

Range Management Visual Impacts¹

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Abstract: Historical overgrazing of western public rangelands has resulted in the passage of the Public Rangeland Improvement Act of 1978. The main purpose of this Act is to improve unsatisfactory range conditions. A contributing factor to unfavorable range conditions is adverse visual impacts. These visual impacts can be identified in three categories of range management: range projects, vegetative manipulations, and grazing systems. The visual impacts are identifiable in the visual landscape components of landform, vegetation and structures. The impact occurs when the form, line, color or texture of the proposed action visually contrasts with the existing characteristic landscape. The degree of impact is determined by how the action is planned, designed, located and constructed. On the whole, range management activities do not create a significant visual impact on the national landscape, but their appearance must be considered when planning multiple-use land activities.

INTRODUCTION

Grazing of domestic livestock was introduced by the Spanish in the Southwest in the early 1600's. The missions were each stocked with a herd of cattle to sustain the inhabitants and teach the Indians the art of animal husbandry (USFS 1977). By 1880, the western livestock industry was at its zenith and occupied the vast grasslands from the Missouri River to the Colorado Rockies. Government contracts encouraged beef production to supply military posts and Indian reservations. New railroads made it possible to raise western beef for eastern markets. It has been viewed as a romantic time in our history when the cowboy was a hero and field of grass "belly-high to a horse" used to wave across the plains

free from brush and undissected by gullies (Hastings 1959). There were wide open pastures, as many cattle as could be grazed and cattle drives as long as you could see. It was seen as the Biblical "Land of Milk and Honey." Soon, however, the implication of the Homestead Act of 1862 would impact this golden scene. In time, the homesteader would crowd the cattleman off the fertile grasslands and force his retreat to the less desirable lands to the west. The livestock operator ended up on lands that were too poor to farm. Much of this was fragile land and once the vegetative cover was damaged, its recovery would take generations. It was also public land where everyone had the same right to use the land. Competition for grass was often bitter and there was no incentive for an individual to consider what was best for the land. Overgrazing became the common practice throughout the rangelands of the west. The winter of 1886-87 hit the cattle industry so hard that it has never fully recovered.

The deterioration from overabuse continued until the drought and depression of 1930 convinced livestock operators that drastic measures would be required to save the industry.

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The Taylor Grazing Act of 1934 brought the first livestock regulation to the public domain range. However, the government agency established to administer management of the range proved to be ineffective in controlling overuse because of the public apathy and a small operating budget. In 1946, another agency was formed to bring the grazing use of public lands into balance with their productive capabilities. By the mid-1960's, range conditions had vastly improved since the 1934 Taylor Grazing Act was passed, but based on the potential of the land, mostly poor conditions still prevailed. The National Environmental Policy Act of 1969 required that an environmental statement be required for all major Federal actions that impacted the human environment. Ensuing litigation by a national organization required the Federal government to conduct such an environmental statement on the livestock grazing program on Federal rangelands. Congress reacted and accepted responsibility for the condition and management of Federal rangeland by passing the Public Rangelands Improvement Act of 1978. This Act authorized increased expenditures for rangeland improvements and declared that unsatisfactory conditions can be improved by: "an intensive, public rangelands maintenance, management, and improvement program involving significant increases in levels of rangeland management and improvement funding for multiple use values." (BLM 1978.)

Since the late 1960's, the public has become more aware of the environment. Travel and mobility have added a great deal to this perception, and attitudes about how our national resources are being used are changing. In the past, range practices were accepted as a way of life, the same as mining, forestry and other resource activities. Today, the public is viewing these activities as competing land uses which must be held accountable for their environmental effects and conflicting requirements. The suit brought against the Federal government regarding "livestock grazing activities" is a good example of this concern.

The visual appearance of range management practices has a lot to do with how well the public accepts the practices. Therefore, the first step in effectively reducing the adverse visual impacts of range management activities is to identify those visual impacts.

Range management as discussed in this paper is divided into three categories:

1. Range projects which are engineered and constructed such as stock tanks, pipelines, fences, etc.

2. Vegetative manipulations such as mechanical, chemical or burning, and,

3. Grazing systems such as rest rotation.

The visual impacts associated with each category are identifiable in each of the three visible landscape components: landform, vegetation and structures. A visual impact usually occurs when the form, line, color or texture of a proposed landscape modification contrasts strongly with the existing characteristic landscape. (BLM 1978.)

Each category of range management will be examined for the type of visual impacts that could occur, the degree to which the impacts might become more or less significant due to the physiographic landscape and the effect that time has on the visual impacts.

