

Environmental Assessment (WY050-EA07-153)
Green Mountain Common Allotment
April 3, 2009

**Chapter 4 – Addendum to the Cumulative Impacts
Analysis for the Green Mountain Common Allotment**

Environmental Consequences

CUMULATIVE IMPACTS

Introduction

The NEPA requires an assessment of the potential cumulative impacts of the proposed project. Cumulative impacts evaluate the incremental impact of actions under each alternative when added to other past, present and reasonably foreseeable future activities. Cumulative impacts can result from individually minor, but collectively significant actions occurring over a period of time. The area of analysis for cumulative impacts for the GMCA includes all areas within the Sweetwater Watershed. The area of analysis for socioeconomics, recreation and wilderness is Fremont County.

Cumulative Impacts Common to All Alternatives

Soil and Water Resources

The area of analysis for these resources includes portions of the Sweetwater River Watershed and the Great Divide Basin. Cumulative impacts to soil and water quality would occur from a combination of activities and land uses occurring within the area of analysis. Activities on federal, state and private lands, such as livestock grazing and trailing, road and well pad construction, urbanization, industrial uses, OHV use, and recreational use would disturb soils, remove vegetation, cause soil compaction, and increase overland flows. Such activities result in increased compaction, reduced infiltration, acceleration soil erosion, and runoff, which increase sediment, salt, and nutrient loads to stream systems and can lead to channel destabilization in some locations. Varying degrees of disturbance and impacts would occur depending on the level of development activity projected for each alternative.

Vegetation Resources

Potential cumulative impacts to vegetation communities would result from surface disturbing actions that contribute to either short or long-term loss of vegetation, and other actions that contribute to altering vegetation attributes through foraging, trampling, vehicle routes, dust and application of vegetation treatments. Water development for livestock, wild horses, and wildlife, including reservoirs, wells, spring and spring source enclosures inflict short-term disturbance to riparian vegetation around springs as a result of fence, pipeline, and trough construction.

Livestock, wild horse, and wildlife grazing can degrade vegetation in several ways. Impacts result from large ungulates (cows, sheep, horses, deer, antelope, elk) consuming and trampling vegetation. Annual consumption of vegetation reduces the overall amount of live vegetation and litter, and in the long term can change species composition and distribution.

Wild Horse Management

There are a total of Three HMAs (Green Mountain, Crooks Mountain and Antelope Hills/Cyclone Rim) within the area of analysis, two of which are within the Lander Field Office and the remaining one overlaps the boundaries of the Lander and the Rawlins Field Offices. The HMAs included in the analysis area make up a portion the Red Desert complex of HMA's. These include: Green Mountain, Crooks Mountain, Stewart Creek, Lost Creek, Divide Basin and Antelope Hills/Cyclone Rim. Under all alternatives, the BLM would continue managing the HMAs to sustain wild horse populations as directed by the Wild Horse and Burro Act of 1971, while achieving herd management plan objectives and rangeland health standards. Potential impacts to wild horses would result from the construction of new fences and water developments and from other surface disturbance activities that alter the wild and free-roaming nature of horse populations. Under three of the four alternatives, impacts to wild horse would not be considered significant; however, varying degrees of disturbance would occur depending on the level of development activity projected for each alternative.

Wider dispersal of livestock grazing through range developments puts stress on upland range forage, providing competition to wild horses. The placement of additional fences and cattle guards pose hazards to horses. The discussion of fences in the wild life section applies equally to wild horses which also expend calories following fence lines to find openings which limit their ability to survive winter conditions.

The intrusion of modern development, particularly mineral development, has the potential to reduce the recreation aspect of viewing wild horses moving freely in open country. For many recreational visitors to the planning area, the viewing of wild horses can be a powerful and lasting image. Development viewing wild horses as a recreational experience could be explored in future management decision, with the same approach as taken for the Pilot Butte Wild Horse Viewing loop which has made a significant contribution to the socio-economic health of Rock Springs and Green River, Wyoming.

