

Attachment C Grazing Plan

Burke Ranch Conservation Bank Grazing Management Plan

Goals

Healthy vernal pool ecosystems require ongoing reduction of vegetative biomass to limit encroachment of non-native species and improve the diversity and density of native plant species. The accumulation of dead plant material (thatch) provides a competitive disadvantage to the lower-growing native forbs along and reduces habitat quality for vernal pool invertebrates. Historically, vegetation levels in vernal pool complexes were maintained through wildfire and grazing of native ungulates. Active land management is currently required to reduce thatch accumulation and minimize encroachment of invasive plant species. In addition, focused grazing efforts will be needed around the playa pools and burrowing owl nest locations to aid in predator avoidance and foraging. Therefore, a livestock grazing program will be implemented on the Bank to maintain healthy, functioning ecosystems on site. Specific goals to achieve the objectives of the Bank include:

- Maintaining existing levels of thatch in upland and wetland areas while investigating long-term grazing strategies;
- Over the 10 years post-Bank approval, investigate alternatives in duration, intensity, and methodologies of grazing (e.g., number of cattle/acre or different grazing livestock) to reduce thatch and maintain appropriate vegetation height and density for burrowing owl foraging and California tiger salamander (CTS) distribution;
- Maintain open vernal pool margins on the playa pools to facilitate use by delta green ground beetle (DGGB)
- Maintaining or increasing the native plant diversity and density in the vernal pools and swales;
- Maintaining or reducing the presence of invasive plant species in the upland areas; and
- Evaluate the grazing plan in regard to maintaining or improving the Bank's biological goals every five (5) years based upon site experience and the best available scientific practices.

The required annual grazing monitoring, coupled with monitoring of the vernal pools and sensitive species, will provide feedback as to whether or not the grazing plan is working and will provide a basis for decision making regarding the grazing management.

Implementation Practices

Livestock grazing is a science that requires the proper balancing of animal numbers, seasonal timing, and grazing intensity to achieve the desired effect on the landscape. Undergrazing allows the accumulation of thatch, which could lead to a reduction of plant diversity, hinder species movement, and reduce populations of forage species for raptors. Overgrazing can pose a greater threat to the habitat; a disturbance regimen facilitates invasion of exotic pest-plant species, and more severe overgrazing can lead to erosion and sedimentation. Preferably, grazing on a short-duration high-intensity cycle can most uniformly remove thatch and affect coverage of invasive species. Due to the large size of the Bank, it will be most effective to divide the Bank

into smaller grazing units. This will allow for rotational grazing, where cattle can be moved on and off paddocks as the appropriate vegetation height and density is achieved.

Grazing practices on the Bank will have greater constraints than normally associated with vernal pool landscapes. To provide optimal forage for burrowing owl, vegetation height will be maintained between 3” and 12” inches, preferably with a majority of the site between 3” and 6” inches. Vegetation height will be maintained in a mosaic pattern rather than uniform height to improve habitat for prey species while maintaining sufficient open areas for raptor foraging. Accumulation of thatch in upland areas will have to be limited to prevent hindrance of CTS migration from estivation burrows to the breeding pools. In addition, it will be necessary to maintain low vegetation density on the margins of the playa pools to support DGGB foraging. Following the supplemental baseline studies in 2008, the Land Manager will design a grazing program for the Bank which addresses the biological requirement of the species on site. This grazing plan will be updated with a map depicting grazing sub-units on the Bank, and specific grazing practices or management requirements needed for each area. Modification to the grazing practices on the Bank will be addressed in the Annual Report submitted by December 31st each year.

Livestock will be most often be introduced to the site some time in November and would be removed from the site prior to July of each year. Recent research published in the journal *Conservation Biology* (Marty & Pyke 2005-Volume 19) shows that grazing vernal pool complexes during the wet season leads to increased inundation periods for the pools, which will provide better growing conditions for the native vernal pool plants and provide a better environment for vernal pool invertebrates. If exotic invasive weeds become a problem, cattle may be placed on site later in the season in an attempt to remove some of the later maturing summer annual weeds.

Timing and duration of stocking rates as well as grazing intensity will be set to maintain: 1) vegetation height between 3” and 12”; and 2) thatch accumulation, measured as forage levels consistent with a Residual Dry Matter (RDM) between 500 and 1,000 pounds per acre. These forage levels will be assessed though photographic comparison with an industry-accepted photo guide, such as the *Residual Dry Matter Monitoring Photo-Guide* (Wildland Solutions Field Guide Series, 1998). Photographs will be provided to the Resource Agencies in the management report.

Numerous sample points will be used to assess vegetation height and RDM. A minimum of 20 sample points will be established on the Bank, with at least on sample point in each grazing sub-unit. Sample point locations will be marked with GPS and directional bearing will be recorded. These sample points will be revisited each year to ensure consistency in monitoring assessment. To ensure the grazing is improving habitat viability as well as managing weed invasion and thatch accumulation, biological monitoring will assess the affects of grazing as described in Attachment B of the Burke Ranch Conservation Bank Management Plan.

The stocking rates for the past several years, based upon conversations with the previous land owner, averages about 160 cow/calf pairs for the season; this breaks down to one cow/calf pair for early six acres. Rates will vary based upon seasonal precipitation and growth of forage.

However, due to the ongoing presence of sensitive species at the Bank (as observed in the 1999 and 2007 invertebrate surveys), WES will continue to use the existing stocking rate and observe the affects of grazing on the resources on site.

Adaptive Management

Grazing management and stocking rates/duration are proposed with the overall goal of supporting the biological objectives of the Bank. Numbers and dates proposed in this plan are estimates and are meant to be used as guidelines. Grazing management for this property will be driven by observed species trends, and seasonal fluctuations in precipitation timing and extent. Depending on weather patterns, more or less cattle may be necessary, or cattle could be moved on site earlier or stay later than stated above. Should additional methodologies be required to adequately graze the Bank, adaptive management will allow for unforeseen stocking or grazing measures to be implemented. Signification deviations from the grazing proposed in this plan would be presented in the monitoring reports, and coordinated with the Resource Agencies as necessary.