

*Pima County*  
*Range Management Standards*  
*and Guidelines*



Pima County  
Natural Resources,  
Parks and Recreation  
3500 West River Road  
Tucson, AZ 85741  
[www.pima.gov/nrpr](http://www.pima.gov/nrpr)

# Table of Contents

Introduction .....	1
Pima County Ranch Land Vision .....	2
Standards.....	2
Guidelines.....	2
Rangeland Inventory.....	3
Assessments.....	5
Monitoring .....	6
Ranch Planning.....	8
CRMP Goals.....	8
Ranch Management Action Strategies .....	9
Optimal Timeline for Annual Evaluation of Grazing Practices for Each Ranch .....	10
Information Required from Operator .....	11
List of Acronyms .....	12
Exhibit A. Livestock Grazing Use Summary.....	13
Exhibit B. Monthly Rainfall Data Form.....	14
Exhibit C. Daily Rainfall Data Form .....	15

This document was first created and adopted in May 2010. The document was developed as a Natural Resources, Parks and Recreation internal management product and has been adopted by the agency Director after undergoing a public review process. The document may be updated from time to time as need and science dictates.

## Introduction

The Sonoran Desert Conservation Plan (SDCP) is a locally developed, long-term vision for protecting the natural and cultural heritage of Pima County. The Plan seeks to combine short-term actions to protect and enhance the natural environment with long-range planning to ensure that the natural and urban environments not only coexist but develop an interdependent relationship, where one enhances the other. The biological goal of the Plan is to protect the full range of plants and animals native to the region by maintaining ecosystem functions.

Ranch conservation is one of the six primary elements of the SDCP. Ranching conserves large areas of open space and wildlife habitat that might otherwise be developed. By virtue of the extensiveness of ranching as a land use and the ongoing stewardship provided by ranchers, ranching in many areas of Pima County is uniquely suited to preserve natural, unfragmented open space, wildlife habitats, and the land's basic natural and cultural resource values.

Eastern Pima County has over 1.4 million acres of land classified as grazing lands, of which over one million of these acres could potentially be developed into urban use in the future. Current ranch operations put annual livestock numbers at about 20,000 animals in 2009. Most ranches in Pima County are still family-owned enterprises. Current fragmentation of ranch lands is greatest within a twenty-five mile radius of Tucson where increasing land values and development pressure have resulted in ranches being converted into urban uses.



Through the ranch conservation element of the SDCP and the associated Multi-species Conservation Plan (MSCP) expected outcomes include:

- The metropolitan urban boundary is better defined;
- The heritage and culture of the west and early Pima County are preserved;
- An important traditional industry is maintained to support a diversified local economy;
- Watersheds and water resources are conserved and protected;
- The natural landscape can be conserved as a working landscape to provide open space, wildlife corridors, and habitat needed to maintain sustainable and diverse ecosystems;
- The landscape will balance traditional uses such as grazing with other uses such as recreation, preservation of cultural resources, habitat enhancement and restoration, control of invasive species, and the conservation and/or preservation of specific species and habitats identified as sensitive.

As a part of the SDCP land conservation strategy, the County has purchased numerous ranch properties over the past decade. With the passage of the 2004 Habitat Protection Priority Bond program, the acquisition of large working ranches has increased significantly. As of early 2010, the County owns or has committed to acquire fifteen working ranches exceeding 51,000 acres of private fee land as well as the grazing leases on over 191,000 additional acres. The Natural Resources, Parks and Recreation (NRPR) Department is responsible for

managing these open space properties. All ranches purchased (with the exception of the A7 Ranch, which as of 2010 is operated by Pima County staff) are independently operated, generally by the previous owners, who own the cattle, manage the ranches day to day and are responsible for operational costs under terms of a Management Agreement. Ranch operators have entered into third-party agreements with the County to conduct operations on County property and on grazing leases held by the County under the conditions outlined in the Management Agreement. This strategy relieves the County of operational and maintenance expenses on the ranches while directing the ranching operation in an ecologically sustainable manner. The County maintains all authority for ultimate decision making regarding property uses, timing and intensity.

