canyon).

Maintenance of Range Improvements: The Term Grazing Permit includes a list of all improvements which the permittee will continue to maintain at a level that effectively provides for their intended uses and purposes. Range improvements will be inspected periodically during the term of the permit to document condition. Annual Operating Instructions (AOIs) will identify range improvements in need of maintenance. Existing improvements may be replaced when their conditions warrant.

Access to Improvements: All authorizations for cross-country motorized travel are subject to existing regulations intended to protect natural and/or heritage resources. Cross-

country travel is not allowed when such travel would cause unacceptable resource damage.

No need for deviation from the current access needs for motorized use is anticipated on the Bottle Allotment. Authorization is provided for the permittee to administer the livestock operation and maintain improvements under the Term Grazing Permit.

Annual authorization for actions implementing management direction in the Allotment Management Plan will be included in the Annual Operating Instructions, such as a description of the anticipated level of cross-country travel, travel needed for the maintenance or reconstruction of existing improvements or the construction of new improvements.

Monitoring

Three types of monitoring will be used - implementation monitoring, periodic monitoring of short-term indicators of resource conditions, and effectiveness monitoring.

Implementation Monitoring: This monitoring will be conducted on an annual basis and will include such things as livestock actual use (# of head, # of months) and scheduled and unscheduled inspections to ensure that all livestock and grazing management measures stipulated in permits, AMPs and AOs are being implemented (e.g. cattle numbers, on/off dates, rotation schedules, maintenance of improvements, mitigation measures).

Periodic Monitoring of Short-term Indicators of Resource Conditions: Short-term indicators of resource conditions such as forage utilization, residual forage, species composition, plant cover, frequency or density, and/or vegetative ground cover will be monitored on the allotment at key areas and at areas identified with site-specific resource concerns. Methods will include generally accepted monitoring protocols.

The purpose of periodic monitoring of short-term indicators is to determine:

1. If individual plants have had an opportunity to recover, grow and reproduce following grazing impacts.
2. If sufficient residual forage remains at the end of the growing season to provide for other resource values or requirements such as soil productivity, wildlife habitat, and dormant season use.
3. If maintenance or improvement of rangeland conditions are indicated.
4. If management adjustments are warranted for the following season to provide for the physiological needs of primary forage species and other resources identified as concerns.
5. If soils and riparian areas are maintaining or moving toward desired conditions.
6. If critical areas are moving toward desired conditions.

Meeting guidelines established for short-term indicators is not a management objective; rather, guidelines are one of the indicators or tools managers use to guide management. These point-in-time monitoring measurements provide information about current resource conditions and apparent trend. When and where resource condition-indicators on an allotment are obviously better than those called for under management guidelines, actual measurements may or may not be recorded every year for all key areas; however, at a minimum, observed general forage conditions at the end of each growing season will be

documented in the allotment file by rangeland managers. Grazing intensity guidelines may be revised upward or downward as conditions warrant and as monitoring indicates the status of progress toward desired conditions.

Effectiveness Monitoring: Monitoring, according to a Monitoring Plan to be established in the Allotment Management Plan, to evaluate the success of management in achieving the desired objectives will occur within key and critical areas or on permanent transects at an interval of 10 years or less. Initial baseline information will be collected on this allotment. Effectiveness monitoring may also occur if data and observations from monitoring of short-term indicators suggest a need for additional information.

Both qualitative and quantitative monitoring methods will be used in accordance with Interagency Technical References, Region 3 Rangeland Analysis and Management Training Guide and the Region 3 Allotment Analysis Handbook.

Alternative 2 – No Action/No Grazing Alternative_____

Alternative 2 is the No Action Alternative required by regulations implementing the National Environmental Policy Act found at 40 CFR 1502.14(d) and by FSH 2209.13 Chapter 90. Under Alternative 2, livestock grazing on the Bottle Allotment would be discontinued and the Term Grazing permit would be cancelled after a 2-year notification to the permit holder (FSM 2231.62d/FSH 2209.13-16.24).

Authorization

Livestock grazing will not be authorized.

New Range Improvements

Under this alternative, **no** new range improvements will be constructed on the allotment.

Maintenance of Existing Range Improvements

Maintenance of range improvements normally assigned to the permit holder will no longer occur.

Cancellation of the Grazing Permit

After cancellation of the Term Grazing Permit, existing structural improvements that contribute to resource protection or that are important to other resources and functions, such as water sources for wildlife populations or fire control, will remain but will not be maintained unless this activity is picked up and funded under another resource area on the Prescott NF, or by a cooperating partner. Removal of improvements losing their functionality will have to be authorized under a future NEPA decision if new ground disturbance is anticipated. Where allotment boundary fences are necessary, the maintenance of these fences may be reassigned to adjacent grazing permit holders in order to maintain the integrity of the boundaries of adjacent allotments.

The cancellation of the term permit for this allotment under this alternative does not represent an official administrative closing of the allotment; rather it would represent the suspension of grazing on this allotment for an undetermined amount of time, until or unless a different decision is made. This alternative could be selected by the responsible official in situations of compelling resource concerns where higher resource values may be at risk and conflict directly with livestock grazing management.

Comparison of Alternatives and Effects

Bottle Allotment	Alternative 1 Proposed Action	Alternative 2 No Action/ No Grazing
Authorization (AUMs, Season of Use & Term)	1,440 to 2,640 AUMs; year-long; 10-year term	N/A
Grazing Intensity Guidelines	Conservative to Moderate, except in riparian and critical areas where site-specific measures apply	N/A
New Improvements	3.5 miles of fencing 1 mile of water pipe 1 water-lot fence 1 windmill and fence 4 drinking troughs 1 5,000 gallon water tank	None
Maintenance of Improvements	Maintenance by the Permittee during term of Permit	Maintenance by permittee discontinued
Monitoring	Monitoring of implementation and effectiveness of Adaptive Management during term of permit	Monitoring of livestock use and effects discontinued
Range Effects	Enhanced management flexibility and livestock distribution due to improved water distribution, new pasture, and adaptive management	Livestock use discontinued
Watershed/Soils Effects	Minor effects to soils and water lessened through enhanced management flexibility due to improved water distribution and through the application of Site-specific Resource Protection Measures and Best Management Practices	Soil and watershed/-riparian conditions improve somewhat more quickly in the absence of livestock

Bottle Allotment	Alternative 1 Proposed Action	Alternative 2 No Action/ No Grazing
Wildlife/Plant Effects	Enhanced riparian protection and water availability beneficial for wildlife; some adverse effects possible on ground-nesting birds. No impacts on MIS habitat seral stages or trend of MIS species forest-wide. Impacts on federally-threatened Mexican spotted owl are not likely to adversely affect the species or habitat. Effects to FS sensitive and migratory bird species may impact individuals but are not significant and do not create a trend toward federal listing. Meets desired condition for plant and animal species and their habitats.	Provides more rapid movement toward desired habitat conditions; water availability may decrease as improvements age without maintenance; impacts to federally-listed Mexican spotted owl, Forest Service sensitive species, Management Indicator Species and migratory birds from the presence of livestock will no longer occur.
Archaeological Effects	No adverse effects on heritage resources	No effects on heritage resources
Recreational Effects	No adverse effects on recreation or Wild & Scenic River resources	No adverse effects on recreation or Wild & Scenic River resources
Compliance w/ Forest Plan and Federal Regulations 36 CFR 222.2 [c]	Yes	No, does not comply with direction to manage forage-producing lands for livestock grazing

CHAPTER 3 – Existing Environment & Environmental Effects

Information regarding the current condition of resources on the Bottle Allotment – range/vegetation, soils, water/riparian, air, wildlife, fish and rare plants, heritage and recreation resources – is provided below in each resource section. Further details regarding existing conditions and the gathering and assessment of that information are provided in the Specialists’ Reports which are included in the Project Record.

A summary of the environmental effects of each alternative on each resource is also provided in this chapter. Each Resource Specialist has considered the direct and indirect effects that would be expected to occur from implementation of each of the alternatives addressed in this EA. They have each also considered the past, present and future activities listed in the table below, that may be affecting resources in the analysis area defined for each resource. Cumulative effects result from the addition of the direct and indirect effects on each resource to the effects of these past, present and reasonably foreseeable future actions. The summation of these effects is reviewed in order to determine if all the effects, when considered collectively, accumulate to a significant level. The Resource Specialists’ Reports, included in the Project Record, contain details of these considerations.

The following table summarizes the past, present and future activities within the Upper Verde and Agua Fria sub-basins that have been considered in the cumulative effects analysis and that may have affected or may be continuing to have effects on the resources. The Prescott National Forest administers 52% of the lands within the Cherry Creek and Upper Verde 5th level watersheds and 89% of the lands within the Ash Creek and Sycamore Creek 5th level watersheds. The map in Appendix 5 defines the Cumulative Effects Analysis Area addressed by the table.

Past, Present and Future Activities Table Bottle Allotment– Ash Creek/Sycamore Creek & Cherry Creek/Upper Verde River Watersheds

Type of Activity	Past Activities/Events	Present Activities	Future Activities
Wildfire Suppression	Historic activity throughout watershed. Approximately 17257 acres from 1999 to 2009.	No fires in 2010	On-going depending on appropriate management response
Vegetation Treatment including Timber Harvest, Fuelwood, Watershed and Wildlife Habitat Improvement	Various treatments from 1987 to 2008 – 5107 acres.	2010 fuelwood treatment – 30 acres	Black Hills Project 3693 acres

Type of Activity	Past Activities/Events	Present Activities	Future Activities
Fire and Fuel Projects including RX Burns	Predominantly RX Burn from 1985 to 2009 – 62,049 acres.	2010 Cherry RX Burn – 3200 acres	Black Hills RX Burn – 52,307 acres Black Hills Biomass – 47,441 acres
Livestock Grazing	Past allotment management of 22 allotments on NFS lands Livestock grazing on other land ownerships	Stocking levels reflect forage & range conditions w/ associated structural improvements	Same
Noxious Weed Treatments	Sweet resinbush – burning & chemical treatments in Verde Allotment; Dalmatian and yellow toadflax – biological (insect) control released in Bottle and Antelope Hills Allotments	Treatments on-going.	Same
Water Supply Improvements	Spring developments, wells, pipelines, water tanks & dirt stock tanks	On-going	Water System Extensions
Recreational Activities & Fuelwood Cutting	Camping/developed campgrounds, dispersed camping, hiking, trailheads, OHV, snow-play and day-use areas, unauthorized off-road vehicle use, hunting, sight-seeing	Same	Travel Management rules implementation
Roads, Utility ROWs, Land Development, Special Use Permitted and Land Exchanges	989 miles of levels 1 to 5 roads; Road maintenance & ROW hazard-tree falling; Gravel pits, private land fencing, recreational camp, subdivisions & development	Same	Same, plus unknown new roads possible
Mining	56 mines (on all included land ownerships)	24 active mines	41 mines
Archaeological Protective Structures	None present in allotment	None present in allotment	None anticipated in allotment

Range Vegetation Resources – Existing Conditions_____

The Bottle Allotment is located on the Verde Ranger District of the Prescott National Forest. The allotment runs south from Mingus Mountain, east of Prescott and southwest of Cottonwood, AZ. (See Vicinity map in Chapter 2 and Allotment Maps in Appendix 1.)

The allotment, as proposed with the Goat Peak Pasture included, contains a total of approximately 26,311 acres and represents the project area for this environmental analysis and is the analysis area for direct and indirect effects on range resources. The allotment will have nine pastures with the addition of the Goat Peak Pasture.

Elevations on the allotment run from approximately 4,800 at the south end where Ash Creek leaves the allotment to near 7,800 feet on Mingus Mountain. The vegetation follows typical elevational bands with ponderosa pine with grass openings in the higher elevations, and piñon/juniper woodlands and chaparral at the lower elevations. The primary livestock forage species on the allotment include blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), black grama (*B. eriopoda*), mountain muhly, (*Muhlenbergia montana*), pine dropseed (*Blepharoneuron tricholepis*), Junegrass (*Koeleria macrantha*), mountain mahogany (*Cercocarpus* sp.), and turbinella oak (*Quercus turbinella*).