VISUAL IMPACTS OF RANGE MANAGEMENT

Range Projects

Stock Tanks

The major visual impact of stock tanks is a result of the standard silver color of the tanks which contrasts strongly with surrounding landscape colors. They can be seen from a great distance. Also because of their circular geometric shape, the form and line of stock tanks contrast with natural landscape forms and lines. Another visual impact is the exposed soil "trampled" effect around tanks as a result of livestock congregating at the "waterhole." This impact usually becomes more noticeable over a period of time. As the landscape character becomes more hilly, these impacts become more significant if the tank is at the top of a hill or at the apex of converging lines. These are key locations in the landscape and the viewing eye is naturally drawn to them. In a forested landscape, the view distance is reduced but a horizontal silvery form strongly contrasts with the verticle green trees. Most of these visual impacts would not significantly decrease over time.

Fences

The visual impact of fences depends a lot on how they are constructed. If the fenceline is cleared with a dozer, there would result a strong contrast in line and color of the soil. The effect would only slightly diminish over time. If the fence was always laid out in a long straight line, the line would contrast with natural contour lines in the landscape. This effect would be most accentuated if the fencelines were sky-lighted along ridge tops.

Bright colored fenceposts create a contrast with the natural colors of the landscape. Because a fence separates pastures, there would be a strong contrast created along the fence-line if the vegetation were of different composition or vigor. These contrasts would vary with the time of year, the degree of grazing on each side of the fence, and the range conditions.

Pipelines

Because the lines are usually buried, the most significant visual impact is the exposed soil that causes a contrast in line and color. Depending on the revegetative capabilities, the scar will usually heal after a short time. As the angle of the landscape increases toward the viewer, such as in hilly landscapes, the contrast would increase. In forested landscapes, if the path of the pipeline were cleared in a swath, the unnatural line created in the vegetation would cause a significant visual impact that would not diminish very much over time.

Windmills and Associated Storage Tanks

The main contrast of windmills is the form, line, and color of the structure itself. A vertical form in a predominantly horizontal landscape creates a very noticeable contrast. Their usual silver color and the motion of the blades also attract attention; however, for the most part, windmills are considered a positive contrast. The associated storage tanks would have similar contrast as described for stock tanks but on a larger scale.

Reservoirs

If the reservoir and embankment form a geometric shape, the form and line would contrast with the natural landforms. As the cattle gather around the "old watering hole" the vegetation becomes trampled and the exposed soil creates a contrast with the color of the vegetation. This effect could get worse over time. If there is a fence around the reservoir, the fenceline itself would create a contrast in form and line. The vegetation inside the fence usually grows unchecked and contrasts with the grazed vegetation on the outside of the fence.

Water Collection Devices

The main impact of structural water collection devices is the structure itself. The form, line, and color of the structure contrast with the natural landscape. If there is a fence around the structure, it would create the same kind of visual contrast as discussed under reservoirs.

Wells and Springs

The visual impact of wells and springs is usually minimal, however, if there is an associated storage tank, this can create a visual impact. The tanks are strong geometrical shapes that can contrast in form, line and color with the natural landscape. As was discussed under reservoirs, there would be a contrast with vegetation inside and outside the fence.

Vegetative Manipulation

The visual impacts of vegetative manipulation usually depend on the size and density of the vegetation, the final shape of the treated area, the technique used to clear the vegetation, and the degree of cleanup or removal. The closer the manipulation looks to what might be considered a natural occurrence, the less the impact will appear.

Mechanical Techniques

Mechanical techniques include disking, rootplowing, pushing, chopping, crushing and chaining.

Disking and rootplowing are usually done on a low growing vegetation such as sagebrush, chaparral and mesquite. The disc or rootplow is pulled behind a crawler tractor and the vegetation is inverted or uprooted.

Pushing is used to control large mesquite and pinon-juniper. A crawler tractor equipped with a dozer blade and usually a push bar uproots the plants.

Chopping is accomplished by use of a drum with cutting blades pulled behind a crawler tractor that forces the plant to the surface and chops it into several pieces.

A tree crusher is similar to the chopping drum but the large blades mounted on drums serve as the wheels of a large, self-propelled unit. This unit is primarily used to eradicate small to medium sized trees.

The chaining technique involves two tractors moving in the same direction dragging a large chain between them uprooting plants as they move.