Cultural Resources

Cultural resources are the remains and locations of past human events. Usually, these resources are comprised of material remains and features that were left behind by people. Cultural resources can be divided into prehistoric and historic resources, and are found throughout the GMCA. Prehistoric cultural resources were created by Native Americans over the past 12,000 years, when prehistoric peoples ranged through the landscape searching for food, water, and shelter and can be found in all parts of the study area. Historic cultural resources were created more recently, after Euro-American peoples entered the area and began leaving their own types of remains and features.

Grazing developments and systems can have adverse effects upon cultural resources if they cause disruptions and erosion at cultural resource localities. In many cases, grazing developments can be designed to avoid cultural resources, which greatly reduces their cumulative effects. On the other hand, avoidance of cultural resources through grazing systems is not as simple. If grazing systems encourage disruptions and erosion at cultural resources sites, cumulative effects to cultural resources will increase. If grazing systems reduce disruptions and erosion at cultural resources sites, cumulative effects will decrease. And since cultural resources and grazing both tend to concentrate in riparian areas, the types of grazing systems proposed in the various alternatives can differ greatly in their effects upon cultural resources.

Oil and Gas Development

Oil and gas development within the area of analysis has increased slightly over the past five years. There are currently 30 approved permits to drill for conventional oil or natural gas within the GMCA and an additional 488 wells in some stage of active production either within the GMCA or within 10 miles of its boundary. In total, there would be approximately 3,100 acres of surface disturbance from the development of oil well pads, roads, pipelines and other facilities if the wells, roads and pipelines are built. Surface disturbance from oil and gas activities have resulted in short-term removal of forage and have caused a slight displacement of wildlife, wild horses and livestock within the area of analysis. Dust from the construction and use of roads is carried in the wind from ¼ to several miles, coating the vegetation and reducing growth rates, palatability, and use patterns by livestock. Cumulatively, this area's oil and gas development is one of the least active when compared to other parts of the Lander and Rawlins Field Offices. The number of Applications for Permit to Drill (APDs) within the Madden, Gun Barrel and Iron Horse oil and gas units within the Lander Field Office, for example have more than doubled since 2003.

Socioeconomics

Economic conditions relate to the analyses of production, distribution, and consumption of goods and services. Economic conditions describe how individuals and communities participate in the exchange of goods and services by earning a living and consuming products and services they need and want. The BLM has the capacity, through its decision making responsibilities, to manage resource development within the Lander Field Office planning area and thereby influence the economy of the wider region. Approximately 58 percent of land in Fremont County is administered by State and Federal agencies, including BLM's Lander Field Office.

The Lander Field Office manages lands for livestock grazing in all five counties in the study area. There are 300 grazing allotment covering approximately 2.7 million surface acres of public land in the planning area. As of 2008, the Lander Field Office administered 60 grazing leases and 144 permits, consisting of approximately 280,372 animal unit months (AUMs). While the majority of AUMs are used by cattle, sheep and horses also are grazed on BLM

lands.

With respect to social conditions related to ranching, where surface ownership is the primary consideration, management decisions of the Lander Field Office have more potential to impact conditions in Fremont County than Carbon, Hot Springs, Natrona, and Sweetwater Counties.

BLM-administered grazing allotments are leased at lower fees on average than state or private lands: federal grazing fees in Wyoming were \$1.56 per AUM in 2006 and \$1.35 per AUM in 2007 (BLM 2007). For comparison, grazing fees on state land were \$4.78 per AUM in 2006, \$5.17 per AUM in 2007, are currently \$5.21, and expected to be \$5.13 in 2009. The average grazing rate on privately owned non-irrigated land in Wyoming was \$15.10 per AUM in 2006 and \$16.10 per AUM in 2007 (Shepler 2008).

ALTERNATIVE ONE

CUMULATIVE IMPACTS ON SOIL AND WATER RESOURCES

Under this alternative, cumulative effects are primarily anticipated in areas where upland soils on BLM-administered lands do not meet Land Health Standards. In these areas, any management action with potential for interfering with the ability to meet Land Health Standards or slowing progress toward meeting those standards should be considered to have a moderate cumulative impact.

