Practice Specification
Prescribed Grazing (Code 528)
IRRIGATED PASTURE

Scope

The work shall consist of managing grazing animals to achieve specified objective(s) within management units as shown on the conservation plan map. Prescribed grazing will assist in meeting the goals and objectives of the land manager.

Facilitating practices such as fencing (can include temporary electric) and water developments will be installed as needed to implement prescribed grazing. Supporting practices for irrigated pasture include Irrigation Water Management, Nutrient Management and Grazing Land Mechanical Treatment.

Plans and Specifications

This specification is for irrigated pasture in California, where improved perennial forage species dominate the site. The following procedures and technical information provide guidance and supplements the requirements for carrying out Conservation Practice Standard 528, Prescribed Grazing.

Prescribed Grazing

Prescribed grazing plans will be developed for all management units where livestock use is planned. Prescribed grazing plans are to be practical and provide flexibility to accommodate such variables as year-to-year climatic fluctuations or variations in forage production due to aging pasture plants. Frequency of harvest and season of use will be based on management objectives, the rate of plant growth, soil health, the physiological needs of forage plants and grazing animals. Timing, duration, and intensity of grazing will be adjusted based on desired plant health and expected productivity of key forage species to meet management unit objectives. Forage utilization levels or stubble-height targets following livestock harvest are a tool used to help ensure that resource sustainability and producer objectives are being met.

The prescribed grazing plan will include the following information and support documentation for all fields of the operating unit being addressed.

Goals and Objectives – Clearly defined and recorded goals and objectives will assist the land manager in achieving desired results on grazing lands. Objectives should be specific, measurable, and achievable with a given time. Resource inventory and analysis will need to be completed with land manager prior to development of specific resource objectives.

Resource Inventory – The resource inventory will include the following information on the conservation plan map(s) or in the conservation plan folder in a manner that is readily understood by the producer using approved forms or suitable documentation.

Conservation Plan Map/Grazing Plan Map

- All fields properly numbered. It is encouraged to add names provided by landowner.
- Acres properly shown for all fields
- Land use for all fields properly identified and shown
- Locations of fences, gates, and natural barriers both planned and existing
- Locations of watering facilities for livestock and wildlife by type both planned and existing
- Forage Suitability Groups (If known)
- All known areas of concern properly identified and shown. For example poisonous plants, noxious weeds, heavy use areas by wildlife etc. that may affect grazing management.

- North Arrow properly shown
- Title block that includes ranch name, county, state, approximate acres, name of preparer and date
- Map legend
- Scale Bar, recommended to use a scale that is easily measured such as 4" =1 mile (1:15840), 8" = 1 mile (1:7920), or 1:24,000 (USGS Quad)
- Location of Key Areas and/or Monitoring sites properly shown and identified

Soils Inventory
- Soils Map
- Non-Technical descriptions by map unit symbol

Animal Inventory
- Livestock numbers by type and class
- Wildlife species that may have impact on Feed and Forage balance. Estimate by species, number and period of occupation.

Threatened, Endangered, and Species of Concern
- Location of known occurrences and potential habitat

Cultural Resources
- Location of known culturally significant areas

Forage Inventory – The forage inventory provides data on expected forage quantity, quality, and species of forage in each management unit during the grazing period. Additional resources including hay production, supplemental feeding records, and lease information should be used in conjunction with the following:

- **CA-528-Spec Tool** – Forage/Animal Inventory or Range/Pasture Computation Worksheet for all grazed areas included in the plan.
-– Pasture Condition Score Sheet
-- Sediment Delivery Inventory & Monitoring Sheet (if needed)

The forage inventory should identify the quantity of forage in each management unit expressed in terms of Animal Unit Months (AUM), Pounds per Acre, Acres/AUM or other quantitative value used by the land manager. The production in each management unit should be determined based on upon values obtained from the field, hay yields or soil survey. Production of each response unit (improved pasture yield) is based upon the total production with adjustment factors which affect the available forage for livestock or wildlife. Local knowledge should be used when available.

Harvest efficiency is defined as the percentage of total *annual* standing forage that is consumed by the grazing animal. Harvest efficiency should not be confused with grazing efficiency which refers to the percentage of *allowable* standing forage consumed and results in higher percentages.

