2012

VCNP Livestock Grazing Report

Photo: TK Thompson

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Valles Caldera National Preserve

11/26/2012

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Valles Caldera National Preserve

Executive Summary

The Valles Caldera Trust manages for the multiple use and sustained yield of renewable resources including timber and forage. In FY 2012, the Trust hosted a multi-faceted grazing program. Two separate grazing permits were issued this year: one permit was issued to Jemez Pueblo while the other went to New Mexico State University.

During the 2012 grazing season, a total of 773 head of cattle grazed in large pastures away from riparian areas and away from the main recreation programs. Of the 773 total head, Jemez Pueblo grazed 336 head and NMSU grazed 437. In total, the Trust received $30,920 in grazing fees during the 2012 grazing season. Again this year, cattle had a minimal impact on the recreation programs due to a concerted effort to keep cattle out of major recreation areas. The program involved many local cattle growers, an extension and research component, two youth ranch/beef camps, a conservation stewardship program aimed at resting tribal grazing land, and a collaborative effort with the US Forest Service to allow cattle grazing permittees displaced by last year's fire to graze on the Valles Caldera.

This was the fourth year that the grazing program operated under the forage Environmental Assessment (EA). The EA considered actions and environmental consequences of the proposed Multiple Use and Sustained Yield of Forage Resources on the Valles Caldera National Preserve. In 2009, the Trust issued a "Finding of No Significant Impact" on the implementation of a grazing program.

Introduction

The lands of the Valles Caldera National Preserve (VCNP) have been grazed for as long as people have tended domestic livestock in the Jemez. The name "Valles Caldera" comes from a geologic term for the unique collapsed volcanic dome. The ranch was long known as Baca Location 1.

The 89,000+ acre Valles Caldera National Preserve was created by the federal government in 2000. A wholly-owned federal corporation, guided by a Board of Trustees, the Preserve represents a new approach for managing public lands. The Valles Caldera Preservation Act of 2000 directs the Trust to operate as a working ranch, while protecting and preserving the health of the land and its resources. Multiple use and sustained yield of the renewable resources and public use of and access to the Preserve for recreation are also among the mandates in the Act.

In FY 2012, the Trust hosted a multi-faceted grazing program. Two separate grazing permits were issued this year: one permit was issued to Jemez Pueblo while the other went to New Mexico State University. During the 2012 grazing season, 773 head were brought onto the Preserve on a four month grazing schedule. Of these 773 total head, Jemez Pueblo grazed 336 head and NMSU grazed 437. In total, the Trust received $30,920 in grazing fees during the 2012 grazing season.

Determining Range Conditions and Grazing Capacities

Before each VCNP livestock grazing season, a range assessment is done to determine the number of cattle that will be allowed to graze at the Preserve. This year, in an effort to provide an updated forecast of range conditions and potential stocking densities of livestock for the 2012 grazing season, Dr. Bob Parmenter provided a memorandum to the Executive Director which giving an update on conditions of the Preserve as of May 2012 (Appendix A). The update included current moisture conditions (precipitation), three month forecasts of precipitation and temperature, the drought outlook, and a summary of the autumn 2011 standing crop biomass in the grasslands of the Preserve. Livestock carrying capacity for 2012 was calculated in animal units (AUs) and animal unit months (AUMs) based on the assessment of data.

In addition, as has been the case in years past, a multi-disciplinary team of resource managers (Trust biologists, University of Oklahoma scientist and students, Sierra Club members, private consultants and the public) assessed rangeland conditions in the spring of 2012, prior to livestock entering the Preserve. The assessments included current and forecasted climate conditions (especially precipitation and temperature), soil moisture, hydrologic data from stream gauges on the Jemez River, standing crop biomass (available forage) and stubble height of various grass species (an indication of recent/current grazing pressure from elk).

In previous years, cattle stocking rates on the Preserve have been adjusted upward or downward depending on resource conditions. For example, the 2008 range readiness reports found excellent range conditions that would support the maximum allowable numbers of steers (2,000) under the previously existing environmental assessment. In contrast, the drought of 2005-2006 resulted in a very poor range conditions in the spring of 2006, which resulted in the decision to suspend livestock grazing for the summer of 2006. The process of formal, multi-disciplinary range readiness assessments each spring provide a science-based adaptive management tool for the livestock operations program.

The initial number of cattle allowed on the Preserve is determined using these data intensive field assessments. The purpose of this type of range assessment is to determine the potential ecological outcome of the proposed livestock grazing program on the VCNP.

Livestock Stocking Levels Model

A model was developed based on forage data collected from 2002 – 2008, forage utilization and elk/livestock abundance was estimated for five levels of precipitation and forage production, ranging from historic high levels to low levels. Average capacity for the VCNP is 541 Animal Units for 4 months of grazing, in addition to an elk herd estimated by the NM Department of Game and Fish of 3,000 animals. The forage allocation calculations were based on total utilization by elk and livestock of 40% of available forage production, with 60% of the forage remaining behind for ecosystem services (soil erosion prevention, carbon sequestration, and health of forage plants).

The analyses of forage availability, precipitation, soil moisture, stream flow, and stock tank water content for fall-spring, 2011-2012, indicated that spring soil moisture levels were near average, while cumulative precipitation and stream flow were at or above average. Stock tank water capacities were good. The climate forecast for summer in northern New Mexico called for above-average temperatures, with average monsoonal precipitation.

Therefore, based on these measurements, the potential stocking rate for livestock on the VCNP should be set at near average levels. This indicated that the VCNP could support at least the 541 Animal Units sustainable in an average year.

However, monitoring data from the pastures utilized during the grazing season of 2011, which were stocked with livestock at 452 AUM, revealed that very little forage utilization occurred in many of the Preserve's grassland types (except Grazeable Woodland, where elk grazing contributed to some areas of heavy use). The Las Conchas fire clearly contributed to this, as the Valle de los Soldados and Valle de los Posos pastures were evacuated immediately after the fire, and not grazed by livestock for the remainder of the summer. Monsoon rains after the fire produced a very good herbaceous plant crop.

Given the Trust's goal of utilizing up to 40% of the available forage, it appeared that the herd stocking level could be increased somewhat, given that 2011 appeared to be an average year in terms of forage, precipitation and soil moisture. The estimate for average capacity of livestock (541 head) depends on the accuracy of the size of the elk herd (estimated at 3,000 elk); if this estimate is too high, then the average capacity for livestock can increase. The NM Department of Game and Fish has an estimated range of elk herd size of 2,500-3,500 animals. If the herd size is only 2,500 elk, then the Preserve could support several hundred (300-400) more head of livestock. Given the low forage utilization observed in 2011, it appeared that the Preserve could support more livestock then an average year. As such, it was decided that increasing the stocking density by a couple hundred head (~200) of livestock would serve as a conservative empirical test of the forage utilization model. However, it was recommended that continued monitoring during the summer was required to ensure that, if the monsoon rains were delayed or failed altogether, then the stocking density would need to be reduced via livestock removals

Grazing Permits

2012 Grazing was conducted under the authority of a VCNP issued grazing permit. The purpose of this permit is for the Trust to permit livestock activities to occur on Preserve under authorized conditions for the 2012 grazing season with a required annual renewal. This livestock program operates under the Trust's Implementing Decision of the Multiple Use and Sustained Yield of Forage Resources. The grazing program is meeting the mandate to continue the operation of the Preserve as a working ranch, consistent with the protection and preservation of the scientific, scenic, geologic, watershed, fish, wildlife, historic, cultural, and recreational values of the Preserve; the multiple use and sustained yield of the Preserve's renewable resources; and public use and access to the Preserve for recreation.

There are several factors which are considered critical in developing a successful grazing program at the Preserve: (1) The grazing program should provide the Trust with the greatest flexibility to respond to varying environmental and market conditions, to meet multiple goals and to incorporate an experimental management style that mixes elements of public and private administration, (2) The program should be aimed at reducing the Trust's administrative costs and efforts, (3) Maximizing the total number of head on the Preserve may not necessarily generate the most revenue for the Trust. Operating smaller numbers of livestock, while at the same time seeking to develop programs that increase revenue through other activities, might prove to be a better long-term strategy for economic return. These activities could include such things as smaller numbers of higher value animals, fees and grants received for educational programs, and conservation stewardship programs, (4) The livestock, elk, and other consumers of forage are allocated 40% of the Preserve's forage on suitable land. This allocation can be calculated using various methods and does allow for different grazing strategies on the Preserve, and (5) The program should provide for the ability to respond to changing conditions, future development or changes on the Preserve, balance all the goals from the Act, and address the competing demands from the public.

This permit commenced on May 15, 2012, and shall continue in force until December 31, 2015, both dates inclusive, unless terminated earlier as hereinafter provided. Terms of permit will be renegotiated on an annual basis, based on performance and compliance of agreement, until the termination of the permit in 2015.

