April 1, 1996

ALLOTMENT MANAGEMENT PLAN & MEMORANDUM OF UNDERSTANDING

between

UNITED STATES FOREST SERVICE ("USFS")

and

TRUSTEES of the TRUST under the WILL of HENRY H. TIMKEN, JR. ("PERMITTEE")

and

USDA NATURAL RESOURCE CONSERVATION SERVICE ("NRCS")

San Rafael Allotment
Sierra Vista Ranger District
Coronado National Forest

This Allotment Management Plan and Memorandum of Understanding (the "Memorandum" or "MOU") is made and entered into for the purpose of providing a means to track the actions that have occurred respective to the San Rafael Allotment of the Coronado National Forest during the 1995 issuance of the USFS livestock grazing permit concerning the San Rafael Allotment ("San Rafael Permit"). This Memorandum will also provide monitoring parameters and protocols to be used to determine if range conditions within the San Rafael Allotment are improving or deteriorating, as measured against a "base" condition to be defined by cooperative effort of the parties to this Memorandum, and will be and constitute part of the terms of the San Rafael Permit, as issued. Prior to the development of this Memorandum, the San Rafael Permit, which expired December 31, 1995, stood at 700 Cattle under the USFS permit and 216 Cattle and 5 horses under the private land permit. Based on the information gathered in the USFS P/U Study of 1994, the San Rafael Permit will be issued for a new 10 year term (extending from January 1, 1996) for 475 cattle to be grazed on the USFS lands

contained within the San Rafael Allotment. The private land permit will not be issued. The Permittee has elected to fence off the larger tracts of private land within the boundaries of the USFS San Rafael Allotment.

I. INTRODUCTION

A. General

The Vaca Ranch, owned by the Permittee, is located in southern Santa Cruz County, Arizona, and includes the San Rafael Allotment of the Sierra Vista Ranger District, Coronado National Forest.

B. Plan Preparation

This Memorandum also includes a ranch management plan, which has been crafted as a coordinated effort of W.R. Timken, Jr. and Louise Blyth Timken and Donald R. Black, who are the Trustees of the owner of the Vaca Ranch, and Bob Hudson, who is the Vaca Ranch manager, and the USFS. NRCS also actively participated in that effort and supplied meaningful information and suggestions. The USFS has consulted with the US Fish and Wildlife Service on known and potential Threatened, Endangered and Sensitive Species. USFS is the lead agency for this ranch management plan and related resource monitoring and measurement efforts.

C. Land Status

Vaca Ranch encompasses approximately 25,526 acres of Private lands, State of Arizona Trust lands, and USFS lands. Land ownership is broken down as follows:

Private	5787 acres
State of Arizona Trust	400 acres
USFS	19739 acres

D. Authorized Use

Historic authorized use was for a total of 700 head of adult cattle, yearlong, ("AU") on the San Rafael Allotment plus 216 cattle and 5 horses yearlong on private land permit. Based on a Production/Utilization study done in 1994 (the "P/U Study"), the USFS reduced authorized livestock grazing use on the San Rafael Allotment to 475 head of adult cattle, yearlong. Current authorized uses under various applicable land tenures is for a total of 485 head of adult cattle, yearlong, broken down as follows:

USFS San Rafael Allotment	5700 AUMs/yr	475 AU yearlong
State of Arizona	120 AUMs/yr	10 AU yearlong

E. Resources

Vaca Ranch lies in Major Land Sub-Resource Area D41-1 (per classification of NRCS), the Mexican Oak-Pine Woodland and Oak Savannah, 16-20" precipitation zone. This Sub-Resource Area is characterized by oak savannas of Mexican blue oak, Arizona white oak, Emory oak, and silverleaf oak with understories of perennial grasses including sideoats grama, blue grama, purple grama, bullgrass, Texas bluestem, cane beardgrass and plains lovegrass. Elevations on the Vaca Ranch range from 4600 feet in Redrock Canyon to 6170 feet at Lookout Knob in the Canelo Hills.

The average annual precipitation ranges from 16 to 20 inches per year. Approximately 60 percent of this precipitation occurs during the summer monsoon season, usually lasting from early July through mid-September. Some precipitation occurs every month of the year. A major portion of the winter moisture comes as snow, rarely lasting more than a few days at the lower elevations, but remaining on the ground for several weeks at the higher elevations. Average rainfall data for the two closest weather stations, Patagonia and Fort Huachuca, are as follows.

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Patagonia	1.14	1.01	0.80	0.34	0.14	0.49	4.42	4.05	1.96	1.05	0.75	1.33	17.47
Ft Huachuca	0.93	0.59	0.66	0.19	0.12	0.38	4.13	3.40	1.75	1.04	0.49	1.02	14.71

The NRCS issued the Soil Survey of Santa Cruz and parts of Cochise and Pima County in April, 1979. This published soil survey includes maps and descriptions of the soils found on the Vaca Ranch. The USFS has digitized these soil maps. The USFS GIS equipment was also used to calculate the acreage of each soil type within each pasture for this planning effort. A copy of the soil map is attached hereto as Appendix A.

Soils which produce similar plant communities within a Major Land Sub-Resource Area are grouped together into a Range Site. The potential native plant communities for each Range Site have been described by the NRCS. Attached hereto as Appendix B is a list of the soils, and the NRCS Range Sites found on the Vaca Ranch.

II. ISSUES

The following issues were identified in the USFS environmental assessment (which covers the San Rafael Allotment), revised October 6, 1995:

- At least 65% of the riparian areas in the San Rafael Allotment are not in satisfactory condition.

- The spread of Lehmann lovegrass could likely contribute to a decline in the more desirable native grasses found on the Vaca Ranch.

Overall plant species vigor, diversity and production on the Vaca Ranch has severely declined over the last few years.

Mearns quail is a popular game bird that inhabits the oak woodlands. The plains grassland provides habitat for pronghorn antelope which are seen from time to time in the open areas of the San Rafael Allotment. Mearns quail and pronghorn both require herbaceous cover for protection from predators. For pronghorn antelope, this is most critical during the fawning season. The quail need thermal cover and nesting cover, as well as hiding cover. Studies have shown (Brown, 1982) that utilization levels of forage production in excess of 45% of annual growth are detrimental to the survival of the Mearns quail. The Brown study also shows that moderate grazing increases the available food supply for Mearns quail.

The Biological Assessment and Evaluation (Deecken, 1995) lists avian species, species of amphibians and reptiles, mammals including bat species, and 16 plant species that are threatened, endangered or sensitive species, and are know to occur, or may occur in the project area. (Attached hereto as Appendix C).

50% of the soils on the San Rafael Allotment are considered impaired due to insufficient residual vegetative cover, and another 33 percent are in unsatisfactory condition due to insufficient residual cover and hampered infiltration into the soil.