Grazing Management Level	Harvest Efficiency
Continuous, Season Long	25%
Deferred Rotation, 2+ Pastures	25-30%
Rest Rotation, Multiple Pastures	25-30%
Short Duration , High Intensity	30-35%

Analysis of Resource Conditions – The analysis of resource conditions is the interpretation and identification of probable causes and potential solutions to those concerns. Careful analysis of collected resource data can lead the conservation planner to the core source of many resource issues allowing for ecological and economically sound solutions. Information on the history of the grazing operation such as stocking rates, type and class of livestock, seasons of use, wildlife numbers etc. should be collected. The following should also be used in analysis:

- **Pasture Condition Score** sheet. For all grazed pastures included in plan.
- **Soil Survey**
- **Forage Suitability Groups,** if present

Forage-Animal Balance – The forage/animal balance should be developed as a sustainable grazing plan for the management units, which ensures that forage produced or available meets demand by livestock and/or wildlife. The forage balance should also be used when considering conservation practices that result in deferment or rest in a management unit.

-528 Spec Tool – Livestock, Forage, and Feed Balance with livestock numbers that assures for a sustainable grazing plan for the management units, which insures forage produced or available meets the demand by livestock and/or wildlife.

Grazing Plan – A properly designed grazing management plan will meet the land manager's goals, and promote the maintenance and/or improvement of the plant, animal, soil, and water resources. The grazing area shall be divided into two or more grazing units. Rotation of animals units will be based on plant development and degree of use, or mulch levels and not on calendar dates. Grazing, including daily rotation grazing, shall be managed to prevent vegetation being reduced below the minimum grazing height specified on the Practice Requirement sheet, or adequate Pasture Condition Score. Fields shall be rested for at least the minimum regrowth period specified on the following table. In order to reduce potential impacts to livestock health and soil structure, allow at least three days following irrigation before moving livestock into fields.

Table 1. – Guide for planning proper regrowth periods and irrigation water management

Grasses	Plant Height (in.) for Grazing Interval		Minimum Regrowth Rooting Time (days)	Depth (ft.)	Potential Salt Tolerance
	Maximum	Minimum			
Bermuda Grass (improved strains)	8	3	15-20	3	High
Reed Canary Grass	12	6	25-30	4	Medium
Tall Fescue	8	4	20-25	3	High Medium
Creeping Meadow Foxtail	6	3	20-25	3	High Medium
Harding Grass	8	3	30-35	5	Medium
Perla Kolea Grass	8	3	30-35	5	Medium
Intermediate Wheat Grass	8	3	30-35	4-5	Medium
Tall Wheat Grass	10	6	30-35	5+	High
Orchard Grass	8	3	25-30	3	Low
Pubescent Wheat Grass	6	3	25-30	3	Medium
Annual Grasses	6	3	20-25	1-2	Variable
Legumes					
Alfalfa	10	4	30-35	5+	Low
Alsike Clover	8	3	25-30	2	Low-Medium
Ladino Clover	8	3	20-25	2	Low-Medium
Trefoil - Birdsfoot	8	3	25-30	3	Medium
Trefoil - Narrowleaf	5	2	25-30	3	Medium
Annual Legumes	4-6	2	20-25	1-2	Variable

Examples of the more common grazing systems used on irrigated pasture include the following:

Alternate Rotation Grazing is a system in which two pastures are alternately rested and grazed. The grazed and rested portions are reversed each year. The minimum rest period is 20 days and may be as long as one year on rangeland and non-irrigated pastures. On irrigated pastures with adequate water the minimum rest period is 20 days and should not exceed 40 days during the growing season.

Deferred Rotation Grazing is a system where seasonal deferment is rotated among pastures each year and the system will need to follow through a complete cycle where each pasture receives a full growing season deferment on the key species a minimum of once every three years. Deferment is usually done for wildlife habitat needs such as nesting.

Short Duration Grazing is a system usually consisting of eight or more pastures in a very intensively managed scheme. Grazing periods are short (from about 1 to 10 days) and rest/recovery periods ranging from 20 to 40 days or longer. The length of the rest period is determined on the rate of plant growth and associated climate. During fast growth the rest period is about 20 days. During slow growth the rest period ranges from 30 to 40 days. The success of this system is based on the rest period needed by the plants to replenish carbohydrate reserves and produce new growth available for grazing by livestock. When properly applied, this system will normally remove only 25% to 30% of the available forage during a single grazing event during the rapid growth stage.