2012 Grazing Operations Plans

The 2012 programs were conducted using two separate annual operation plans prepared by Tim Haarmann (VCNP) and agreed upon by the permittees (Jemez Pueblo and NMSU)

Among other things, the Jemez Pueblo plan included the following planning information:

Jemez Pueblo Stocking Rates and Pastures

Jemez Pueblo stocking plan for the 250 AUs per pasture on a rotational basis is as follows:

Rincon de los Soldados (June)

Posos Pasture (July)

Rincon de los Soldados (August)

Posos Pasture (September)

The livestock operations may consist of a cow/calf pairs, replacement heifers, steers, and bulls. Note: Jemez Pueblo was eventually allowed to bring in a total of 336 head of cattle.

Among other things, the NMSU plan included the following planning information:

NMSU Stocking Rates and Pastures

The NMSU stocking rates for the AUs per pasture is as follows:

Field Trap (Valle Grande): 32 AUs

Lake Trap (Valle Grande): 68 AUs

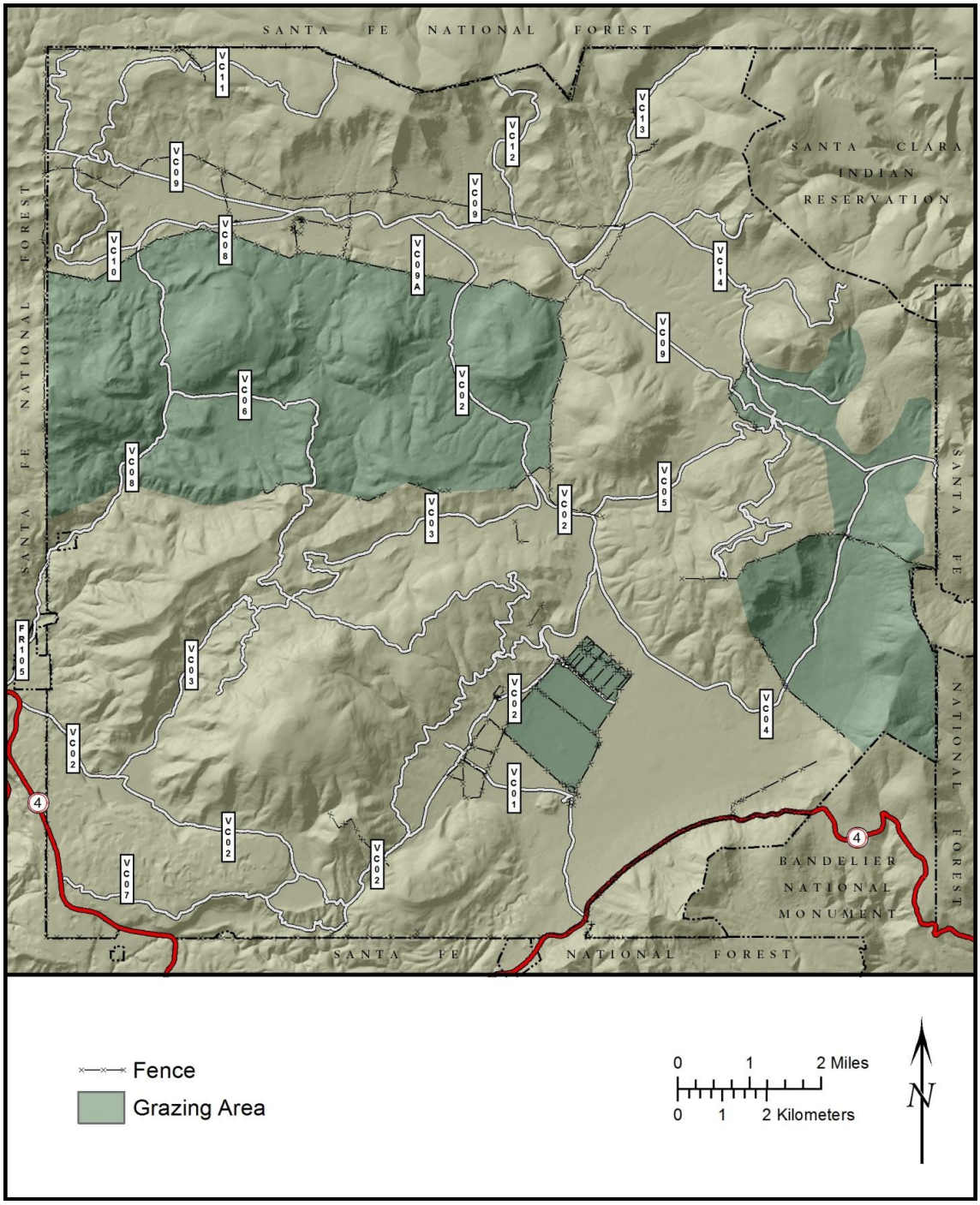
Seco-San Luis-Santa Rosa: 300 AUs

Horse paddocks at the bull barn can sustain a small number of approximately 10 AUs per paddock, but each paddock should be monitored frequently.

The livestock operations will consist of three separate programs: "Top of the Valle" Bull Development Program, a Heifer Development and Artificial Insemination Program, and a Regional Cow/Calf Outreach and Grazing Program. Note: NMSU was eventually allowed to bring in a total 437 head of cattle.

Figure 1 shows a map of the pastures used in the 2013 season.

Figure 1. Grazing areas that were used during the VCNP 2012 season.



2012 Grazing Season

During the 2012 Grazing season, a total of 723 animal units (cow/calf pairs and mature bulls equal 1.0 A.U.s; yearling heifers and yearling bulls equal 0.7 A.U.s.) of cattle were delivered to the Preserve. The AUs equated to 773 head. Of these 773 total head, Jemez Pueblo grazed 336 head and NMSU grazed 437.

The pastures being grazed included the field/lake traps, the bull paddocks, the south horse pasture near HQ, the Rincon pasture, the Posos pasture and the Valle Seco/ Santa Rosa/San Luis pastures.

AUs per pasture were as follows:

- South Horse Pasture 14 AUs (heifers)
- Lake and Field Traps (Valle Grande): 70 AUs (yearling bulls)
- Bull Paddocks 40 AUs (yearling bulls)
- Rincon de los Soldados and Posos Pastures: 336 AUs (cow/calf pairs, bulls)
- Seco- San Luis-Santa Rosa: 263 AUs (cow/calf pairs, bulls):

Specifically, the VCNP program included the following components:

Jemez Pueblo Cow/Calf Operation and Conservation Stewardship Program

For this program, Jemez pueblo and local cattle producers brought in approximately 320 cows and their calves for grazing on the Preserve. Both the mother cows and their calves benefited from the abundant forage and will gain significant weight while on the Preserve. Around 15 bulls were used as part of this program.

As a conservation stewardship measure, it was agreed that the Jemez Pueblo tribal rangeland would not be grazed while the cattle were on the Preserve, thus giving the tribal land a rest from grazing. As part of this program, range plant surveys were conducted by staff from both the Pueblo of Jemez and the Trust, to assess any change in rangeland condition due to this conservation effort.

The range condition parameters that were measured included:

a) Ground Surface Conditions: Presence/Absence and depths if applicable of rills, pedestals gullies, and wind scouring; b) Basal cover percentages of: Plants, Bare, Litter, Scat, and Wood; c) Percent Canopy Cover of Grasses and Forbs broken down by the 3 dominant grasses and the 3 dominant forbs; and d) Average grazed and ungrazed heights for grasses and forbs, also broken down by the three dominant species of each.

This year's studies were primarily conducted to help establish the study plots and finalize field methodology. Results indicated no significant change in range condition. However, over time we expect to see improvements in range conditions.

In addition, Jemez Pueblo provided 1144 hours of volunteer time to build and repair fence on the Preserve. These volunteer hours are calculated to be a value of $24,927.76 to the Trust (based on the federal rate of $21.79 per volunteer hour).

NMSU High Altitude Bull Evaluation Program

Bulls grazed on the Preserve this summer and underwent a variety of tests before being used for breeding. Most important of these tests was the Pulmonary Arterial Pressure (PAP). The PAP test provides an indicator of the animal's resistance to Brisket Disease. Brisket Disease, also known as High Mountain Disease or Pulmonary Hypertension, is one of the Rocky Mountain region's most costly diseases. The disease is the result of elevated pulmonary arterial pressures or pulmonary hypertension and generally affects animals less than one year of age residing at an elevation above 5,000 feet.

Brisket Disease is caused primarily by an oxygen shortage; oxygen availability reduces considerably at higher elevations causing increased resistance to blood flow in small arteries in the lungs. The heart compensates for higher resistance by stretching and building up a higher pressure. The pressure can continue to build up until fluids leak out of the blood stream and collect in the chest cavity, the brisket, and other places. Eventually, the heart wears out and stops beating.

Susceptibility or resistance to brisket disease is an inheritable trait. The goal of this program was to identify bulls with the greatest resistance to brisket and promote that genetic trait, adding value to the animal and reducing the incidence of the disease.