The major drainages located within the allotment are Burnt Canyon, Ash Creek, Cherry Creek, Black Canyon and Gaddes Canyon. None of the drainages have perennial flow throughout, though Ash Creek and Cherry Creek do have reaches that are perennial. These drainages are largely intermittent or ephemeral with riparian vegetation present, consisting of native and non-native herbaceous and woody species. Perennial flow may extend from some of the springs on the allotment for up to several hundred yards. Emergent riparian vegetation is present at some of the springs and seeps.

The current year-round term grazing permit provides for the use of up to 1,440 AUMs of forage each year under a deferred rotation system. An animal-unit-month (AUM) is used here as a measure of the amount of forage used by one cow for one month¹⁰. One AUM is the amount of forage, approximately 26 pounds of dry vegetative matter, required by one mature cow each day for a month. Specific information on current and past livestock stocking levels on the Bottle Allotment is provided in Chapter 3 and Appendix 2. Over the last 24 years, permitted actual use has ranged from no use during 5 years, up to 2640 AUMs during 5 years, with varying amounts of use in the other years. (See Appendix 2 for actual use data.)

The determination and description of range conditions on the Bottle Allotment is based on field sampling conducted in 2009 within representative Terrestrial Ecosystem Survey (TEUI) map units (USDA Forest Service, 2000) in each pasture of the allotment. The map units sampled were selected based on a Geographic Information System analysis that took into consideration primary and secondary range¹¹ and vegetation types while emphasizing the predominant or most representative TEUI map unit(s) in each pasture. Selected sites were sampled to determine which vegetation community type each map unit currently supports based on the plant community descriptions in the Draft Ecological Classification for the Prescott National Forest (USDA Forest Service, 2006). Further details on information gathered regarding current vegetation conditions are provided in the

¹⁰ The Prescott NF has chosen to describe the amount of forage to be permitted for use each year on an allotment in Animal Unit Months (AUMs); one AUM reflects the amount of forage used by one mature cow in one standardized 30-day month. To calculate this yearly allocation, the number of mature cattle is multiplied by the number of months they are present on the allotment, giving animal months (AMs), a figure representing the actual use for a year on the allotment. This actual use figure is then multiplied by a factor of 1.0 to calculate the AUMs. (See Appendix 2 for the actual use table for this allotment.)

¹¹ **Primary Range** is land which animals prefer to use, generally defined as having slopes of 0-10% and within one mile of water. **Secondary Range** is lands that are more lightly used than primary range, generally having slopes of 10-30% that are within two miles of water.

Bottle Range and Vegetation Specialist's Report and associated field information in the Project Record.

Field sampling was conducted by the Bottle Interdisciplinary Core Team consisting of a range conservationist, soil scientist, hydrologist and ecologist. The sampling provided information that allowed a comparison between the currently existing vegetation/plant community and the potential natural community (PNC), as defined by the Terrestrial Ecosystem Survey of the Prescott National Forest (2000). This comparison provides an approximation of the ecological status for each area or map unit sampled. Ecological status was then described in terms of the sampled unit's similarity to the PNC, *i.e.*, as having either high, mid- or low similarity to PNC. The apparent trend of the existing vegetation in relation to the PNC was also determined and described as either static, toward PNC, away from PNC, or indeterminable (not apparent).

Then, using both the ecological status and the apparent trend, a determination of the Rangeland Management Status¹² (RMS) for each pasture or map unit is made. Rangeland Management Status is an indicator of the current condition and trend of the vegetation on an allotment, both of which reflect prior management, and is used here as an indicator of compliance with direction in the Forest Plan. The following table from the *Rangeland Analysis and Management Training Guide* (USDA Forest Service, 1999) displays a matrix of how the determination is made.

Interpretation Matrix for Determining Rangeland Management Status (RMS)			
Trend	Low Similarity to Desired Vegetation Status	Mid-Similarity to Desired Vegetation Status	High Similarity to Desired Vegetation Status
<i>Toward</i>	Satisfactory RMS	Satisfactory RMS	--
<i>Static</i>	Unsatisfactory RMS	Satisfactory to Unsatisfactory RMS	Satisfactory RMS
<i>Away from</i>	Unsatisfactory RMS	Unsatisfactory RMS	Unsatisfactory RMS

The Forest Plan states (page 32) that „satisfactory management“ shall occur on grazing allotments meaning that management actions are proceeding according to a schedule (in this case, an Allotment Management Plan) “which lead to fair or better range conditions with an upward trend”. For the purposes of this analysis, areas determined to be in satisfactory RMS, based on the Interpretation Matrix Table above, are considered to meet Forest Plan direction for „satisfactory management“.

Management on the Bottle Allotment over the last approximately 24 years under the Forest Plan, applying forage use standards and guidelines for key forage species (Forest Plan, pg. 155-156), has provided for satisfactory rangeland management status across the allotment. All pastures have an approximate ecological status of mid- to high similarity to potential natural (plant) communities, except burned areas of the Powell Pasture where

¹² **Rangeland Management Status** is a description of the current condition of a rangeland in comparison to a desired status, or in terms of the progress toward that status. RMS is described as satisfactory when the existing vegetation community is similar to the desired condition or short-term objectives are being achieved to move the rangeland toward the desired condition. USDA Forest Service, Southwestern Region, *Rangeland Analysis and Management Training Guide*, June 1999, page G-7.

the similarity was low. Slickrock Pasture was not rated for ecological status due to the vegetation having grown to a succession stage beyond that of a fire climax potential natural community class. The apparent trend of the existing vegetation in relation to the potential natural community was found to be static for all but the Holding Pasture and one mapping unit in the Walnut Pasture where the apparent trend was not evident and in the Powell Pasture where the apparent trend is toward the PNC. Based on the current conditions on the Bottle Allotment, taking into account apparent trends, the Bottle Interdisciplinary Team has determined that direction from the Forest Plan is best complied with by designating the potential natural community as the desired vegetation status. See Appendix 2 for further information on the existing condition for each pasture.

The Range Management Specialist responsible for administration of this allotment and the Interdisciplinary Core Team have determined that the satisfactory Rangeland Management Status found to exist currently overall on the allotment also meets the Forest Plan definition of Satisfactory Range Condition - “range land in [a] range condition class of at least fair with stable or upward trend” (Forest Plan, pg. 113). Smaller, included areas determined to be in unsatisfactory RMS are considered to be areas of concern and have been identified by the ID Team as areas where site-specific Resource Protection Measures will be applied to bring rangeland resources and management into compliance with the Forest Plan, in this case into greater similarity with the potential natural community. These site-specific measures are described in the Proposed Action, Alternative 1, in Chapter 2.

Noxious weed infestations have been located on the allotment. The species currently known to be present are Dalmatian and yellow toadflax and sweet resinbush. Unconfirmed reports of Scotch and bull thistles have also been received. Monitoring and treatment of noxious weed infestations are handled under the Tri-Forest Noxious Weed Control Program.

Opportunities exist to improve management flexibility and livestock distribution on the allotment through the construction of a drift fence in the Burnt Canyon Pasture, additions to the water supply system, and the addition of the Goat Peak Pasture. These developments will aid in distributing grazing pressure more evenly across the allotment and away from those areas that may have been used more heavily in the past, and along with the resource protection measures described in the Proposed Action, will contribute to achieving resource objectives and desired conditions.

Stocking Rate

The Bottle allotment with the included Goat Peak pasture from the Goat Peak allotment has had an average stocking rate of 1774 Animal-Months (AM) or 148 cattle per year from 1981 to 2008 (see Actual Use Appendix 2). The range of cattle numbers present on the Bottle allotment and in the Goat Peak pasture of the Goat Peak allotment for the period 1981-2008 is 0-3158 AM or 0-263 cattle per year.

Another approach in estimating grazing capacity for the Bottle allotment is based upon the relationship between livestock behavior and distance from water, available forage production and topography (Holechek 1988). Adjustments in livestock numbers are made based upon slope class and distance from water. Any grazing capacity calculation will only provide an estimate for one point in time because the climate and vegetation on any area are dynamic rather than constant. However, if properly determined and interpreted

grazing capacity knowledge is still a critical component in development of sound range management practices.

Using Geographic Information Systems (GIS), a slope break map and associated acreages were developed for this calculation. Additionally, in this estimate it is assumed that the allotment is fully watered (less than 1 mile from water), based upon the intermittent streams and other range improvements. The forage production value used in these calculations was based on herbaceous and browse forage production for each pasture on the allotment based on the FORG value for each TES unit identified in each pasture (Terrestrial Ecosystems Survey of the Prescott National Forest, 2000). Then, an average harvest coefficient of 40% use was assigned. The 40% use value represents a mid-point between the Conservative (30-40%) and the Moderate (40-50%) grazing intensity guidelines. Using this methodology, the calculated grazing capacity is 1464 Animal Unit Months (AUM's) or 122 cattle per year.

The various methodologies for determining stocking rate on the Bottle allotment and included Goat Peak pasture are as follows: (1) average stocking: 1774 AM's (148 cattle); (2) range of stocking: 0-3158 AM's (0-263 head of cattle); (3) calculated capacity: 1464 AUM's (122 cattle yearlong). The proposed stocking rate range of 1440-2640 AUM's or 120-220 head of cattle is within the range of past use and is likely to maintain desired vegetation conditions.

Direct & Indirect Effects on Range Vegetation Resources

The Range/Vegetation Specialist's Report addresses the direct, indirect and cumulative effects of each alternative analyzed by the Interdisciplinary Team. A summary of the effects is provided here. Further details are in the Specialist's Report which is part of the Project Record for this analysis.

Alternative 1 - Proposed Action

The proposed action is designed to comply with Forest Plan standards and guidelines, as amended. Grazing Guidelines and resource protection measures will be incorporated into the project as design features to protect forest resources such as soil, water, vegetation, riparian habitats, and wildlife, as well as to make progress toward or maintain desired conditions. Best Management Practices will be implemented to comply with the Clean Water Act and protect soils resources. (See Appendix 4 for Grazing Guidelines and BMPs) The probability is high that management under the grazing guidelines described in this alternative will provide for the successful accomplishment of the resource objectives and desired conditions described for this project.

In general, light (0-30% use) to moderate (41-50% use) grazing intensities provide opportunity for increased average annual forage production in wet or dry years and upward trends in range conditions when compared to heavier grazing intensities. Holechek and Galt (2000¹³, 2004¹⁴) provide a comprehensive review of studies related to residual leaf lengths on southwestern forage species and growth forms as indicators of

¹³ Holechek, J.L. and D. Galt. 2000. Grazing Intensity Guidelines. *Rangelands* 22(3):11-14.

¹⁴ Holechek, J.L. and D. Galt. 2004. More on Stubble Height Guidelines. *Rangelands* 26(4):3-7.

grazing intensity. They concluded that grazing at moderate or conservative (31-40% use) intensities will generally result in maintaining or improving rangeland conditions over time. Grazing will continue to be managed with a deferred rotational system with proposed improvements that will assist with improved livestock distribution. The effects on the rangeland vegetation resource from the proposed action are beneficial. Deferred rotation allows key forage species the opportunity to store carbohydrates and set seed during periods of seasonal rest. Periodic rest provides additional opportunity for improved plant vigor and enhanced reproductive capability for key forage species.

Grazing by cattle can affect upland plants by reducing plant height, canopy cover of understory plants, and ground cover. The degree of these effects is influenced by utilization guidelines and timing of use. Changes in condition and trend of the vegetation on an allotment vary depending on the growing conditions after cattle leave the pasture. Under favorable conditions, plant height and canopy cover would recover within one year. If growing conditions are not favorable, plant recovery would occur more slowly (up to two to three years). Vegetation recovery from the other activities and natural events may take up to ten years depending on climate.

Over time, under the Proposed Action, desirable forage plant density and plant biomass residue would increase, plant species composition would improve, and the vigor of forage plants would be good. Range condition and trend are expected to remain static or static to upward on this allotment due to: 1) the deferred rotational grazing system which will continue to be implemented on the allotment, 2) the timing of livestock use, and 3) the application of grazing guidelines that are enforced through the administration of the term grazing permit. No livestock-induced changes in condition are expected in areas determined to have no capacity because livestock access to these areas will only be incidental due to steep slopes or distance from water.

