2010 Buckhorn
Allotment Management Plan (AMP)

Red Rock Ranger District

Coconino National Forest

Prepared by: _____ Date 9/26/11
Marc Stavropoulos
Rangeland Management Staff

Agreed to/Reviewed by: _____ Date 9/26/2011
Peggy Ingham
Term Grazing Permit Holder

Approved by: _____ Date 10/7/2011
Heather Provencio
Red Rock District Ranger

Record of Decision Summary

This Allotment Management Plan follows the "Environmental Assessment" and "Decision Notice and Finding of No Significant Impact" for the Buckhorn Range Allotment signed on September 2010. Complete information on the purpose and need of the project, alternatives considered, and effects of the alternatives can be found in the EA or the Decision Notice and FONSI.

According to Ch. 90 Rangeland Management Decision-making, concurrent with modification or issuance of a new permit following a NEPA decision the allotment management plan must be modified to be consistent with the NEPA decision and must be included in Part 3 of the term grazing permit. All allotments must maintain a current AMP developed within the bounds of the NEPA based decision.

Goals and Objectives

Condition	Goals and Objectives for Buckhorn Allotment †
Ground Cover	Maintain ground cover attributes (bare soil, basal vegetation, litter) in amounts that approximate potential as determined by the Terrestrial Ecosystem Survey.
Species Composition	Have all the succession stages represented across the landscape for biological diversity.

† All measurements would involve comparing observed conditions to that which is predicted by TES. TES desired values can be found on the Coconino National Forest TES website at http://alic.arid.arizona.edu/tes/tes.html

The desired condition for Buckhorn Allotment is a condition that would provide for livestock grazing in a manner that would comply with the standards and guidelines addressed in the Forest Plan.

Desired Conditions

Buckhorn Allotment Desired Conditions†	
Broad Category	**Project Specific Desired Condition**
Ground Cover in Grassland Parks	Should be adequate to prevent erosion and to maintain soil productivity
Condition of Uplands	vegetative conditions should be "satisfactory" or moving toward satisfactory condition based on trend analysis conducted by the range staff in collaboration with the permittee and partnering agencies
Gulling and Head cutting	No new gulling or head cutting should be evident on hill slopes or within grassland parks. Gullies and head cuts created in the past should be healing.
Water Quality	Meet State of Arizona water quality standards

† The numbers obtained from existing plots would be considered baseline data. What would be measured is any deviation toward or away from the desired condition, relative to the baseline. TES desired values can be found on the Coconino National Forest TES website at http://alic.arid.arizona.edu/tes/tes.html.

Allotment Management

Buckhorn Allotment is located on the RRRD and MRRD, and encompasses approximately 42,000 acres. About 10,000 of those acres are part of the West Clear Creek Wilderness. Of those 10,000 acres of wilderness, only about 1,000 acres would continue to be grazed under the proposed action. The remaining 9,000 acres cannot be accessed by livestock due to steep slopes and existing fences. Therefore, about 33,000 acres of the allotment is open to livestock grazing.

Permitted Livestock:

Permitted livestock numbers would be a maximum of 3,300 AUMs (275 CYL). This is the maximum number of cattle that could be supported during times of favorable climate once the desired conditions for vegetation and soil have been reached. Current conditions would not support this level of grazing; therefore yearly numbers would not be authorized to reach 275 head of cattle until soil and vegetative conditions improve.

Season of Use

The permitted season of use would be yearlong.

Management:

Livestock grazing would occur by implementing an adaptive management system. The grazing system will employ (either deferred or rest-rotation grazing) which would allow for plant growth and recovery.

Annual authorized livestock numbers would be based on existing conditions, available water and forage, and predicted forage production for the year. Adjustments to the annual authorized livestock numbers (increase or decrease) may occur during the grazing year, based on conditions and/or range inspections.

The grazing period within each pasture would be based upon weather/climate conditions, current growing conditions, and the need to provide for plant re-growth following grazing. The grazing period per pasture would vary; pastures would only be grazed once during the grazing year except on rare occasions when multiple grazes might be necessary. Multiple grazes would only be allowed if certain criteria are met, which is addressed in the next two sections.