NMSU also measured the weight gain of these bulls. Gaining weight is the heart of the cattle industry. Identifying bulls that are good at gaining weight as well as resistant to brisket adds additional value to these animals.

NMSU Cow-Calf Pairs Program

For this program, local cattle producers brought in approximately 220 cows and their calves for grazing on the Preserve. Both the mother cows and their calves benefited from the abundant forage and will gain significant weight while on the Preserve.

NMSU US Forest Service Permittee Opportunities

Because of the 2011 Las Conchas fire, several of the US Forest Service grazing permittees could not return to their allotments located south of the Preserve due to fire damage. Therefore, these permittees were given the opportunity to participate in the NMSU program should they so desire. There were several permittees that opted to participate in the program and were therefore provided an opportunity to continue grazing cattle in the Jemez area.

NMSU Replacement Heifer Program

For this program, cattle producers brought in artificially inseminated heifers (female calf that has not been previously bred) for grazing and breeding, approximately 20 heifers. They were bred with bulls who are likely (through genetics) to produce a calf who will be small at birth but should gain weight nicely in the first year. When a young cow can give birth to a small calf her first delivery it reduces the likelihood of complications occurring during birthing. This not only protects her during this first birth but can lead to an overall improvement in her reproductive health through her life. Unfortunately, this was the group of cattle that was moved from the Preserve due to the fire.

NMSU Youth Ranch Management Camp

For the second year, NMSU hosted the youth ranch management camp. It was a success on multiple levels. More information on the ranch camp can be found online at:

http://nmyrm.nmsu.edu/

According to the website, the camp, designed for 15 to 19-year-old New Mexico youth, was an effort to reverse the aging trend in ranching. Nationally, the average age in the ranching community continues to increase as more young people are opting to leave the ranch for careers outside production agriculture.

"The ranch camp is a tremendous opportunity for high school youth and is the first of its kind across states I have been involved with," said Dennis Braden, general manager of Swenson Land and Cattle Co. in Stamford, Texas, and a camp volunteer and presenter.

"What the kids learned at the ranch camp has a direct impact on the quality of beef produced for future generations," said Dina Reitzel, executive director of the New Mexico Beef Council. The council was one of many industry organizations and companies that helped sponsor the inaugural camp.

The 30 youth selected to attend this year's camp received training in all aspects of ranch management.

NMSU Youth US Beef Academy

Another youth program was initiated this year at the VCNP. NMSU hosted an inaugural US Beef Academy. More information on the Academy can be found online at:

http://usba.nmsu.edu/

According to the website, the NM Youth Ranch Management program was developed in 2011 to promote learning opportunities for youth from family ranches. In 2011 and 2012, the NMSU Cooperative Extension Service and the greater BEEF Industry in NM hosted 30 youth from across the state of NM on the Valles Caldera National Preserve at the NM Youth Ranch Management Camp. A common question asked by attendees and parents at the end of the weeklong program was, "When is the next camp?"

The US Beef Academy (USBA) aimed to further expand the NM Youth Ranch Management Program on the Valles Caldera to youth from across the United States. The USBA was tailored as an advanced, applied educational experience for youth between the ages of 15-19 with a sincere desire to be the next generation of beef industry producers and leaders. Participating youth left this unique experience with an expanded toolbox of new concepts and ideas, advanced technologies, and applied skills that are currently being used throughout the beef industry to improve efficiency and profitability.

The goals for youth who attend this event were two-fold: 1) introduce them to subject matter they can take back home to the ranch, and 2) expose and provide direction on future educational and career opportunities across various sectors of the beef industry.

Like the annual Youth Ranch Management Camp, the US Beef Academy was a unique event at one of the West's most historic ranches.

VCNP Range Management and Monitoring Efforts

Several methods of range monitoring were employed by Trust staff to gather information about the grazing conditions before, during, and after the grazing season.

One of the methods of monitoring rangeland health during the grazing season used techniques recommended by the USDA's Natural Resources Conservation Services (NRCS). In an attempt to standardize the monitoring of the cattle program on the ground during the grazing season, records of the cattle program and range conditions were kept and assessed using the USDA NRCS, Grazing Recordbook: A field Guide for Range, Forage and Livestock Programs. Part of this process involved conducting basic pasture utilization surveys.

Surveys were conducted in (1) the south horse pastures, (2) the Lake/Field trap pasture, (3) the bull paddocks, (4) the Rincon pasture, (5) the Posos pasture, (6) the Seco/Southwest San Antonio pastures, and (7) the Santa Rosa/San Luis pastures.

The methods of the NRCS Rangeland Utilization Survey consist of selecting key areas in the pastures that are grazed. Step transects are done by walking in one direction and at every second step, stopping and estimating which Use Class is apparent for the key species nearest your foot. The Use Class is the amount of annual growth removed by grazing animals. At least

100 points are taken per survey. The Use Classes are described by NRCS and include 0-15% (none), 16-35% (light), 66-80% (heavy), 80-100% (severe). For example "None" is described as having very little use of key forage plants with only choice areas or choice plants being foraged. "Light" is described as having key forage plants that are lightly to moderately used, with practically no use of low-value plants, with most of the accessible range shows grazing. "Moderate" means that key forage plants are used about right for the season; with some use of low value forage plants and all fully accessible range areas are grazed. Some trampling may be evident. Table 1 includes the results from these field assessments.

Table 1. 2012 Grazing Season Utilization for VCNP Pastures Using USDA NRCS Use Class.

Pasture	Beginning of Season (May)	Mid Season (August)	End of Season (October)
South Horse Pasture	**8.0 %** 0-15% (none)	**54.9%** 36-65% (moderate)	**66.9%** 66-80% (heavy)
South Horse Pasture (Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)
Lake/Field Trap	**8.0 %** 0-15% (none)	**39.5%** 36-65% (moderate)	**42.4%** 36-65% (moderate)
Lake/Field Trap (Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)
Bull Paddocks	**8.0 %** 0-15% (none)	**57.3 %** 36-65% (moderate)	**63.3 %** 36-65% (moderate)
Bull Paddocks (Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)
Rincon Pasture	**8.0 %** 0-15% (none)	**67.9 %** 66-80% (heavy)	**59.3%** 36-65% (moderate)
Rincon Pasture (Control)	**8.0 %** 0-15% (none)	**8%** 0-15% (none)	**8 %** 0-15% (none)
Posos Pasture	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**34.9 %** 16-35% (light)
Posos Pasture Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8 %** 0-15% (none)
Seco/SW San Antonio	**8.0 %** 0-15% (none)	**32.5 %** 36-65% (moderate)	**53.0 %** 36-65% (moderate)
Seco/SW San Antonio (Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)
Santa Rosa/San Luis	**8.0 %** 0-15% (none)	**59.8 %** 36-65% (moderate)	**53.9 %** 36-65% (moderate)
Santa Rosa/San Luis (Control)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)	**8.0 %** 0-15% (none)

South Horse Pasture

Results indicated that the control site for the South Horse pasture remained in the 0-15% (none) range for the entire grazing season, while the South Horse pasture itself, where about 20 heifers grazed for about 120 days went from 54.9% mid-season utilization in early August (NRCS moderate) to 66.9% utilization total for the end of the season (NRCS high) .

Lake/Field Trap Pastures

Results indicated that the control site for the Lake/Field Trap pastures remained in the 0-15% (none) range during the entire grazing season. The Lake/Field pastures where about 100 head of yearling bulls grazed went from 39.5% mid-season utilization in early August to 42.4% utilization total for the end of the season. Both were classified as the NRCS 36-65% (moderate) utilization level.

Bull Paddocks

Results indicated that the control site for the bull paddock pastures remained in the 0-15% (none) range for the entire grazing season, while the bull paddocks pastures, where about 55 head of cattle grazed went from 57.3% mid-season utilization in early August to 63.3% utilization total for the end of the season . Both were classified as NRCS 36-65% (moderate) utilization level.

Rincon Pasture

Results indicated that the control site for the Rincon pasture remained in the 0-15% (none) range during the entire grazing season. The Rincon pasture where about 336 head of cattle grazed for two and a half months went from 67.9% mid-season utilization (NRCS High utilization) in early August to 59.3 % utilization total for the end of the season (NRCS moderate utilization). We planned to rotational graze the cattle in the Rincon and Posos pastures. However, due to the delay in completing the new fence in the Posos pasture, the cattle were left in the Rincon longer than planned. Fortunately, having rotated the cattle off the pasture for the last six weeks of the season, the final utilization was within the moderate category.

Posos Pasture

Results indicated that the control site for the Posos pasture remained in the 0-15% (none) range during the entire grazing season. The Posos where about 336 head of cattle grazed for six weeks went from 8.0% mid-season utilization in early August to 34.9% utilization total for the end of the season. Mid season utilization was classified as the NRCS 0-15% (none)

utilization level while the end of season was classified as NRCS 16-35% (moderate) utilization level.