Ranching has been a traditional use of this land since the Spanish introduced cattle in the 1690's. For the families who graze cattle on these allotments, ranching is a tradition as well as a source of income. Ranching also helps support the local economy and provides products from a renewable resource. Any decision made by the District Ranger could have impacts on the Permittee's ability to maintain a viable livestock operation. The decision could also have an effect on the local economy, and on the livelihood of the Permittee, ranch manager and his employees and their families. There are groups and individuals who maintain that grazing by domestic livestock is not an appropriate use of USFS resources, and that some ecosystems in southeastern Arizona have been, and continue to be, damaged by grazing.

While major conflicts between grazing and recreation have not been identified on the San Rafael Allotment, the area does have a number of visitors who like to drive off of USFS Road 58 to hunt, bird watch, or spend time at the Bog Hole and Red Rock Canyon. These activities, particularly off-road driving, add to the cumulative adverse effects on vegetation and soils in this area.

The following concerns were identified by the USFS during their inspection of San Rafael Allotment lands in August and September 1992:

* Poor plant vigor and some accelerated erosion
* Low diversity of grass species in places
* Heavy utilization in some pastures

Monitoring Sites, which had been established in 1966, were relocated and re-read in 1993. The data for those Monitoring Sites is attached hereto as Appendix D.

III. GOALS

Goals have been defined as broad statements which identify the interests and concerns of the Vaca Ranch, the Permittee, the other parties to this Memorandum, and interested members of the public. Goals articulated and identified for the Vaca Ranch and surrounding areas are as follows:

(a) The goals set out by the USFS, Coronado National Forest, Sierra Vista Ranger District, in its environmental assessment are:

- To maintain or improve rangeland resources on the San Rafael Allotment within the standards and guidelines of the Forest Plan.
- To retain the commercial grazing of livestock on USFS lands.
- To provide for the protection of threatened, endangered and sensitive species and their habitat.
- To improve compliance with the National Environmental Policy Act (NEPA) and related laws.

(b) The San Rafael Valley Association advanced the following goals and values in A Framework for Guiding the Future of Arizona's San Rafael Valley, Fall 1994.

- Priority 1: Protect the San Rafael Valley's private land base.
- Priority 2: Ensure that future development is compatible with the landscape.
- Priority 3: Monitor and influence outside forces for change.
- Priority 4: Enhance agricultural viability.

- Values identified include the San Rafael Valley's ranching tradition, the solitude and remoteness, shared values among valley residents, a rich culture of Mexican, Southwestern, and Native American origin, the ability to make a living from ranching, the beauty of the valley, the valley's grasslands and openness of the landscape, and abundant wildlife.

- Their vision for the valley's future includes an economically viable ranching community, a landscape that looks the same as now, no further recreational development, no commercial or resort development, well managed populations of wildlife, more respect from visitors for private property, and a healthy river and riparian area.

(c) The Sierra Vista District Redrock Canyon Plan identified the following goals:

- Provide for ecosystem diversity by at least maintaining viable populations of all native and desirable non-native wildlife, fish and plant species through improved habitat management.
- Produce livestock products consistent with other resources and uses; balance permitted grazing use with grazing capacity, and eliminate grazing from areas not capable of supporting livestock without significant detriment to range or other resources.
- Maintain the current spectrum of developed, dispersed, and primitive recreation opportunities and increase those opportunities with the capability of the resources.
- The primary focus for the Redrock Canyon area is for riparian emphasis, but also includes livestock/wildlife and fuelwood emphasis, and visual quality emphasis.
- Improve habitat and protection for federally listed plant and animal species and work towards de-listing of the Gila top minnow.
- Restore damaged watersheds to satisfactory condition by improving vegetative cover.
- Meet Arizona and USFS water quality standards.
- Bring existing roads and trails to be retained on the system to a maintainable standard which is suitable for the planned use and provides for minimum safety and resource protection.

(d) Vaca Ranch goals that were identified during the inventory and initial planning phases for the ranch management plan include:

- Utilize pastures with available browse species during the winter months.
- Maintain the aesthetic aspects along the main roads of the San Rafael Valley
- Minimize the cost of implementing a grazing management program.
- Maintain a self sustaining economically feasible ranching operation.
- Maintain historic grazing use patterns where possible in grazing rotations.
- Balance herd sizes to water dependability in each pasture.
- Maintain private control of livestock grazing on private lands.

IV. OBJECTIVES

Objectives have been defined as specific measurable improvements that are needed in order to meet the goals of the ranch management plan. The following objectives were identified for the Vaca Ranch and the San Rafael Allotment:

- Maintain a moderately high ecological vegetative condition with a stable or upward trend and stable soils. Improve overall range condition to good or excellent (NRCS range condition classes). Focus management on reestablishing the mid-grasses component of the plant communities.
- Manage grazing so that average utilization does not exceed 45 percent on Key Areas of the USFS lands. Manage grazing use on private lands so that utilization does not exceed 50 percent of current year's production on key species in Key Areas on private and state lands.
- Increasing standing and down litter cover to improve rainfall infiltration, wildlife cover values, and improve soil condition.
- Stabilize gullies and allow perennial grasses and forbs to reestablish in these areas.
- Establish at least 1 key area in each pasture where these objectives will be measured. Monitor resource conditions to insure that the ranch management program is accomplishing the resource management objectives.

V. GRAZING MANAGEMENT

A. Livestock Operation

Vaca Ranch is operated as a cow-calf operation. Registered Hereford bulls are run with the cows from late March or early April until fall, when the cows are put into the upper pastures for the Winter.

B. Grazing Schedule

There are 23 pastures on the Vaca Ranch which can be utilized to developed planned grazing rotations which will achieve the objectives of the ranch management plan. The attached grazing schedules show suggested movement patterns of the different herds on the Vaca Ranch over a six year cycle. At the end of the six year cycle, the rotation pattern will repeat.

The Vaca Ranch livestock have been separated into six herds, which include cow-calf herds, replacement heifer herds, and horses. This multiple herd plan allows existing water developments to be used without major renovation that would be needed with larger herd sizes. A general description of each herd follows, with the understanding that the class(es) of livestock used in any herd may permissibly be varied by Vaca Ranch, as long as the number of head is maintained so that the 5700 AUM limit on the USFS lands is never exceeded. As shown on the planned grazing rotations, livestock numbers in each herd must be adjusted each year in order to insure that the 5700 AUM limit on USFS lands is not exceeded. It should also be understood that the USFS has limited utilization on key species in Key Areas of the San Rafael Allotment to 30 to 40 percent of current year's production (weight basis) in Upper Robinson, Upper Williamson and the Dunham pastures due to goshawk and spotted owl habitat, 45 percent of

current year's production (weight basis) for the remaining large pastures within the San Rafael Allotment, and 55 percent of current year's production (weight basis)for the smaller traps within the San Rafael Allotment, and that animals must vacate a particular pasture or particular area within a pasture when permissible utilization maximums are reached, regardless of the authorized AUMs that may be established totally for the San Rafael Allotment or a particular pasture within that Allotment.