During the first two years, no double graze in the narrow pastures (Indian Flat, Painted Tank) would be permitted. Instead, the AOIs for the first two years would call for a spring trail through and a fall graze. This is necessary to allow some rest (by only grazing once) and to have the rest in the spring, which is the critical growing season. After the first two years, a double graze would be considered if monitoring indicates:

- The annual cumulative grazing does not exceed maximum allowable use,
- The pasture was not grazed in excess of the allowable use the year prior,
- Leaf litter is maintained or improved, and
- Species composition shows an increasing trend moving from the existing plant community to the desired plant community.

The Responsible Official, in consultation with the range specialist, would make the decision on whether a double graze could occur. The decision would be documented in the AOIs.
Once a double entry is allowed, a double entry the following year would only be considered if:

- The annual cumulative grazing does not exceed maximum allowable use;
- The pasture was not grazed in excess of the allowable use the year prior;
- Leaf litter is maintained or improved;
- Species composition shows an increasing trend moving from the existing plant community to the desired plant community;
- Plants fully recovered the prior year between the first (spring) defoliation (graze) and the second (fall) defoliation (graze); and
- Adequate residual matter and seed heads remained following the second (fall) defoliation.

The Forest Service requests the Permittee leave water in stock tanks (1/4 full) for wildlife use after domestic livestock have been removed from the grazing unit. Critical water tanks identified for wildlife include: Maxwell, Tramway, and Coyote tanks.

Grazing Intensity:
Grazing intensity is defined as the amount of herbage removed through grazing or trampling during the grazing period. Grazing intensity would be managed to allow for the physiological needs of plants. A grazing intensity of 30-50 percent would be managed for year-round. This would leave 50-70 percent of the annual forage production for site protection.

A management guideline of 30 and 40 percent forage utilization, as measured at the end of the growing season, would be employed. The winter zone would use 30 percent utilization and the summer zone would use 40 percent utilization. This utilization would maintain or improve rangeland vegetation and long term soil productivity.

Areas Deferred from Grazing

Clear Creek Pasture
Because of resource concerns, livestock grazing would be deferred on 1491 acres of the Clear Creek Pasture, leaving 652 acres open to grazing.

Bull Pen Pasture
A 418 acre portion of Bull Pen Pasture would be deferred from livestock grazing due to a lack of ecological diversity, the presence of sensitive riparian habitat, and inherently unstable soils. Ninety-seven acres of the west portion would still be open for grazing. These 97 acres would be combined with the portion of Heifer Pasture that would still be open to grazing.

Heifer Pasture

Livestock grazing would be deferred from the western half of the pasture (approximately 580 acres). A new north/south pasture fence would be constructed to redefine the new pasture boundaries. The eastern half would include the 97 additional acres from the Bull Pen Pasture.

The western half would be deferred from livestock grazing because of unsatisfactory soils that may be contributing to decreased water quality in the Verde River. Grazing would be allowed on the eastern side, and timing and intensity would be adjusted to reduce impacts on the soils.

Approximately 620 acres of acacia are promoting the unsatisfactory soil conditions in the west half of Heifer pasture. The area would be treated with triclopyr herbicide to produce a positive soil and vegetation trend. Stems and branches would be cut and the herbicide would be applied to the cut areas by hand, with backpack sprayers. No aerial application would occur.

Improvements - Structural

1. **Water improvements would be constructed to improve the distribution of cattle across the allotment.**
    - Approximately 5-7 miles of new water pipeline would be constructed in the following pastures to improve livestock distribution:
        - Heifer Pasture – 1.2 miles of pipeline
        - Cedar Pasture – 2.25 miles of pipeline
        - Winter Pasture – 1.5 miles of pipeline
        - Clear Creek Pasture – 0.2 miles of pipeline
        - Boulder Pasture – 2.25 miles of pipeline
    - Four new drinkers would be placed in the following pastures:
        - 1 drinker in Cedar Pasture
        - 1 drinker in Clear Creek Pasture
        - 2 drinkers in Heifer Pasture
    - A new water storage tank would be constructed in Boulder Pasture.
    - A new corral would be constructed in Willow Pasture.
    - A cattle guard would be installed between Heifer and Bull Pen Pastures on FR 215.
    - Bessie Tank maintenance was cleared in the 2005 Buckhorn Allotment Watershed and Wildlife Habitat Improvement project.