The NRPR Department manages the properties with the intent of achieving sustainable uses of natural resources and maintaining functionally healthy habitat for both wildlife and livestock. The County uses methods developed by the United States Department of Agriculture (USDA), Agricultural Research Service, Natural Resources Conservation Service (NRCS), the United States Department of Interior, Bureau of Land Management (BLM), and the University of Arizona (UA) to inventory rangeland resources, assess rangeland and riparian health, and monitor rangeland and riparian conditions and trends. These techniques will be utilized to guide ranch and grazing management decisions.

## **Pima County Ranch Land Vision**

The County's vision is to manage ranch properties to achieve sustainable use of natural resources and consistency with habitat needs for implementation of a MSCP by maintaining functionally healthy habitats for both wildlife and livestock.

## **Standards**

The County will use three standards to maintain healthy rangelands on its ranch properties. These standards become the goals for the desired conditions of rangelands (plant communities, soils/sites and ecological processes). The standards are measurable and attainable, and comply with Federal, State and County statutes, policies and directives applicable to land ownerships found on County-owned ranches.

1. Rangeland plant communities will be managed to provide adequate cover to protect soils from accelerated erosion and promote proper hydrological function.
2. Rangelands will be managed for diverse native plant communities which exhibit the appropriate plant functional groups (life-forms) and annual productivity for the ecological sites present.
3. Rangelands and riparian areas will be managed to optimize ecosystem health and condition, and for habitats that support diverse native wildlife, fish, and plant populations.



# Guidelines

The County will use seven guidelines to manage grazing on its ranches. Guidelines are management approaches, actions and practices necessary to achieve desired rangeland condition goals. Guidelines identify and apply methods to control grazing land use; they are developed and applied to achieve desired conditions within site capability and they can be adjusted over time.

1. Stocking rates will be established to balance livestock numbers with forage plant production. Permitted numbers may remain the same but stocking rates can change yearly to match changing forage and water supplies.
2. Appropriate grazing systems (methods of grazing and resting pastures) will be employed to allow plant forage species to recover from grazing, reproduce and accumulate soil cover (foliar, basal and litter).
3. Utilization levels of key forage species will be used as guidelines for achieving sustainable use of renewable forage resources. Forage utilization will be managed to achieve target levels of 35-40% or less use of the current year's growth of selected key forage species consistent with a conservative grazing regime<sup>1 2</sup>. If necessary these levels may be adjusted depending on pasture conditions or to meet specific management objectives.
4. Practices such as fencing (using Arizona Game and Fish Department (AGFD) wildlife-friendly standards), improving available water supplies, range seeding, shrub management and prescribed burning may be used as indicated by monitoring plant community response to applied management.
5. Adaptive management will be used to make grazing management decisions each year. This process employs a strategy of:
  - a. Applying management throughout the year (with record keeping);
  - b. Monitoring plant communities (in the fall of each year), grazing use, and precipitation;
  - c. Assessment of results using an interdisciplinary approach;
  - d. Using the assessment to plan and/or modify grazing management decisions for the coming year and determine the need to modify and implement appropriate practices;
  - e. Recognizing that results of monitoring that cannot be explained by assessment of the data (vegetation, climate and grazing use) may indicate research needs that can be addressed through a committee of rangeland experts.
6. Habitat will be managed to provide for ecosystem health and the maintenance of diverse populations of native plant, fish and wildlife species. Grazing plans will balance stocking rates and pasture rotations with maintaining or actively improving rangeland habitats for native species. Management tools such as wildlife-friendly fencing and year-round water drinkers may be utilized to enhance these habitats. Water tanks and troughs should contain wildlife escape ramps, if needed. Depending on management activities, strategies for rehabilitation or restoration projects will be evaluated and integrated into ranch plans on a case-by-case basis.
7. Special wildlife habitat features (caves, mines, rock outcrops, springs, seeps, etc.) will be identified and considered during implementation of management actions, and conserved and/or enhanced through appropriate actions to maintain their unique habitat values.