Seco/SW San Antonio Pastures

Results indicated that the control site for the Seco/Southwest San Antonio pastures remained in the 0-15% (none) range for the entire season, while the Seco/Southwest San Antonio pastures where about half of the 263 cow/calf pairs grazed went from 32.5% mid-season utilization in early August to 53.0% utilization total for the end of the season. Both were classified as the NRCS 36-65% (moderate) utilization level.

Santa Rosa/San Luis Pasture

Results indicated that the control site for the Santa Rosa/San Luis pasture remained in the 0-15% (none) range for the entire grazing season, while Santa Rosa/San Luis pasture itself, where about half of the 263 cow/calf pairs grazed went from 59.8% mid-season utilization in early August to 53.9% utilization total for the end of the season. Both were classified as the NRCS 36-65% (moderate) utilization level.

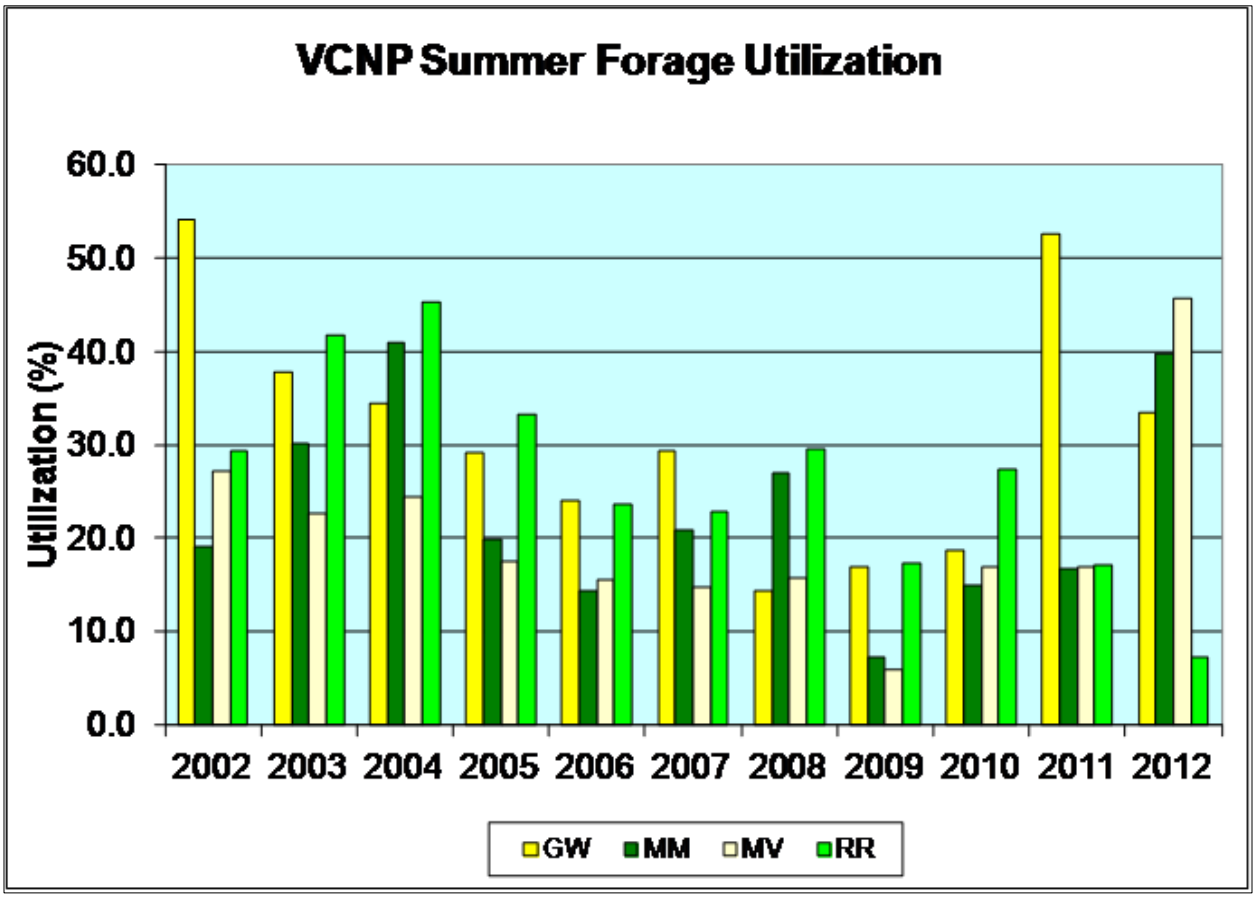
The more extensive and rigorous data collection and studies of range health were conducted as part of the Science Program's range condition monitoring.

Total rainfall during the 2012 season was lower than average and the lowest in about 10 years. Based on data collected after the cattle had been removed from the Preserve, the forage utilization data showed that most areas had been grazed near the 40% forage utilization goal. There were some grazing in the grassland type "Mountain Valley" that went slightly beyond the 40% goal. As a whole, during 2012 we were closer to our 40% utilization goal than in 2011 (Table 2). Grazing levels in 2012 were closer to the 40% goal when compared to many of the past grazing seasons (Figure 2).

Table 2. VCNP forage utilization (based on ratios of biomass outside vs. inside exclosures from autumn sampling, after livestock have left the VCNP).

	2011	2012
Grazeable Woodland (GW)	53	33.4
Mountain Valley (MV)	17	45.7
Mountain Meadow (MM)	17	39.8
Riparian (RR)	17	7.3
Overall Average % Utilization:	**25.9**	**31.55**

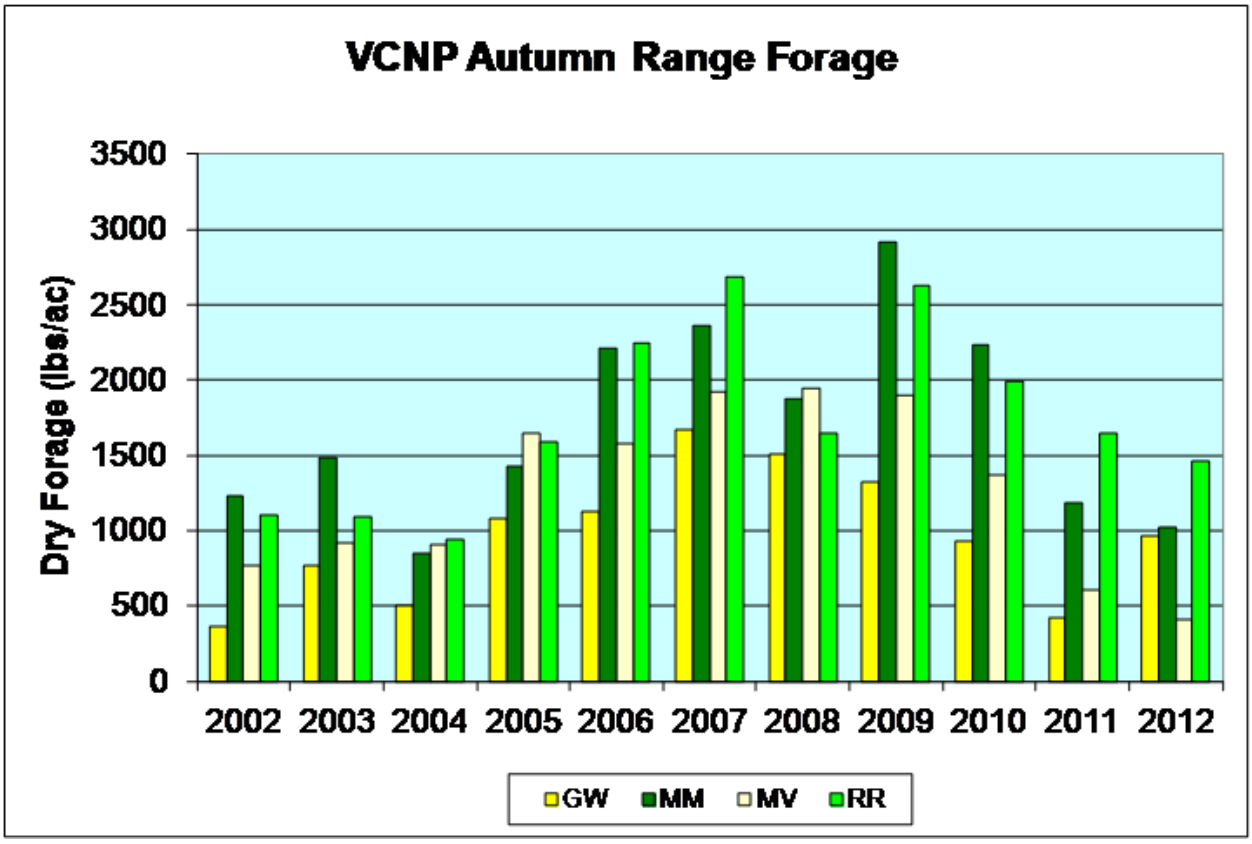
Figure 2. The VCNP Summer Forage Utilization 2002-2012.