The Proposed Action provides opportunities to improve livestock distribution through new fencing and improvements in existing water developments and the expansion of the water supply in additional areas of the allotment which will aid in achieving resource objectives. While management prescriptions have been met in recent years, the addition of fencing and development of additional water sources would result in improved livestock distribution into areas where little to no use has occurred in the past. This would result in increased management flexibility and will lessen the effects of grazing on sites preferred by livestock. Distribution of livestock and use across the allotment will be more uniform.

Site-specific effects are expected to be as follows: 1) in Map Unit (MU) 490 in Walnut Pasture where the apparent trend was not able to be determined - the highly similar ecological status is expected to remain close to current, however, desirable species should become more prominent in the composition over time. 2) in MU 485 in Holding Pasture where the apparent trend was also not able to be determined - the ecological status is expected to move higher toward its potential with the desirable species increasing in cover and frequency. 3) in both of these MUs, satisfactory Rangeland Management Status will be maintained and an upward or static apparent trend would be detected within five years when typical precipitation occurs.

Alternative 2 – No Action/No Grazing Alternative

Under the No-Action Alternative, all cattle grazing within the allotment would be phased out over a 2-year period. Livestock impacts on vegetation and soils would be removed.

Only incidental wildlife grazing would occur sporadically at light intensities. Key areas would receive only incidental forage and browse use. Desirable forage plant density and plant residue would increase, plant species composition would improve, and the vigor of forage plants would be good. The apparent trend in key areas can fluctuate independently of any grazing influence. The trend with regard to similarity to Potential Natural Community may fluctuate based upon local climatic events; however, the expectation with average or above-average rainfall patterns is that the trend is expected to move toward PNC. This trend should be rapid in favorable precipitation years. Key areas and key species allotment-wide will realize beneficial effects based upon receiving only incidental grazing.

Site-specific effects are expected to be as follows: 1) the ecological status of MU 490 is expected to remain similar to current conditions however desirable species should become more prominent in the composition over time. 2) the ecological status of MU 485 is expected to move higher toward its potential with the desirable species increasing in cover and frequency within the desired plant community. This change in trend should be rapid in years with favorable precipitation.

The cancellation of the grazing permit would create an absence of maintenance of structural improvements. Water developments and fencing would no longer be maintained unless sufficient funds in another program area allowed for such maintenance. Allotment boundary fence maintenance may have to be assigned to adjacent grazing permit holders, creating an economic burden on them. The loss of water system improvements may have adverse impacts on the use of the area by wildlife. There would likely be significant economic impact to the grazing permit holder due to a loss of part or all of their livestock operations and subsequently, a further impact on the economy of the local community.

Cumulative Effects on Range Vegetation Resources

The cumulative effects analysis area considered for effects on range/vegetation resources includes the Cherry Creek/Upper Verde 5th level watersheds within the Upper Verde River sub-basin and the Ash Creek/Sycamore Creek 5th level watersheds within the Agua Fria sub-basin. Please see the map in Appendix 5 for the location of the Bottle Allotment within these watersheds.

The past, present, and reasonably foreseeable future activities and events considered in the cumulative effects analysis for the range and vegetation resources are shown on the “Past, Present and Future Activities Table”. They include past livestock grazing, dispersed recreation, timber and fuelwood sales, firewood gathering, fuel treatments, past wildfires, prescribed fire, roads, unauthorized off-highway vehicle use, recreational activities, wildlife grazing, and climatic conditions. These activities each affect livestock management and range vegetation in different ways depending on the location and extent of the activities. The effects of these other activities, when added to livestock grazing and management as described under the proposed action, do not change the anticipated effects over-all with regard to the apparent trend of the ecological status or the rangeland management status.

The Proposed Action has been developed with project design features, resource protection measures and Best Management Practices in order to minimize adverse effects on rangeland vegetation and resources. The impacts created through livestock grazing, improvement construction and the adaptive management described for the action alternative, when added to the other past, present and future activities listed in the table at the beginning of Chapter 3, do not together accumulate to levels that are considered to be

significant for the range or vegetative resources, nor are they expected to lead to irreversible effects to vegetation.

Soils Resources

The Soil Specialist's Report addresses the existing conditions of the soil resources on the allotment and the effects of each alternative on those resources. A summary of the existing conditions and the effects of each alternative on the soils resource, including any cumulative effects, are provided here. Details of this analysis are contained in the Specialist's Report in the Project Record.

The purpose for conducting a soils analysis is to describe soil conditions, to provide interpretations of soil characteristics and to predict effects to the soil resources. Soil condition is an evaluation of the capacity of soils to function within ecosystem boundaries to sustain biological productivity, to maintain environmental quality and to promote plant and animal health. The soil condition rating procedure evaluates soil quality based on an interpretation of factors that affect three primary soil functions - soil stability, soil hydrology, and nutrient cycling. These functions are interrelated and address the abilities of soil to resist erosion, to absorb, store and transmit water, and to accept, hold and release nutrients.

Soil condition is described in one of three condition categories, each of which describes how the soil is functioning. Soils in satisfactory condition are maintaining their ability to function normally to maintain resource values and sustain outputs. Soils in impaired condition have indicators of reduced functioning and have an increased vulnerability to degradation. Soils in unsatisfactory condition show indicators that signify a loss of soil function resulting in the inability of the soil to maintain resource values, sustain outputs or to recover from impacts. Areas with impaired or unsatisfactory soil conditions are candidates for the application of measures or management practices designed to prevent further degradation and/or to recover soil functions.

Existing Conditions - Soils

The soil conditions on the Bottle Allotment were evaluated based on the field sampling of the same Terrestrial Ecosystem Survey map units as described above in the Range Vegetation Resources section of this chapter. The map units analyzed in the Crater, Pine, Hayfield and Holding Pastures were found to be satisfactory condition. The majority of the Slickrock and Goat Peak Pastures, and portions of the Walnut Pasture, were found to be in satisfactory condition, however some inclusions of soils in impaired and unsatisfactory condition were found that are the result of fire impacts in the chaparral plant community. Other portions of the Walnut Pasture associated with pinyon-juniper stands also have impaired soils. All map units sampled in the Burnt Canyon Pasture were found to be in satisfactory condition; however, there are non-representative small inclusions of soil with impaired conditions that are a result of various impacts including fuelwood cutting, recreational user impacts and other concentrations of use. All map units sampled in the Powell Pasture were found to be impaired due to past fires in the chaparral. Further information on the soil sampling results is provided in the Soil Specialist's Report in the Project Record.

Direct & Indirect Effects on Soils Resources

The analysis area considered in determining direct and indirect effects on the soils resources includes the Bottle Allotment, including the Goat Peak Pasture.

Alternative 1 - Proposed Action

Soils in all of the pastures in satisfactory condition will remain in that condition under the grazing authorization and adaptive management described in the Proposed Action which includes the use of grazing guidelines, site-specific resource protection measures and the application of Best Management Practices. (See Appendix 4 for grazing guidelines and BMPs that apply to this allotment.) Areas within the Holding Pasture with reduced vegetative ground cover are expected to improve with application of the grazing guidelines and BMPs and will maintain the pasture in satisfactory condition.

The impaired soil conditions resulting from fires in the chaparral plant community in Slickrock, Goat Peak, Powell and Walnut Pastures will improve over time through the natural plant succession process. Livestock grazing will not influence soil condition improvements because improvement is based primarily on the presence of shrub cover and associated leaf litter which are not heavily affected by livestock in the uplands. Unsatisfactory soils conditions resulting from past fires in the chaparral will also recover through the application of the grazing guidelines and BMPs which call for incidental use only in these areas.

The function and protection of soils in impaired condition in the Walnut Pasture will be improved through the reduced grazing intensities to be managed for under the grazing guidelines and BMPs incorporated in the proposed action. Reduced grazing intensity will allow for additional organic materials to be available to increase vegetative ground cover and for incorporation into the soil.

Alternative 2 – No Action/No Grazing Alternative

With the discontinuation of grazing on the allotment, there will no longer be any effects from livestock grazing. The removal of livestock from the allotment is expected to allow a more rapid recovery of the localized impaired soil areas; however this is a long-term process subject to many environmental factors and influences.

Cumulative Effects on Soils Resources

The cumulative effects analysis area considered for effects on soils resources includes the Cherry Creek/Upper Verde 5th level watersheds within the Upper Verde River sub-basin and the Ash Creek/Sycamore Creek 5th level watersheds within the Agua Fria sub-basin, as shown on the map in Appendix 5.

Analysis of the cumulative effects of the Proposed Action conducted by the Inter-disciplinary Team Soils Scientist has determined that implementation of the proposed action will not lead adverse cumulative effects on soils. The scope of the proposed activities, when combined with the size of the project area will have negligible impacts to the soils of the cumulative effects area. The proposed action integrates design features to ensure the protection and improvement of the soils resources. Adaptive management would be employed to achieve desired conditions and site-specific management objectives will be applied to address areas in need of improvement or that are vulnerable to site

deterioration. Site-specific soil and water conservation practices in the form of Best Management Practices have been developed and will be implemented to ensure protection and improvement of the soil and watershed resources.

No significant direct, indirect or cumulative effects to soils resources are expected to occur as a result of implementation of the Proposed Action Alternative.

Water and Riparian Resources

The Hydrology and Water Resource Specialist's Report addresses the existing conditions of water and riparian resources on the allotment and the effects of each alternative on those resources. A summary of the existing conditions and the effects of each alternative on the resources, including any cumulative effects, are provided here. Details of this analysis are contained in the Specialist's Report in the Project Record. (Please note: Wild and Scenic River resources are addressed in the Recreational Resources section.)

Watershed condition consists of the upland area condition plus the streamcourse or riparian condition (including springs/seeps and wetlands). The upland condition is assessed via soil condition –hydrologic function, stability, and nutrient cycling. There are a number of protocols for assessing stream channel and riparian condition. The Proper Functioning Condition (PFC) assessment method (USDI BLM 1998) is the minimum standard for assessment of riparian condition (Thomas 1996). In order to provide more detailed and specific information than the Yes/No/NA checklist used for PFC indicators, a more detailed field form was developed (Prescott National Forest Riparian Field Worksheet). In addition to the basic PFC reference, a number of indicator descriptions were modeled after the User's Guide for the Rapid Assessment of the Functional Condition of Stream-Riparian Ecosystems in the American Southwest (Stacy, et al 2006). Some of the hydrogeomorphic indicators also used information from the Stream reach inventory and channel stability evaluation, (Pfankuch 1975). Two other references were also used – Rosgen's Applied River Morphology (1996) and the EPA monitoring protocol (Bauer, et al 1993). Literature citations for these references are included in the References section.

On selected stream segments this expanded field form was used for description of quality indicators of condition and function of riparian attributes and processes. An interdisciplinary team selected representative reaches of streamcourses, conducted field reviews and reached agreement on the descriptions. The interdisciplinary team consisted of a hydrologist, soil scientist, range conservationist, and ecologist. The team members' extensive experience in field sampling facilitated rapid classification of such components as canopy cover, ground cover, native vs. non-native plant composition, percent of plants grazed or browsed, et al. Descriptions of riparian attributes were then summarized in narrative form for both hydrogeomorphic (stream channel function and stability) and vegetative conditions. Average scores were not calculated; rather the emphasis was on a description of the existing condition and function, with importance placed on the rationale for the numerical ratings of individual parameters. Field worksheets and the instructions for their use are included in the Project Record.

The upland watershed conditions on the Bottle Allotment were evaluated based on the field sampling of the same Terrestrial Ecosystem Survey map units as described in the Range Vegetation Resources section of this chapter. Several of the springs and seeps have been inventoried over time including in 2008 by other Forest Service personnel and

in 2009, about half of the springs were visited by the Interdisciplinary Core Team. Emphasis was placed by the Core Team on springs that had been deemed most likely to be impacted by the presence of livestock. Information available from Arizona Department of Environmental Quality records, U.S. Environmental Protection Agency records, and from the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) was also used as appropriate (USDI-USFWS, 1991-1995). Further information on the watershed analysis and information collected is included in the Hydrology and Water Resource Specialist's Report in the Project Record.