---

<sup>1</sup> Smith, L., G. Ruyle, J. Maynard, S. Barker, W. Meyer, D. Stewart, B. Coulloudon, S. Williams, and J. Dyess, 2005, Principles of obtaining and interpreting utilization data on Southwest rangelands, University of Arizona Cooperative Extension AZ1375, 14pp.

<sup>2</sup> Holechek, J. L., M. Thomas, F. Molinar, and D. Galt. 1999. Stocking desert rangelands: what we've learned. Rangelands 21:8-12.

# Rangeland Inventory

The County will conduct an inventory of all the County-owned ranches. This inventory will consist of mapping all cultural improvements (houses, corrals, roads, fences, water developments, etc.) with information such as names, pasture size, scale and legends on the land on a comprehensive map base. Information

will also be obtained where possible on historic/prehistoric resources that could be significantly impacted by grazing or other resource management activities. Inventory data will be collected in and/or converted into digital format for inclusion into the Pima County Geographic Information Services Division library, and cultural data will be recorded with the Arizona State Museum. Rangeland resources will be delineated using established data management techniques.

Pima County-owned and leased rangelands lie within one or more of three environmental/geographic regions: the Upper Sonoran Desert, the Semi-desert Grasslands, and the Mexican Oak Savannah. In Arizona, these regions correspond to Major Land Resource Areas (MLRAs)<sup>3</sup> in which soils that are alike in their ability to produce vegetation are grouped together into units called "Ecological Sites". An ecological site is defined as a distinctive kind of land with specific physical characteristics (soil, slope, landform, etc.) and processes (erosion, fire, hydrology, etc.) that differs from other kinds of land in its ability to produce a distinctive variety and amount of vegetation. Ecological sites are described with written narratives of the site's physical characteristics, soils and historic climax plant community. They are the recommended basic unit of rangeland classification and are suitable for mapping at a land management scale. Ecological site descriptions are published by NRCS and are available at the USDA Ecological Site Information System website<sup>4</sup>. The County will use established procedures for mapping and delineating ecological sites as described in the NRCS National Range and Pasture Handbook<sup>5</sup>.



The "Soil Survey of Pima County, Eastern Part" is completed and available online for all private, State Trust and Tribal lands east of the Tohono O'odham Nation<sup>6</sup>. Because soil mapping units are generally correlated to ecological sites, soil polygons in conjunction with on-site field truthing can be used to create ecological site delineations, and to identify soil-moisture and temperature regimes within MLRAs.

- MLRA 40-1 is the Upper Sonoran Desert region in Arizona and is characterized by a precipitation regime of 10-13 inches annually, elevations ranging from 2,000 feet above mean sea level (FAMSL) to 3,200 FAMSL, soils in the typic-aridic soil-moisture regime and thermic soil-temperature regime. Twenty ecological sites have been described in this zone.

<sup>3</sup> USDA, Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin, U.S. Department of Agriculture Handbook 296 (2006)

<sup>4</sup> <http://esis.sc.egov.usda.gov>

<sup>5</sup> USDA NRCS, 2003, National Range and Pasture Handbook. Grazinglands Technology Institute, Revision 1 December 2003 (<http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>).

<sup>6</sup> USDA, NRCS, 2003, Soil Survey of Pima County, Arizona, Eastern Part (<http://soildatamart.nrcs.usda.gov>).

- MLRA 41-3 is the Semi-desert Grassland region in southern Arizona, characterized by a precipitation zone of 12-16 inches annually, elevations from 3,200 to about 4,500 FAMS L and soils in the ustic-aridic soil-moisture and thermic soil-temperature regimes. Twenty ecological sites have been described in this zone.
- MLRA 41-1 is the Mexican Oak Savannah region in southern Arizona and is characterized by a 16-20 inch precipitation zone, elevations above 4,500 FAMS L and an aridic-ustic soil-moisture regime and-thermic soil-temperature regime. Fourteen ecological sites have been described in this zone.