Land uses on areas surrounding BLM-administered lands can generate negative effects on soil and water resources, which could be exacerbated by BLM actions that result in cumulative impacts. Known activities outside the planning area that could contribute to cumulative effects include conversion of sagebrush and other habitats to agricultural or residential use, invasions of noxious weed, juniper treatments, logging and road construction, water use, and fire. Cumulative effects also are anticipated in areas outside the planning area boundary where surface disturbance activities would occur related to recreation resources management; utilities, transportation, and telecommunications management; or any other management activity that includes road construction. While some cumulatively considerable effects may be associated with BLM activities in combination with other land uses, such effects are not anticipated to be significant.

There are currently 133 acres undergoing impacts from the development of range improvements (fences, water developments, etc.) and sacrifice areas where soils have been disturbed by the placement of salt blocks or mineral supplements since implementation of the 1999 EA. There remain 16 water projects and 9 miles of riparian fence still to be completed under this alternative. These new projects would create an additional 60 acres of surface disturbance.

As discussed in Chapter 3, riparian and wetland vegetation within the area of analysis makes up less than one half of one percent. However, even though the overall percentage of wetland habitats is less than one percent, the percentage of these habitats were found to be either non-functional or functioning at risk with a static or downward trend. Based on past history and difficulty of managing livestock under the current situation and the results from the 2002 conformance review, negative cumulative impacts would continue to occur.

CUMULATIVE IMPACTS ON VEGETATION RESOURCES

Potential cumulative impacts to vegetation communities would result from surface disturbing actions that contribute to either short or long-term loss of vegetation, and other actions that contribute to altering vegetation attributes through foraging, trampling, vehicle routes, dust and application of vegetation treatments. Water development for livestock, wild horses, and wildlife, including reservoirs, wells, spring and spring source enclosures inflict short-term disturbance to riparian vegetation around springs as a result of fence, pipeline, and trough construction.

Livestock, wild horse, and wildlife grazing can degrade vegetation in several ways. Impacts result from large ungulates (cows, sheep, horses, deer, antelope, elk) consuming and trampling vegetation. Annual consumption of vegetation reduces the overall amount of live vegetation and litter, and in the long term can change species

composition and distribution.

Cumulative impacts associated with the implementation of Alternative One would be lower than Alternative Two, about the same as Alternative Four, and less than Alternative Three. Forage utilization standards would be implemented under Alternative One, therefore impacts to riparian and upland vegetation would only be impacted short-term, but would have long-term beneficial impacts if livestock are moved once the stubble height requirements are met.

The continued expansion of weeds within and adjacent to the area of analysis would have a slightly negative impact to livestock, and to lesser degree, wildlife and wild horses through reduced forage and increased death loss from poisonous plants.

CUMULATIVE IMPACTS ON WILDLIFE/FISHERIES HABITAT AND SPECIAL STATUS SPECIES

Nine miles of new fencing is proposed under Alternative One to complete the schedule of range improvements planned under the 1999 Decision. Additional fencing in the GMCA, in combination with fencing proposals in the Rawlins Field Office to improve livestock management south of the allotment, could negatively impact antelope movements of the Red Desert Antelope Herd, as they move to crucial winter habitats near Rawlins and Interstate 80. Antelope would continue to be able to migrate to these crucial winter habitats, but new fencing could slow migration or change migration patterns.

In addition to impediments to wildlife migration and movement caused by fences, impacts to habitat (particularly sage-grouse habitat) may also occur from direct habitat loss through surface disturbance and loss of habitat function. For example, a typical spring development for livestock watering directly disturbs 2.6 acres (see Appendix 19). However, experience has shown that an area of heavy livestock grazing will occur within $\frac{1}{4}$ to $\frac{1}{2}$ mile of a watering source which will remove most of the herbaceous forage and cover for species such as sage-grouse. At a conservative estimate of $\frac{1}{4}$ mile, the total amount of habitat lost or impaired from one such development is 125 acres. Alternative One proposes the completion (under the 1999 Decision) of 18 water developments for a total of 2,250 acres within the GMCA itself. This would be added to the estimated 289 water developments already existing in the GMCA or in the LFO within 10 miles and an undetermined number of water developments in the Rawlins Field Office within 10 miles of the GMCA.