    In years of drought or if new wildlife habitat objectives need to be made, additional water developments may need to be identified for both wildlife and livestock use.

2. **New Fences and Gates would be constructed to improve livestock distribution and management and protect sensitive habitats. All new fences would be constructed to current wildlife standards.**

- ❖ Approximately four miles of electric fence along the Maxwell North, Dirty Name and Dukey Pasture boundaries would be converted to barbed wire.
- ❖ Approximately half a mile of barbed wire drift fence would be constructed in Willow Pasture.
- ❖ Approximately three miles of barbed wire fence would be constructed in Willow Pasture to create a holding area for the proposed corral.
- ❖ Approximately one mile of barbed wire fence would be constructed in Heifer Pasture to exclude livestock from the western third of that pasture.
- ❖ Approximately one mile of barbed wire fence would be constructed in Bull Pen Pasture, such that 97 acres of Bull Pen would be grazed with Heifer Pasture.
- ❖ Approximately one mile of barbed wire fence would be constructed on the south boundary of Clear Creek Pasture.
- ❖ The existing gate at Hance Springs would be converted to a pipe gate or walk-through to stabilize the fence and protect the spring.
- ❖ The fence with a partition at Coyote Tank would be reconstructed.

The fence with a partition at Maxwell Tank would be reconstructed.

Improvements – Non Structural

- ❖ Vegetation treatment is planned for the western portion of Heifer pasture.
- ❖ Other treatment is expected as part of the Wickiup Draw restoration project, which is currently in the planning process.

Monitoring and Adaptive Management

Monitoring - Range

Two types of monitoring would be used to evaluate whether desired conditions are being met or if progress towards or away from desired conditions is occurring. These types of monitoring are implementation and effectiveness monitoring.

- ***Implementation monitoring*** would be conducted on an annual basis by the range staff and the Permittee, and would include: livestock actual use data, grazing intensity evaluations during the time cattle are in a pasture and grazing utilization evaluations at the end of the growing season (within key areas), stubble height, and visual observation of plant composition and ground cover.

- ***Effectiveness monitoring*** by the range staff would occur within key areas on permanent transects at an interval of 10 years or less to evaluate the success of management in achieving the desired objectives. Effectiveness monitoring may also be conducted if data and observations from implementation monitoring (annual monitoring) indicate a need.

Contemporary qualitative and quantitative monitoring methods would be used in accordance with the Interagency Technical References, Region 3 Rangeland Analysis and Management Training Guide, and the Region 3 Allotment Analysis Handbook. These can be reviewed at the RRRD. Refer to page 26-30 of the range specialists report for more detailed rangeland monitoring requirements.

Monitoring - Soils

A soil condition monitoring protocol would be necessary to determine if soil condition objectives are being met and to inform the adaptive management process. Soil condition assessments would be conducted following the Region 3 FSH Supplement 2509.18-99-1. Pastures with high amounts of Unsatisfactory soils (about 25% or more of pasture) will require baseline data collected by TES unit along established transects prior to implementing the first years authorized grazing. The only pasture that would require baseline data is the Heifer Pasture and includes TES units 280 and 404. After the baseline data has been collected, soil condition will be monitored every 2 years, for 4 years and then at 10 years again to determine extent of soil improvement, if any, following the soil condition objectives listed in the Resource Protection Measures above.

Pastures with high amounts of Impaired soils (about 50% or more of pasture) would be assessed by sampling representative TES units (at least 1 TES unit/pasture preferably at established range clusters) in the first two years to establish baseline conditions and then again every 5 years to determine change in soil condition. Pastures with more than 50% Impaired soils include Baldhill, Boulder, Buckhorn, Cedar, Heifer, Indian Flat, Oak, Painted Tank, Wickiup and Winter. TES units to assess include the following; 381, 403, 404, 420, 447, 448, 462, 463, 466, 492.