NRCS ecological site descriptions also include information related to commonly encountered plant communities, which will enable determination of the current ecological status or condition of a specific site by comparing the present-day characteristics of the plant community to the potential that is described in the ecological site description<sup>7</sup>. "State and Transition" models describe succession of plant communities in arid regions like Arizona and may provide future guidance in further determining realistic vegetation management objectives<sup>8</sup>.

## Assessments

The County will use two assessment techniques to evaluate the health and functionality of rangelands and riparian areas. These techniques are qualitative (i.e., depend upon professional judgment). They require considerable training and will be done in an interdisciplinary fashion. The assessments are not monitoring techniques and will not be used to measure progress towards meeting goals. They are tools to be used for educational and communication purposes and to help identify problems and set priorities for both monitoring and management.

1. Rangeland Health is a qualitative assessment that will be used to rate 17 indicators that affect the three primary attributes of the rangeland ecosystem being evaluated: site and soil stability, hydrologic function, and biotic integrity of the plant community<sup>9</sup>. Rangeland health assessments will be performed on ecological sites during the initial inventory process and at monitoring locations to determine the status or function of these ecosystem attributes. Subsequent assessments will be performed prior to lease renewals. A preponderance of evidence will be used to determine if the evaluated rangeland ecosystem attributes are healthy, at risk, or unhealthy<sup>10</sup>.



<sup>7</sup> Task Group on Unity in Concepts and Terminology, 1996, New concepts for assessment of rangeland condition, *Journal of Range Management*, 48: 271-282.

<sup>8</sup> Bestelmeyer, B.T., J.R. Brown, et al., 2003, Development and use of state-and transition models for rangelands, *Journal of Range Management*, 56(2): 114-126

<sup>9</sup> Pellant, Pyke et al., 2005, Interpreting Indicators of Rangeland Health – Version 4 (<http://www.blm.gov/nstc/library/techref.htm>).

<sup>10</sup> Reference area information to assist in the use of this technique have been developed by NRCS for major ecological sites in places such as un-grazed or lightly grazed exclosures on the Santa Rita Experimental Range.

2. Riparian Proper Functioning Condition is a qualitative assessment that addresses questions which examine the hydrology, vegetation, and erosion/deposition processes of a riparian area<sup>11 12</sup>, although this assessment does not identify the cause of a resource problem. Proper functioning condition assessments will be performed on riparian reaches with similar channel characteristics on all riparian areas encountered during the initial inventory process, and at any riparian monitoring location. Subsequent assessments will be performed prior to lease renewals. A summary determination will be made for each area being evaluated: either proper functioning condition, functional “but at risk”, or non-functioning.

## Monitoring

Rangeland monitoring will implement fixed (permanent) plots placed in strategic areas (key areas) in pastures. These key areas usually represent a dominant ecological site and are in areas receiving average grazing use<sup>13</sup>. Where possible, both a grazed area and an un-grazed (exclosure) control area on the same ecological site will be monitored. The use of an un-grazed control site will help separate grazing effects from climatic effects on plant communities. At all plot locations photo points will be established and seasonal rainfall recorded twice each year for winter (October through May) and summer precipitation (June through September) thus obtaining records for cool and warm seasons. Existing plots that are found to be unproductive in providing useful data or prove excessively difficult to access may be moved to more favorable locations to maximize monitoring efforts. All monitoring plots, new or existing, will be evaluated for whether their data accurately reflects local field conditions prior to any long-term time commitment.

