Angell
Allotment Management Plan (AMP)

Flagstaff Ranger District

Coconino National Forest

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Reviewed by: Gary Hase, Jr. **Date** 3/31/2016
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Agreed to/
Reviewed by: James Turrell **Date** 3.27.2016
James Turrell
Permittee

Approved by: Debra Mollet **Date** 3/31/2016
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Deputy District Ranger

DECISION SUMMARY

The environmental analysis of grazing use on the Angell Allotment was required by the Rescission Act of 1995 and followed current guidance from Forest Service Handbook 2209.12, Chapter 90 (Grazing Permit Administration; Rangeland management Decision Making). This analysis was completed in accordance with all applicable laws, regulations, policies and plans; including, but not limited to the

The Decision Notice and Finding of No Significant Impact for the Angell Allotment was signed by Debra L. Mollet, Flagstaff Deputy District Ranger on November 20, 2015. Information specific to this Allotment Management Plan can be found in the Decision Notice and Finding of No Significant Impact and in the Project Record for the Environmental Assessment for the Angell Allotment.

ANNUAL OPERATING INSTRUCTIONS

Annual Operating Instructions (AOI) will be issued prior to the beginning of each grazing season and are part of the Term Grazing Permit as indicated in Part 2, Section 8, paragraph (a). AOIs will be developed cooperatively with the permittee and will include instructions and/or information related to the following: authorized livestock numbers; period of use; pasture grazing schedule; drought management; grazing strategy; allowable utilization standards; seasonal utilization standards; monitoring; mitigation measures; range improvements; salting/ protein block practices; portable water hauling; fire protection; and motor vehicle use/ restrictions. As needed, other instructions may be included in the AOI. The AOI may be amended during the grazing season due to climatic changes that affect resource conditions, management needs, or other unexpected changes affecting the allotment. Developing these plans each grazing season and making the necessary adjustments throughout the season as conditions change provides the needed flexibility for livestock operations in the Southwest.

ALLOTMENT MANAGEMENT

The Angell Allotment is located east of Flagstaff and is roughly bounded by Interstate 40 on the south and the Coconino National Forest boundary on the east and north. The allotment contains approximately 51,700 acres. Approximately 51,584 acres within the allotment are National Forest System land with the remainder being either private or state land.

Permitted Livestock Numbers

Permitted livestock numbers will be a maximum of 2,350 Animal Unit Months (AUMs) which is equivalent to 425 head of adult cattle for approximately five and a half months.

Annual Authorized Livestock Numbers

Annual authorized livestock numbers are based on existing conditions, available water and forage and predicted forage production for the year. Annual authorized livestock numbers will not exceed permitted numbers and therefore will always be between 0 and 2,350 AUMs. Adjustments to the annual authorized livestock numbers and AUMs (increase or decrease) may occur during the grazing season based on conditions verified by range inspections, but will not exceed 2,350 AUMs.

Permitted Season of Use

The permitted season of use will be June 1 through November 15. Depending on allotment conditions, the grazing periods may vary in length allowing livestock to enter the allotment as early as May 15 and/or remain on the allotment until November 30. An extended season of use will only be authorized if it has been determined through range inspections that soil, water and vegetation conditions are suitable. If an extended season of use is authorized, the maximum permitted AUMs (2,350) will not be exceeded.

Grazing Management

Grazing will occur using a deferred rotation or a deferred rest-rotation management system, both of which will allow for plant growth and recovery. Having the option to use either the deferred rotation or deferred rest-rotation grazing system will allow the Forest to adjust management depending on monitoring and conditions.

Generally pastures will be grazed only once during the grazing season. A second grazing period of a previously grazed pasture during the grazing season will only be authorized by the Responsible Official when conditions warrant and it has been determined through range inspections that soil, water and vegetation conditions are appropriate, and that utilization guidelines for the pasture will not be exceeded as a result of a second grazing period.

In some cases pasture re-entry may be needed to facilitate livestock movement on the allotment such as trailing livestock from one pasture to another. This is not the same as a second grazing period. Pasture re-entry for livestock movement purposes will be allowed provided the livestock are actively herded through previously grazed pastures.

Forage Utilization Guideline

Utilization is defined as the proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects). It is a comparison of the amount of herbage left compared with the amount of herbage produced during the year. Utilization is measured at the end of the growing season when the total annual production can be accounted for and the effects of grazing in the whole management unit can be assessed.