Montane meadow pastures with impaired soils include Willow, Brushy and Experimental Pastures on TES units 53 and 55. Willow Pasture has the largest amount of impaired soils and should be used as an indicator and monitored to determine if soil condition objectives are being met. Monitoring would occur in the first year to establish baseline conditions and then again every 5 years according to the Resource Protection Measures listed above. In the Dukey pasture, since it has high amounts of unsatisfactory soils, will require baseline data to be collected within the first year of authorized grazing. After the baseline data has been collected, soil condition will be monitored every 2 years, for 4 years and then at 10 years again to determine extent of soil improvement, if any, following the soil condition objectives listed in the Resource Protection Measures above.

If monitoring indicates soil conditions are not meeting soil condition objectives and improving towards satisfactory, current livestock grazing utilization and intensity will be adjusted and may include pasture deferral or reduced grazing utilization and intensity.

Suggested soil monitoring includes soil condition assessments by Regional protocol and where possible, in conjunction with range vegetation monitoring. Soil hydrology, stability and nutrient cycling functions will be monitored.

Range vegetation monitoring sites should be placed in key areas that represent each map unit by pasture or allotment or at established clusters. Key areas will be more than ¼ mile from water.

Monitoring - Wildlife

Parameters for turkeys and grassland and wet meadow dependent species would be measured during range monitoring:

1) Where we are at low TES capability, manage for an increase in diversity of grasses and forbs (3-5+ grass types examples of Idaho Fescue, Blue gramma, and W. Wheatgrass; 4-8 forb types like Mountain Mulley and long-tongued Mulley) at in meadows of 4 acres or less but if larger try to strive for the same. The above species are just examples and data should not be limited to only these species. The key is 3-5+grass species and 4-8 forb types of the appropriate TES (C3 or C4) type.

2) Manage for improved prey base (invertebrates, C3 and C4 plants) in the spring and through summer in smaller patches (1/10th to 3 acres-but if conditions exist in more). A good diversity of grasses and forbs makes good conditions for abundant invertebrates.

3) Where larger meadows (2-4 acres+) exist, manage for a stubble height of 4-5" up to 10"; stubble height can be patchy.

4) Ensure water is left available along pine stringers and in and around the smaller openings after cattle have been moved out of the unit.

Critical water sources in Buckhorn Allotment

Pasture Name	Name of Water Body	Desired Condition
Brushy-Buckhorn	Maxwell Tank	Repair fence or take down as needed and monitor. Request permittee leave ¼ of the tank full of water for wildlife as recommended by AZGFD after cattle have left the unit. If necessary, add wildlife escape ramps. All fences would be to wildlife friendly standards as per forest plan regulation.
Dukey-Buckhorn	Tramway Tank	Request permittee leave ¼ of the tank full of water for wildlife as recommended by AZGFD after cattle have left the unit.
Maxell North-Buckhorn	Coyote Tank	Repair fence or take down as needed and monitor. Request permittee leave ¼ of the tank full of water for wildlife as recommended by AZGFD after cattle have left the unit. If necessary, add wildlife escape ramps. All fences would be to wildlife friendly standards as per forest plan regulation.

Adaptive Management

Adaptive management is a strategy that considers various management actions that could be employed to modify the grazing system. Modifications are often necessary because environmental conditions vary. Implementation and effectiveness monitoring would provide the basis for modifying management. Management would be modified in cooperation with the Permittee. Elements of the grazing system that might be modified include: timing, intensity, frequency, and duration of grazing. The likely modifications are implemented as needed through the AOIs.

Adaptive management would also allow for the construction of rangeland improvements, if they have been identified, and are determined through monitoring to be necessary for moving the allotment toward desired conditions.

Tables and 1 and 2 show the adaptive management options developed for the proposed action.