Vegetation monitoring will utilize several techniques to determine trends and to assess progress towards meeting County rangeland management objectives. These techniques include:

1. Plant Frequency Sampling<sup>14</sup> – Frequency is the number of times a plant species is present in a given number of sample quadrats of uniform size placed repeatedly across a stand of vegetation. It is expressed as a percentage of total placements and reflects the probability of encountering a particular species at any location within the stand. The sensitivity of frequency data to density and dispersion make frequency a useful parameter for monitoring and documenting changes in plant communities. It is useful for monitoring vegetation changes over time at the same locations or for comparisons of different locations. The presence of annual plants is directly correlated to habitat suitability for some wildlife; therefore, annual species are recorded as well as perennials. Species-specific data are more useful when using the ecological site guides to compare the current vegetation community to the potential natural community. Plant frequencies are com-



<sup>11</sup> BLM, 1998, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas, TR 1737-15.

<sup>12</sup> BLM, 1999, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas, TR 1737-16.

<sup>13</sup> USDA NRCS (National Resources Conservation Service), 2003, National Range and Pasture Handbook, Grazinglands Technology Institute, Revision 1 December 2003 (<http://www.glti.nrcs.usda.gov/technical/publications/nrph.html>).

<sup>14</sup> Ruyle, G. B., Ed., 1997, Some methods for monitoring rangelands and other natural area vegetation, Report 9043, University of Arizona, Cooperative Extension Service, Tucson, Arizona

pared to frequencies from previous years to identify changes and help determine trend. Binomial confidence intervals will be used to identify changes in frequencies that signify meaningful departures from normal sampling variation. A 40 centimeter square quadrat size, and 200 quadrats located along paced transects as recommended by range scientists at the UA is considered the ideal standard and will yield important data related to plant species diversity, plant functional groups and trend in individual plant species.

2. Point cover<sup>15</sup> – Points of cover will be sampled on each transect to measure soil ground cover, with 600 to 800 points being considered an ideal number by range scientists. These measurements include bare soil, plant basal cover, gravel/rock cover, litter cover and cover of cryptogamic plants (algae, mosses and lichens). Soil cover is one of the principle factors affecting soil erosion. Point cover is gathered concomitant with frequency data.
3. Fetch<sup>16</sup> – Fetch is a measurement of the fragmentation or patchiness of cover, which is directly related to acceleration of soil erosion. Fetch is measured as the distance from a point on a transect to the nearest perennial grass or shrub base. Asymmetry is calculated using the formula: (maximum-median)/(median-minimum), where the median, minimum, and maximum values come from the collective dataset of individual fetch measurements from a transect. As asymmetry (longer fetch distances increase relative to the shortest fetch distances) increases, fragmentation of cover increases and erosion can accelerate. Asymmetry values exceeding 10 are indicative of soil erosion beyond natural levels. This measurement is most applicable to grassland sites and communities with over 2% basal or ground cover, and will not be used on desert sites with less cover.
4. Dry Weight Rank<sup>17</sup> – Composition by weight is probably the best measure of the relative abundance of a plant species in a community. In each quadrat (the same quadrat used in frequency measurements) the 3 species having the highest yield on a dry matter basis are visually estimated. These species are ranked 1-3 with the highest yielding species getting a rank of 1. This measure of the plant community yields plant species composition (by annual production) and allows the comparison of the present-day plant community on a site to the potential or the desired plant community described in the ecological site description. This comparison is expressed numerically as the similarity index.
5. Comparative Yield<sup>18</sup> – This method will be used for estimating above ground biomass production. Reference quadrats are chosen, representing the range in dry weight of vegetative standing crop or yield expected to be commonly encountered during sampling. The current production in these (usually five, 40-centimeter square) quadrats is clipped and weighed (grams air-dry). Results from sample quadrats are then compared to the reference quadrats and rated. The summary yields a standing crop of biomass in pounds per acre on an air dry basis. This measure can be used to compare production of the present day plant community to that shown on the ecological site description for a normal, above average or below average rainfall year.
6. Utilization measurements – Utilization is a measure of the percent of the current year's growth, by weight, that has been removed from a forage plant by grazing, browsing or trampling. Utilization levels (expressed as a percentage) are used as guidelines to assist in achieving plant community objectives<sup>19</sup>. Utilization is determined<sup>20</sup> at the end of the planned grazing period, or at the end of the

---

<sup>15</sup> Ibid

<sup>16</sup> D. Robinett (personal email communication to I. Rodden, January 11, 2009).