A management guideline of conservative use (30-40% forage utilization as measured at the end of the growing season) will be employed to maintain or improve rangeland vegetation and long term soil productivity. Allowable use guidelines take into account the cumulative effects of wildlife and livestock. Annual reductions in the forage utilization guideline may be necessary based on resource conditions.

Additional information regarding the Utilization guideline can be found in the Monitoring section of the Allotment Management Plan.

Seasonal Utilization Guideline

Seasonal utilization is defined as the amount of herbage removed through grazing or trampling during the grazing period. Seasonal utilization monitoring will occur within each of the main grazing pastures during, and/or immediately after, the period when livestock are grazing the pasture and will be used by the Forest Service and the permittee to determine actual pasture move dates.

Seasonal utilization will be managed to allow for the physiological needs of plants. Moderate seasonal utilization (21-50%) will be the management guideline in late spring and early summer months when sufficient opportunity exists for plant regrowth. During the later summer and fall seasonal utilization will be managed the conservative level (30-40%) when the potential for plant regrowth is limited. Annual reductions in the seasonal utilization guideline may be necessary

based on resource conditions.

Additional information regarding the Seasonal Utilization guideline can be found in the Monitoring section of the Allotment Management Plan.

Grazing Periods

The actual grazing period within each pasture will depend on current growing conditions and the need to provide for plant recovery following grazing. The length of the grazing period within each pasture will also be dictated by the seasonal utilization guidelines.

Use of Mineral/Nutrient Supplements

Mineral and protein supplements (typically salt and protein blocks) are generally necessary in range livestock operations and can be used to improve livestock distribution. The following guidelines will be used when placing salt and protein blocks:

- In general, salt and protein blocks should not be placed within ¼ mile of water or riparian areas.
- To aid in livestock distribution, salt and protein blocks should generally be placed in areas of light forage utilization.
- Salt and protein blocks should not be placed in areas of depleted range, erosive soils, or sensitive plant or animal species.
- Salt and protein blocks will be located away from known cultural resources.
- No more than three blocks (50 lb. blocks) of salt/protein will be placed at any location at any one time.
- The use of portable salt/protein block containers is encouraged but not mandatory.

Temporary Livestock Water

Temporary sites for livestock water may be needed and should be used as necessary to assist in livestock distribution. The following requirements will apply to temporary livestock water locations:

- Coordinate with the District Rangeland Management Specialist to identify temporary livestock water locations and access routes for individual pastures prior to the grazing period.
- To aid in livestock distribution, the temporary livestock water locations should generally be in areas of light forage utilization.
- Temporary livestock waters should not be located in areas of depleted range, erosive soils, or sensitive plant or animal species.
- Temporary livestock waters will be located away from known cultural resources.
- Temporary livestock water locations will be moved, or will no longer be supplied with water, when the desired forage utilization levels have been reached in the area surrounding the temporary livestock water (utilization levels determined ¼ to ½ mile from the temporary water).
- Escape ramps for small mammals and birds will be placed in all water troughs and open

water storage tanks.

- Temporary livestock water storage tanks and troughs will be removed by the end of the grazing season.

STRUCTURAL RANGE IMPROVEMENTS

Existing Structural Range Improvements

Structural range improvements assigned to you for maintenance are listed in your Term Grazing Permit and are also identified on the Allotment Map. These improvements are to be fully maintained annually to comply with permit requirements (Part 2, Section 8(i)). The grazing permittee is responsible for all maintenance materials, supplies and equipment necessary to properly maintain all range structural improvements. The Forest will replace range structural improvement materials and/or supplies at the end of the improvement's life (when maintenance and repair is no longer feasible to keep the improvement properly maintained and functioning). The following specific guidelines apply to the operation, maintenance and reconstruction of existing structural range improvements:

- Permittee will notify the District Rangeland Management Specialist at least 60 days prior to the beginning of any maintenance work that requires the use of heavy equipment.
- Any construction of replacement fencing will be done in accordance with specifications developed to facilitate wildlife passage.
- Water will be left in permanent water troughs when cattle leave pastures.
- The spread of potential and existing noxious or invasive weeds by heavy equipment used in the maintenance or construction of structural range improvements will be prevented by cleaning the heavy equipment before entering the area and by avoiding weed infestations during travel.
- Prevention measures from the State of Arizona Aquatic Invasive Species Management Plan (AZGFD 2001) will be employed to avoid spreading aquatic invasive nuisance species and pathogens during tank cleaning activities.
- Prior to ground disturbing activities, archaeological sites within the project area will be identified and marked for avoidance. If any new sites are discovered during maintenance or reconstruction activities, ground-disturbing work will be halted and the new sites will be reported to the District or Forest archeologist.
- If heavy equipment is needed to maintain or reconstruct structural range improvements the work will only occur when the soils are dry enough to support heavy equipment without creating compaction or ruts. Exceptions may be made in emergencies or when higher soil moisture is needed as part of the maintenance or reconstruction activity.
- Any maintenance you perform must conform to the standards specified by your District Rangeland Management Specialist.