For additional examples of grazing schedules refer to the National Range and Pasture Handbook.

Prescribed Grazing Schedule can be used to document the grazing schedule. The schedule should be planned for minimum of three years and adjusted annually based upon monitoring and actual use records.

Contingency Plan- A contingency plan will be developed that details potential problems (i.e., severe drought, fire, flooding) and serves as a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation. Flexibility is needed in any grazing management plan to adjust for changes in forage production, availability of water for livestock, drought, fire, flooding, and other natural events. A contingency plan describes how decisions will be made regarding changes in livestock numbers, the grazing periods in each pasture, supplemental feeding and other management decisions if water or forage for livestock becomes limited in quantity or distribution, or more forage becomes available during above normal production years.

Monitoring Plan – A monitoring plan will be developed with appropriate records to assess whether the grazing strategy is meeting the objectives of the landowner. A monitoring plan should provide enough information to assist the land manger with decisions concerning the grazing schedule and stocking rates. A combination of short and long term monitoring methods should be incorporated into the plan.

The monitoring plan will also include repeatable photo points for each key grazing area and areas of special concern identified in the planning process.

Establishing Key Areas and Species

Identification of key areas and key plants that the manager should evaluate in making grazing management decisions should be documented for each grazing unit.

- Key grazing areas will be selected within a pasture that are representative of that unit, and can be used to prescribe and monitor grazing use. A key grazing area must provide a significant amount of the available forage in the pasture, and contain the key plant species to be managed. Key grazing areas and key species should be identified according to management objectives, resource concerns, and characteristics, which influence the pattern of grazing distribution in each pasture. It is assumed that if the key area is properly grazed, the pasture as a whole will not be excessively used.

- Key plant species (one or more) will be selected that are important to management objectives, and will comprise more than 15 percent of the available forage by species or groups of species. Other species may be selected based on specific management considerations, such as for stabilizing stream banks, competing with noxious weeds, or wildlife habitat.
- Key areas will serve as monitoring sites used to evaluate management. Management checks should be made prior to grazing, throughout the grazing period, and during rest periods to determine the degree of use and other resource conditions, to make needed adjustments in grazing management.
- Key areas may need to be reselected when significant changes in grazing management occurs, such as changing the season of use, adding structural improvements that influence livestock distribution, or changing the kind and/or class of grazing animal.

For a more detailed discussion of selecting key areas and key species refer to the NRPH.

Herbaceous Utilization

Utilization target levels are used to help ensure that resource objectives are met. Attaining a specified use level of key species is not an objective, but serves as a reference point to evaluate the grazing system and its effect on the desired plant communities. Target utilization levels should be planned by considering current and planned resource conditions, scheduled rest periods, and grazing tolerance of key species. Utilization tolerance of native species varies by the physiology and morphology of the plant, season of use, soil, climate, vigor and health of plants, and competition with other species.

In general, during the growing season, plant health is affected by grazing when use levels exceed 50 percent of total current year's aboveground production by reducing or stopping root growth. In the dormant season, plant health is affected by grazing when use levels exceed 65% by reducing thermal cover of remaining stems, removing carbohydrate storage sites, damaging crown buds, etc. Planned use levels must ensure the plant has adequate leaf area and growth for photosynthesis and recovery following grazing.

Documentation of prescribed grazing will include the following:

- **CA-CPA-014** – Proper Grazing Use
- **Permanent Photo Points** – Established at each Key area
- **Actual Use –** Records of livestock numbers and dates in each management unit provided by landowner.

Riparian Area Grazing

Riparian areas are a special kind of native rangeland that occur adjacent to streams or open water bodies where vegetation is strongly influenced by the presence of water. Grazing management strategies for riparian areas need to be tailored to the site-specific resource conditions, soil and vegetation capabilities, water quality requirements, fish and wildlife needs and management objectives. Where improvement of a riparian area is the goal, management objectives and grazing management plans should be focused specifically to riparian zone features while considering the needs of the entire watershed. Major considerations for establishing management objectives in riparian areas include:

- Kind and amount of vegetation required to trap and hold sediment deposits during runoff events
- Maintenance of streambank/shoreline stability and elimination of bank shearing by hoof action
- Maintenance of stream channel, streambank, and floodplain conditions required for proper functioning of riparian area
- Importance of riparian area to riparian-dependent wildlife and upland wildlife species that are periodically attracted to riparian areas
- Restoration/maintenance and enhancement of aquatic and/or waterfowl habitat.