Grazeable Woodland (GW,) Mountain Valley (MV), Mountain Meadow (MM), Riparian (RR)

For the entire Preserve, average production was 965 lbs/acre, down slightly from the previous year's 967 lbs/acre. Figure 3 includes the average forage left standing after the livestock were removed for 2002-2012.

Figure 3. Average amount of forage (dead and live) left standing in autumn 2002-2011.



Grazeable Woodland (GW), Mountain Valley (MV), Mountain Meadow (MM), Riparian (RR)

Financial

In 2012, Jemez Pueblo and NMSU paid the Trust $10.00 per head a month ($40.00 total per head for the 4 month grazing season). 773 head were grazed for the season producing gross revenue of $30,920.

Ranch and science personnel, as well as vehicles and supplies, are required to operate the program. An estimate of the cost of these program specific operations expenditures is included in Table 4. Estimated expenditures for the program were $26,196.

Table 4. 2012 Grazing Program Estimated Expenditures.

Ranch Personnel	Cost
--Ops Div Director	$4,092
--Ranch Hand	$8,820
--Fence Crew	$1,920
Ranch Vehicle	$96
Fence Vehicle	$480
Ranch Supplies	$500
Ranch Subtotal	$15,908
Science Personnel	
--Veg. Crew	$6705
--Field Supervisor	$3540
Science Vehicle	$173
Science Supplies	$30
Science Subtotal	$10,288
TOTAL	$26,196

In summary:

- $10.00 per head a month ($40.00 per head for 4 month season)
- A total 773 head grazed for the season
- Gross income was $30, 920, operations costs were $26,196
- **NET INCOME : $4,724**

Conclusion and Recommendations

A total of $30,920 was returned to the Trust. Again this year, the 2012 cattle program was a success on several fronts. Two separate permits were issued to two groups. This allowed the greatest amount of flexibility in the program while maximizing the benefits to the Trust and the permittees. The continuing multi-faceted programs again involved multiple cattle growers (including many local producers), involved a conservation program on tribal land, helped out the USFS permittees impacted by last year's fire, limited the impacts to sensitive habitats, limited impacts and interaction with recreation programs, and provided a research component related to issues unique to high altitude cattle. Furthermore, the two New Mexico Youth Camps were a great success and received broad positive feedback. And lastly, Jemez Pueblo provided 1,144 hours of volunteer time building fence, valued at $24,927.76.

There were several goals for the cattle program that were set forth in 2010 and 2011. All these goals were taken into account as we managed the 2012 grazing program at the Preserve. We made progress in reaching these goals and they will be used again as standards for next year's program. These include:

- The grazing program should provide the Trust with the greatest flexibility to respond to varying environmental and market conditions, to meet multiple goals and to incorporate an experimental management style that mixes elements of public and private administration.
- The program should be aimed at reducing our administrative costs and efforts.
- Operating smaller numbers of livestock, while at the same time seeking to develop programs that increase the revenue through other activities, might be a better long-term strategy for economic return. These activities could include a smaller numbers of higher value animals (such as the high elevation bull/heifer programs), fees and grants received for educational programs, conservation stewardship programs, or even recreational fees associated with herding or other cowboy activities.
- The program should provide for the ability to respond to changing conditions, future development or changes on the Preserve, balance all the goals from the Act, and address the competing demands from the public.
- The program should have goals which also take into account the ecological impacts and other issues associated with the Las Conchas fire. These would include:

(1) Strive to include as many Santa Fe National Forest permittees as possible from the allotments that were impacted by the fire. Use the Valles Caldera as a "grass bank" for those permittees, in turn allowing burned areas on the National Forest to recover without grazing pressure.

(2) Work to improve range monitoring techniques on the Preserve using common methodology from other federal and state range management programs. This would include the development of systematic standards and guidelines for monitoring of the Valles Caldera grazing program and moving beyond simple utilization data.

Unfortunately, Number 2 was not entirely completed this year. It is recommended we attempt to accomplish this effort as part of the upcoming 2013 grazing season.

This year, a VCNP ranch hand was hired to help eliminate the impacts from trespass cattle. Trespass cattle continued to be a problem on the Preserve, mostly on the northern part of the Preserve. However, the efforts of the ranch hand to locate and remove cattle had a positive impact as a whole. Substantial effort was made to remove cattle off of the Preserve, having the owners come retrieve their cattle, as well as law enforcement involvement. It is recommended that we continue to hire a ranch hand each season to help with these efforts.

In summary, the 2012 grazing season conducted by Jemez Pueblo and NMSU was successful. Again this year, great effort was made to keep the cattle in large pastures away from riparian areas and away from recreation programs. The cattle had a negligible impact on the recreation programs this year due to a concerted effort to keep cattle out of recreation areas. The program involved many local cattle growers, included an extension and research component, a conservation stewardship program which allowed the resting of tribal land. Furthermore, the youth camps were a success and both are being planned again for next year.

Appendix A

VCNP Memo: Estimate of Livestock Numbers

Director, Science and Education

Valles Caldera Trust

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Date: 1 May, 2012

Memo to: Dennis Trujillo, VCT Executive Director

Subject: Range Readiness Analysis for VCT livestock program for summer, 2012

I. Introduction:

The purpose of this range assessment is to determine the potential ecological outcome of the proposed Valles Caldera Trust (VCT) 2012 livestock grazing program on the Valles Caldera National Preserve (VCNP). This report is based on analyses of field data collected by VCT science staff, USDA ARS Jornada Experimental Range scientists, volunteer citizens from the Sierra Club, and University of New Mexico climatology scientist Douglas Moore, and provides an evaluation of the condition of the pastures, including amounts of available forage, potential for continued forage growth in terms of soil moisture, and water availability in streams and stock tanks. In addition, a report on projected climate conditions for the summer of 2012 is provided for the purpose of anticipating possible temperature levels and precipitation amounts in regard to sustained production of forage for livestock and wildlife.

II. Sampling Design and Methods:

Forage availability data were derived from vegetation clip plots at 40 long-term sampling sites across the VCNP. These sites are part of the long-term monitoring network for forage productivity and utilization by livestock and elk, and are associated with permanent monitoring sites for plant species composition and cover. Sites are stratified by grassland type: Grazeable woodland (GW) sites are found in the sub-canopy areas of forests surrounding the VCNP valles, generally dominated by Ponderosa pines; mountain valley sites are upland slopes of the valles, dominated by Parry oatgrass and fescues;

mountain meadow sites are typically in the low areas of the valles on relatively moist soils, and commonly support Kentucky bluegrass and a wide variety of other grasses and forbs; and riparian sites, found along streams in the valles, and dominated by several species of sedges. At each site, four replicated ¼ square-meter rings are clipped of all vegetation to a height of approximately 1 cm. The clipped vegetation is collected in paper bags, dried in ovens at 60º C for at least 48 hours, and weighed to the nearest gram. Estimates are then calculated for standing crop biomass in kilograms/hectare, and converted to pounds per acre units for report presentation. These estimates are then scaled up to the entire VCNP, and a calculation is made for the number of livestock that could be supported with the available forage, allowing for retention of forage for other herbivores (e.g., elk, rodents, grasshoppers, aphids, etc.) and sustaining ecosystem function (e.g., prevention of soil erosion, carbon sequestration, promotion of nutrient cycles, maintaining the health of forage plants, etc.). The results are also compared to those of previous years. In addition, grass stubble height transects (30 paces each) were measured at each of the forage clip plot sites. At each pace location, the dominant grass species were measured (cm) for average live height of leaf blades. Each plant was inspected to determine if it had been grazed or not grazed at the time of measurement.

