

PRESCRIBED HERBIVORY FOR VEGETATION TREATMENT PROJECTS

Draft by RMAC – 2014-2015

OVERVIEW

This document has been produced by the Range Management Advisory Committee (RMAC) to raise awareness of the use of prescribed herbivory amongst CAL-FIRE Vegetation Management Program (VMP) Foresters and others contemplating fuel reduction projects consistent with the Vegetation Treatment Program Environmental Impact Report (VTP EIR). The VTP EIR contemplates using a combination of prescribed fire, mechanical treatments, manual treatments, prescribed herbivory, and herbicides to meet the goals and objectives of the program. The information included in this document should aid the VMP Foresters in identifying environmental conditions where prescribed herbivory may be the best treatment alternative in terms of cost and environmental impact to meet the projects objectives.

Prescribed herbivory as envisioned under the VTP EIR is the intentional use of domestic livestock to remove, rearrange or convert vegetation on wildlands to reduce the costs and losses associated with wildfires and to enhance the condition of forests, rangelands, and watersheds¹. The types of domestic livestock considered include cattle, horses, sheep and goats. Combinations of these animals can be effective in creating fuel breaks in grass and shrub fuel types, and maintaining fuel breaks in grass, shrub and timber fuel types. Effective use of livestock requires the appropriate combination of animals, stocking rates, and timing.

Determining the goal, objective, mission or purpose of the user is critical in evaluating the potential use of prescribed herbivory or sometimes referred to as “targeted grazing/browsing”.

SITE EVALUATION

Several characteristics and parameters of the site must be evaluated prior to designing a grazing/browsing management plan including but not limited to the following:

1. Targeted plant species.
2. Fuel characteristics including species composition, height, diameter, density, removable objectives.
3. Environmental characteristics including proximity to watercourses, wildlife habitats of concern, desired vegetation, weed species, neighbors, zoning issues, herbivore safety including wild dogs, predators, theft.
4. Infrastructure available including access, water, fencing, ...
5. Project size is dependent on scale – generally smaller projects are more costly than larger projects considering cost per acre or cost per pound of biomass removed. See discussion in contract segment.

ANIMAL CHARACTERISTICS

Generally animals can be divided into two (2) categories – ie., grazers and browsers – however each category may overlap significantly depending on species, stage of growth, availability of forage, animal genetics, or previous training of animals. Horses, cattle and sheep fall into the category of “grazers”, and tend to take aggressive bites of grasses and forbs. Goats fall into the broad category of “browsers”, and tend to nibble on brush and trees depending on browsing heights. However, each category can move to the opposite category depending on the aforementioned conditions.

Consumption per day of both grazers and browsers can be calculated by the following thumb rule: Animals will eat approximately 3% of their body weight per day of the dry matter weight of forage consumed. So, taking a 100# goat as an example and a very rough estimate of 25% dry matter of green growing brush the goat would consume about 12# of green brush per day. So, if you want to remove a ton of brush per day from a specified area it would take approximately one hundred seventy (170) 100# goats to accomplish your goal. By calculating the amount of biomass you want to remove you can estimate the mob size (# of animals) and length of the foraging period to get the job done. (This “thumb rule” will help you as you move to the contracting portion of this paper.)

Often times foraging species targeted may not provide a balanced nutritional diet for the herbivore used. Supplemental feed may be required to provide for a balanced ration for the animals to remain healthy and productive while completing your objectives.

Infrastructure needed for herbivores can be very simple, or very complex, depending on the genetic and other background factors of the animals selected. The most simple process is a mob with a herder, guard dogs (to protect from predators), herd dogs to control animal movement, and a water source for animals. A more complex system may require portable or permanent fencing, corrals, roads for access, barns or other environmental protection for the animals in inclement weather. Infrastructure needs can be worked out in collaboration with a grazing/browsing contractor.

Often multi-species (usually goats and sheep) can be very effective particularly when your target is grass and forb weeds or grasses and forbs with shrub fuel types. There probably is not a typical mob size, however one herder can handle up to 1500 hd of goats or goats and sheep. Special concerns can be many or very limited.

Toxic plants can be a challenge particularly with sheep. Goats seem to be resistant to most serious toxins but may limit their intake of scrub or forbs depending on the time of year or elevations. Other special concerns include, predators both natural and manmade. Many special

concerns can be alleviated with public friendly guard dogs. Short-haired guard dogs may be the most practical to minimize “stickers” in the summer and “mud balls” in the winter.

Comment [O1]: Re-work

ADVANTAGES AND BENEFITS

Prescribed herbivory can offer a variety of benefits in comparison to other proposed vegetation treatments included in the VTP EIR.

Herbivory is a historic, natural way of removing biomass and at the same time providing a quality protein product for societal benefit. They are essentially a “biological masticator” that can reproduce themselves, and turn unwanted biomass into a consumable product while at the same time increase soil organic matter, sequester carbon, and minimize greenhouse gases (GHG).

Consider using domestic livestock in your project when the following concerns arise:

- Air quality compared to fire
- Noise compared to mechanical operation
- Proximity to structures compared to fire and mechanical
- Extremely steep slopes compared to mechanical
- Soil compaction and surface disturbance compared to mechanical
- Noxious weed control compared to several other methods

LIMITATIONS

There may be environmental or social constraints that make prescribed herbivory an inappropriate treatment to consider – including:

- Treatment of dead woody fuels and slash.
- Timing of treatment in relation to size and maturity of the biomass.
- Landscape constraints and minimum management requirements from VTP EIR.