Table 1 – Adaptive Management for Allowable Use

Indicator/Trigger Point The "If" Statement	Adaptive Management Response Options The "Then" Statement
If grazing intensity is in compliance with the 30-50 percent guideline on at least 70% of each pasture.	Continue current management system
If grazing intensity exceeds the guideline in more than 30% of a pasture.	Cows would leave that pasture early despite schedule; the strategy for that pasture the following year would be either to rest it, graze it at lighter intensity, or allow a shorter use period; change season of use or timing of grazing the next year; or increase riding and herding to improve livestock distribution;
If in a 5 year period guidelines have been exceeded twice. or If guidelines are exceeded in two consecutive years and the trend (apparent or measured) is down.	Permit suspension would be considered Note: Various mitigating factors, such as drought and wildfire would be taken into account.

Table 2 – Adaptive Management for Range Improvements

Indicator/Trigger Point The "If" Statement	Adaptive Management Response Options The "Then" Statement
If monitoring indicates that livestock are finding a way to cross the eastern-most boundary of the Clear Creek Pasture and/or entering into West Clear Creek. Note: Livestock grazing is not allowed in the riparian areas associated with West Clear Creek or west of the designated grazing area in the Clear Creek Pasture. This has not been a problem in the past because the livestock have been physically unable to access the riparian areas due to the steep slope of the canyon wall.	Drift fences would be placed at locations shown in green on Map 2 in Appendix 1.
If there is a need to gather livestock in Brushy pasture	A corral would be constructed.
If livestock are ever able to get through a rugged draw into the	Drift fencing would be constructed at

West Clear Creek Wilderness. Note: The only place where cattle could access more than the 1000 acres of West Clear Creek Wilderness they would be grazing is if they pass through a rugged draw. So far the cattle have not done this.	the mouth of the draw to exclude the cattle.

Project Design Criteria/Best Management Practices and Mitigations

Various measures are used to reduce or prevent undesirable effects during the implementation of management activities. Forest Plan standards and guidelines are the first measures to be applied. Other project design criteria are then developed as needed.

Some measures are not identified as design criteria because they are responses to events that won't necessarily occur and therefore might not be implemented. Instead of design criteria, these items are identified as mitigation measures. They are designed to respond to or "mitigate" something that may or may not happen.

Range Management

Resource protection measures (design criteria) are identified with the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.

Design Criteria/Resource Protection Measures		
#	**Resource Protection Measure**	**Purpose**
1	The District Range Staff will monitor permittee compliance with the Term Grazing Permit, Allotment Management Plan, and Annual Operating Instructions.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.
2	Manage livestock grazing intensity and utilization to improve vegetative ground cover and to improve the quality and quantity of desirable vegetation.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.
3	Design and implement a planned grazing system that will provide for adequate rest during the plants growing season. Monitoring and adaptive management will be used to modify the grazing system to account for the continually changing effects of resource conditions and climate.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.
4	Grazing impacted areas will be monitored for grazing intensity, utilization, production, and vegetation condition and trend.	Provide resource information to make adjustments in management to maintain or improve the long-term diversity, density, and production of upland vegetation.

Design Criteria/Resource Protection Measures		
#	**Resource Protection Measure**	**Purpose**
5	Utilize salt to improve livestock distribution. Salt at a reasonable distance away from waters or natural congregating areas such as swales, drainages, riparian areas and meadows. Move salt when livestock distribution objectives are not being achieved or to correct localized over use by livestock grazing.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.
6	Existing range structural improvements are to be maintained. New range structural improvements are to be constructed to standard and maintained as necessary. New structural range improvements such as corrals, troughs, trails, storage tanks, should not be located in areas such as swales, drainages, riparian areas and meadows. Installation and maintenance of approved range structural improvements will allow for the implementation of proper livestock control and distribution, shorter graze periods and longer rest periods, and other livestock management techniques. There is the need to keep cattle contained to pastures and prevent users from leaving pasture gates open. If gates left open becomes a management problem, new cattlegaurds may need to be installed. Cattlegaurds maintenance is shared between the Forest Service and the permittee.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.
7	Stock tank maintenance: • Maintenance will be limited to the original boundary of the stock tank. • Maintenance will be limited to removal of sediment that has accumulated in the stock tank and maintenance of the tank berm and spillway. • Equipment that will be used includes but is not limited to a dozer, backhoe, or front end loader. • Maintenance frequency will range from no maintenance to whenever needed, depending on the amount of sediment flowing into the tank. • Maintenance will be done when the stock tanks are either dry or the water level is low enough so that the equipment will not get stuck in the mud. • Any requirements or timing restrictions related to water quality, wildlife, archeology, or Forest Plan standards and guidelines will be followed.	To achieve the purpose of maintaining adequate water availability.