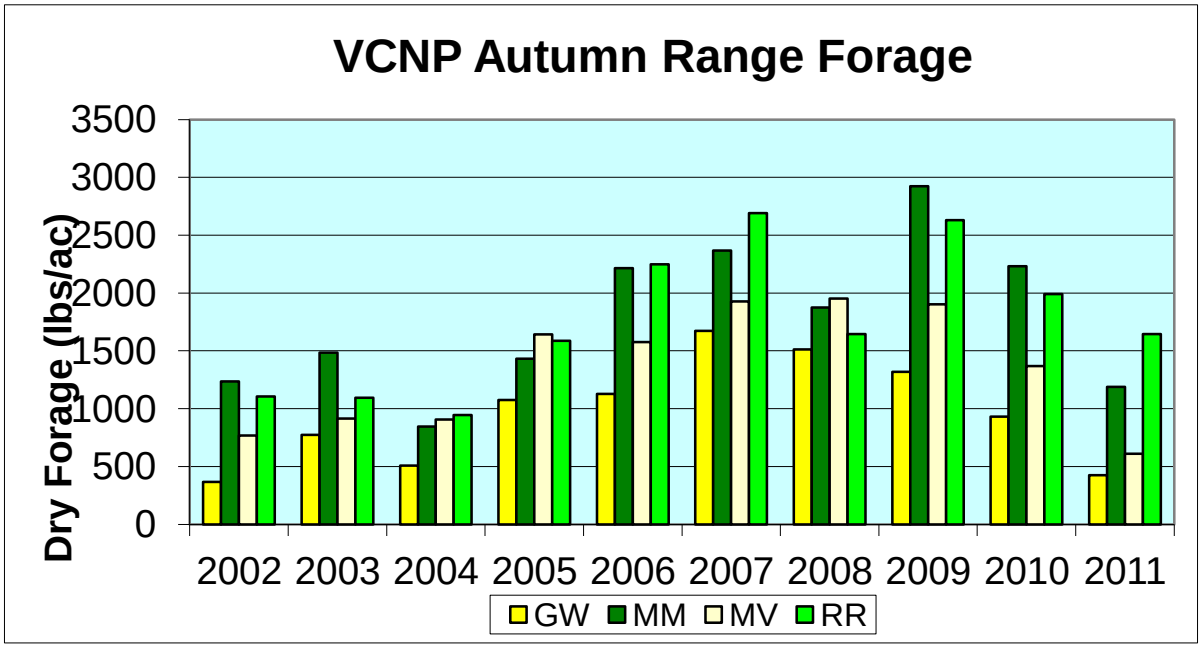
Meteorological data were analyzed for precipitation and soil moisture. Data from the current year were compared to conditions in previous years.

Meteorological forecast data for the spring and summer periods of 2012, including both precipitation and temperatures in northern New Mexico, were obtained from the multi-agency Southwest Coordination Center (SWCC) web site: http://gacc.nifc.gov/swcc/predictive/weather/weather.htm

To ascertain overall runoff conditions in Jemez Mountain streams, stream flow data for the Jemez River watershed (based on the USGS stream gauge near Cañon in the Jemez Valley) were obtained from the USGS web site (http://waterdata.usgs.gov/nm/nwis/current/?type=flow).

III. Results:

A. Forage Availability. The results of the forage assessments from 2002 through last autumn (fall, 2011) indicated that standing crop biomass is somewhat lower than the same time last year (2010). The results of the sampling are shown below. The standing crop forage available at the end of the growing season in 2011 is below average compared with the 2006-2010 period.

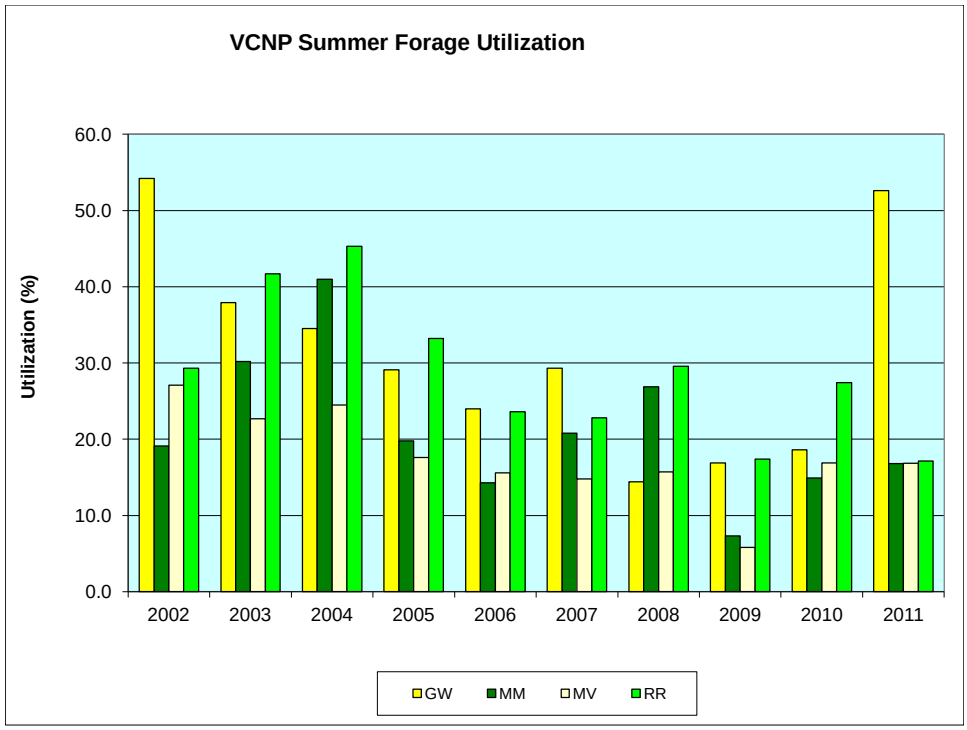


Utilization rates from last year indicate that most grasslands sustained utilization rates well under the target of 40%, whereas some sites in the Grazeable Woodland sustained utilization higher than 40% - a number of these high values were in areas without livestock, and were due to grazing by elk and other wildlife herbivores.

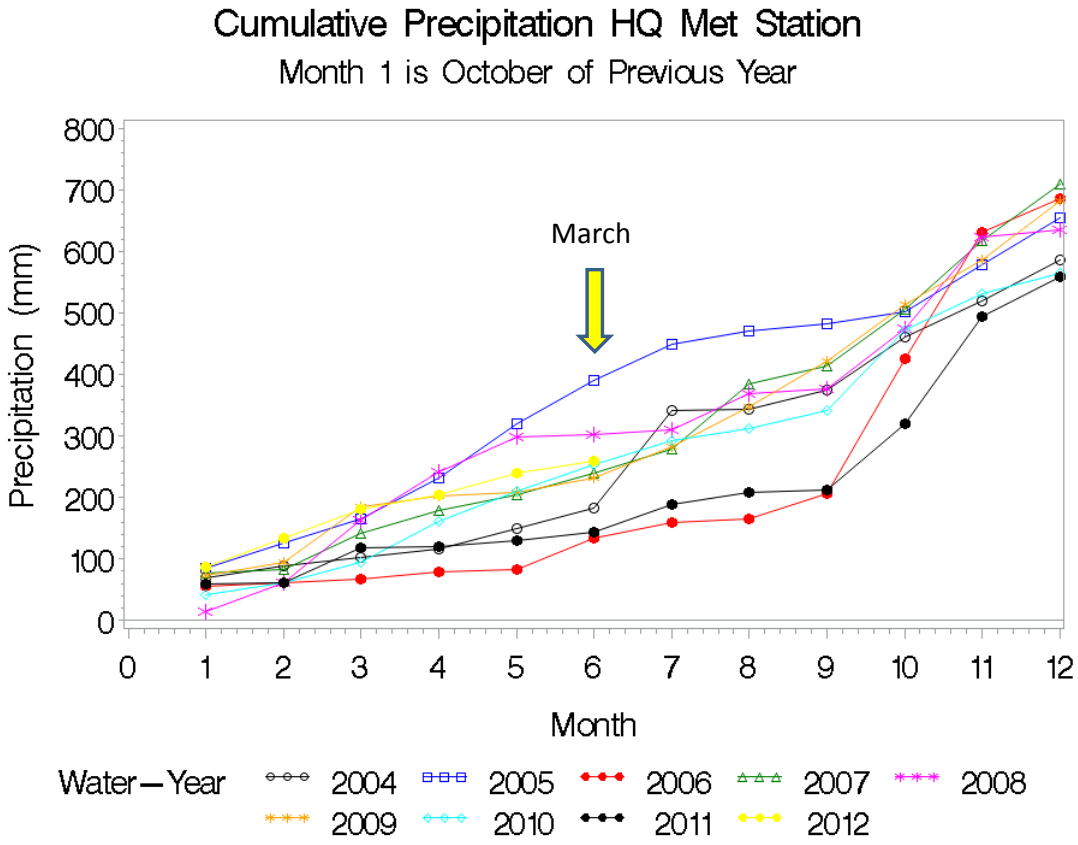
2011 Forage Utilization Results by grassland type:

GW = Grazeable Woodland; MV = Mountain Valley;
MM = Mountain Meadow; RR = Riparian

YEAR: 2011			
Site Type	Summer net utilization (%)	Range of % utilization	2011 Fall Standing Crop Biomass (lb/ac)
GW	52.6	0.0 - 59.9	425
MV	16.8	0.0 - 62.2	610
MM	16.9	0.0 - 35.3	1,188
RR	17.2	0.0 - 55.5	1,645