BEST MANAGEMENT PRACTICES

Things to consider when designing a prescribed herbivory project to minimize or mitigate potential environmental or social impacts:

- Conduct appropriate public relations communications so that the public will understand what your project mission is all about. Even though “biological masticators” are an age-old tool, using them for reducing biomass in reducing the potential for catastrophic fire events is a relatively new concept in modern times. The general public will be very interested in what you are doing. A well designed public relations program will help you bridge the gap between the public and bureaucratic institutions.

- Have in place a well thought-out animal care procedure to make sure the animals are cared for in a responsible, humane fashion (ample stock watering, safety from predators by using guard dogs or animal protection and careful animal observation for sickness or disease).
- Consultation with Certified Range Managers (CRM) when appropriate or required.
- Develop a monitoring program that determines the effectiveness of the grazing/browsing program compared to the original planned results.

CONTRACTING

The following key points should be addressed in a contract with a prescribed grazer:

- **Finding the right Contract Grazing Operator for your project**

There are a number of contract grazing outfits performing targeted grazing for specialized services, most often using goats and sheep. The size and scale of these operators are varied, from smaller operations using only a few dozens of goats to commercial operation of upwards of 2,000 head performing year-round grazing services. Determining the scale of your project through acreage will help you to determine which kind of contract grazer you should pursue. Often a Request for Proposal (RFP) or Request for Quote (RFQ) is announced to the general public and contract grazers are able to bid or quote on the project requesting to be performed. This allows the agency to determine which operator may be the best fit for the project.

A list of contract grazers can be found on-line through the listed links below. Please take note that these are not the sole operators performing these services and it may be most advantageous in finding the most active contract grazers through contacting other known organizations within the region who use grazing as a management tool.

- **Assessment**

Before a contract grazer is able to develop a quote and scope of work for a project, it is common for a tour of the site(s) that are being proposed for grazing. This allows the contract grazer to assess a variety of factors which help to determine what is needed to appropriately perform the job. Such as: number of head, species and ratio if more than one species is proposed to be used, water access points, fencing type, vegetation and density, slope of terrain and truck and trailer access, as well as camp trailer sites if the project requires an on-site herder. Allowing invitation for proposed contract grazing operators to become familiar with the site will allow for the most accurate cost quote and approach to achieving your goals using herbivores for mastication of fire hazardous vegetation.

- **Cost Structures**

The acreage, duration, time of year and the complexity of factors to perform the grazing service are taken into consideration when contract grazers develop their quotes. There are two general types of determination of cost for contract grazing services. The first cost structure is quoting the service fee by placing a charge per head per day. For example, there are 500 head of goats proposed to graze for service, a contract grazing operator might charge 50 cents per head (500 goats in this example) per day. If the project is to consist of 30 days, the quote would be

\$7,500. It is to be made clear that the transportation costs are either folded into the cost per head per day, or is separate cost and is added onto the cost structure for the service fee of cost per head, per day.

The second cost structure, common in areas grazed around urban and suburban peripheries, is a service fee per acre grazed for a proposed project. This also may or may not include the transportation cost and should be stipulated in RFP. Smaller acreage often is of greater cost per acre than broad acreage, typically due to the transportation and impact on animal performance. Also to be taken into account are the aforementioned factors which help contract grazing operators determine complexity and needs to perform each project. Contract grazing services per region vary, however industry standard in 2014 in the urban periphery of the Bay Area can range from \$600-\$1,000 an acre for the service of targeted grazing for fire hazard reduction and/or stewardship goals. Most of these parcels being grazed are less than 100 acres parcels and generally are in the range of 5-20 acres.

The highest demand months for contract grazers tend to be on the tail-end of the growing season through late Summer months, and sometimes early Fall. depending on annual rainfall. This also varies from region to region. During those heightened demand months, contract grazers often charge a premium for their services. Conversely, during off-season months of Fall and Winter, service fees may be found to be less as the demand lessens during this time of year affecting grazing service prices.

- **The Contract**

Public agencies within the state of California have been using contract grazing for more than a decade and detailed contracts have been developed to address the needs and concerns of both the agency and the contractor. The contract generally stipulates insurance qualifications, labor details, grazing schedules and terms of an annual or multiple year contract. Please inquire with your most local or regional public agency known to use contract grazing as a vegetation management tool for sample contracts.

References:

Prescribed Grazer Contacts:

California wool Growers Association

http://www.woolgrowers.org/targeted_grazing/producer.html Accessed 8/22/14

Livestock for Landscapes

<http://www.livestockforlandscapes.com/network.htm>

Some Agencies that use Prescribed Grazing:

East Bay Regional Parks District

City of San Francisco

City of Oakland

City of Lincoln

San Mateo County Parks and Recreation

Santa Clara County Parks and Recreation

Comment [O2]: Talk to Karen Launchbaugh

Prescribed Grazing Resources:

American Sheep Association. Targeted Grazing: A Natural approach to Vegetation Management and Landscape Enhancement – A Handbook on Grazing as an Ecological Service. American Sheep Association, 2006.

http://www.woolgrowers.org/targeted_grazing/handbook.html Accessed 8/22/14.

Navaez, Nelmy. Prescribed Herbivory to Reduce Fuel Load in California Chaparral. University of California, Davis. ProQuest, 2007. PhD Dissertation.

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