The visual impacts of all these techniques could be very similar. If the line between the treated and untreated areas were straight, the form of the treated area outlined by this straight line would create a strong contrast in form and line. The color and texture of the treated area would also create a visual contrast. If the debris were not cleaned up or windrowed

or piled in high evenly spaced geometric forms, the visual contrast with the natural landscape would be quite noticeable. The size and shape of treated areas in relation to the untreated areas can determine visual acceptability. As variety and harmony increase, the visual impact decreases. An opening created in a dense stand of vegetation is more noticeable than one created in sparse vegetation. These impacts are diminished as new, more desirable species appear and grow.

Spraying

The chemical control of vegetation results in defoliated shrubs or trees. The contrast or visual impact depends on the size and density of the vegetation affected. The larger and more dense the vegetation, the greater the impact. The nature of seeing dead plant materials is to associate them with devegetation and disease and the uniformed viewer might see this as a visual impact. Again, how natural a shape the treated area takes can help determine its visual impact. The impact will usually last as long as the defoliated plant material is easily visible, however, because the effected species can be selected, the ground cover remains and the visual impact is not as great as other vegetative manipulations.

Burning

The visual impact of burning is associated with the psychological effect of fire. That is to say, fire is associated with damage and destruction. The standard management philosophy of fire is to put it out. Therefore, when people see fire-blackened tree trunks and grassland, they think of it as a negative visual impact. This effect lasts until new secondary growth becomes visible.

Grazing Systems

The visual impacts of grazing systems are associated with range conditions. That is to say, how livestock are grazed in a certain allotment affects the perceived visual patterns of the landscape. The perceived patterns are affected by the following factors and conditions: The existing vigor and condition of the vegetation, soil fertility, erosion potential, the availability and spacing of water sources, the number of livestock being grazed and the length of time they are grazed. All these factors and more combine to determine the degree of visual impacts associated with grazing systems. The visual impacts of three basic grazing systems will be discussed individually and collectively.

Seasonal Continuous Grazing

In this system, livestock graze continu-

ously in the same area, year after year. Stocking rates must be low enough to ensure that desired forage plants maintain vigor and produce seed crops. Because of continuous grazing, watering areas are "beat out" causing a contrast in soil color. A pattern of livestock paths become established resulting in a line and color contrast. Depending on the vegetation conditions there could also be a line, color, and texture contrast created by pasture fence-lines. The conditions on one side of a fence could contrast with those on the other side of the fence.

Deferred Rotation Grazing

With this system grazing is delayed on a portion of the range in succeeding years until a specific plant growth stage is reached. Grazing is rotated among all pastures during the grazing season, except one, which is deferred each year until after seed of the key forage plants is mature. Visual impacts of this system are less than a continuous grazing system because the deferred rotation reduces some of the vegetative contrast. However, some of the same impacts can occur if each pasture is grazed beyond its capacity.

Rest Rotation Grazing

This system rests the range from grazing at suitable intervals dictated by the growth requirements of key forage plants. It is useful in counteracting the effects of the selective grazing habits of livestock by allowing desirable forage species to recover vigor, produce seed and again reproduce. Three or more pastures are used during the grazing cycle with some pastures being rested while others are grazed. This system is the most desirable in terms of visual impacts because of increased plant vigor and more uniform appearance of the vegetation. Again, overgrazing can create visual impacts similar to other systems, but it would take longer to become noticeable because of the additional pastures.

The critical factor in all these systems, as relates to the visual impacts, is the carrying capacity or stocking rate of the pasture. Over-grazing with any system causes negative visual impacts to the scenic quality of the landscape.

SUMMARY

As described in this paper, the visual impacts of range management vary in degree depending on how the specific actions are planned, designed and implemented in the various characteristic landscape types. A project in one landscape type may look totally different in

another landscape type. There are many variables involved when evaluating any type of visual impact. Most impacts are noticeable in the foreground and middleground viewing zones. The more varied the landscape the less impacting they become.

The visual impacts of range management activities vary in degree over the life of the project. The visual impact of site construction for example, will probably diminish over time. Vegetative manipulations are most noticeable within the first five years after implementation. The longest visual impact occurs with grazing practices themselves. Overgrazed rangeland takes a long time to recover and the effects go far beyond visual impacts.

Because of the historical significance associated with cattle ranching, range management activities are not considered a major visual impact nationally. However, as people are becoming more aware of their environment, they are objecting to adverse visual changes caused by highly competitive land uses. It, therefore, becomes more important to consider

how range management activities "fit" the landscape in order to reduce negative visual impacts.

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