Herd 1 is the main cow-calf herd on the Vaca Ranch. The herd size will vary from 305 to 345 head, depending on how much private land will be used in the rotation each year. This herd (to the extent permissible, as determined on an annual basis under this MOU) utilizes Redrock North pastures during the winter from October through January, and then moves to Redrock South from February through March. The herd is then split, with 45 percent of the animals alternating yearly between the two Dunham pastures, and 55 percent alternating yearly between the two Kennedy pastures from April through September. Bulls will be with the cows in the Kennedy and Dunham pastures, and will then be moved to the best private pasture during the winter when the cows are moved back to the Redrock pastures. This rotation provides for winter use only in the Redrock pastures, with full growth and seed production benefits for all key species every year during the growing season. Each Kennedy and Dunham pasture will receive 6 months of growing season use, and then 18 months of rest (which will include one full growing season and 2 winter periods.)

Herd 2 is a mixed cow-calf and 2nd year heifer herd. The herd size will vary from 145 to 175 animals. This rotation has historically been used for cows that did not calve the prior year, so that they could be shipped if they did not produce a calf early in the spring. Heifers are combined with cows in this rotation to improve grazing distribution in the Upper Robinson pasture. The herd will utilize Upper Robinson each year during the winter. In order to avoid exceeding the 5700 AUMs on the USFS lands, in years when Herd 1 uses the Dunham Forest pasture, 175 animals must be pulled out of Herd 1 and Herd 2 and put into the Brown pastures by the end of December. Because of the poor forage quality in Upper Robinson, as cows drop calves they will be moved in with the replacement heifers in Herd 3. The cows in this herd that produce a calf will alternate summer use between the Hunt pasture and the 3 Brown pastures that will be used as one large pasture. This provides roughly the same grazing/rest periods as the Herd I rotation. The 2nd year heifers in this herd will be moved in with the 2nd year heifers from Herd 4 and be bred in the Meadow Valley and Headquarters pastures. The complete early pull-out every other year and the cows with calves being pulled out in alternate years from Upper Robinson should help provide adequate habitat for Goshawks and Spotted Owls.

Herd 3 is primarily made up of 1st year replacement heifers. The replacement heifer herd size will remain fairly stable at about 60 animals, with any difference being made up with cows. Cows that drop a calf while they are in Upper Williamson and Upper Robinson (Herds 2 and 4) need to be moved out of these pastures because of the relatively poor forage quality in these 2 pastures. As these cows drop their calves, they will be moved in with the replacement heifers in Herd 3. If utilization levels in the Herd 3 pastures begin approaching the 45 percent limit, the cows with calves will be moved on to the scheduled Hunt or Brown pastures. This

is a simple 3 pasture rotation which utilizes 2 of the 3 pastures each year. The Lower Robinson, Middle Robinson, and Lower Williamson pastures will receive 6 months of winter grazing, and then one year of rest, and then 6 months of summer grazing and one year of rest. A new crop of replacement heifers will be weaned from the cow herds in October each year, and spend the next 12 months in this rotation. Then they will be moved into Herds 2 and/or 4.

Herd 4 is primarily made up of 2nd year heifers, but will also have some cows in the herd to help balance the distribution of animals with pasture sizes. The herd size will remain stable at 90 animals. The herd will spend the winter in Upper Williamson. As with Herd 2, cows which drop a calf while in Upper Williamson will be moved in with the replacement heifers in the Herd 3 rotation. Because of the large difference in pasture size between the Headquarters Pasture and Meadow Valley, alternating summer use between these pastures is not feasible. Both pastures must be used each summer, but will have alternating rest during the most critical growth period in August and September when the perennial grasses are in their peak growth period, setting seed and putting food reserves into the root system for winter dormancy. In the future, it may be possible to either relocate the fence between those two pastures so that they are more equal in size, or it may be possible to acquire access to the adjacent USFS lands and use them in combination with the Meadow Valley pasture. Either of these would allow the herd to alternate use between 2 summer pastures.

Herd 5 is primarily set up for miscellaneous animals and some horses around the headquarters. This herd will use the same 3 pasture rotation as Herd 3, using 2 out of the 3 pastures each year. The herd size will vary from 18 to 22 animals, taking in a few animals in some years to avoid exceeding the 5700 AUMs on the USFS lands.

Herd 6 is also primarily set up for horses and some miscellaneous animals. The herd size will vary from 17 to 24 animals, again to help insure that the 5700 AUMs is not exceeded on the USFS lands. Because the pastures are not adjacent, nor equally sized, the rotation is a simple 2 pasture rotation, moving the animals every 4 months. This provides adequate balance between summer and winter use, and helps maintain good cover in these pastures so that they can be used as holding pastures during the spring and fall cow work periods.

Notwithstanding the foregoing, it is understood and agreed the exact dates of the moves and the number of livestock grazing in any permitted pasture at any one period must be flexible due to the annual variability in forage production in each pasture, resulting from yearly variability in growing conditions. It may be necessary to move livestock earlier or later than shown on the planned grazing rotation schedule. Vaca Ranch will keep records of when livestock were actually moved, and provide actual use information to the participating agencies during the annual monitoring and plan review meetings. Livestock movements will be made primarily based on the objectives for this ranch management plan and this Memorandum.

VI. MONITORING

Monitoring will be used to determine whether the goals and objectives of the ranch management plan and this Memorandum are being achieved. At least 3 "Key Areas" will be established in each pasture. The Key Area(s) in each pasture will be used to determine whether vegetation and grazing management objectives are being achieved. Key Areas will be selected to provide representative sites within each pasture, which will typically be located in areas which have both the potential to improve in response to the ranch management program, and the ability to provide representative utilization data for that pasture, and will typically have representatives of the key species that the ranch management plan is focusing on and good representation of the dominant species which provide forage in that particular pasture.

Because of some of the issues identified by the USFS, additional Key Areas may be needed in pastures containing USFS lands within the San Rafael Allotment to monitor riparian areas, lehmann lovegrass spread, Mearns quail habitat (woodlands), goshawk habitat, and spotted owl habitat. Additionally, monitoring of wildlife populations, sediment yield into both ponds and riparian areas, and water quality in riparian areas may be needed to determine whether the goals for threatened, endangered and sensitive species are being achieved. The USFS will identify any additional monitoring needs. Details of monitoring methods and locations to be used are identified in Appendix E attached.

All ranch management decisions and ranch management plan modifications will be based on data collected from these Key Areas. The following information will be collected on and from each of the Key Areas designated under this Memorandum:

1. A photo will be taken to provide visual support for the data collected.
2. Range Condition will be determined and published by USFS and NRCS, when the Key Areas are agreed and established.
3. Pace Frequency trend data will be collected on summer rested pastures, each fall.
4. Utilization data will be collected on all grazed pastures.
5. Range Condition will be re-evaluated by USFS and NRCS if and when trend data shows significant changes.

Utilization data will be collected at Key Areas as near as possible to the time livestock are moved out of the pasture for the year.