In addition to the guidelines provided above, your Rangeland Management Specialist may provide additional standards/requirements for the operation, maintenance, and reconstruction of existing structural range improvements. It is the responsibility of the grazing permittee to conform to the standards/requirements as specified.

New Structural Range Improvements

If through monitoring and range inspections it is determined that there is a need to improve livestock distribution and allotment management the following structural range improvements may be constructed:

- A new water pipeline and trough would be constructed in the southwestern portion of the Cocrane pasture and the southeastern portion of Cinder Hill pasture. The pipeline would run along the pasture fence between Cocrane pasture and Luepp Road. The new pipeline and trough would create new livestock watering locations for both Cocrane and Cinder Hill pastures. The source for this new pipeline and trough is the existing pipeline in the Cocrane pasture and the initial project plan is to construct the new pipeline as an above ground pipeline.

- Two new water pipelines would be constructed in South Angell pasture with troughs located at the terminal end of the pipelines. The source for these new pipelines is the existing pipeline in the South Angell pasture and the initial project plan is to construct the new pipelines as above ground pipelines.

- The existing water lot currently servicing Crisp and Cinder Hill pastures would be expanded to also service the O'Neil pasture. The expansion of this water lot would allow for better livestock distribution and improved livestock management within the O'Neil pasture by providing an additional water source.

- A water lot would be constructed in the southeast corner of Cinder Hill pasture that would also be accessible from Cocrane pasture. This water lot would be constructed around the trough proposed in #1 above. The construction of this water lot would allow for better livestock distribution and improved livestock management in Cinder Hill and Cocrane pastures.

Prior to construction of any of the above structural range improvements, National Historic Preservation Act Section 106 compliance must be completed. Additionally, the structural range improvements listed above will follow site-specific construction guidelines issued by your Rangeland Management Specialist. All new structural range improvements listed above will be added to the term grazing permit as they are constructed.

DROUGHT MANAGEMENT STRATEGY

Allotment management may need to be adjusted during drought conditions. Following the Region 3 supplement to the Grazing Permit Administration Handbook 2209.13-2006-1, the Standardized Precipitation Index (SPI) combined with site-specific information will be used to assess drought conditions and determine necessary adaptive management alternatives. Forest Service Region 3 and Coconino National Forest drought management policies identify numerous adaptive management actions for mitigating grazing effects during drought. Any adaptive management actions necessary due to drought conditions will be decided on by the Responsible Official in consultation with the Rangeland Management Specialist and the grazing permittee.

The following specific management actions may be used on the Angell Allotment during periods of drought:

- Authorized AUMs may need to be reduced. Reductions may be necessary prior to the permitted season of use and/or during the permitted season of use.
- Season of use may need to be shortened. Depending on the severity of the drought and authorized AUMs, a reduced grazing season may be necessary.
- Pasture use periods may need to be shortened. Pastures will not be grazed twice during the same grazing season and this may ultimately result in an early exit from the allotment.
- Pastures may need complete rest from livestock use. How long a pasture, or pastures, will be rested depends on the severity of the drought.
- Utilization and/or seasonal utilization levels may need to be reduced. Depending on the severity of the drought and the authorized AUMs, reduced utilization and/ or seasonal utilization levels will likely result in shortened use periods and may ultimately result in an early exit from the allotment.
- Lack of livestock water, or poor distribution of livestock water, may result in reduced pasture/allotment use periods.
- Livestock use of planned rested pastures due to drought will not be authorized.

MITIGATION MEASURES FOR SPECIAL STATUS SPECIES

There are no threatened and endangered species or critical habitat within the Angell allotment. No mitigation measures are required for listed Federal, State, and Forest Service special status species.