Other industrial developments which are planned or recently completed in the GMCA that will remove habitat for antelope, sage-grouse, and other sage steppe species include the Devon CO₂ gas pipeline (90 acres) and two uranium mining plans of development that will remove 53 acres habitat by direct disturbance and cause some loss of habitat function in an undetermined number of additional acres in the surrounding area.

The greatest potential loss of habitat function for sage-grouse in the GMCA and surrounding area may likely be from oil and gas development rather than livestock grazing. Research has shown (Holloran 2005, Walker et al. 2007) that sage-grouse breeding and nesting habitat may be impacted over four miles from active energy development. There are currently 30 approved permits to drill for conventional oil or natural gas within the GMCA and an additional 488 wells in some stage of active production either within the GMCA or within 10 miles of its boundary. While not all of these wells are in suitable sage-grouse nesting or breeding habitat, each one represents several acres of direct habitat and forage loss from well pad, access road, and pipeline construction as well as an impairment of habitat in an undetermined number of acres surrounding these developments.

CUMULATIVE IMPACTS ON WILD HORSES

Under Alternative One, 9 miles of new riparian fencing and 16 new water developments would be constructed. The construction of the riparian fencing would not occur within any of the HMAs, however the construction of the new water development in the southern portion of the GMCA could increase wild horse movement into areas outside their respective HMAs and into the boundaries of the Rawlins Field Office.

Cumulative impacts of wild horse use within the planning area could affect how livestock and wildlife use the area by reducing the amount of forage and water resources available, particularly during drought years. Wild horses are also present within herd management areas year-round. The intensity of wild horse use is controlled by managing the number of wild horses within each of the herd management areas. But the season, duration, and frequency of wild horse use is difficult to control. Therefore, impacts of wild horse use, particularly in natural concentration areas, occur annually. Wild horses would be maintained within AMLs in the three Herd Management Areas located within or adjacent to the planning area.

CUMULATIVE IMPACTS ON CULTURAL RESOURCES

Grazing developments: Under Alternative One, proposed grazing developments are not expected to significantly affect cultural resources values. If cultural resources are found in a proposed development area, in most cases, the development would be relocated to avoid the cultural resources.

Grazing systems: Under Alternative One, the proposed grazing system is projected to have the following effects: in the short term, Alternative One is expected to continue current levels of grazing pressure on riparian areas; in the long term, Alternative One is expected to reduce grazing pressure on riparian areas. Reduced grazing pressure in the long term will in turn also reduce effects on cultural resources along riparian areas. In other words, if properly implemented, Alternative One's grazing system would eventually have a beneficial effect on cultural resources along riparian areas.

Conclusion: The grazing developments proposed under Alternative One would not cause cumulative adverse effects on cultural resources. This is because developments would be relocated to avoid conflicts with cultural resources. The grazing system proposed in Alternative One would cause cumulative beneficial effects on cultural resources over time. This is because there would be less long-term grazing pressure on riparian areas, which would mean less long term disruption and erosion at cultural resource sites in those areas. The overall cumulative effect on cultural resources from Alternative One would be positive.

CUMULATIVE IMPACTS ON RECREATION AND VISUAL RESOURCES

The area of analysis provides recreational amenities to many public land users; however most of the recreational use can be identified as coming from within Fremont, Carbon and Sweetwater Counties. Recreational activities could cause animal displacement, increased dust on forage that reduces palatability, and injury or death to animals as a result of vehicle-animal collisions. Recreational activities that result in gates left open or fences cut would increase fence maintenance and the resources needed to locate and return livestock to their appropriate grazing areas. The impacts on livestock grazing operations would probably increase over the life of the allotment management plan, as a result of increasing popularity for outdoor recreation activities within the planning area.

Cumulative impacts to recreation and visual resources under Alternative One would result from BLM actions authorizing the construction of additional range improvements, such as fences, water wells and troughs when combined with similar actions on private and state lands. Approximately 85% of all range improvements authorized under the 1999 Decision have already been implemented.