Existing Conditions – Water and Riparian Resources

The riparian resources on the allotment are comprised of both riverine riparian systems, present as streams, and emergent riparian systems which are typically represented by seeps and springs along with any associated wetlands. Riverine riparian zones encompass a stream channel between the low and high water marks and that portion of the terrestrial landscape from high water mark towards the uplands where vegetation may be influenced by elevated water tables or flooding and by the ability of the soils to hold water. Emergent riparian communities are groundwater-dependent and are present on the allotment as springs and seeps. Emergent riparian systems maintain specific soil conditions and support plants adapted to saturated or hydric soils.

Precipitation in the area of the allotment is generally bi-modal, occurring in both winter and summer, with the greatest water runoff occurring during the winter period between October and April. Average annual precipitation varies with elevation across the allotment, but ranges from about 15 inches where Ash Creek leaves the allotment to 25 inches near Mingus Mountain Lookout. The average yearly precipitation total for the area for the last thirty years is between 19" and 20". Since 1996, however, drought conditions have been most common in the area.

The Bottle Allotment lies within two 4th level watershed sub-basins, the Upper Verde which contains approximately 44% of the allotment, and the Agua Fria which contains 56%. The Black Canyon, Gaddes Canyon and Cherry Creek drainages are in the Upper Verde sub-basin and the Ash Creek watershed is within the Agua Fria sub-basin. The map in Appendix 5 displays these two sub-basins. The watercourse database from the Prescott National Forest GIS database includes 107 miles of watercourses within the allotment, as delineated on US Geological Survey 1:24000 topographic maps. The riparian vegetation zones in these riverine environments are narrow as the watercourses are primarily ephemeral and flow only in response to storm or snowmelt events. Some of the other watercourses are intermittent and usually flow for several months each year and a small portion are perennial, according to local residents and Forest Service personnel, primarily portions of Ash Creek. Riparian vegetation is more abundant along intermittent and perennial flow segments.

The geology in the area of the allotment provides limited opportunity for the development of aquifers and the springs on the allotment are classified as "local" and are generally vulnerable to climatic cycles with some tending to dry up during drought periods. Some of the springs on the Bottle Allotment have small associated areas with hydric soils, which in combination with specific riparian vegetation and hydrologic conditions, meet the definition of wetlands as defined by the Army Corps of Engineers and the Environmental Protection Agency. Most of these wetland areas are quite small, ranging from 0.01 to 0.1 acre and are commonly associated with an adjacent area having riparian vegetation but not having fully saturated or hydric soils. Current trends of a reduced proportion of winter

precipitation being snowfall, which along with earlier spring thaws are predicted to continue and possibly increase in effect, possibly resulting in reduced ground water recharge which is needed to maintain springs, wetlands and their outflows.

The Water and Riparian Resources Table below provides a summary of the riverine and emergent riparian areas on the allotment by pasture, as mapped by the US Fish and Wildlife Service’s National Wetlands Inventory conducted for Arizona with 7.5 minute U.S. Geological Survey quads covering the Prescott National Forest (produced from approximately 1991 to 1995) with miles or acres totals given for each type of site. The table also includes constructed earthen tanks and wells which also provide sources of water for livestock and wildlife. (Please see maps in Appendix 1 for locations of constructed improvements.) There is a total of 23.4 acres and 7.8 linear miles of mapped riparian areas. Seven separate stream-course locations and approximately half of the 41 springs on the allotment were examined in the field by the Interdisciplinary Core Team when assessing current conditions.

Bottle Allotment - Water and Riparian Resources by Type, Pasture and Watershed															
	Agua Fria Sub-basin					Upper Verde Sub-basin					Allotment Totals				
Pasture	Waters			Riparian*		Waters			Riparian		Waters			Riparian	
	Springs	Tanks	Wells	Acres	Miles	Springs	Tanks	Wells	Acres	Miles	Springs	Tanks	Wells	Acres	Miles
Burnt Canyon	9			2.88	2.07	2	4		3.20	2.71	11	4		6.08	4.78
Crater	1					1	1		3.76		2	1		3.76	0.00
Goat Peak 1	2		1		0.04	7		1			9	0	2		0.04
Hayfield	2	1									2	1			0.00
Holding					0.80										0.80
Exclosure in Powell Pasture									4.27					4.27	0.00
Pine	4		1	0.66	0.85						4		1	0.66	0.85
Powell	4					3		1	8.45	0.05	7	0	1	8.45	0.05
Slick Rock	4		1		1.10						4	0	1		1.10
Walnut	2	2		0.17	0.20						2	2		0.17	0.20
TOTALS	28	3	3	3.71	5.06	13	5	2	19.68	2.76	41	8	5	23.39	7.82

* Riparian - as inventoried on the National Wetlands Inventory (NWI) by the US Fish and Wildlife Service at the 1:24,000 scale on U.S. Geological Survey topographic maps. Acres are the aggregate of mapped polygons, miles are linear segments too narrow to delineate as polygons and are in addition to the polygons.

The majority of the allotment is in satisfactory watershed condition, with the exception of several specific areas along drainages and some recent intensely burned chaparral areas in Slickrock, Goat Peak, Powell and Walnut Pastures where the soils are impaired, as described in the Soils section above. Riparian areas were sampled in the Burnt Canyon, Slick Rock, Walnut, Powell and Crater Pastures. Overall, the condition trend for all of the sampled reaches in upper, mid and lower-Ash Creek, Burnt Canyon and the Powell Creek drainage were static or stable except for downward or slightly downward trends in the Burnt Canyon drainage and in lower Ash Creek in the Walnut Pasture. A predominance of non-native herbaceous vegetation was noted in several riparian reaches sampled in the Burnt Canyon, Powell and Walnut Pastures where smooth brome-grass is currently providing a dense cover in some areas. Native sedges and rushes generally are better adapted to providing bank-protection. Further details on results of the field sampling are available in the Hydrology and Water Resource Specialist’s Report in the Project Record.

In addition to riparian condition, water quality is another indicator of the health of a system that is addressed by the federal Clean Water Act (CWA). The CWA requires the Arizona Department of Environmental Quality (ADEQ) to conduct a comprehensive analysis of surface water quality every two years to determine if water quality standards are being met and designated uses are being supported. If designated uses are not being attained and are found to be impaired, a determination of the pollutant(s) causing the impairment and their sources is made. If the source(s) of pollution are not solely natural, a Total Maximum Daily Load (TMDL) for the pollutant(s) may be assigned to the impaired reach.

The Verde River, from above Sycamore Canyon (above the project area) to Fossil Creek (below the project area) was listed as an impaired water based on samples collected from 1991 to 1995. The pollutants found were turbidity and suspended sediment. The ADEQ report recommended the use of Best Management Practices and certain non-structural projects, such as prescribed fire and grassland restoration treatments, aimed at reducing wildfire danger and improving vegetative ground cover that will assist with reducing excessive storm runoff and soil erosion. The turbidity impairment appeared to be directly correlated to large storm events, and no reduction in suspended sediment load was found to be necessary during base flow conditions. Sampling on the Verde River between Sycamore Creek and Beaver Creek in 2000-2004 found an overall assessment of attaining water quality standards for all beneficial uses except warm water aquatic and wildlife community uses with the primary pollutant being turbidity (ADEQ, 2008). Ash Creek flows into the Agua Fria River primarily through an ephemeral stream reach. The Agua Fria was sampled just below this junction in 2002-2003. The sampling indicated attainment of water quality standards for all beneficial uses (ADEQ, 2008).

The most common conditions limiting the hydrogeomorphic functioning of stream channels are high width to depth ratios, and excessive erosion or deposition of sediments. The recovery of riparian vegetation, both herbaceous and woody, is essential for attainment of stability for many stream types. The following conditions contribute to the recovery and maintenance of riparian health:

- Maintenance and enhancement of residual herbaceous vegetation along the greenline or streambank
- Minimizing the annual impacts to seedlings and sapling of woody riparian species
- Limiting the physical impacts to streambanks and greenlines vulnerable to alteration

Reaching desired conditions for riparian areas and stream channels depends not only on management activities, but also on climatic events.

Effects on Water and Riparian Resources

The analysis area considered in determining direct effects on water and riparian resources is the Bottle Allotment, including the Goat Peak Pasture. The indirect effects analysis area for water and riparian resources includes the Cherry Creek 5th level watershed within the Upper Verde River sub-basin and the Ash Creek and Sycamore Creek 5th level watersheds within the Agua Fria sub-basin. Please see the map in Appendix 5 for the location of the Bottle Allotment within these watersheds.

Direct & Indirect Effects Common to Both Alternatives

Under both alternatives there would be some effects by other ungulates, elk and deer, through the browsing of woody riparian seedlings and saplings, and some trailing/trampling. In addition there would be some effects from dispersed recreation in areas readily accessible by vehicle.

Rates of re-establishment and recovery of the desired riparian vegetation will vary. Burnt Canyon and upper Ash Creek have limited existing woody riparian vegetation. Dense, rhizomatous, non-native herbaceous species, especially smooth brome, in Powell Creek, Burnt Canyon, and upper Ash Creek will slow establishment of native obligate herbaceous species such as sedges and rushes as well as of woody riparian species. The fragmented distribution of riparian areas will also influence the rates of species re-establishment.

Neither alternative is expected to affect water yield. Research in Arizona regarding the effects of management activities on water yield has found temporary increases in water yield from removal or significant modification of vegetative overstory such as in ponderosa pine or interior chaparral vegetation (Baker 1999). Neither the proposed action nor the no grazing alternative will modify the vegetative overstory.

There are no irreversible or irretrievable effects anticipated from either of the alternatives. Given time and rest from impacts, potential effects to vegetation and riparian resources from livestock can heal. Depending on the type or magnitude of impact and the affected resource, the duration of time needed to change conditions to those desired can differ. For example, obtaining all age classes of native woody species in a site where they are no longer present may take a number of decades, however the simple effects of grazing on vegetation stubble height can be changed in one growing season. Given time, unstable, incised or over-widened channels can reach a new condition of stability.

Alternative 1 - Proposed Action

The application of adaptive management, with the included resource protection measures and structural improvements, should continue the existing satisfactory watershed condition in the upland areas. Within riparian areas, conditions should eventually reach satisfactory or functional condition from both hydrogeomorphic and vegetative standpoints, through adaptive management, monitoring and structural improvements, as warranted. The time required to achieve these conditions may be longer than under the No Action/No Grazing Alternative. Monitoring will be needed along Ash Creek in both the Slick Rock and Walnut Pastures to determine if 2-3 years of adaptive management is resulting in movement toward desired conditions, particularly with regard to the herbaceous vegetation component. If it is not, the riparian protection fencing specified in the Proposed Action will be installed and the subsequent effects should be similar to those described for Alternative 2.

Should one or more of the riparian fences be constructed, the environmental effects on water resources from construction activities will be quite localized and temporary. Movement of fence materials to construction sites may require some ATV traffic within the floodplain, including crossings of the stream channel. The application of Best Management Practices should minimize these effects.

Alternative 2 – No Action/No Grazing

The No Grazing Alternative eliminates the direct effects of livestock grazing to stream courses and riparian areas in the Bottle Allotment. The potential and rates of recovery are variable and difficult to predict, but will be most rapid under this alternative.

Riparian areas are generally regarded as having high inherent potential for recovery from disturbance. Stream channel and riparian area recovery are considered optimal when the direct effects of livestock grazing are eliminated. The amount of time required for riparian recovery after severe degradation can vary from several years to decades. Recovery is dependent on the existing condition of the watershed, stream channel and riparian area (flow regime, channel gradient, dominant channel substrate, watershed area, type and extent of riparian vegetation) and future management, climate and natural disturbances.

In the Walnut Pasture, recovery of herbaceous vegetation along the greenline and near floodplain should result in the trapping of sediment and beneficial bank building, leading to greater stability and more productive microsites.

Woody vegetation age-class structure should improve in the upper Walnut Pasture riparian area, moving toward the site's potential for all age classes of woody riparian vegetation. The existing seedling class should move to sapling stage within the first ten years.