It is mutually agreed by the parties to this Memorandum that the following resource measurement methods will be cooperatively used to determine whether the range conditions and related resource conditions within the Vaca Ranch (San Rafael Allotment) are improving or declining, and if adjustments in stocking and/or management are warranted due to the results of those resource measurements:

1. **SOIL CONDITIONS.** Soil condition monitoring within the San Rafael Allotment will be accomplished with the use of the soils monitoring guide attached hereto as Appendix 1. This guide provides five parameters for surface structure determination. Observations on surface structure will occur at those Key Areas marked upon the San Rafael Allotment Map attached hereto as Appendix E (the "Allotment Map") and will be made jointly and cooperatively by USFS, the Permittee and NRCS every third calendar year during the term of the San Rafael Permit, as mutually agreed by the parties to this Memorandum. Those observations on surface structure, when compared to Appendix 1, will provide pertinent soil conditions ratings. Each of such observations shall be summarized by written report to be filed in the USFS San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest, which written summary report shall be jointly signed by USFS, the Permittee, and NRCS, or, in the event the parties cannot agree to a particular observation conclusion, USFS shall prepare and file its written summary report, to which the Permittee and/or NRCS may attach its respective "minority report" or statement of conclusions. The mutual objective will be to obtain an overall soil condition rating within the San Rafael Allotment of satisfactory or better, as described in Appendix 1, for each soil condition monitoring procedure conducted under this Memorandum. Copies of all reports and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

2. **RIPARIAN CONDITIONS.** Riparian conditions will be measured and will be compared to the guide for both the wet (7A Management Area) and dry (7B Management Area) riparian areas, attached hereto as Appendix 2. Riparian condition measurements will occur at those specific locations marked upon the Allotment Map and will be made jointly and cooperatively by USFS, the Permittee and NRCS every third calendar year during the term of the San Rafael Permit, as mutually agreed by the parties to this Memorandum; provided, however, all Red Rock pastures shall receive riparian condition measurements every year for the first 3 years of the term of this MOU and thereafter at such frequency for those Red Rock pastures as shall be mutually agreed by the parties hereto. Those observations on riparian condition, when compared to Appendix 2, will provide a riparian condition rating. Each of such observations shall be summarized by written report to be filed in the USFS San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest, which written summary report shall be jointly signed by USFS, the Permittee, and NRCS, or, in the event the parties cannot agree to a particular observation conclusion, USFS shall prepare and file its written summary report, to which the Permittee and/or NRCS may attach its respective "minority report" or statement of conclusions. The mutual objective for riparian areas will be to obtain an overall condition rating within the San Rafael Allotment of satisfactory or better, as described in Appendix 2, for each riparian condition monitoring procedure conducted under this Memorandum. Copies of all reports and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

3. RANGE CONDITIONS. Range conditions within the San Rafael Allotment will be measured using the following techniques:

(a) USFS, the Permittee and NRCS will remeasure those Parker Three Step transects presently situated upon the San Rafael Allotment, at the locations marked on the Allotment Map, not later than December 1, 1996 and thereafter sometime in the fifth calendar year of the term of the San Rafael Permit, at times mutually agreed by USFS, the Permittee and NRCS, to determine range condition. USFS will file in the San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest a written report showing conclusions and trends determined from the results of such measurement within a reasonable time after each such measurement, which written report shall be jointly signed by USFS, the Permittee, and NRCS, or, in the event the parties cannot agree to a particular observation conclusion, USFS shall prepare and file its written summary report, to which the Permittee and/or NRCS may attach its respective "minority report" or statement of conclusions. Copies of all reports and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

(b) There will be created and maintained upon the San Rafael Allotment, at the locations marked on the Allotment Map (as cooperatively determined by USFS, the Permittee, and NRCS), frequency monitoring plots in each of the pastures partially or totally comprised of USFS lands within the San Rafael Allotment for the purpose of determining species composition (by weight), frequency of certain species, density, and overall ground cover. There shall be designated in each such pasture no fewer than three (3) "Key Areas" where utilization cages shall be established as representative "average use" sites within that pasture which would provide an area possessing the potential to improve range conditions in response to ranch and livestock management programs and the ability to provide representative forage production (and utilization) data for that pasture---each of which "Key Areas" shall be established by mutual agreement of the parties to this Memorandum at locations within one-quarter to one-half mile from any known livestock or wildlife concentration points within that pasture, e.g., man-made water sources, pasture corners, bedding areas and saddles, etc. In addition, utilization will be monitored in Red Rock pastures with monitoring sites located both near and away from permanent water locations. There shall also be designated in each such pasture one trend area or frequency monitoring plot for purposes of pace frequency monitoring, which such plots shall be examined and measured cooperatively by the parties hereto once per year for the first three years of the term of this MOU and thereafter once per every other year. At the mutual agreement of the parties to this Memorandum, additional "Key Areas" may be established for the specific purpose of other monitoring needs of USFS (in the nature of specific species habitat development/maintenance, wildlife populations, sediment yield into water points, and similar goals.) Such additional "Key Areas" and monitoring processes conducted in connection therewith will likewise be conducted as herein provided. Range trends and condition measurements will

occur at those specific locations marked upon the Allotment Map as frequency monitoring plots and will be made jointly and cooperatively by USFS, the Permittee and NRCS in all summer-rested pastures each calendar year of the term of the San Rafael Permit. Those observations on range trends and condition, when compared to Appendix 3, will provide a range condition rating. USFS will file in the San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest a written report showing trends determined from the results of each such measurement within a reasonable time after each such measurement, which written report shall be jointly signed by USFS, the Permittee, and NRCS, or, in the event the parties cannot agree to a particular observation conclusion, USFS shall prepare and file its written summary report, to which the Permittee and/or NRCS may attach its respective "minority report" or statement of conclusions. Copies of all reports and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

(c) There will be created and maintained upon the San Rafael Allotment, at the locations marked on the Allotment Map (as cooperatively determined by USFS, the Permittee, and NRCS), permanent photo points in each of the pastures within the San Rafael Allotment to provide points of reference at every designated "Key Area" within that pasture for the purpose of providing visual support for all data collected in determining species composition (by weight), frequency of certain species, density, and overall ground cover, as determined by reference to the range site guide attached hereto as Appendix 3. USFS will file in the San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest a written report, together with any and all photographs obtained at any time for the purpose of showing conclusions and trends determined from the results of each such measurement within a reasonable time after each such measurement. Copies of all reports, photographs and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

Carrying capacity for each pasture within the San Rafael Allotment will be determined by Production-Utilization Surveys (utilizing the same methodology of the P/U Study) that will be scheduled as soon as possible after it is determined by USFS, or it is reasonably suggested by the Permittee, that changes in range conditions warrant an adjustment in current stocking levels or in pasture rest-rotation sequences and, in any event, as nearly as possible to the time livestock are removed from a particular pasture within the San Rafael Allotment at the termination of an assigned grazing period. Such per-pasture study of utilization and production will be coordinated by USFS and will involve as active participants the Permittee, USFS, NRCS, and such other participating agencies as shall be designated or permitted by USFS. USFS will file in the San Rafael Allotment file maintained in the offices of the Sierra Vista Ranger District of the Coronado National Forest a written report showing conclusions and trends determined from the results of each such measurement within a reasonable time after each such measurement, within a reasonable time after that particular pasture is vacated at the termination of the assigned grazing term, which written report shall be jointly signed by USFS, the

Permittee, and NRCS, or, in the event the parties cannot agree to a particular observation conclusion, USFS shall prepare and file its written summary report, to which the Permittee and/or NRCS may attach its respective "minority report" or statement of conclusions. Copies of all reports, photographs and monitoring data collected, gathered or prepared by or on behalf of any party to this Memorandum shall be timely supplied to all other parties to this Memorandum.