Grazing management of riparian areas is to provide for adequate cover and height of vegetation on streambanks and floodplains to support natural stream functions (sediment filtering, bank building and water storage). Timing of grazing shall be managed to minimize damage to streambanks when most vulnerable to trampling. Grazing guidelines should address the kind and amount of vegetation needed on streambanks to minimize erosion effects, including the minimum stubble height of vegetation following grazing; the regrowth period for key forage species within the grazed riparian area; and critical growth and establishment periods for key riparian browse species.

Haying Operations in Wild Meadows

Riparian areas (native wet meadows) that are mowed for hay production should be harvested using wildlife-friendly harvesting strategies such as:

- Harvest the area from the inside outward to allow an escape route for wildlife
- Reduce ground speed in areas where birds have been observed, nesting activity is expected or fawning/calving occurs.
- When possible, harvest hay no earlier than the middle of July
- If there are several fields to harvest, save the fields closest to wetlands and woody cover for last
- Flushing bars are useful for flushing birds from nests.

Operation and Maintenance

Operation: Prescribed Grazing will be applied on a continuing basis throughout the occupation period of all grazing units. Adjustments will be made as needed to ensure that the goals and objectives of the prescribed grazing strategy are met.

Maintenance: Monitoring data and grazing records will be used on a regular basis within the prescribed grazing plan to ensure that objectives are being met. All facilitating practices (i.e., fence, watering facilities, etc.) that are needed to effect adequate grazing distribution as planned by this practice standard will be maintained in good working order.

Best Management Practices for Basic Prescribed Grazing Plans - 528

Best Management Practices (BMP's) are strategies for managing the use of a resource (such as pastureland) in a manner that protects the resource and promotes ecological and economic sustainability. They include practical ideas like placing salt block in strategic sites to better distribute livestock. Using BMP's are an easy set of guidelines that a landowner can implement to promote soil health, maintain or improve streams, riparian areas and water quality and promote the health and vigor of selected plant communities. BMP's should be used with and incorporated into any Prescribed Grazing Plan. Prescribed Grazing is defined as managing the controlled harvest of vegetation with grazing animals, with the intent to achieve a specific objective.

The following are grazing BMP's for Irrigated Pasture:

1. Set target grazing use levels in accordance with production limitations, plant sensitivities and management goals. This will help ensure the health of the desirable plants in a grazing unit.
2. Manage the frequency, duration, season of use, and intensity of grazing to promote desirable plant communities and the optimal productivity of key forage species.
3. Maintain enough vegetative cover to prevent accelerated soil erosion by wind and water.
4. Distribute livestock to promote the dispersion and decomposition of manure and to prevent the delivery of manure to water sources.
5. Examine livestock behavior to determine reasons for uneven use patterns, such as differences in quality of forage or distance to high quality drinking water. Consider livestock distribution when seeding pastures with improved forage species, which may create differences in seasonal forage palatability within a grazing unit.
6. Periodically rotate supplement sites (mineral, salt or feed) to reduce livestock concentration areas and associated resource degradation.
7. Salting should be used as a means to get more even livestock distribution. Salt and other supplements should be placed in areas not readily used by livestock.
8. Grazing when soils are wet should be avoided, especially on fine textured soil so compaction doesn't occur. Allow soil to dry a minimum of three days following irrigation before livestock can enter the field.
9. Grazing, including daily rotation grazing shall be managed to prevent vegetation height be reduced below the minimum grazing height specified on Table above.
10. Fields shall be rested for at least the minimum regrowth period shown on the Table above.
11. Allow at least three days after applying manure solids before irrigating the fields. No manure will be applied mechanically or through fertigation after October 1, unless specified in the Nutrient Management Plan.
12. In areas where water share delivery is from an irrigation district, do your best to remove livestock 1-2 days before water is applied.
13. When standing forage residue accumulates to levels where they reduce utilization by livestock, these should be mowed to restore forage uniformity across the management unit.
14. If needed, nitrogen shall be applied in split applications at the times of maximum plat utilization. Phosphorus shall be applied annually, or as soil tests and professional recommendations indicate.
15. If animal manure in fields is significantly heavier in some areas of the field than others, this material should be spread uniformly over the field.
16. Place salt and minerals in tubs or troughs to prevent contamination of soil surface.