Ash Creek above Ash Creek Well in the Slick Rock Pasture should gradually build banks as herbaceous vegetation expands density and root mass. Stream reaches where increased density and effectiveness of herbaceous vegetation results in the building of the banks will also generate some additional bank storage capacity. This will provide additional soil moisture for riparian vegetation and, on intermittent reaches, would be expected to increase the period of time that surface water is present in the channel. This will be beneficial to the adjacent riparian and aquatic communities. However, the potential for beneficial downstream effects is limited by the length of these reaches and by their relatively steep gradients. In reaches where streambank building occurs, some overbank flow during flood periods will be absorbed, very slightly reducing flood volumes. However, the large size of the watershed, the very flashy nature of storm runoff, and the limited volume of potential increase in bank storage will minimize the relative effects on flood peaks.

Water quality in the perennial and intermittent segments of Ash Creek should improve as current inputs of sediment from bank trampling and animal waste will be greatly reduced (the limited amount from wild ungulates will continue). Because none of the streams have continuous perennial flow to the Verde or Agua Fria Rivers, there will be no change to their downstream water quality at base flow conditions. During storm and flood events the current limited outflow of these constituents will be reduced; however, the magnitude of the current contribution in proportion to the overall river inflow is so low that the changes will be virtually undetectable in the perennial streams.

Cumulative Effects on Water and Riparian Resources

The cumulative effects analysis area for water and riparian resources includes the Cherry Creek/Upper Verde 5th level watershed within the Upper Verde River sub-basin and the Ash Creek/Sycamore Creek 5th level watersheds within the Agua Fria sub-basin. Please see the map in Appendix 5 for the location of the Bottle Allotment within these watersheds.

Analysis of the cumulative effects of the Proposed Action conducted by the Interdisciplinary Team Hydrologist has determined that implementation of the proposed action will not lead to adverse cumulative effects on the watershed. The scope of the proposed activities, when combined with the size of the project area will have negligible impacts to watershed conditions within the watershed cumulative effects area. The proposed action integrates design features to ensure the protection and improvement of the soil and watershed resources. Adaptive management would be employed to achieve desired conditions and site-specific management objectives will be applied to address areas in need of improvement or that are vulnerable to site deterioration. Site-specific soil and water conservation practices in the form of Best Management Practices have been developed and will be implemented to ensure protection and improvement of the soil and watershed resources.

Water Quantity and Timing - Because there are no direct or indirect effects to water quantity there will be no cumulative effects. The minimal effects to low flow and peak flow volumes through the increased building of streambanks and increased bank storage will be very localized and the primary benefits will be locally enhanced riparian and aquatic habitat. Downstream effects below the project area are expected to be negligible.

Water Quality – Upper Verde River Sub-Basin - The Verde River, within the cumulative effects analysis area, is currently listed as not attaining water quality standards. In 2002, ADEQ completed a TMDL for the Verde River in implementation of Best Management Practices. Best Management Practices are incorporated as a part of this action and should contribute the allotment's proportionate share toward preventing any further degradation and eventually reversing it.

Water Quality - Agua Fria Sub-Basin - No stream segments in this portion of the cumulative effects analysis area were included by the ADEQ in the 2008 Status of Ambient Surface Water in Arizona, Arizona's Integrated 305(b) report and 303(d) Listing Report (ADEQ 2008). Although the EPA added Lake Pleasant to the state's 303(d) list of impaired waters due to a fish consumption advisory for mercury, the lake is 40 miles downstream from the project area and will not be affected directly or indirectly by the authorization of livestock grazing.

No significant direct, indirect or cumulative effects to water and riparian resources are expected to occur as a result of implementation of the Proposed Action Alternative.

Air Resources

Existing Conditions - Air Quality

The project area is in a Class II airshed representative of rural areas. Class I airsheds are present approximately 12 miles north in the Sycamore Canyon Wilderness and about 7 miles east in the Yavapai-Apache Reservation. There are no ambient air quality non-attainment areas within Yavapai County which contains the allotment and the Prescott National Forest. Current air quality conditions within the analysis area do not exceed any of the established standards for the six primary pollutants – particulate matter, lead, sulfur dioxide, ozone, nitrogen dioxide and carbon monoxide (USDA Forest Service, Prescott National Forest, 2009).

Potential air quality impacts associated with the proposed action were assessed by evaluating the potential for soils to contribute to the production of particulate matter under

the uses and management being proposed. Soil erodibility was evaluated based on the soil surface's susceptibility to wind erosion and its protection by vegetative cover and structure.

The soils across the allotment are generally resistant to wind erosion, with some areas of moderate susceptibility. The vegetative cover acts as a windbreak for the soil surface, further minimizing the potential for wind erosion to contribute to air pollution.

Environmental Effects - Air Quality - Both Alternatives

Livestock grazing will have minimal to no impacts on air quality. The soils are generally not susceptible to wind erosion and the vegetative structure is able to dissipate the wind at the soil surface and minimize the potential of creating particulate emissions. A limited amount of dust and vehicular emissions would be created during construction of structural range improvements but would be very temporary and would not extend beyond the project area. Under the No Action Alternative, no grazing or associated management activities would occur to create impacts to air quality.

Although there are many sources of particulate matter within the larger airshed, the distance of the project from sensitive areas, the very limited amount of particulate matter that will be produced and the fact that the air in this area is not close to the impairment threshold, lead to the determination that the proposed action will not contribute to the effects of other activities within the cumulative effects analysis area or create significant effects on the air resource.

Wildlife, Rare Plant, Fish & Aquatic Species Resources

The Wildlife, Fish and Rare Plant Specialist's Report addresses the following species groups – Federally-listed Threatened or Endangered plants and animals and any critical habitat present, Forest Service Sensitive plants and animals, habitat and population trends of Management Indicator Species (MIS), Migratory Bird Treaty Act and Arizona Partners in Flight (PIF) migratory bird species, as well as Important Bird Areas and over-wintering areas. A summary of information regarding the species present and the effects of each alternative are provided here. The Bottle Allotment, including the Goat Peak Pasture, is the analysis area considered for direct and indirect as well as cumulative effects on these resources. Further details regarding the species considered and the analysis conducted for these resources are contained in the Wildlife, Fish and Rare Plant Report in the Project Record.

Existing Environment and Direct & Indirect Effects – Wildlife, Rare Plant, Fish & Aquatic Species

The majority of the Bottle Allotment falls within the chaparral or pinyon-juniper woodland habitat types, with a small portion at the highest elevations supporting ponderosa pine forest. Springs, ephemeral or intermittent streams, earthen stock tanks, and approximately 24 acres of wetland/riparian habitat (USDI-FWS, 1991-95) are also present in the allotment and are used by both wildlife and livestock.

Federally-listed Threatened or Endangered plants and animals and any critical habitat present – The federally-listed Threatened Mexican spotted owl and its habitat occur within the project area. Single owls have been found three times in the Mingus Mountain area between 1998 and 2003. One Protected Activity Center, PAC, is located

within the allotment. Three-hundred and fifteen acres of MSO restricted habitat is present within the allotment, 265 acres within the PAC and 50 acres outside the PAC. No designated critical habitat is present within the project area. Suitable habitat for the migration of the yellow-billed cuckoo, a Forest Service sensitive species and a candidate for federal listing, may exist in the Ash Creek drainage.

Summary of Effects Determination Made for Federally Listed Species by Alternative	
Alternative	Mexican Spotted Owl - Threatened
Proposed Action	May affect not likely to adversely affect
No Action	May affect, beneficial

Forest Service Sensitive Species – Ten Forest Service Sensitive Species and/or their suitable habitat are present within the Bottle Allotment. The implementation of the alternatives considered in this analysis may impact individuals or habitat of these species but will not affect the viability of these species or result in trends toward federal listing for any. Details on the habitat used by each species and their presence in the analysis area are provided in the Specialists' Report included in the Project Record. The following table summarizes the effects findings for these species for each alternative.

Summary of Effects Determinations* Made for Region 3 Sensitive Species by Alternative

Alternative	Common Black Hawk	Northern Goshawk	Western Red Bat	Abert's Towhee	Yellow-billed Cuckoo
Proposed Action	MIIH	MIIH	MIIH	MIIH	MIIH
No Action	BI	BI	BI	BI	BI
Alternative	Arizona Phlox	Mt. Dellenbaugh Sandwort	Senator Mine Alumroot	Arizona Toad	Lowland Leopard Frog
Proposed Action	MIIH	MIIH	NI	MIIH	MIIH
No Action	NI	NI	NI	NI	NI
<p>*NI = No impact; BI = beneficial impact; MIIH = May impact individuals or habitat but will not likely contribute towards federal listing or cause a loss of viability to a population or species.</p>					

Fish – There are no federally-listed or Forest Service Sensitive fish species or their habitat within the analysis area. Therefore, there are no effects to fish under either alternative within the analysis area or downstream of the allotment.

Management Indicator Species – Five Management Indicator Species (MIS) designated on the Prescott National Forest have habitat within the allotment that may be affected by livestock grazing and management. The Forest-Level Analysis of Management Indicator Species for the Prescott National Forest provides background and current information for these species on the Forest (USDA Forest Service, 2009). The effects of the two alternatives being considered here are summarized in the following table. Details of the complete analysis, including cumulative effects, are included in the Wildlife, Fish and Rare Plant Report in the Project Record.

Summary of Effects on Management Indicator Species (MIS)				
Species	Proposed Action Alternative		No Action Alternative	
	Project Level Effects on MIS Habitat Quantity & Quality	Effects on MIS Habitat and Population Forest-wide Trends	Project Level Effects on MIS Habitat Quantity & Quality	Effects on MIS Habitat and Population Forest-wide Trends
Mule Deer	<p>No change to habitat quantity of early-seral stage pinion-juniper and chaparral vegetation.</p> <p>May increase habitat quality due to construction and maintenance of water developments.</p>	<p>No effect to forest-wide trends.</p>	<p>No change to habitat quantity of early-seral stage of pinion-juniper and chaparral vegetation.</p> <p>May reduce habitat quality since there would be fewer water sources to be able to expand the use of suitable habitat.</p>	<p>No effect to forest-wide trends.</p>
Northern Goshawk	<p>No change to habitat quantity of late-seral stage ponderosa pine.</p> <p>Habitat quality may be reduced; however prey species habitat would be expected to be maintained.</p>	<p>No effect to forest-wide trends.</p>	<p>No change to habitat quantity of late-seral stage ponderosa pine.</p> <p>Habitat quality may increase through more herbaceous ground cover and abundance of prey species.</p>	<p>No effect to forest-wide trends.</p>
Lucy's warbler	<p>No change in habitat quantity of late-seral stage riparian habitat.</p> <p>With the resource protection measures, habitat quality for this species should improve. Cowbird impacts may increase.</p>	<p>No effect to forest-wide trends.</p>	<p>No change in habitat quantity of late-seral stage riparian habitat.</p> <p>Most rapid improvement in recruitment of riparian trees; cowbird presence may decrease.</p>	<p>No effect to forest-wide trends.</p>

Summary of Effects on Management Indicator Species (MIS)				
Species	Proposed Action Alternative		No Action Alternative	
	Project Level Effects on MIS Habitat Quantity & Quality	Effects on MIS Habitat and Population Forest-wide Trends	Project Level Effects on MIS Habitat Quantity & Quality	Effects on MIS Habitat and Population Forest-wide Trends
Turkey	<p>No change in habitat quantity of early-seral stage ponderosa pine.</p> <p>Habitat quality may be impacted with reduced ground cover affecting diversity of prey species, cover for nests, and the increased potential for ground nests to be trampled by livestock.</p>	<p>No effect to forest-wide trends.</p>	<p>No change in habitat quantity.</p> <p>No change in early-seral stage ponderosa pine.</p> <p>May allow increase in vegetative cover and increased forage quality.</p>	<p>No effect to forest-wide trends.</p>
Spotted Towhee	<p>No change in habitat quantity of late-seral stage chaparral.</p> <p>Habitat quality may be impacted with reduced ground cover affecting diversity of prey species, cover for nests, and the increased potential for ground nests to be trampled.</p>	<p>No effect to forest-wide trends.</p>	<p>No change in habitat quantity of late-seral stage chaparral.</p> <p>Habitat quality may increase with an increase of insect species diversity and additional vegetative cover for nests; ground nests will not be trampled by livestock.</p>	<p>No effect to forest-wide trends.</p>

Migratory Birds, Important Bird Areas and Over-wintering Areas – Some 35 species of migratory birds are known to occur on the Prescott National Forest and 27 additional species have the potential to occur here (Latta, 1999; USDA Forest Service, 2009). The Migratory Bird Treaty Act of 1918 as amended, and associated regulations provide the framework within which the effects to these species were analyzed. Each species and its habitat may potentially be affected by management activities associated with this grazing action. There is a small potential for disturbances to nests or loss of eggs or unfledged chicks due to livestock trampling, which may affect ground nesting birds present such as the Spotted towhee and Virginia warbler. The other species nest above ground and there is a potential for minimal disturbance through the dislodging of nests by livestock or from other activities associated with the grazing action. The presence of livestock increases the potential for nest parasitism from cowbirds for those species that are commonly used as hosts such as Virginia's and Lucy's warblers. No significant effects are expected to occur as a result of the implementation of either of the alternatives because the proposed project will not substantially alter existing habitat for migratory birds that visit or use the Forest and are listed on the Partner's in Flight priority bird list. Increases in habitat suitability can result from the construction of new water sources and from the insects attracted to areas of livestock use. Disturbances to or loss of birds or nests due to livestock presence, such as through trampling or dislodging of a nest, or from other activities resulting in unintentional take are expected to be infrequent and are not projected to rise to a level that affects the total population size for any species.