Such information may indicate that either an increase or decrease in stocking rates or revision of pasture rest-rotation sequencing is appropriate. With the implementation of the management program on the Vaca Ranch, the vigor, health, species composition and production of forage species is expected to improve. As production does improve, utilization levels are expected to decrease ratably. In that event, the Vaca Ranch will then be grazing fewer animals than it has been historically, and the rangelands will be then producing more forage as range condition improves. If yearly utilization levels, as measured at Key Areas, are below the authorized use levels for each pasture within the San Rafael Allotment, the Vaca Ranch is running at or near permitted numbers, the USFS will calculate how many additional AUMs could have been harvested before the authorized use levels were reached. This will be documented and placed in the file of the USFS on the San Rafael Allotment, with copies to all participating and interested individuals and entities. If, after 3 years, measured utilization is consistently more than 5 percent (5%) lower than authorized utilization levels, and vegetation conditions are showing an upward trend, with the Vaca Ranch running at or near authorized numbers, the USFS will approve an increase in authorized numbers to allow the Permittee full allowable use levels in each pasture within the San Rafael Allotment. This re-evaluation of authorized numbers will take place in the 3rd, 6th and 9th calendar year of the term of the San Rafael Permit.

4. **THREATENED, ENDANGERED and SENSITIVE SPECIES.** As to any new matters or actions not yet formally taken and finalized as of the date hereof, a determination of habitat requirements of Threatened, Endangered and Sensitive (T,E&S) species and other wildlife will be made by USFS and other permitted participating agencies, and that information will be used to create a written report within a reasonable period after that information has been gathered and any determination made. The results of such determination and report shall be delivered to the Permittee within a reasonable time after the conclusion of that effort, and the Permittee and/or its agents shall thereupon have a period of not more than 60 days thereafter within which to file with USFS a controverting report on the findings and determinations regarding any one or more species included within that report (but not the entire report, generally), all of which reports shall be filed in the San Rafael Allotment file.

When monitoring is done to measure soils, riparian and/or range conditions, there will also be a determination made by USFS and permitted participating agencies as to how well wildlife and T,E&S requirements are being met, and whether those findings indicate a need for changes in stocking rates and/or rest-rotation sequencing or other livestock and ranch management techniques.

5. MISCELLANEOUS. This Memorandum will become and be effective as of the date all parties hereto have executed this MOU and will last until the 10 year San Rafael Permit expires. At the end of the first 5 years of the San Rafael Permit, this Memorandum will be reviewed, along with the National Environmental Policy Act (NEPA) documentation for the San Rafael Permit. There will be a yearly examination of the monitoring process to determine if it is meeting the objectives of this Memorandum, or if better techniques exist. It will be the responsibility of the Permittee to provide representation during the monitoring sessions, which shall be noticed to the Permittee by USFS by written notice received by the Permittee not less that two weeks prior to any such monitoring session. In late summer or fall of each year during the term of the San Rafael Permit, there will be an annual assessment by USFS of the San Rafael Allotment using the monitoring techniques outlined in this Memorandum. A written statement of the assessment results thus created will be provided by USFS to the Permittee, NRCS, and other interested persons after the monitoring and such assessment is completed. This statement of assessment results will include estimates of the expected duration of the grazing periods for each pasture during the coming year, based on the amount of forage (by measurement) that has been produced since the last grazing period. Once the livestock have been placed in a pasture, the Ranch Manager of the Vaca Ranch will be responsible for determining when established allowable utilization levels have been met in Key Areas, and moving the livestock of the Vaca Ranch accordingly. There will be periodic visits upon the San Rafael Allotment by USFS personnel to determine if proper utilization levels are being adhered to; the Permittee will be appropriately advised of all USFS visits and USFS findings and conclusions, by written reports timely delivered by USFS to the Permittee, and NRCS, and all other interested persons or entities.

Prepared by: Laura White Dupee 8/14/96

Laura White Dupee — Date
Range Conservationist

Approved by: Jeanne M. Wade 8/14/96

Jeanne M. Wade — Date
District Ranger

Agreed to by: Robert Hudson 5-22-96

Robert Hudson, for Trustees of the Trust — Date
under Will of Henry H. Timken, Jr.
Permittee

Approved by: Bert L. Evans Dist. Cons. 6-12-96

USDA Natural Resource Conservation Service — Date
NRCS

Num	Pasture	Total Acres	Private / State Acres	Forest Acres		Forest Clayloam Upland	Forest Limy Slopes	Forest Clay Bottom	Forest Loamy Upland	Forest Limestone Hills	Forest Loamy Bottom	Forest Volcanic Hills	Forest Shallow Hills
1	Redrock North	3863	0	3863						454.37	81.56	570.77	2755.87
2	Redrock South	2171	0	2171					0.2		31.42	883.13	1255.94
3	Headquarters Past	1709	52	1657		177.78	6.28	4.83	387			848.27	232.68
4	Upper Robinson	3165	0	3165					1396.7		40.34		1727.46
5	Upper Williamson	1116	0	1116					570.01				545.82
6	Lower Williamson	625	166	459		4.16	2.27	39.63	411.14			1.37	
7	Dunham Forest	1665	0	1665		8.82		28.6	1605.13		22.09		
8	Dunham Private	1292	1292	0									
9	Kennedy Private	547	547	0									
10	Kennedy Forest	3267	0	3267		160.55	33.2	188.07	1279.47			1304.52	301.14
11	West Brown	250	250	0									
12	Middle Brown	350	350	0									
13	East Brown	450	450	0									
14	Hunt Pasture	1226	1226	0									
15	Lower Robinson	717	241	475		67.02		20.54	381.12		6.51		
16	Middle Robinson	855	123	732					625.23		104.31		2.34
17	Farm	192	192	0									
18	Meadow Valley	949	64	885		36.04				30.28		493.4	325.19
19	Shipping Trap	426	426	0									
20	Baldwin Trap	204	75	129		44.21	19.24	29.57	35.75				
21	Headquarters Trap	157	0	157		43.7		8.89	101.98			2.76	
22	Horse Pasture	245	245	0									
23	Vaca Trap	86	86	0									
	Totals	25526	5787	19739		542	61	320	6794	485	286	4104	7148
Num	Pasture					Private Clayloam Upland	Private Limy Slopes	Private Clay Bottom	Private Loamy Upland	Private Limestone Hills	Private Loamy Bottom	Private Volcanic Hills	Private Shallow Hills
1	Redrock North												
2	Redrock South												
3	Headquarters Past					22.91						28.97	
4	Upper Robinson												
5	Upper Williamson												
6	Lower Williamson					54.32	14.75	24.48	72.63				
7	Dunham Forest												
8	Dunham Private					10.5		128.98	863.93		188.13		
9	Kennedy Private					44.2	11.8	74.39	304.15			81.57	31.1
10	Kennedy Forest												
11	West Brown							50	175		25		
12	Middle Brown							30	195		125		
13	East Brown					100		60	290				
14	Hunt Pasture					193.48	83.52	320.08	185.29		389.11	74.9	
15	Lower Robinson					29.04		71.68	108.45		34.32		
16	Middle Robinson								57.9		65.44		
17	Farm					3.35		157.92	30.99				
18	Meadow Valley					26.57						37.57	
19	Shipping Trap					158.68	85.23	114.35	67.91				
20	Baldwin Trap					8.68	4.6	43.73	18.14				
21	Headquarters Trap												
22	Horse Pasture					59.85	18.55	91.7	15.89		59.24		
23	Vaca Trap					11.29		31.18	26.22			17.44	
	Totals					723	218	1198	2510		866	240	31