As a result of the actions planned under Alternative One and the mitigation developed to reduce impacts, livestock grazing on the allotment will not contribute to the trends documented in the affected environment. Therefore, cumulative impacts to the recreation setting and the available/realized experiences and benefits will occur at a similar rate to that documented in the affected environment.

CUMULATIVE IMPACTS ON WILDERNESS STUDY AREAS AND WILD AND SCENIC RIVERS

Minimal cumulative impacts from livestock grazing activities are expected as a result of implementing Alternative One. In general, the special management prescriptions and protections given to these areas would help maintain and improve wilderness characteristics within the Sweetwater River WSA and WSR. In addition, the Sweetwater WSA

and WSR would continue to be managed accordance to the Interim Management Policy for Lands under Wilderness Review. Within in the Sweetwater River WSA, the use of mechanical equipment is limited and the integrity of the wilderness setting must be maintained, which would increase the complexity of construction techniques for range improvements and limit the types of improvements that are feasible.

Since this alternative relies on livestock herding, utilization triggers, and a deferred rotation, the intensity of impacts as a result of implementing Alternative One are anticipated to be light. In addition no offsite impacts to the Sweetwater WSA and WSR as a whole unit are anticipated. No impacts exceed maximum allowable standards as identified in the Interim Management Policy for Lands under Wilderness Review. As a result of the above findings, cumulative impacts to the WSA and WSR are anticipated to occur at a rate similar to the trends documented in the affected environment.

CUMULATIVE IMPACTS ON SOCIOECONOMICS

Socioeconomic impacts under Alternative One are not expected to result in any adverse cumulative impacts on local or regional social conditions. Local communities would continue to benefit from multiple-use management of public lands. Overall, the management activities under Alternative One would not change forage extraction and other resource uses and would result in similar resource conditions that exist at the present time. Federally and State-managed lands make up approximately 95% of the land area within the GMCA and the majority of other lands directly adjacent to the allotment boundary.

ALTERNATIVE TWO

CUMULATIVE IMPACTS ON SOIL AND WATER RESOURCES

Between 1986 and 2006 there have been approximately 307 miles of new fence built within the Lander Field Office. This equates to approximately 15 miles of new fence construction per year. This mileage includes both enclosure fences and traditional pasture fences. This alternative currently proposes 98 miles of new pasture fences. As this alternative would rely most heavily on new fences to achieve better livestock control and distribution on the allotment, more fence mileage can be reasonably expected as unforeseen livestock management situations arise that can only be remedied by more fencing. Additionally, as more fences are built, more water projects would be needed as areas formerly serviced by existing water would no longer be available.

Approximately 50 acres of sacrifice areas around new water developments would be created. The vegetation would be removed mainly by trampling and somewhat by livestock and wildlife consumption. These areas would be mostly devoid of vegetation with some compacted soils and would remain in poor condition due to the continual use of the water source. It is believed that there would be a decrease in the vigor of the vegetative species immediately adjacent to the sacrifice area. The vigor decrease would come about from the dust on the plants, soil compaction by livestock soils are moist, the trampling and resulting mechanical damage of vegetation by livestock, and the heavy grazing which commonly takes place around water sources. Another 147 acres (98 miles fence x 1.5 acres trailing disturbance per mile = 147 acres) would be affected by the trailing of livestock, wild horses, and wildlife along the proposed pasture and riparian management fences. Trailing would cause the removal of vegetation through trampling and compaction of the soil. Higher erosion rates would also ensue on these areas devoid of vegetation. Rill and gully initiation would occur on the sloping locations over time. Sandy soils would be prone to scouring by wind. The denuded, compacted, and heavily-used areas would also be the locations most prone to weed establishment. The installation of water pipelines would disturb another 2 acres.

With the livestock use levels and management strategy proposed under this alternative, riparian zone improvement cannot be expected in the short or long term. Shifting away from hot season use highly benefits riparian vegetation, but under this alternative, the limited length of deferment would not suffice in allowing for improvements in vegetation, vegetative litter, and hydrologic conditions. Cattle trails found in the transition zones and extending to the uplands would remain in their present compacted state. The cattle trails would continue to channel runoff and sediment into the riparian areas, as cattle use on the cattle trails is expected to remain heavy.