There are no designated Important Bird Areas on the allotment to be affected. Many important over-wintering areas are large wetlands. There are no large wetlands in the analysis area. Therefore, this area is not recognized as an important over-wintering area because neither significant concentrations nor a high diversity of birds occur here. There will be no effects on either type of area under either alternative.

Cumulative Effects on Wildlife, Rare Plant, Fish & Aquatic Species

The past, present and future activities listed the table at the beginning of Chapter 3 each affect species and their habitats in different ways. Some activities such as new water developments or riparian protection may be beneficial to certain species while others such as vegetative treatments or prescribed fire included in other projects to reduce wildfire susceptibility may be detrimental to some. To the extent that these activities have occurred and will likely continue into the future, wildlife, plant and animal species and their habitats will continue to be impacted.

The impacts of authorized livestock grazing, when added to the on-going recreational use and fuelwood cutting impacts and the prescribed burning fuels reduction treatments authorized under the Black Hills Project, may possibly affect ground-nesting migratory bird species present on the Verde Ranger District. The unintentional take resulting from these cumulative effects is expected to be infrequent and is not projected to rise to a level that affects the total population size for any species of migratory birds.

The impacts created through livestock grazing and the adaptive management described for the action alternative analyzed here, when added to the other past, present and future activities in the cumulative effects analysis area shown on the map in Appendix 5, do not together accumulate to levels that are considered to be significant for wildlife, fish or rare plant resources or their habitats.

Heritage Resources

Existing Conditions

The Heritage Report addresses the effects on archaeological resources of each alternative analyzed by the Interdisciplinary Team. A summary of the effects is provided here. Further details are in the Heritage Report which is part of the Project Record for this analysis.

A review of past heritage surveys conducted in the project area and of the records of known archaeological sites on the allotment has been completed. Documentation in the range files shows that this area of the Verde Ranger District has been grazed by livestock for at least 100 years and at times by higher numbers of livestock than current levels. Intensive surveys of the locations identified for construction and installation of new range structural improvements to be completed in the first two years have been conducted. Site surveys for remaining improvements, such as the new fencing in the Burnt Canyon Pasture, will be conducted prior to initiation of those projects on the ground.

Sixty-six heritage resource sites have been identified and documented by heritage resource specialists on the allotment. These represent prehistoric, historic and multi-component sites. Thirty-one of these sites have been evaluated and determined to be eligible for addition to the National Register of Historic Properties, 28 sites have not yet been evaluated but will be treated as eligible until an evaluation is completed. Seven sites have been evaluated and determined to be ineligible for addition to the Register. Sites identified as grazing-sensitive have not been adversely affected by the presence of livestock.

Six Native American Tribal Governments were sent scoping letters providing a description and map of the Proposed Action and requesting their assistance in identifying any specific areas or sites within the allotment that may be of special interest to them such as Traditional Cultural Places. Responses were received from two Tribal Governments however no specific sites were identified. Consultation with the Arizona State Historic Preservation Office will be completed before a decision is made concerning selection of an alternative for implementation.

Direct, Indirect & Cumulative Effects on Heritage Resources

The Proposed Action Alternative does not recommend changing to a more intensive grazing system or to increase the number of livestock substantially. Livestock presence has not been found to have an adverse effect on any of the sites known in the project area. No sites will be affected through the access to and construction of new improvements planned within the first two years. Thorough surveys of the locations of the remaining planned improvements will be surveyed prior to construction.

A finding of no direct or indirect effects on heritage resources has been made for each of the alternatives. Because there are no effects from either of the alternatives considered in this EA, there are no cumulative effects resulting from this project to consider. Periodic monitoring by Heritage Specialists will take place to assess conditions of heritage properties on the allotment. Further details on the analysis of effects are included in the Specialist's Report which is included in the Project Record.

In the event of the discovery of unrecorded properties, these sites will be protected in the same manner as other eligible or unevaluated properties. If heritage personnel determine

that the construction of a new structural improvement may adversely affect a property, construction activities will be halted and the Prescott National Forest will enter consultation with the Arizona State Historic Preservation Office and tribes (if applicable) to resolve the adverse effects. This project complies with the National Historic Preservation Act of 1966, as amended and with Executive Order 11593.

Recreation Resources & Inventoried Roadless Areas_____

Existing Conditions

The Bottle Allotment falls within two Recreational Opportunity Spectrum (ROS) areas classified for their recreational opportunities as Semi-Primitive Motorized and Roaded Natural. These classifications mean that the area provides a moderate probability for experiencing solitude, closeness to nature and tranquility in a predominately natural-appearing environment in the semi-primitive motorized portions, or an opportunity to affiliate with other users in developed sites providing some privacy in the roaded natural portions. Visitor use in the general area has increased by about 20% since 2002. Use at developed campgrounds within or very near the Bottle Allotment has increased about 49% in the same time period.

The area of the Prescott National Forest surrounding the Bottle Allotment is open for dispersed recreational activities such as camping, hiking, horseback riding, hunting, mountain biking and target shooting. Motorized travel may legally occur only on roads and designated trails. One developed campground is present in the Allotment, the Powell Springs Campground which is open from April through September each year. Other developed sites occur near the allotment in the Mingus Mountain area.

The allotment contains all or portions of some 35 miles of trails, ten trails being designated as non-motorized, and two trails, including the Great Western Trail, are multi-use trails open for some motorized vehicles.

Also located within the allotment are all or portions of two Inventoried Roadless Areas, the Ash Creek IRA and the Black Canyon IRA. These areas have been identified by the Forest Service as areas without roads where road construction and tree cutting are not currently allowed. All current IRA direction will be applied throughout the management of the allotment. There are no designated Wilderness Areas within or adjacent to the allotment.

There are no eligible or designated Wild and Scenic River reaches occurring within the Bottle Allotment. A segment of the Verde River was designated in 1984 as a Scenic River under the Wild and Scenic River Act (Public Law 90-542). This segment lies below Beasley Flat some 16 miles from the allotment to the southeast.

Direct, Indirect and Cumulative Effects on Recreation Resources

Recreational activities and recreational planning for future activities will not be affected by the re-authorization of livestock grazing on the Bottle Allotment or by the management activities included in the Proposed Action. The No Action Alternative will also not have any adverse effects on recreational opportunities.

The proposed new improvements and access to those improvements will not have any adverse impacts on the Inventoried Roadless Areas as no new roads are needed for access and no large-diameter trees would be cut.

There will be no direct or indirect effects on the scenic segment of the Verde Wild and Scenic River or its outstandingly remarkable characteristics under either of the alternatives.

Because there are no direct or indirect effects on recreational resources or opportunities, on Inventoried Roadless Areas, or on Wild and Scenic Rivers, there will also be no cumulative effects on any of these resource values. Further details on the analysis of effects are included in the Specialist's Report which is included in the Project Record.

CHAPTER 4 – Coordination and References

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

Core Interdisciplinary Team Members

Kelli Spleiss	District Range Staff
David Moore	Forest Soil Scientist
Maximillian Wahlberg	Forest Ecologist & GIS Support
Ed Holloway	Range Management Specialist
Loyd Barnett	Contract Hydrologist
Linda Barker	ID Team Leader / Writer / Editor
Chris Thiel	ID Team Leader/ Writer / Editor

Extended Team Members

Kimberly Hartwig	Wildlife Biologist
Albert Sillas	Aquatic Biologist
Elaine Zamora	Archeologist
Dorothy Baxter	Recreation Planner
Debra Crisp	Botanist
Thomas Potter	GIS Coordinator
Nancy Walls	Forest Natural Resources Staff Officer
Dee Hines	past Verde District Ranger
Linda Jackson	Acting Verde District Ranger
Celeste Gordon	current Verde District Ranger

Allotment Permit Holders

Mr. David Statler, Mr. Walt Statler, Mr. Pat Statler

Federal and State Agencies

AZ Department of Environmental Quality, Northern Regional Office
US Fish and Wildlife Service, AZ Ecological Services Office
AZ Game and Fish Department
AZ State Historic Preservation Office

Tribes

The Hopi Tribe
The Hualapai Tribe
The Tonto Apache Tribe
The Yavapai Prescott Tribe
The Fort McDowell Yavapai Nation
The Yavapai-Apache Nation

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* Only references cited in this Environmental Assessment are included here.

APPENDICES

Appendix 1 - Allotment Map

Appendix 2 - Actual Use Table and Range Condition Information

Appendix 3 - List of Existing Improvements

Appendix 4 – Grazing Guidelines & Best Management Practices

Appendix 5 – Cumulative Effects Analysis Area Map

Appendix 6 – Glossary of Terms

Appendix 1 – Allotment Map (See following pages)

See Allotment Proposed Action Map and Inset Detail Maps on the following pages.

Appendix 2 - Actual Use Tables and Range Condition Information

Bottle Allotment

Actual Use Table*:

Bottle Allotment (original allotment without proposed Goat Peak Pasture addition)

Year	Actual Use (AUMs)	Season
2008	934	Year-long
2007	314	Year-long
2006	0	Year-long
2005	0	Year-long
2004	0	Year-long
2003	0	Year-long
2002	695	Year-long
2001	1800	Year-long
2000	2400	Year-long
1999	614	Year-long
1998	1260	Year-long
1997	1278	Year-long
1996	1222	Year-long
1995	1647	Year-long
1994	1714	Year-long
1993	1734	Year-long
1992	2640**	Year-long
1991	1320	Year-long
1990	Non-use	Year-long
1989	2640**	Year-long
1988	2640**	Year-long
1987	2640	Year-long
1986	2628	Year-long
1985	2640**	Year-long
1984	2640**	Year-long
1983	2328	Year-long
1982	2268	Year-long
1981	2316	Year-long

Goat Peak Allotment – This allotment has been in non-use since 1990. When it was last stocked from 1981-1989, numbers ranged from 94-96 head per year over the entire allotment. The Goat Peak pasture represents 45% of the entire allotment acreage, so the Goat Peak pasture alone received an average use of 508 AUMs or 42 mature cattle per year based on the ratio of pasture acreage to total allotment acreage.

* Authorized use, actual use, when available, and billing data are maintained in the 2200 Range Files on the District and are hereby incorporated by reference.