<sup>17</sup> Ruyle, G. B., Ed., 1997, Some methods for monitoring rangelands and other natural area vegetation, Report 9043, University of Arizona, Cooperative Extension Service, Tucson, Arizona

<sup>18</sup> Ibid

<sup>19</sup> Smith, L., G. Ruyle, J. Maynard, S. Barker, W. Meyer, D. Stewart, B. Coulloudon, S. Williams, and J. Dyess, 2005, Principles of obtaining and interpreting utilization data on Southwest rangelands, University of Arizona Cooperative Extension AZ1375, 14pp.

<sup>20</sup> BLM, Interagency Technical Reference 1734-3, 1996, Utilization studies and residual measurements.

grazing season (February for summer forage crop, June for spring forage crop) if grazed year-round. In years where a spring forage crop is lacking, year-round utilization may be gauged prior to the summer rains. Utilization is measured on one or more key forage species selected at each key area. During the grazing period or season, estimates of utilization and use patterns can be used to adjust stocking rates, if needed. Utilization estimates based on forage produced to time of estimate during a growing season should be identified as “seasonal utilization” and usually will have a different guideline percentage than utilization based on current annual growth. If grazing in one year or season results in utilization in excess of the guidelines, then the current plan may be adjusted or revised to allow recovery of that particular pasture in the subsequent year. Actual utilization data can be used with vegetation monitoring and rainfall amounts to assess trends in various attributes of the plant community and soil cover<sup>21</sup>.

## Ranch Planning

Pima County rangelands fall within the geographic area of the Tucson Field Group for Coordinated Resource Management (CRM). The group is the local arm of the Arizona CRM group consisting of representatives from NRCS, BLM, AGFD, United States Forest Service, Arizona State Land Department, local Natural Resource Conservation Districts, and Arizona Cooperative Extension. The local group meets each summer to develop plans for interagency ranch planning and monitoring efforts in the coming year.

Within this framework Pima County will develop a Coordinated Resource Management Plan (CRMP) for each of its ranch properties as time and resources permit. The CRMP will include a grazing component with an assessment of rangeland resources (ecological sites, cultural features, etc.), current rangeland conditions, and goals. Adaptive management will utilize monitoring results in a feedback loop each year to develop and modify grazing plans. The CRMP will establish a collaboration model for the managers, ranch operators, natural resource agencies and the public to work together to achieve common conservation goals for the land. Pima County does not, however, relinquish its authority for overall management decisions made on County-owned and/or leased properties.



The CRMP process brings together a team of local area experts to share programmatic needs and conservation strategies that support the SDCP program goals on ranch properties. Draft CRMP plans will be available for public review and comment and will be posted on the Natural Resource Division portion of the Pima County Natural Resources, Parks and Recreation website at [www.pima.gov/nrpr](http://www.pima.gov/nrpr).

## CRMP Goals

1. Establish stocking rates, timing, frequency, and duration of grazing that are consistent with utilization guidelines.

<sup>21</sup> Holechek, J.L., Pieper, R.D., and Herbel, C.H., 2004, Range Management: Principles and Practice, 5th edition, Pearson Prentice Hall, New Jersey, 607 pages.

2. Attain a stable or positive trend over time in rangeland conditions (vegetative, soils, productivity).
3. Utilize grazing systems that shall allow for sufficient plant growth, reproduction and residual cover to protect soils from accelerated erosion.
4. Adjust stocking rates to account for variation in precipitation and forage production.
5. Practice cooperative management and collaboration with ranch operators, other agencies and the public.
6. Maintain public access to and across the ranch properties where public health/safety and negative impacts to wildlife or wildlife habitat are not an issue.