Vegetation

The following design criteria is to be followed to protect vegetation.

#	Design Criteria	Purpose
	Proposed Action	
1	Survey areas containing proposed structural improvements before construction for Region 3 Sensitive plants and noxious or invasive weeds before construction of improvement. Identify populations and mitigate impacts of management actions if needed.	Identifies locations of Region 3 Sensitive plants and identifies potential impacts to Region 3 Sensitive plants that may occur during construction.
2	Avoid Region 3 Sensitive plants (if found during survey) during the construction of structural improvements	Mitigates impacts to Region 3 Sensitive plants.
3	Identify and treat noxious or invasive weed populations that may occur in areas of proposed structural improvements (refer to noxious or invasive weed report for treatments and mitigations)	Mitigates impacts to Region 3 Sensitive plants by reducing the risk of noxious or invasive weed infestations in populations or habitats

Design Features for Wildlife

#	Mitigation	Purpose & Rationale
W1	Livestock grazing and management activities will occur within PAC's, but no human disturbance or construction activities associated with cattle grazing operations would occur within PAC's during the breeding season (March 1 through August 31). Although fence construction and reconstruction would not be allowed during the breeding season, fence maintenance, cattle gathering and herding may be allowed if necessary.	To minimize disturbance to MSO during the breeding season., in accordance with Mexican spotted owl recovery plan, 1995, and Region 3 FS Framework for streamlining informal consultation for livestock grazing activities, 2004.
W2	Water will be left for wildlife use after domestic livestock have been removed from the grazing unit. Critical water tanks for wildlife are included in appendix B.	To provide for wildlife needs.
W3	Fences will be built to wildlife standards (from Coconino Forest Plan page 69).	To facilitate wildlife movement from one pasture to another.

#	Mitigation	Purpose & Rationale
W4	All open storage tanks and drinkers will be provided with entry and escape ramps for wildlife (from Coconino Forest Plan page 69).	To provide for wildlife needs.
W5	Approved protocols will be followed when conducting work in earthen livestock tanks. This protocol will be attached to the AOI.	To minimize the risk for introducing and spreading disease among aquatic systems
W6	Biologists will be given at least 60 days notice prior to conducting work in earthen tanks. This notice will allow for surveys, if needed, and/or mitigation to reduce adverse affects to amphibians.	To avoid affecting amphibians during tank cleaning efforts.

Soil and Watershed Resources

The following measures are designed to achieve the objectives of improving or maintaining long-term soil productivity and enhancing water quality.

Soil Condition Objectives

To achieve the objective of improving and/or maintaining long-term soil productivity and enhancing water quality, the District Range Staff will monitor permittee compliance with the Allotment Management Plan throughout the grazing period of each year for the life of the Permit.

- Compliance with the terms and conditions of the livestock grazing permit will be strictly enforced including livestock grazing scheme, contingencies for drought conditions and monitoring agreements.
- To achieve the objective of improving and/or maintaining long-term soil productivity and enhancing water quality, livestock will be managed to graze at an intensity that will improve vegetative ground cover and composition (primarily the litter component) to enhance soil function (minimizes soil erosion, promotes water infiltration and enhances nutrient recycling) and to improve the quality and quantity of desirable vegetation.
- Pastures dominated by satisfactory soil conditions should be allowed up to 40% utilization during the growing season.
- Pastures dominated by impaired soils should be allowed up to 30% annual utilization.
- Pastures with high amounts of Unsatisfactory soils connected to Impaired soils are rested or Unsatisfactory soils fenced until desired conditions (soil conditions objectives are met).
- Western half of Heifer would be fenced and portions of Bull Pen and Clear Creek deferred.
- Other pastures with unsatisfactory soils should be allowed up to 30% utilization and monitored according to the plan listed in the monitoring section.
- Each pasture is grazed in a planned sequence.