** Billed number instead of permittee-reported actual use

Appendix 2 - Actual Use Table and Range Condition Information

Bottle Allotment

Existing Condition Information:

Summary of Ecological Status, Apparent Trend & Rangeland Management Status of the Allotment by Pasture

Pasture / TES Unit	Approximate Ecological Status	Apparent Trend	Rangeland Management Status (RMS)
Burnt Canyon - 554	High Similarity to Potential Natural Community	Static	Satisfactory
Burnt Canyon – 570	High Similarity to PNC	Static	Satisfactory
Crater – 448	Mid Similarity	Static	Satisfactory
Crater – 476	High Similarity	Static	Satisfactory
Hayfield – 448	Mid Similarity	Static	Satisfactory
Holding – 485	Mid Similarity	Not Apparent	Satisfactory
Pine – 438	High Similarity	Static	Satisfactory
Powell – 476	Low Similarity	Toward PNC	Satisfactory
Slickrock – 438	N/A (due to long-term exclusion of fire – exceeds PNC in shrub presence and has lost herbaceous-species presence)	Static	Satisfactory
Walnut – 448	Mid Similarity	Static	Satisfactory
Walnut – 490	High Similarity	Not Apparent	Satisfactory
Goat Peak Pasture – 476	High Similarity	Static	Satisfactory

Appendix 3 - List of Existing Improvements

Bottle Allotment (including Goat Peak Pasture):

- 22 miles of allotment boundary fence
- 9 miles of interior pasture fence
- 9 stock tanks
- 33 springs
- 13 corrals
- 4 wells

Appendix 4 – Grazing Guidelines & Best Management Practices

Prescott National Forest Resource Management Guidelines

The following intensity guidelines were developed by the Range NEPA Core Team as an adaptive management measure to assist in maintaining desired resource conditions and as a means to move toward desired conditions where resource issues have been identified. The grazing intensity levels provided in these guidelines are based on soil, upland vegetation and riparian resource conditions.

Soils Conditions:

Soil Condition:	Satisfactory	Impaired	Unsatisfactory
Grazing Guidelines:	Conservative Intensity (31-40% Use) during the growing season; Moderate Intensity (41-50% Use) during the dormant season.	Light Intensity (0-30% Use) during the growing season; Conservative Intensity (31-40% Use) during the dormant season.	Incidental use regardless of season ¹⁵ .

Upland Vegetation Conditions:

Rangeland Management Status:	Trend in Relation to Potential Natural Community		
	Towards	Static	Away From
Satisfactory	Conservative Intensity (31-40% Use) during the growing season; Moderate Intensity (41-50% Use) during the dormant season.		N/A
Unsatisfactory	N/A	Light Intensity (0-30% Use) during the growing season; Conservative Intensity (31-40% Use) during the dormant season.	Incidental use, regardless of season.

¹⁵ prescribed “Light Use” (0-30%) in all seasons and restrict livestock concentration behavior and/or practices. (i.e. lounging, salting, supplements, holding, watering etc.).

Riparian (all riparian vegetation including streamsidess, springs and seeps) Conditions:

Riparian Condition:		Fully Functional	Partially Functional	Non-Functional
Grazing Guidelines:	Woody	20% Use (Forest Plan S&Gs)	20% Use (Forest Plan S&Gs)	Discourage use in excess of incidental use
	Herbaceous	5" minimum stubble height on key riparian herbaceous species.	8" minimum stubble height on key riparian herbaceous species.	

Best Management Practices - Summary

Soil and water conservation measures are means to comply with the Non-Point Source Section of the Clean Water Act and the Intergovernmental Agreement (IGA) signed by the Forest Service (R3) and the Arizona Department of Environmental Quality (ADEQ) (Jolly 1990). As per the IGA, the most practical and effective means of controlling potential non-point source pollution is through the development of Best Management Practices (BMPs). The general BMP categories were largely derived from the Soil and Water Conservation Handbook, but were supplemented and modified to meet project needs (USDA FS 1990a). The number affiliated with each BMP references Southwestern Region FSH 2509.22 (1990a).

The following BMPs will be employed. Practice numbers and titles are followed by a brief explanation of site-specific application plans. Further details are contained in the BMP document in the Project Record.

22.0 Range Management

Soil and water resources were considered in the development of the proposed action to ensure desired conditions are maintained or achieved. Part of the adaptive management strategy employs the use of soil and water conservation practices to achieve soil and water desired results. Adaptive management is dynamic and utilizes a number of rangeland management practices based on site-specific characteristics and conditions. Some adaptive management strategies that may be considered are: assigning and adjusting stocking levels, adjusting livestock distribution, establishing deferred or rest rotation schedules, setting utilization and/or stubble height standards, adjusting season and duration of use, fencing, exclosures, range improvements, supplementing, etc.

22.1 Range Analysis, Allotment Management Plan, Grazing Permit System, and Permittee Operating Plan

Objective: To manage rangelands through integrated resource management and ensure they are meeting Forest Land Management Plan objectives (USDA FS, 1986).

An interdisciplinary approach was used to ensure objectives of the Forest Land Management Plan are or will be met. This entails reviewing the Forest Plan and other policy, procedural, and environmental law guidance. Affected environment and current conditions are analyzed for applicable resources and used to determine what is needed to achieve desired conditions. Land managers evaluate current rangeland strategies and integrate adaptive rangeland prescriptions as a proposal to achieve desired conditions. The analysis is incorporated into the 10-year term permit in the form of an Allotment Management Plan (AMP). Annual operating instructions are created every season to implement the AMP and the terms of the permit.

22.11 Controlling Livestock Numbers and Season of Use

Objective: Safeguard water and soil resources under sustained forage production. Manage forage utilization by livestock to maintain healthy ecosystems for all resource objectives (USDA FS 1990a).

The following table provides utilization levels based on soil condition. However, chaparral ecosystems with impaired soil conditions due to fire will not need a utilization adjustment because these systems are maintained from litter associated with shrub species. Natural succession and shrub growth will result in soil recovery.

Utilization level by soil condition:

Soil Condition	Growing Season - Utilization	Dormant Season - Utilization
Satisfactory	Conservative (31-40%)	Moderate (41-50%)
Impaired	Light (0-30%)	Conservative (31-40%)
Unsatisfactory	Incidental use	Incidental use

22.14 Determining Grazing Capability of Lands

Objective: To maintain or improve soil stability, soil productivity and water quality by grazing the land within its capability (USDA FS 1990a).

This practice is an administrative and preventative control (USDA FS 1990a). Grazing capacity was determined by evaluating historical use records and reviewing historical production and utilization studies. Projections of livestock capacity were performed based on distance to water, available forage production, and topography. Resource conditions and concerns were evaluated through an interdisciplinary team setting and desired conditions and site-specific management objectives were developed. Adaptive management strategies will integrate the resources capabilities to ensure desired conditions and objectives for resources are met.

22.12 Controlling Livestock Distribution

Objective: To manage sustained forage production and forage utilization by livestock while protecting soil and water resources. Maintaining healthy ecosystems for wildlife and other resources (USDA FS 1990a).

Pasture fencing and natural barriers are used to control the distribution of grazing on all allotments. Distribution within each pasture occurs by controlling access to water, by herding, changing season of use, and supplement placement. Distribution needs and techniques will be implemented through Adaptive management.

22.15 Revegetation and Reseeding

Objective: Establish vegetative cover on sites to prevent accelerated erosion and sedimentation (USDA FS 1990a).

Reseeding/revegetation, mycorrhizae inoculation, and/or fertilization may occur to improve/maintain rangeland, vegetation, soil, riparian, watershed, and ecosystem health. Revegetation/reseeding preparation may include scarifying and /or ripping soils.

22.16 Erosion Control

Objective: Maintain soil productivity and safeguard water quality (USDA FS 1990a).

Erosion control practices and/or maintenance may be employed to improve/maintain rangeland, vegetation, soil, riparian, watershed, and ecosystem health. Some vegetation, soil, and water conservation practices may include:

- Mulching, wattle construction, water bars, soil imprinting.
- Constructing channel stabilization structures such as weirs/check dams and bank revetments.
- Re-contouring landscapes associated with gullies and constructing erosion control structures and revetments.
- Placing barricades and/or signage to discourage public access to sensitive areas.

25.12 Protection of Wetlands and Riparian Areas.

Objective: To avoid adverse impacts, including impacts to water quality, associated with disturbance or modification of wetlands (USDA FS 1990a).

The following table provides utilization levels based on riparian/ wetland ecosystem conditions.

Riparian Condition – including springs, seeps, and wetlands	Woody	Herbaceous
Fully Functional	20% Use	5” minimum stubble height on key riparian species.
Partially Functional	20% Use	8” minimum stubble height on key riparian species.
Non-Functional	Incidental use	Incidental use

31.0 Fire and Other Post Vegetation Treatment Recovery

Soil and vegetation resources will be evaluated after post treatment activities to determine livestock adaptive management strategies to ensure the maintenance of site productivity. An evaluation of sites exposed to treatments is required at the end of the second growing season to determine if adequate resource recovery has occurred and identify if any additional adaptive management strategies are needed.

22.13 Rangeland Improvements

Objective: To improve, maintain or restore range resources, including soil and water through the use of rangeland improvements (USDA FS 1990a).

The following BMP’s provide general guidelines for newly constructed or reconstruction of range improvements. Range improvements may be constructed as an adaptive management technique.

Existing range improvements will be reconstructed and maintained as needed. Adaptive management strategies may lead to constructing new facilities in order to achieve the desirable attainable effects.

24.22 Special Erosion Prevention Measures on Disturbed Land

All sites subjected to surface disturbance will be inspected to determine appropriate erosion control measures. Areas will be evaluated to determine the need for preparatory erosion control measures, such as re-smoothing or sloping areas to its natural contours, ripping or scarifying the soil surface, etc.

24.16 Streamside Management Zone

A designated zone that consists of the stream and an adjacent area of varying width where management practices that might affect water quality, fish, or other aquatic resources are modified. The SMZ is not a zone of exclusion, but a zone of closely managed activity. It is a zone which acts as an effective filter and absorptive zone for sediment; maintains shade; protects aquatic and terrestrial riparian habitats; protects channel and streambanks; and promotes floodplain stability. The SMZ may be wider than the riparian area. Evaluations are done to determine if there is a need for special soil and water conservation prescriptions and, if so, to develop them. Normally areas up to 150 feet from the channel are evaluated; however, wide floodplains may require a greater area of evaluation and evaluation may determine that a narrower area is all that is required for specific prescriptions.

25.16 Soil Moisture Limitations

All operations will be conducted during periods when the probabilities for precipitation, wet soils, and runoff are low.

25.18 Revegetation of Surface Disturbed Areas

All areas that have been disturbed will be evaluated to determine if reseeding is necessary or if natural recruitment is adequate. TES will be used to determine the appropriate grass seed specification.

24.3 Slash Treatment in Sensitive Areas

When conditions are warranted, all disturbed sites will be mulched with vegetation slash, certified weed free hay, or any other material deemed appropriate. Other erosion control practices may be implemented in lieu of mulch on a case-by-case basis (e.g. water bars, etc.).

24.14 Protection of Extremely Unstable Lands

Range improvement installation locations will avoid unstable lands. Unstable lands that are unavoidable will require special erosion control measures.

41 Access and Transportation Systems

To protect soil and water resources, cross-country travel will not occur during wet conditions or on slopes 40% gradient or greater.