## **Ranch Management Action Strategies**

1. Identify property boundaries and legal access.
2. Map ranch roads, boundaries, pastures, improvements (and document condition of improvements), and water sources. Install signs to clearly communicate ranch roads and boundaries.
3. Identify ecologically sensitive areas and the management needs of these areas.
4. Determine percentage of ranch lands that livestock can utilize (noting sensitive areas, slope and distance from water, or important wildlife habitats).
5. Compile and review historical stocking and utilization rates, precipitation records, fire regimes, and other factors that contributed to the current resource conditions.
6. Consult with AGFD Wildlife Managers to identify wildlife resources and requirements on ranch lands.
7. Identify riparian areas and assess the function and ecological condition of each.
8. Inventory ecological sites and identify current ecological status (health) or condition.
9. Analyze all of the above information and develop a coordinated resource management plan.
10. Select key areas and establish rain gauges, photo points and monitoring transects with a paired ungrazed control plot where possible. (Monitoring efforts will be repeated every year for an initial three year baseline assessment and biennially at a minimum thereafter.)
11. Evaluate alternative methods to manage grazing. (Select and apply one.)
12. Utilize an adaptive management model to incorporate the yearly assessment of monitoring results into a process of developing annual grazing plans, adjustment of stocking rates, and determining the need for practices or research (to help explain unknowns). (Research findings should be incorporated back into the system as available.)
13. Develop fire management plans with the agency responsible for fire management decisions. (Develop maps showing areas that would benefit from fire and provide them to the agency to guide managers if a natural fire starts.)
14. Evaluate other legal or illegal uses and/or impacts on ranch properties (e.g. camping, hunting, off-road vehicle use, or border issues) and develop strategies to enhance, address or mitigate negative impacts where possible. Mitigation actions should be compatible with existing ranch management plans.

---

Terms used in this report can be found and described in the "Glossary of terms used in range management", 4th edition. Glossary Update Task Group (1998). T. Bedell. Denver, Society for Range Management.

# Optimal Timeline for Annual Evaluation of Grazing Practices for Each Ranch

ACTION	TIMELINE
Evaluate pasture utilization levels	February or June
Annual monitoring and photos at key areas	September to November
Twice annual recording of precipitation at key areas	May and September
Operator submits suggested revisions based upon the assessment of monitoring results	September
Review and assess current year's data, monitoring analyses, goals and objectives, and completed or new projects or concerns	November
NRPR Review Panel reviews the operator's changes and makes decisions for the next year	December
Operator meets with the NRPR Review Panel to discuss proposed use for the coming two years	December
Review a summary of monitoring and pasture utilization data to date with ranch operator, so stocking rate adjustments, if apparent, can be initiated with fall livestock work schedule	November to January
Decisions made on the approved stocking rate	March
Additional on-the-ground stocking rate adjustments, if necessary	January to June

# Information Required From Operator

(Exhibits A - C)

## ACTION

## DEADLINE

- |  |                                 |
|--|---------------------------------|
| 1. Livestock Grazing Use Summary for the current year (Exhibit A)  | December 1                      |
| 2. Projected-Use Plan for the next two years (Exhibit A)   | October 1                       |
| 3. Rain fall records at historic locations (recorded on Daily Rainfall or Monthly Rainfall data sheets, Exhibits B and C)  | December 1                      |
| 4. Averages of weaning weights, calf crop percentages, and production records (to aid in determining animal performance and evaluate production goals and trends relative to previous years) | December 1, <b>if available</b> |

## List of Acronyms

AGFD	Arizona Game and Fish Department
BLM	Bureau of Land Management
CRM	Coordinated Resource Management
CRMP	Coordinated Resource Management Plan
FAMSL	Feet Above Mean Sea Level
MSCP	Multi-Species Conservation Plan
NRCS	Natural Resources Conservation Service
NRPR	Natural Resources Parks and Recreation
SDCP	Sonoran Desert Conservation Plan
UA	University of Arizona
USDA	United States Department of Agriculture





# Exhibit C. Daily Rainfall Data Form

Ranch Name: \_\_\_\_\_

Year(s): \_\_\_\_\_

## Daily Rainfall

Month:	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Date												
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												