CUMULATIVE IMPACTS ON VEGETATION RESOURCES

The cumulative impacts to vegetation resources are greatest under Alternative Two because of the longer season of use and emphasis on developing additional grazing pastures. The grazing system proposed under Alternative Two would emphasize increasing livestock distribution into previously unused or lightly used areas. Cattle are expected to use the uplands to a greater degree and make more use of riparian vegetation. Increased utilization of the uplands by cattle and sheep would likely cause greater competition between livestock, wild horses and wildlife within and outside of the area of analysis.

CUMULATIVE IMPACTS ON WILDLIFE/FISHERIES HABITAT AND SPECIAL STATUS SPECIES

In addition to the cumulative impacts of new and existing GMCA fences and fencing proposals in the Rawlins Field Office mentioned under Alternative One, Alternative Two would add another 98 miles of new fences. Several miles of this proposed fencing would lie across antelope migration routes (both to the south and north) or further impede movement from one area to another. Surface disturbance (i.e. habitat loss) is estimated at 1.5 acres per mile (see Appendix 19) for a total of 147 acres. Additional fencing will further impact sage-grouse by presenting a collision hazard for low flying birds and providing perches for raptors.

In addition to the impacts associated with livestock water developments as described under Alternative One, Alternative Two would add another five developments or 625 more acres of habitat impairment. Cumulative impacts from the Devon CO2 pipeline and energy development would remain the same as those described under Alternative One.

CUMULATIVE IMPACTS ON WILD HORSES

The cumulative impacts of implementing Alternative Two would significantly impact wild horse movement. The overall level of development of water projects and fencing that lies inside and outside the herd areas and in travel zones virtually eliminates the travel zones, as well as any exchange of horses among the five different HMAs within the Red Desert Complex of HMA's, two of which are located with the Rawlins Field Office. The proposed level of water development within the allotment would permanently draw wild horses into areas that they may have only passed through - or not used at all - prior to water development. It is anticipated that at this level of development, the integrity of the historic use areas would be lost, and wild horses would be found throughout the entire allotment and northern portions of the Rawlins Field Office.

Wider dispersal of livestock grazing through range developments puts stress on upland range forage, providing competition to wild horses. Fences and cattle guards pose hazards to horses. The discussion of fences in the wild life section applies equally to wild horses which also expend calories following fence lines to find openings which limit their ability to survive winter conditions.

The intrusion of modern development, particularly mineral development, has the potential to reduce the recreation aspect of viewing wild horses moving freely in open country. For many recreational visitors to the planning area, the viewing of wild horses can be a powerful and lasting image. Development viewing wild horses as a recreational experience could be explored in future management decision, with the same approach as for the Pilot Butte Wild Horse Viewing loop which has made a significant contribution to the socio-economic health of Rock Springs and Green River, Wyoming.

CUMULATIVE IMPACTS ON CULTURAL RESOURCES

The greatest potential for cumulative impact to cultural resources would occur under Alternative Two because of increased surface disturbance activities and limited protection to cultural resources as a result of proposals to construct new range improvements (e.g. fences, water wells, pipelines). Under this alternative, the historic character of the Seminoe Cutoff National Historic Trail would be degraded due to the high level of range improvement

infrastructure to be developed.

Grazing developments: Under Alternative Two, most of the proposed grazing developments are not expected to significantly affect cultural resources values. However, three different proposed projects are presently designed to adversely affect significant cultural resources. These projects would cause surface disturbances, and would increase grazing pressure on these resources. Unless these projects are redesigned, the cumulative effects on cultural resources would be adverse.

Grazing systems: For Alternative Two, the proposed grazing system is projected to have the following effects: in the short term and the long term, Alternative Two is expected to continue or increase current levels of grazing pressure on riparian areas. Increased grazing pressure in the long term will in turn also increase effects on cultural resources along riparian areas. In other words, if properly implemented, Alternative Two's grazing system would eventually have an adverse effect on cultural resources along riparian areas.