41.25 Maintenance of Roads

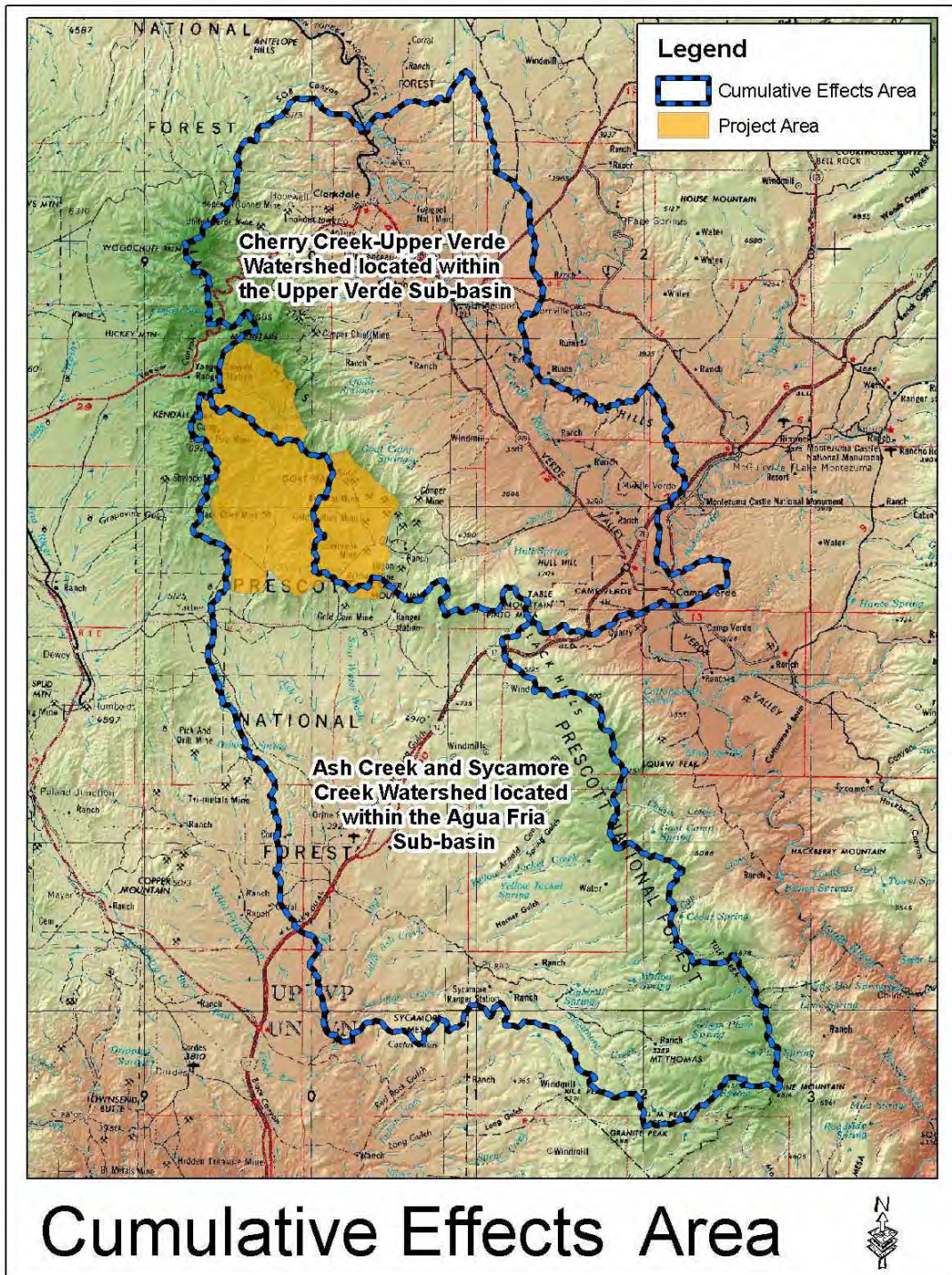
Road maintenance will concentrate on improving drainage. Road drainage measures will not channel run-off directly into stream channels. This includes out-sloping the road and maintaining leadoff ditches. Roadwork will not occur during wet or storm conditions.

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Appendix 5 – Cumulative Effects Analysis Area Map

See next page for map.



Appendix 6 – Glossary of Terms

Adaptive Management- A formal, systematic, and rigorous approach to learning from the outcomes of management actions, accommodating change, and improving management. It involves synthesizing existing knowledge, exploring alternative actions and making explicit forecasts about their outcomes.

Allotment Management Plan (AMP) - An Allotment Management Plan (AMP) is unique, and is based on the individual landscape and ranch operation and will be modified with modification or issuance of a new permit following a NEPA decision to ensure consistency with the NEPA decision. The AMP must be included in Part 3 of the term grazing permit. The Sycamore Allotment must maintain a current AMP developed within the bounds of the NEPA based decision (USDA 2007).

Animal Month (AM) - A month's use and occupancy of rangeland by a single animal or equivalent.

Animal Unit Month (AUM) – The quantity of forage required by one mature cow (1,000 pounds) or the equivalent for 1 month; approximately 26 lbs of dry forage per day is required by one mature cow or equivalent.

Annual Operating Instructions (AOI) - Instructions developed a guideline for grazing management by the agency and livestock permittee for implementing grazing management activities on a specific allotment for a specific grazing season.

Aquatic – Pertaining to standing and running water in streams, rivers, lakes and reservoirs.

Best Management Practice (BMP) – Application of the best available demonstrated control technology, processes, measures and operating methods that are socially, economically and technically feasible for controlling soil loss or improving water quality.

Browse – Young twigs and leaves of woody plants consumed by wild and domestic animals.

Candidate Species- Plants and animals for which the U.S. Fish and Wildlife Service (FWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

Community Type – Community types represent existing vegetation communities that do not currently reflect potential due either to disturbance or natural processes related the development of the community. Vegetation may be disturbed by a number of factors including: grazing, fire, and other activities.

Critical Habitat – That portion of a wild animal's habitat that is critical for the continued survival of the species as declared by the Secretary of the Interior.

Cultural Resource – The physical remains of past human cultural systems and places or sites of importance in human history or prehistory.

Desired Conditions- Descriptions of the social, economic and ecological attributes that characterize or exemplify the desired outcome of land management. They are aspirational and likely to vary both in time and space.

Dispersed Recreation – In contrast to developed recreation sites (such as campgrounds and picnic grounds) dispersed recreation areas are the lands and waters under Forest Service jurisdiction that are not developed for intensive recreation use. Dispersed areas include general undeveloped areas, roads, trails and water areas not treated as developed sites.

Ecological Type – Ecological types are derived directly from the TES document and describe the potential vegetation for a particular soil type. The potential vegetation was defined through intensive field sampling. See the Terrestrial Ecosystem Survey Handbook, USDA 1986 for a full description of how potential vegetation descriptions were derived.

Endangered Species – Any species that is in danger of extinction throughout all or a significant portion of its range, as declared by the Secretary of the Interior.

Environmental Analysis – An analysis of alternative actions and their predictable short- and long-term environmental effects, including physical, biological, economic and social effects.

Environmental Assessment – The concise public document required by regulations for implementing the procedural requirements of NEPA (40 CFR 1508.9).

Ephemeral – A stream that flows only in direct response to precipitation, and whose channel is above the water table at all times.

Erosion – The wearing away of the land's surface by running water, wind, ice or other geological agents. Erosion includes detachment and movement of soil or rock fragments by water, wind, ice or gravity.

Forage – All non-woody plants (grass, grass-like plants and forbs) and portions of woody plants (browse) available to domestic livestock and wildlife for food.

Forage Utilization – The portion of forage production by weight that is consumed or destroyed by grazing animals. Forage utilization is expressed as a percent of current year's growth.

Forest Plan – A document, required by Congress, assessing economic, social and environmental impacts, and describing how land and resources will provide for multiple use and sustained yield of goods and services.

Grazing Capacity – The maximum level of plant utilization by grazing and browsing animals that will allow plants or associations of plants to meet their physiological and/or reproductive needs.

Grazing Period - The length of time grazing livestock or wildlife occupy a specific land area.

Grazing Permittee – An individual who has been granted written permission to graze livestock for a specific period on a range allotment.

Gully Erosion – The erosion process whereby water accumulates in narrow channels and, over short periods, removes the soil from this narrow area to depths ranging from several feet to as much as 75 to 90 feet.

Habitat – The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

Improvement – Manmade developments such as roads, trails, fences, stock tanks, pipelines, power and telephone lines, survey monuments and ditches.

Incidental Use - prescribed "Light Use" (0-30%) in all seasons and restrict livestock concentration behavior and/or practices. (i.e. lounging, salting, supplements, holding, watering etc.).

Indicator Species – A wildlife species whose presence in a certain location or situation at a given population level indicates a particular environmental condition. Population changes are believed to indicate effects of management activities on a number of other wildlife species.

Instream Flows – Those necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality and recreational opportunities on National Forest lands at acceptable levels.

Interdisciplinary (ID) Team– A group of individuals with skills from different resources. An interdisciplinary team is assembled because no single scientific discipline is sufficient to adequately identify and resolve issues and problems. Team member interaction provides necessary insight to all stages of the environmental analysis process.

Intermittent (or Seasonal Stream) – A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

Issue – a point of discussion, debate, or dispute with a Proposed Action based on some anticipated effect.

Key Area - A relatively small portion of a range selected because of its location, use or grazing value as a monitoring point for grazing use.

Management Indicator Species – See "Indicator Species."

Mesa – A tableland; a flat-topped mountain or other elevation bounded on at least one side by a steep cliff.

Monitoring - The orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives. This process must be conducted over time in order to determine whether or not management objectives are being met.

Montmorillonitic Soils- Heavy clay soils that have a high water and nutrient holding capacity, and resist erosion.

National Environmental Policy Act (NEPA) – An act to declare a National policy that will encourage productive and enjoyable harmony between man and his environment; to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

National Forest System Land – National forests, national grasslands and other related lands for which the Forest Service is assigned administrative responsibility.

NEPA- See “National Environmental Policy Act”

Perennial Stream – A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Permitted Grazing – Authorized use of a National Forest range allotment under the terms of a grazing permit..

Proper Functioning Condition (PFC) - A methodology for assessing the physical functioning of riparian and wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. PFC evaluates how well the physical processes are functioning through use of a checklist.

Proper Functioning Condition (PFC) Assessment - Provides a consistent approach for assessing the physical functioning of riparian-wetland areas through consideration of hydrology, vegetation, and soil/landform attributes. The PFC assessment synthesizes information that is foundational to determining the overall health of a riparian-wetland area.

Proposed Action – In terms of the National Environmental Policy Act, the project, activity or action that a Federal agency intends to implement or undertake and that is the subject of an environmental assessment.

Range Allotment – A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

Range Condition – The state of health of a range land site based on plant species composition and forage production in relation to the potential under existing site conditions. Range condition is rated as satisfactory or unsatisfactory.

Riparian – Land adjacent to perennial and intermittent streams, lakes and reservoirs. This land is specifically delineated by the transition ecosystem and defined by soil characteristics and distinctive vegetation communities that require free and unbound water.

Sheet Erosion – The removal of a fairly uniform layer of soil from the land surface by rainfall and runoff water without the development of conspicuous water channels.

Seral Community - an intermediate stage found in ecological succession in an ecosystem advancing towards its climax community.

Sinuosity- A bending or curving shape or movement.

Soil Erosion – The wearing away of the land surface by running water, wind, ice or other geological agents, including such processes as gravitational creep. Detachment and movement of soil or rock by water, wind, ice or gravity.

Soil Productivity – The capacity of a soil in its normal environment to produce a specified plant or sequence of plants under a specified system of management.

Species Composition – Species composition refers to a descriptive list of species that together make up a given ecological community.

Species Diversity –Diversity refers to the measure of composition for a given community and is also referred to as species richness.

Stream Reach - the length of the stream selected for monitoring.

Structural Range Improvement – Any type of range improvement that is manmade (e.g., fences, corrals, water developments).

Suitable Range – Range which is accessible to livestock or wildlife and which can be grazed on a sustained yield basis without damage to other resources.

Terrestrial Ecosystem Survey (TES) - consists of the systematic analysis, classification and mapping of terrestrial ecosystems. It describes and maps the soils and potential vegetation (ecological types). This Ecological Classification describes the existing vegetation (community types) associated with the ecological map units.

Thermal Cover – Cover used by animals to reduce effects of weather.

Threatened Species – Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Travelway - Any transportation facility that allows vehicle passage of any sort, that came into existence without plans, design or standard construction methods, that is not maintained or signed and has a very low traffic volume.

Trend- The direction of change in an attribute as observed over time.

Utilization- The proportion or degree of the current year's forage production that is consumed or destroyed by animals (including insects). The term may refer either to a single plant species, a group of species, or to the vegetation community as a whole.

Watershed – The entire area that contributes water to a drainage or stream.

Watershed Condition – A description of the health of a watershed in terms of the factors that affect the hydrologic function and soil productivity.

Wildlife Habitat – The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