Vaca Ranch 1995-96 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	345	0	1380	1380	
Redrock South					1	1								2171	2171		0	690	690	
Dunham Forest														1665	1665		0	0	0	45% AUs
Dunham Private							1	1	1	1	1	1	1292		1292		932	0	932	45% AUs
Kennedy East							1	1	1	1	1	1	100	1920	2020		56	1082	1139	55% AUs
Kennedy West													447	1347	1794		0	0	0	55% AUs
Herd 2																				
U. Robinson.	1	1	1	1	1	1								3165	3165	145	0	870	870	
West Brown													250		250		0	0	0	24% AUs
Middle Brown													350		350		0	0	0	33% AUs
East Brown													450		450		0	0	0	43% AUs
Hunt							1	1	1	1	1	1	1226		1226		870	0	870	
Herd 3																				
L. Robinson	1	1	1	1	1	1							241	475	716	60	121	239	360	
M. Robinson							1	1	1	1	1	1	123	732	855		52	308	360	
L. Williamson													166	459	625		0	0	0	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley							1	1					64	885	949		12	168	180	
Headquarters Past									1	1	1	1	52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap	1	1	1	1	1	1							75	129	204	18	40	68	108	
Horse Pasture							1	1	1	1	1	1	245		245		108	0	108	
Headquarter Trap														157	157		0	0	0	
Herd 6																				
Farm	1	1	1	1					1	1	1	1	192		192	17	94	0	94	70% AUs
Vaca Trap	1	1	1	1					1	1	1	1	86		86		42	0	42	30% AUs
Shipping Trap					1	1	1	1					426		426		68	0	68	
1= Graze 1 Month											Totals		5785	19741	25526	675	2405	5694	8100	

60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

Vaca Ranch 1996-97 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	305	0	1220	1220	
Redrock South					1	1								2171	2171		0	610	610	
Dunham Forest							1	1	1	1	1	1		1665	1665		0	824	824	45% AUs
Dunham Private													1292		1292		0	0	0	45% AUs
Kennedy East													100	1920	2020		0	0	0	55% AUs
Kennedy West							1	1	1	1	1	1	447	1347	1794		251	758	1007	55% AUs
Herd 2																				
U. Robinson	1	1	1											3165	3165	175	0	525	525	
West Brown				1	1	1	1	1	1	1	1	1	250		250		375	0	375	24% AUs
Middle Brown				1	1	1	1	1	1	1	1	1	350		350		525	0	525	33% AUs
East Brown				1	1	1	1	1	1	1	1	1	450		450		675	0	675	43% AUs
Hunt													1226		1226		0	0	0	
Herd 3																				
L. Robinson							1	1	1	1	1	1	241	475	716	60	121	239	360	
M. Robinson													123	732	855		0	0	0	
L. Williamson	1	1	1	1	1	1							166	459	625		96	264	360	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley											1	1	64	885	949		12	168	180	
Headquarters Past							1	1	1	1			52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap							1	1	1	1	1	1	75	129	204	21	46	80	126	
Horse Pasture													245		245		0	0	0	
Headquarter Trap	1	1	1	1	1	1								157	157		0	126	126	
Herd 6																				
Farm					1	1	1	1					192		192	24	67	0	67	70% AUs
Vaca Trap					1	1	1	1					86		86		29	0	29	30% AUs
Shipping Trap	1	1	1	1					1	1	1	1	426		426		192	0	192	
1 = Graze 1 Month											Totals		5785	19741	25526	675	2400	5700	8100	

60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

Vaca Ranch 1998-99 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	313	0	1252	1252	
Redrock South				.	1	1								2171	2171		0	626	626	
Dunham Forest							1	1	1	1	1	1		1665	1665		0	845	845	45% AUs
Dunham Private													1292		1292		0	0	0	45% AUs
Kennedy East													100	1920	2020		0	0	0	55% AUs
Kennedy West							1	1	1	1	1	1	447	1347	1794		257	776	1033	55% AUs
Herd 2																				
U. Robinson	1	1	1											3165	3165	175	0	525	525	
West Brown				1	1	1	1	1	1	1	1	1	250		250		375	0	375	24% AUs
Middle Brown				1	1	1	1	1	1	1	1	1	350		350		525	0	525	33% AUs
East Brown				1	1	1	1	1	1	1	1	1	450		450		675	0	675	43% AUs
Hunt													1226		1226		0	0	0	
Herd 3																				
L. Robinson	1	1	1	1	1	1							241	475	716	60	121	239	360	
M. Robinson							1	1	1	1	1	1	123	732	855		52	308	360	
L. Williamson													166	459	625		0	0	0	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley											1	1	64	885	949		12	168	180	
Headquarters Past							1	1	1	1			52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap	1	1	1	1	1	1							75	129	204	19	42	72	114	
Horse Pasture							1	1	1	1	1	1	245		245		114	0	114	
Headquarter Trap														157	157		0	0	0	
																			19	
Herd 6																				
Farm					1	1	1	1					192		192	18	50	0	50	70% AUs
Vaca Trap					1	1	1	1					86		86		22	0	22	30% AUs
Shipping Trap	1	1	1	1					1	1	1	1	426		426		144	0	144	
1 = Graze 1 Month											Totals		5785	19741	25526	675	2400	5700	8100	