RESOURCE PROTECTION MEASURES

Best management practices (BMPs) will be implemented to prevent the introduction and spread of invasive plants, to retain water in earthen stock ponds and troughs for wildlife, to protect heritage resources, and to protect public health and safety during project implementation. Specific design features include, but are not limited to, the following:

- Prevention measures from the State of Arizona Aquatic Invasive Species management Plan (AZGFD 2001 (a)) will be required to avoid spreading aquatic invasive nuisance species and pathogens during tank cleaning activities.

- At least 60 days prior to the start of maintenance of earthen stock tanks, the permittee will be required to contact the Flagstaff Ranger District so biological and heritage surveys can be completed, if needed, and mitigation measures for the protection of aquatic species can be implemented.

- Salt or mineral supplement location should be rotated annually and avoid areas where livestock concentrations could cause excessive vegetation trampling, soil loss or disturbance to sensitive species or habitats. Salt and mineral supplements should not be placed closer than ¼ mile from a water source.

- Management practices which tend to concentrate livestock (and most likely wild ungulates), such as placement of salt or water troughs, will be located away from known cultural resources.

- Any construction of new fences or reconstruction of existing fences will be done in accordance with specifications developed to facilitate wildlife passage.

- Project work on structural range improvements and/or new construction of structural range improvements will be carried out when soils are dry enough to support heavy equipment, if needed, without creating compaction or ruts.

- Grazing BMPs will be implemented in alignment with Arizona Administrative Code R18-9-501. Grazing management and mitigation practices which can be considered for this allotment are described in the National Management Measures to Control Nonpoint Source Pollution from Agriculture published by EPA in 2003.

- Spread of potential and existing noxious or invasive weeds by heavy equipment used in the maintenance or construction of structural range improvements will be prevented by cleaning the heavy equipment before entering the area and by avoiding weed infestations during travel. Noxious or invasive weed populations that may occur in areas of proposed structural improvements will be identified and treated.

- BMPs will be incorporated for noxious or invasive weeds as listed in the Appendix B of the 2005 Final Environmental Impact Statement for Integrated Treatment of Noxious or Invasive Weeds into all management actions.

- Water will be left in troughs when cattle leave the pastures per Forest Plan direction.

- All new and existing open storage tanks and drinkers will be fitted with entry and escape ramps for wildlife. These ramps will be built to current Bat Conservation International specifications and installation will be coordinated with both the district range and wildlife staff.

- Monitoring/site inspections within the grazing allotment will continue as part of the day-to-day activities of Forest archaeologists.

- Any ground disturbing range developments within the allotment will comply with the existing Region 3 Programmatic Agreement with the Arizona State Historic Preservation Officer, dated December 24, 2001, and shall constitute and undertaking for Section 106

compliance.

- Prior to ground-disturbing activities, archaeological sites will be identified and marked for avoidance. If previously unrecorded cultural resources are encountered during ground-disturbing activities, all work must cease in the immediate vicinity of the discovery and steps will be taken to secure the site. Work will not resume until the District or Forest archaeologist has been notified and has determined an appropriate course of action.

MONITORING

Two types of monitoring will be used for monitoring resource conditions and livestock management; implementation monitoring and effectiveness monitoring. Both qualitative and quantitative monitoring methods will be used in accordance with the Interagency Technical References, Region 3 Rangeland Analysis and Management Training Guide, and the Region 3 allotment Analysis Handbook. Monitoring frequency varies by each activity and will be accomplished collaboratively by Forest Service personnel, the grazing permittee, and cooperating agencies.

Implementation Monitoring

Implementation monitoring will be conducted on an annual basis and will include the following:

Permit Compliance: Throughout each grazing season, Forest Service personnel will monitor activities on the allotment to ensure compliance with Permit terms and conditions, the Allotment Management Plan, and the Annual Operating Instructions.

Livestock Actual Use: Permittee will keep accurate records regarding actual livestock numbers and pasture use dates on the form supplied as part of the Annual Operating Instructions. This form will be submitted to the Forest Service at the end of the grazing season.

Range Readiness: Range readiness is assessed prior to the start of the grazing season by Forest Service personnel to determine if vegetative conditions are ready for livestock grazing. The range is considered ready for grazing once cool season grasses have leafed out, forbs are in bloom, and brush and aspen have leafed out. These characteristics indicate the growing season has progressed far enough for plants to replenish root reserves so that grazing will not seriously impact the forage plants.