Conclusion: The grazing developments proposed in Alternative Two would cause cumulative adverse effects on cultural resources. This is because three developments would cause adverse effects to significant cultural resources. The grazing system proposed in Alternative Two would cause cumulative adverse effects on cultural resources. This is because there would be the same or more long-term grazing pressure on riparian areas, which would mean more long term disruption and erosion at cultural resource sites in those areas. The overall cumulative effect on cultural resources from Alternative Two would be negative.

CUMULATIVE IMPACTS ON RECREATION AND VISUAL RESOURCES

The actions and the intensity of those actions authorized (and the developed mitigation) under Alternative Two would synergies with existing/planned actions in the allotment to compound the trends documented in the affected environment. Over a 20 year time frame the allotment would endure an irreversible (Clark 1979) urbanization of the recreation setting. This would drastically change the experiences and benefits available to recreationist on the allotment. Loss of the distinct niche represented by the settings and experiences and benefits opportunities of the GMCA would homogenize the recreation (experience and benefit) opportunities available within all recreation features. This homogenization would reduce visitor ability to recreate in the setting they desire to achieve the experiences and benefits important to the individual or group. Inevitably this impact indirectly produces visitor conflicts when recreationists are forced to use a setting where their desired experiences and benefits are not easily facilitated.

The construction of range improvement projects would affect scenic quality on a short and long-term basis. Temporary enclosure fencing would have short-term effects on visual quality whereas permanent enclosures or allotment fencing affects visual quality for the long-term. Livestock grazing affects soils, riparian areas, and vegetation by potentially denuding vegetation and causing soils erosion. Visual effects are site-specific. Adverse effects from grazing are mitigated through modified grazing practices as well as soil, riparian, and vegetation manipulation projects.

CUMULATIVE IMPACTS ON WILDERNESS STUDY AREAS AND WILD AND SCENIC RIVERS

The intensity of impacts as a result of Alternative Two would exceed maximum allowable impacts for the WSA resource; these impacts would also affect the WSR resource. The impacts are on a localized level and probably could be mitigated without causing additional impacts. Potential to impact recreationists experience and benefit realization level exists, however this would occur in access areas and during the trip into the core WSA only. The area contained within the WSA and WSR does not have any known reasonable foreseeable actions that might synergies with the above impacts. In addition, no impacts to the WSA resource as a whole are anticipated as a result of the actions planned for Alternative Two.

CUMULATIVE IMPACTS ON SOCIOECONOMICS

Socioeconomic impacts under Alternative Two are not expected to result in any adverse cumulative impacts on local

or regional social conditions. Alternative Two provides the grazing permittees with greater flexibility and stability than the other three alternatives. Local communities would continue to benefit from multiple-use management of public lands. Overall, the management activities under Alternative Two would increase forage extraction and other resource uses and would result in great use of the forage resource.

Alternative Two has the most range improvement infrastructure proposed and therefore would be the most expensive to implement. Federally and State-managed lands make up approximately 95% of the land area within the GMCA and the majority of other lands directly adjacent to the allotment boundary.

ALTERNATIVE THREE

CUMULATIVE IMPACTS ON SOIL AND WATER RESOURCES

Livestock distribution can increase or decrease the effect of livestock, depending on their location and density. If livestock are concentrated in small areas or along fence lines, the effect of animal waste and soil disturbance from trampling would be greater in those areas – with associated effects related to soil disturbance and compaction, as well as increased concentrations of nutrients and pathogens. Concentration of livestock in riparian areas can lead to destruction of stream banks and removal of riparian vegetation, which is possible where alternate water supplies are not available or where enclosures are not used. Similar effects can result from the activities of wild horses if not managed properly.

Land uses on areas surrounding BLM holdings have the potential to generate negative impacts on water resources, which could be exacerbated by BLM actions with similar potential negative impacts. In approving specific activities and implementing appropriate protective measure and management practices for lands it administers, the BLM is expected to consider these adjacent uses and the potential for BLM 's activities to exacerbate any potential cumulative effects. Therefore, although some cumulatively considerable effects may be associated with BLM activities in combination with other land uses, such effects are not anticipated to be significant.