60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

Vaca Ranch 1997-98 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	325	0	1300	1300	
Redrock South					1	1								2171	2171		0	650	650	
Dunham Forest														1665	1665		0	0	0	45% AUs
Dunham Private							1	1	1	1	1	1	1292		1292		878	0	878	45% AUs
Kennedy East							1	1	1	1	1	1	100	1920	2020		53	1019	1073	55% AUs
Kennedy West													447	1347	1794		0	0	0	55% AUs
Herd 2																				
U. Robinson	1	1	1	1	1	1								3165	3165	165	0	990	990	
West Brown													250		250		0	0	0	24% AUs
Middle Brown													350		350		0	0	0	33% AUs
East Brown													450		450		0	0	0	43% AUs
Hunt							1	1	1	1	1	1	1226		1226		990	0	990	
Herd 3																				
L. Robinson													241	475	716	60	0	0	0	
M. Robinson	1	1	1	1	1	1							123	732	855		52	308	360	
L. Williamson							1	1	1	1	1	1	166	459	625		96	264	360	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley							1	1					64	885	949		12	168	180	
Headquarters Past									1	1	1	1	52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap													75	129	204	18	0	0	0	
Horse Pasture	1	1	1	1	1	1							245		245		108	0	108	
Headquarter Trap							1	1	1	1	1	1		157	157		0	108	108	
Herd 6																				
Farm	1	1	1	1					1	1	1	1	192		192	17	95	0	95	70% AUs
Vaca Trap	1	1	1	1					1	1	1	1	86		86		41	0	41	30% AUs
Shipping Trap					1	1	1	1					426		426		68	0	68	
1= Graze 1 Month											Totals		5785	19741	25526	675	2403	5697	8100	

60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

Vaca Ranch 1999-2000 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	325	0	1300	1300	
Redrock South					1	1								2171	2171		0	650	650	
Dunham Forest														1665	1665		0	0	0	45% AUs
Dunham Private							1	1	1	1	1	1	1292		1292		878	0	878	45% AUs
Kennedy East							1	1	1	1	1	1	100	1920	2020		53	1019	1073	55% AUs
Kennedy West													447	1347	1794		0	0	0	55% AUs
Herd 2																				
U. Robinson	1	1	1	1	1	1								3165	3165	165	0	990	990	
West Brown													250		250		0	0	0	24% AUs
Middle Brown													350		350		0	0	0	33% AUs
East Brown													450		450		0	0	0	43% AUs
Hunt							1	1	1	1	1	1	1226		1226		990	0	990	
Herd 3																				
L. Robinson							1	1	1	1	1	1	241	475	716	60	121	239	360	
M. Robinson													123	732	855		0	0	0	
L. Williamson	1	1	1	1	1	1							166	459	625		96	264	360	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley							1	1					64	885	949		12	168	180	
Headquarters Past									1	1	1	1	52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap							1	1	1	1	1	1	75	129	204	18	40	68	108	
Horse Pasture													245		245		0	0	0	
Headquarter Trap	1	1	1	1	1	1								157	157		0	108	108	
Herd 6																				
Farm	1	1	1	1					1	1	1	1	192		192	17	95	0	95	70% AUs
Vaca Trap	1	1	1	1					1	1	1	1	86		86		41	0	41	30% AUs
Shipping Trap					1	1	1	1					426		426		68	0	68	
1= Graze 1 Month												Totals	5785	19741	25526	675	2404	5696	8100	

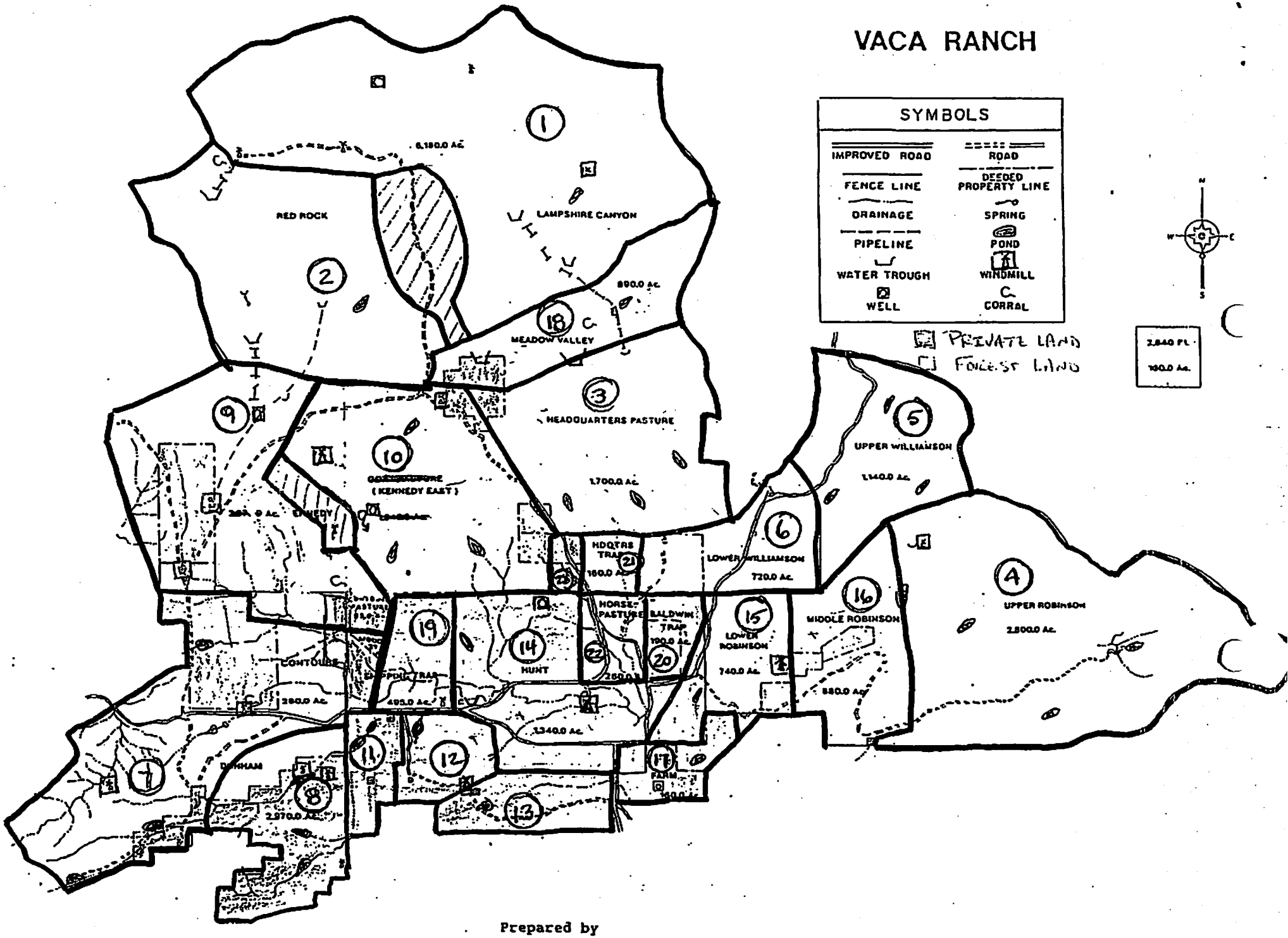
60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