- Adequate rest during the plants growing season allows plants to become established and grow undisturbed.
- Adequate rest during the plants dormant season allows for the accumulation of plant litter.
- Key grazing areas will be monitored to determine when cattle should be moved to prevent overuse.
- A planned grazing system is designed to promote flexibility in the grazing program and to buffer the adverse effects of drought according to BMP 22.11, 22.12, 22.14 (FSH 2509.22).

To achieve the objective of maintaining and improving long-term soil productivity and enhancing water quality, livestock will be managed to graze on all soils at an intensity that will maintain or improve effective ground cover (effective ground cover is defined as the % litter greater than 1.25 cm in size and % total plant basal area) to enhance soil function (minimizes soil erosion, promotes water infiltration and enhances nutrient recycling) and to improve the quality and quantity of desirable vegetation. BMP 22.11.

- Soil condition objectives are established, used in the monitoring plan and adjustments made where needed in adaptive management.
- Manage livestock grazing at an intensity so that target effective ground covers for all soils (by TES Map Unit) are approximately equal to or greater than the threshold effective ground cover (amount necessary to maintain soil stability and productivity) and be moving towards the natural (under potential plant community) within 10 years for all Impaired and Unsatisfactory soils.
- Overall soil conditions will move towards satisfactory on Impaired and Unsatisfactory soils and remain at satisfactory for soils that are currently in satisfactory condition.
- Montane meadows (TES units 53 and 55) should strive to achieve 90 percent of potential ground cover to prevent accelerated surface erosion and gully formation but is probably unattainable within 10 years. Therefore, during the 10 year permit, target ground covers on these soils should be about 2/3rds of Natural covers. Threshold ground cover values are not achievable on Inherently Unstable soils but target cover values should strive to move towards natural cover values. During drought, these effective ground covers will be difficult to attain, but livestock grazing should not decrease existing effective ground cover.

To achieve the objective of improving long-term soil productivity, grazing will be avoided on soils in Unsatisfactory soil condition areas where adjacent to and connected to major tributaries to the Verde River and West Clear Creek by active herding or deferral, according to BMP 22.12 (FSH 2509.22).

- To improve or maintain a stable and desired plant community and improve water quality while maintaining or improving soil condition, the intensity, frequency, duration and season of grazing will be manipulated in such a manner that the impacts to vegetative and water quality will be positive. Promote ecological and stable plant communities on both upland and bottom land sites.

- To control livestock access to and use of sensitive areas such as soils prone to erosion, improved grazing management systems (e.g., herding) will be used to reduce physical disturbance of soil and vegetation and minimize direct loading of animal waste and sediment to sensitive areas. Installation of alternative drinking water sources and use of exclusionary practices, such as fencing (conventional and electric) will also be used as appropriate.

Noxious and Invasive Weeds

The following Resource Protection Measures are taken from the Weed EIS for the Forest (USDA Forest Service 2005).

Objective	Best Known Practice
RANGE MANAGEMENT	
Grazing	
RM-1. Consider weed prevention and control practices in the management of grazing allotments.	1.1 – Include weed prevention practices, inspection and reporting direction, and provisions for inspection of livestock concentration areas in allotment management plans and annual operating instructions for active grazing allotments. 1.2 – For each grazing allotment containing existing weed infestations, include prevention practices focused on preventing weed spread and cooperative management of weeds in the annual operating instructions. Prevention practices may include, but are not limited to: • Maintaining healthy vegetation • Preventing weed seed transportation • Minimize potential ground disturbance - altering season of use or exclusion • Weed control methods • Revegetation • Inspection and Monitoring • Reporting • Education
RM-2. Minimize transport of weed seed into and within allotments.	2.1 – If livestock are potentially a contributing factor to seed spread, schedule units with existing weed infestations to be treated prior to seed set before allowing livestock on those units. Schedule these infested units to be the last in the rotation. 2.2 – If livestock were transported from a weed-infested area, corral livestock with weed-free feed, and annually inspect and treat allotment entry units for new weed infestations. 2.3 – Designate pastures as unsuitable range to livestock grazing when infested to the degree that livestock grazing will continue to either exacerbate the condition on site or contribute to weed seed spread.
RM-3. Maintain healthy,	3.1 – Through the allotment management plan or annual operating