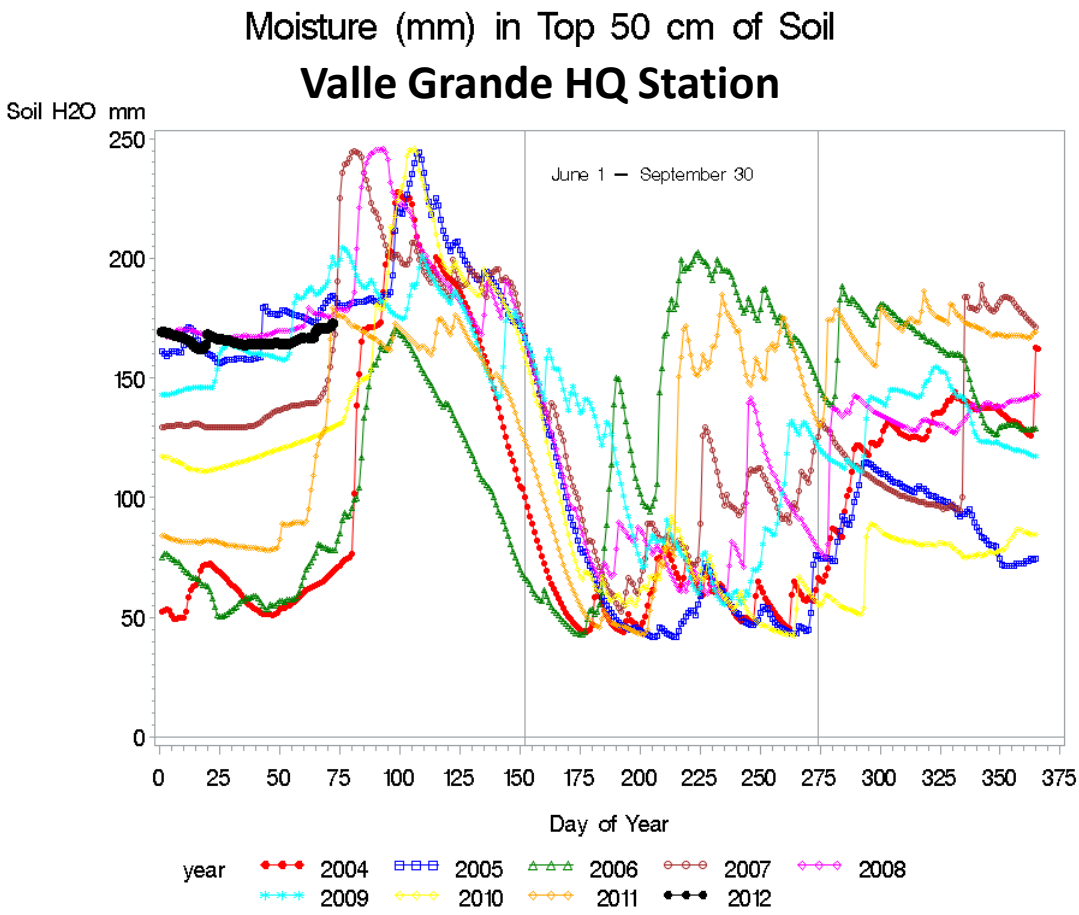

VCNP Summer Forage Utilization
Utilization (%)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
GW
MM
MV
RR

B. Climate. Precipitation conditions in northern New Mexico during the winter of 2011 have been very close to the long-term average. Precipitation as rain and snowfall was higher than average during October through December, but somewhat below average during January through March.



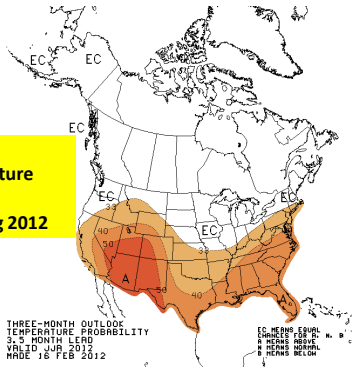
Cumulative precipitation at the VCNP HQ station in Valle Grande. Monthly data are for annual "water year" running from October through September. Note that cumulative precipitation in 2012 (yellow line) is right on average.

C. Soil Moisture. Soil moisture conditions as of early April, 2012 (black line), were above average for supporting continued plant growth into the early summer.



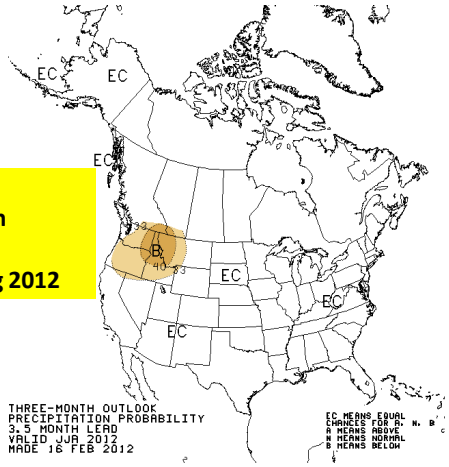
Soil moisture at HQ station, top 50 cm. Dates based on Julian Days (Jan. 1 = Day 1, Dec. 31 = Day 365. The livestock grazing season is shown as June 1 – Sept. 30). Note that soil moisture is slightly above average compared to values observed in many previous years.

D. Climate forecast for summer, 2012. Projected summer forecasts of temperature by the Southwest Coordination Center for northern New Mexico indicate a statistically higher probability of higher than average temperatures (see below). This may lead to realized higher evapo-transpiration rates, and potentially drier soils if the monsoon rains do not materialize. The forecast for precipitation is for normal summer moisture amounts in northern New Mexico However, given that monsoons periodically fail, continued monitoring of precipitation and forage condition will be undertaken throughout the summer.



Summer Temperature Outlook: June-Aug 2012

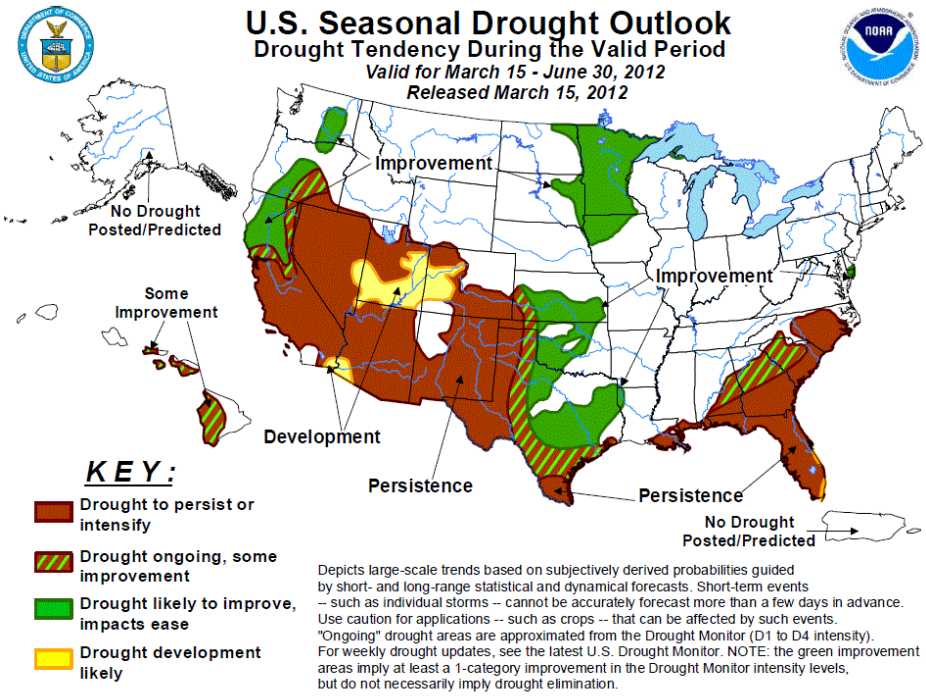
Temperature forecasts for summer, 2012. These outlooks predict the likelihood (chance) of above-average, average, and below-average precipitation, but not the magnitude of such variation. The numbers on the maps are % probabilities and do not refer to degrees.