Vaca Ranch 2000-2001 Grazing Rotation

Herd 1													Acres				Private	Forest	Total	Note
Pasture	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Priv	Forest	Total	AUs	AUMs	AUMs	AUMs	
Redrock North	1	1	1	1										3863	3863	305	0	1220	1220	
Redrock South					1	1								2171	2171		0	610	610	
Dunham Forest							1	1	1	1	1	1		1665	1665		0	824	824	45% AUs
Dunham Private													1292		1292		0	0	0	45% AUs
Kennedy East													100	1920	2020		0	0	0	55% AUs
Kennedy West							1	1	1	1	1	1	447	1347	1794		251	756	1007	55% AUs
Herd 2																				
U. Robinson	1	1	1											3165	3165	175	0	525	525	
West Brown				1	1	1	1	1	1	1	1	1	250		250		375	0	375	24% AUs
Middle Brown				1	1	1	1	1	1	1	1	1	350		350		525	0	525	33% AUs
East Brown				1	1	1	1	1	1	1	1	1	450		450		675	0	675	43% AUs
Hunt													1226		1226		0	0	0	
Herd 3																				
L. Robinson													241	475	716	60	0	0	0	
M. Robinson	1	1	1	1	1	1							123	732	855		52	308	360	
L. Williamson							1	1	1	1	1	1	166	459	625		96	264	360	
Herd 4																				
U. Williamson	1	1	1	1	1	1								1116	1116	90	0	540	540	
Meadow Valley											1	1	64	885	949		12	168	180	
Headquarters Past							1	1	1	1			52	1657	1709		11	349	360	
Herd 5																				
Baldwin Trap													75	129	204	22	0	0	0	
Horse Pasture	1	1	1	1	1	1							245		245		132	0	132	
Headquarter Trap							1	1	1	1	1	1		157	157		0	132	132	
																			22	
Herd 6																				
Farm					1	1	1	1					192		192	23	64	0	64	
Vaca Trap					1	1	1	1					86		86		28	0	28	70% AUs
Shipping Trap	1	1	1	1					1	1	1	1	426		426		184	0	184	30% AUs
1 = Graze 1 Month											Totals		5785	19741	25526	675	2404	5696	8100	

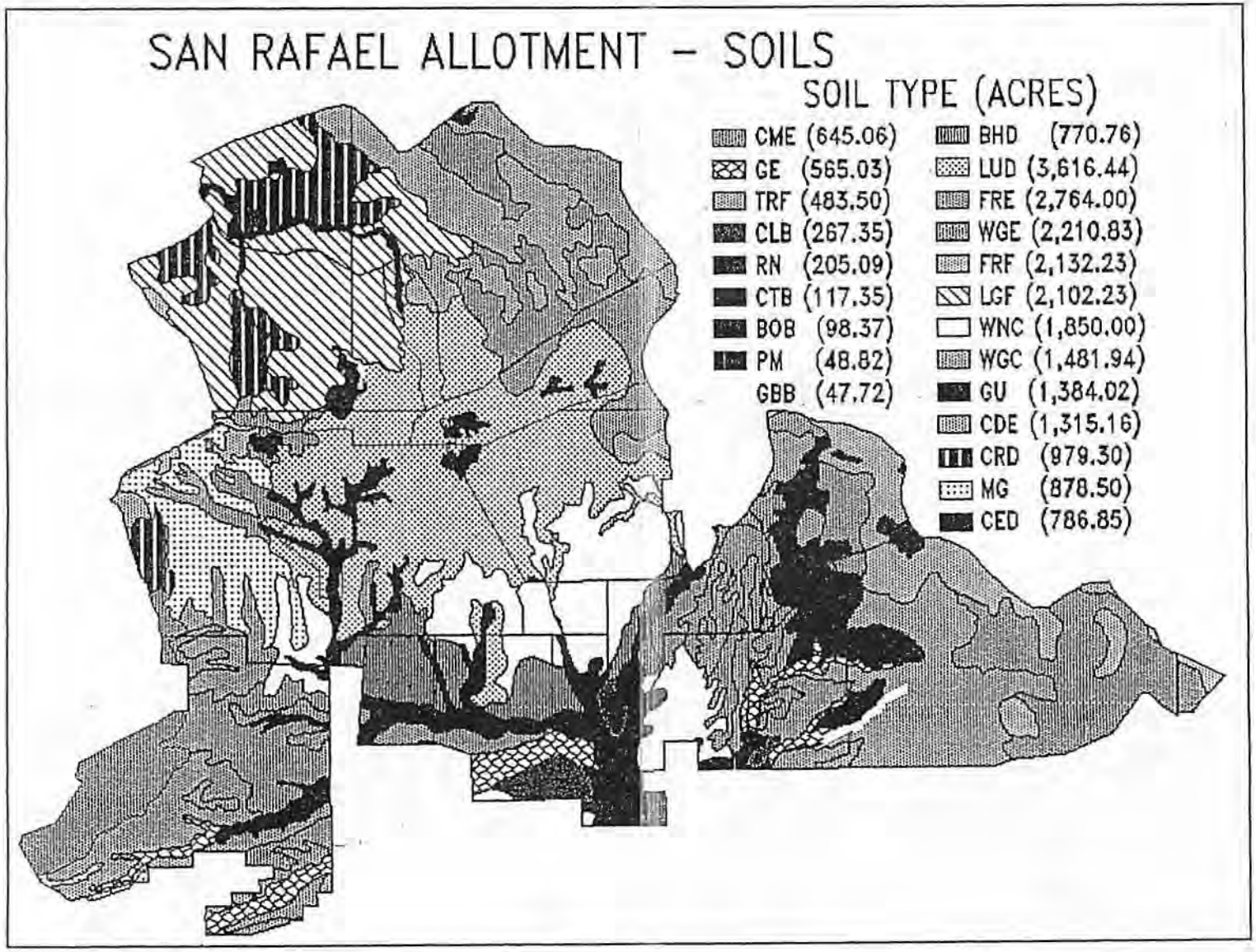
60 Bulls will be kept in the best summer pastures during the winter, scattered with the cows in the summer. AUs shown include bulls for each herd.

VACA RANCH



Prepared by
FARM CLINIC, INC.
932 Robinson Street
[illegible], Indiana 47906

FIGURE 2


SAN RAFAEL ALLOTMENT - SOILS
SOIL TYPE (ACRES)
CME (645.06)
GE (565.03)
TRF (483.50)
CLB (267.35)
RN (205.09)
CTB (117.35)
BOB (98.37)
PM (48.82)
GBB (47.72)
BHD (770.76)
LUD (3,616.44)
FRE (2,764.00)
WGE (2,210.83)
FRF (2,132.23)
LGF (2,102.23)
WNC (1,850.00)
WGC (1,481.94)
GU (1,384.02)
CDE (1,315.16)
CRD (979.30)
MG (878.50)
CED (786.85)