desirable vegetation that is resistant to weed establishment.	instructions, manage the timing, intensity (utilization), duration, and frequency of livestock activities associated with harvest of forage and browse resources to maintain the vigor of desirable plant species and retain live plant cover and litter. 3.2 – Manage livestock grazing on restoration areas to ensure that vegetation is well established. This may involve exclusion for a period of time consistent with site objectives and conditions. Consider practices to minimize wildlife grazing on the areas if needed.
RM-4. Minimize ground disturbances.	4.1 – Include weed prevention practices that reduce ground disturbance in allotment management plans and annual operating instructions. Consider for example: changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use. 4.2 – Inspect known areas of concentrated livestock use for weed invasion. Inventory and manage new infestations.
RM-5. Promote weed awareness and prevention efforts among range permittees.	5.1 – Use education programs or annual operating instructions to increase weed awareness and prevent weed spread associated with permittees' livestock management practices. 5.2 – To aid in their participation in allotment weed control programs, encourage permittees to become certified pesticide use applicators.
GENERAL INTEGRATED WEED MANAGEMENT PRACTICES FOR ALL SITE-DISTURBING PROJECTS AND MAINTENANCE PROGRAMS	
2. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.	2.3 – Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Determine the need for, and when appropriate, identify sites where equipment can be cleaned. Clean all equipment before entering National Forest System lands; a forest officer, in coordination with the unit invasive species coordinator, needs to approve use of on-forest cleaning sites in advance. This practice does not apply to service vehicles traveling frequently in and out of the project area that will remain on a clean roadway. Seeds and plant parts need to be collected when practical and incinerated. 2.4 – If operating in areas infested with weeds, clean all equipment before leaving the project site. To minimize time spent cleaning equipment, time all work in infested areas last and concurrently, designate a "contaminated" parking lot where project vehicles working in the infested area may be parked for the duration of the project. This area should be monitored in followup mitigation and should be near a "clean" vehicle/equipment lot. Identify sites where equipment and vehicles can be cleaned before leaving the site at the end of the project. Seeds and plant parts need to be collected when practical and incinerated. 2.5 – Workers need to inspect, remove, and properly dispose of weed seed and plant parts found on their clothing and equipment after being

	trained to recognize the priority species in the area. Proper disposal means bagging the seeds and plant parts and incinerating them.

Cultural Resources

- Sites will be monitored as part of the day-to-day activities of the professional cultural resource specialists (as per Appendix H).
- Any improvements that would be constructed within two years of the decision to allow grazing, and that can be defined on the ground, would be surveyed and cleared prior to authorizing grazing on the allotment. All other projects would be surveyed for cultural resources and a separate clearance report would be issued for each of them prior to implementation. Located sites would be marked and avoided during construction. If any new sites are discovered during construction activities, they would be reported to the district or forest archeologist and ground-disturbing work halted. By avoiding archeological sites during construction, and in areas of concentrated use, there would be no effects to cultural resources.

Visuals

- Camouflaging range improvements such as fencing and drinkers by using self-weathering steel or painting improvements flat Forest Service brown.
- Favor dull rusty materials; avoid bright or galvanized materials to ensure elements blend with the natural landscape character.

Mitigation

The environmental effects described in Chapter 3 of the EA are estimated with the assumption that these mitigation measures would be implemented. They have been used on previous projects and are considered to be effective at reducing environmental impacts. They are consistent with applicable Forest Plan Standards and guidelines, and the terms, conditions and conservation measures of existing biological opinions. Implementation of the mitigation measures in combination with project design features will avoid the occurrence of potentially significant environmental impacts.

Mitigation for Range

Mitigation	Purpose
During drought conditions, adjust grazing timing, intensity, frequency, numbers, and the management system as necessary to protect the upland vegetation resource.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.

In the event of planned and/or unplanned fire, adjust grazing timing, intensity, frequency, numbers, and the management system as necessary to protect the upland vegetation resource.	To achieve the objective of improving and/or maintaining long-term diversity, density, and production of upland vegetation.