Seasonal Utilization: Seasonal utilization monitoring will occur within each of the main grazing pastures during, or immediately after, the period when livestock are grazing the pasture. Seasonal utilization is defined as the amount of herbage removed through grazing or trampling during the grazing period. Seasonal utilization will be used by the Forest Service and the permittee to control actual pasture moves. Livestock may need to be moved out of a

pasture sooner if the seasonal utilization guideline is reached before the planned move date. Likewise, livestock may stay longer in a pasture if seasonal utilization is below the established guideline when the planned move date arrives. Seasonal utilization measurements will be taken at locations within pastures using the "key area" concept. These key areas reflect the effects of livestock grazing within the entire pasture.

Utilization: Utilization monitoring will occur at the end of the growing season within each of the main grazing pastures. Utilization is defined as the proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects). It is a comparison of the amount of herbage left compared with the amount of herbage produced during the year. Utilization is measured at the end of the growing season when the total annual production can be accounted for and the effects of grazing in the whole management unit can be assessed. Utilization measurements will be taken at locations within pastures using the "key area" concept. These key areas reflect the effects of livestock grazing within the entire pasture.

Utilization measurements can indicate the need for management changes prior to this need being identified through long term monitoring. If monitoring shows that the utilization guideline was exceeded in a pasture, the grazing schedule and/or cattle numbers will be adjusted for the following year. If utilization is exceeded after these adjustments are made, then changes will be made to the grazing management system.

Forage Production and Ground Cover: Forage production assessments will be made to determine stocking levels for the grazing season and will also be used during the grazing season to determine if adjustments in the stocking level should be made. Qualitative assessments of ground cover will also be made and used as an indicator of condition and trend; observed changes may indicate the need to conduct effectiveness monitoring (condition and trend) prior to the scheduled interval.

Precipitation: Precipitation is currently recorded at 4 sites that approximate the precipitation for the allotment. Additional precipitation gauges may be placed on the allotment for more localized information.

Allotment Inspection: A written summary will be completed each year by Forest Service personnel to document the overall history of that year's grazing. This document will include a monitoring summary, livestock actual use, weather history, and a discussion of the year's accomplishments and problems. Information from this report will be used in preparing the following year's grazing plan.

Effectiveness Monitoring.

Effectiveness monitoring will be used to evaluate the success of management in achieving the desired conditions. Effectiveness monitoring will occur within key areas on permanent transects at an interval of 10 years or less and will be accomplished collaboratively by Forest Service personnel, grazing permittee, and cooperating agencies. Effectiveness monitoring may also be

conducted if data and observations from implementation monitoring (annual monitoring) indicate a need. Effectiveness monitoring will include the following:

Forage Production: Forage production surveys will be conducted using the best available methods at that time. Forage production data will be used as a tool to manage this allotment, but will not be the sole measurement to establish carrying capacity.

Vegetation and Ground Cover Monitoring: Eighteen long-term vegetation and ground cover monitoring plots are located on the Angell allotment. These plots were established as Parker Three-Step monitoring clusters in the 1950's/1960's and were converted to Pace Frequency transects and 1/10 acre ocular vegetation canopy cover plots in 2000. Data was last collected from these plots in 2014 and 2015.

The Pace Frequency method will be used to collect vegetation frequency and ground cover data. This data will reflect changes and trends plant species abundance, plant species distribution and ground cover.

Ocular plant canopy cover plots (0.10 acre plots) will be used to document vegetation canopy cover by plant species. This data will allow for a comparison between existing conditions and the desired vegetative community conditions described in the Environmental Assessment for the Angell Allotment.

The monitoring methods identified for effectiveness monitoring may be changed or modified in the future as new methods are developed and/or the need arises for additional resource information. Any new monitoring methods adopted will be methods sanctioned and endorsed by the scientific and professional communities.

ADAPTIVE MANAGEMENT

Adaptive management will continue to be used on the allotment to maintain and improve the vegetation, soil, and watershed conditions to meet desired conditions. Adaptive management allows the Forest Service to adjust the timing, intensity, duration and frequency of livestock grazing in response to changing ecological conditions, climatic conditions, and management activities. If monitoring indicates that changes are needed, management will be modified in cooperation with the permittee and the changes will be implemented through the Annual Operating Instructions. Changes may include administrative decisions such as the specific number of livestock authorized annually, specific dates of grazing, intensity of grazing, the class of animal, or modifications in pasture rotations. Adaptive management changes in livestock management will not exceed the limits established in the environmental analysis decision document for the timing, intensity, duration, and frequency of livestock grazing.