Summer Monsoon Outlook: June-Aug 2012

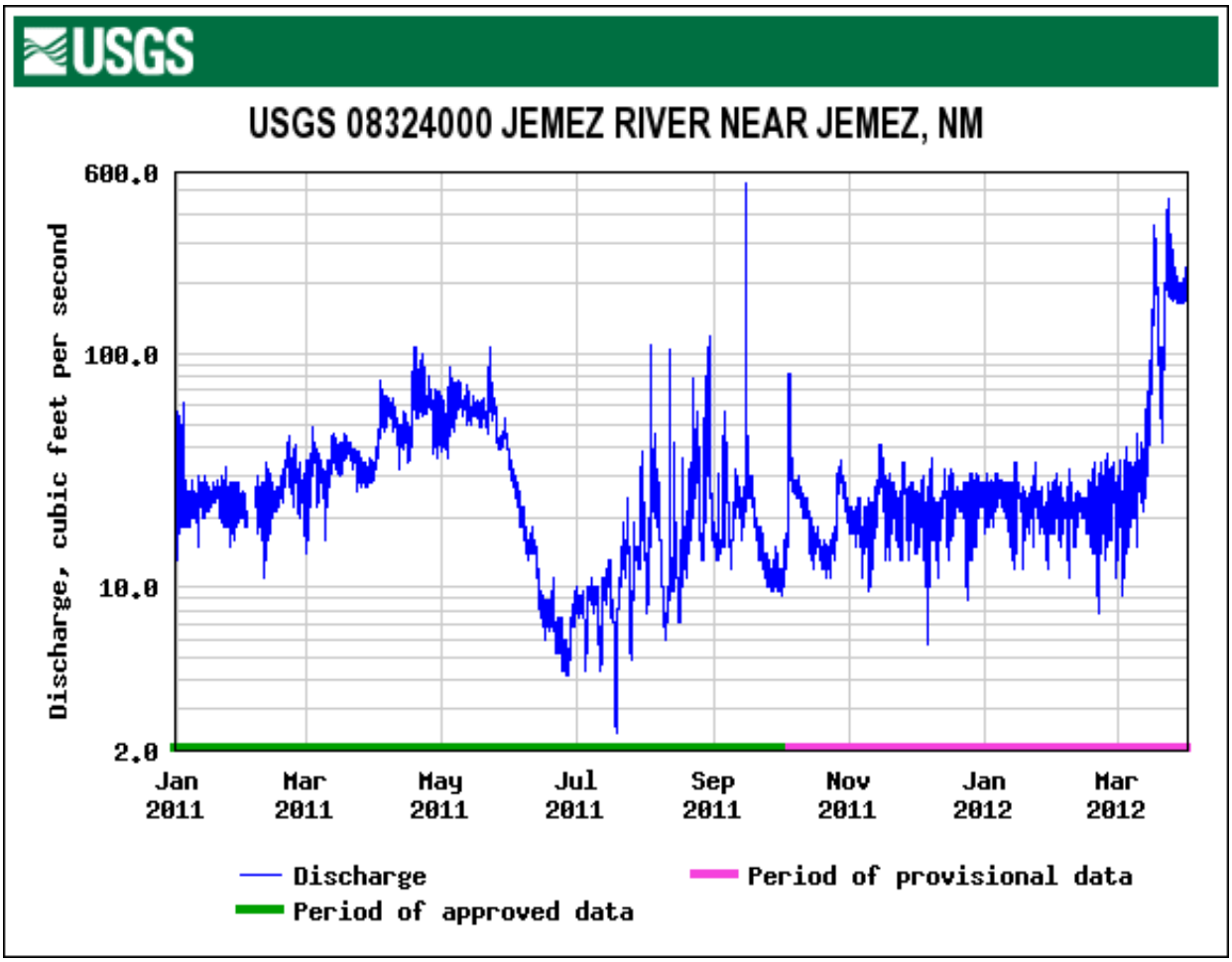
90-day precipitation forecasts for summer, 2012. These outlooks predict the likelihood (chance) of above-average, average, and below-average precipitation, but not the magnitude of such variation. The numbers on the maps do not refer to inches of precipitation. The 90-day outlook is for "equal chance" of normal precipitation through August, 2012.

With respect to overall drought, dry conditions have lessened but are still persistent in northern New Mexico, with an area of improvement forecast for the northwestern part of the State. The Valles Caldera lies just on the edge of this region, and therefore, some improvement may or may not be observed in the Preserve itself; however, the Preserve's high elevation will increase the probability of increased rainfall.



Drought outlook through June 2012, in the United States.

E. Stream flow and runoff. Data from the USGS stream gauge on the Jemez River show substantially higher peak flows in spring 2012 than at the same time last year. Discharge was ~20-50 cubic feet per second (cfs) in March, 2011, whereas in early April 2012, discharge was >110 cfs. The peak 2011 flow flow rate resulted from monsoon flash floods following the Las Conchas fire.



Discharge (cubic feet per second, or cfs) of the Jemez River (USGS stream gauge near Cañon, NM), Jan. 2011 through March 2012.

F. Stock tank water-holding conditions. In May, 2012, the major stock tanks in the Valle Grande, Valle de Los Posos, and the Valle Seco, were nearly full to capacity, and water was still flowing through the spillways. Upland water tanks that were visible from back-country roads also appeared to be nearly full. While many of the VCNP stock tanks are in need of repair and maintenance, and some are not functional, the remaining tanks appear to have sufficient water levels to support livestock and elk through the pre-monsoon periods.

IV. Livestock Stocking Level.

Based on forage data collected from 2002 – 2008, forage utilization and elk/livestock abundance has been estimated for five levels of precipitation and forage production, ranging from historic high levels to low levels. Average capacity for the VCNP is 541 Animal Units for 4 months of grazing, in addition to an elk herd estimated by the NM Department of Game and Fish of 3,000 animals. The forage allocation calculations are based on total utilization by elk and livestock of 40% of available forage production, with 60% of the forage remaining behind for ecosystem services (soil erosion prevention, carbon sequestration, and health of forage plants).

VCNP forage production estimates (fall standing crop biomass, lbs/acre dry weight)

Reflects forage available for allocation to elk and cattle (40% of total on suitable areas)

Pasture Name	Sum of ACRES	Sum of HIGHMODEL	Sum of MIDHIMODEL	Sum of AVGMODEL	Sum of MIDLOMODEL	Sum of LOWMODEL
Field Trap	329.5	291,957	239,136	186,230	141,172	96,159
Jaramillo Trap	805.1	459,886	379,367	298,731	227,973	157,294
Lake Trap	653.9	592,190	485,525	378,735	290,024	201,402
Lower San Antonio Trap	1,895.7	1,029,266	850,652	671,818	513,992	356,373
Middle San Antonio Trap	838.9	649,416	535,105	420,637	321,731	222,929
Mohawk Trap	749.3	327,898	269,747	211,516	161,593	111,721
Redondo	25,982.5	1,395,627	1,144,534	893,236	678,424	463,921
Rincon	3,835.0	911,027	748,285	585,327	443,884	302,617
Round Mountain	555.9	464,815	382,190	299,483	230,247	161,087
San Antonio Bench	11,237.2	1,045,614	861,092	676,381	512,152	348,181
Seco-Santa Rosa-San Luis	14,632.3	2,174,694	1,799,839	1,424,556	1,085,955	747,860
Shipping Trap	1,232.0	1,004,446	835,101	665,612	514,445	363,501
Toledo-Obsidian Valley-Posos-Slot	15,619.3	2,904,053	2,415,809	1,926,998	1,476,697	1,027,079
Upper San Antonio Trap	2,316.3	1,269,223	1,048,402	827,277	634,882	442,683
Valle Grande	5,892.1	3,416,862	2,809,101	2,200,594	1,683,006	1,165,989
Grand Total (lbs dry forage, fall)	86,575.0	17,936,972	14,803,884	11,667,132	8,916,180	6,168,793
Elk allocation (3,000 elk * 6 months @ 540 lbs/month):		9,720,000	9,720,000	9,720,000	9,720,000	9,720,000
Remaining for allocation to DL		8,216,972	5,083,884	1,947,132	-803,820	-3,551,207
Stocking levels Animal Units (1 AU = 900 lb/month) for 4 months		2,282	1,412	541	-223	-986
Stocking levels for Steer (630#/month/head for 4 months)		3,261	2,017	773	-319	-1,409

Results of forage model allocation calculations for VCNP.

The analyses of forage availability, precipitation, soil moisture, stream flow, and stock tank water content for fall-spring, 2011-2012, indicate that spring soil moisture levels are near average, while cumulative precipitation and stream flow are at or above average. Stock tank water capacities are good. The climate forecast for summer in northern New Mexico calls for above-average temperatures, with average monsoonal precipitation.

Therefore, based on these measurements, the potential stocking rate for livestock on the VCNP should be near average levels. This would indicate that the VCNP could support at least the 541 Animal Units sustainable in an average year.

However, monitoring data from the pastures utilized during the grazing season of 2011, which were stocked with livestock at 452 AUM, revealed that very little forage utilization occurred in many of the Preserve's grassland types (except Grazeable Woodland, where elk grazing contributed to some areas of heavy use). The Las Conchas fire clearly contributed to this, as the Valle de los Soldados and Valle de los Posos pastures were evacuated immediately after the fire, and not grazed by livestock for the remainder of the summer. Monsoon rains after the fire produced a very good herbaceous plant crop. Given the Trust's goal of utilizing up to 40% of the available forage, it appears that the herd stocking level could be increased somewhat, given that 2011 appeared to be an average year in terms of forage, precipitation and soil moisture. The estimate for average capacity of livestock (541 head) depends on the accuracy of the size of the elk herd (estimated at 3,000 elk); if this estimate is too high, then the average capacity for livestock can increase. The NM Department of Game and Fish has an estimated range of elk herd size of 2,500-3,500 animals. If the herd size is only 2,500 elk, then the Preserve could support several hundred (300-400) more head of livestock. Given the low forage utilization observed in 2011, it appears that the Preserve could support more livestock in an average year.

As such, increasing the stocking density by a couple hundred head (~200) of livestock could serve as a conservative empirical test of the forage utilization model. However, continued monitoring during the summer will be required to ensure that, if the monsoon rains are delayed or fail altogether, then the stocking density will need to be reduced via livestock removals.