There are currently 133 acres undergoing impacts from livestock (i.e., sacrifice areas) and/or project developments (e.g., springs, wells, fences, and reservoirs) from projects completed since implementation of the 1999 Final Decision. No new water developments are proposed in this alternative. There would be no net gain in the amount of fences on the entire GMCA under Alternative Three. No additional impacts from livestock management projects are expected to arise from this alternative.

CUMULATIVE IMPACTS ON VEGETATION RESOURCES

Potential cumulative impacts to vegetation communities under Alternative Three are similar to Alternative One, but less impacting than Alternative Two. Through the implementation of forage utilization standards, Alternative Three would likely have the least amount of use on upland and riparian plant communities.

The continued expansion of weeds within and adjacent to the area of analysis would have a slightly negative impact to livestock, and to lesser degree, wildlife and wild horses through reduced forage and increased death loss from poisonous plants.

CUMULATIVE IMPACTS ON WILDLIFE/FISHERIES HABITAT AND SPECIAL STATUS SPECIES

Cumulative impacts from fencing under Alternative Three would be the same as those described under Alternative One. Alternative Three proposes six water developments for a total of 750 acres of habitat loss. This is 1,500 acres less than that proposed under Alternative One. Cumulative impacts from the Devon CO₂ pipeline and energy development would remain the same as those described under Alternative One.

CUMULATIVE IMPACTS ON WILD HORSES

Cumulative impacts from temporary fencing could occur. Impact intensity would depend on how much temporary fencing is authorized, and where the temporary fencing is located. Each individual project would add to the cumulative impacts.

Alternative Three's absence of additional water developments would help maintain the integrity of the historic wild horse use areas within the HMAs. No loss of wild horse visitor days would occur in this alternative, and the opportunity to develop a wild horse viewing loop in any one of the three HMAs would still be available.

CUMULATIVE IMPACTS ON CULTURAL RESOURCES

In general, management actions associated with livestock grazing activities under Alternative Three would be similar to Alternative One. Cumulative impacts within and outside the planning area are expected to affect relatively small localized areas and would not have measureable effects on cultural resources. Under this alternative, livestock would continue to be managed under a season long grazing system with 6 to 7 smaller herds of cattle and 2-3 bands of sheep. Cultural sites that are fenced would exclude grazing, causing a small loss of available forage; however, this would occur on few sites. Restriction on surface disturbing activities near cultural sites could potentially result in modifications or relocation of range improvements; however since there are no new range improvements proposed; only the remaining range improvements under the 1999 Decision would be completed.

Through the implementation of aggressive utilization monitoring and active herding, long-term reductions in trampling and congregation near natural water sources and riparian areas would decrease impacts to cultural resources, causing a positive trend in their long-term preservation. Reductions in trampling and congregation impacts near natural water sources and riparian area would decrease impacts to cultural resources, and would lead to a positive trend in their long-term survival.

Grazing developments: Under Alternative Three, new grazing developments are not being proposed; therefore, there is no expectation of effects to cultural resources values.

Grazing systems: For Alternative Three, the proposed grazing system is projected to have the following effects: in the short term and the long term, Alternative Three is expected to reduce grazing pressure on riparian areas. Reduced grazing pressure in the long term will in turn also reduce effects on cultural resources along riparian areas. In other words, if properly implemented, Alternative Three's grazing system would have a beneficial effect on cultural resources along riparian areas.

Conclusion: No grazing developments are proposed in Alternative Three, and so no cumulative adverse effects could occur upon cultural resources. The grazing system proposed in Alternative Three would cause cumulative beneficial effects on cultural resources. This is because there would less long-term grazing pressure on riparian areas, which would mean less long term disruption and erosion at cultural resource sites in those areas. The overall cumulative effect on cultural resources from Alternative Three would be positive.

CUMULATIVE IMPACTS ON RECREATION, AND VISUAL RESOURCES

As a result of actions planned under Alternative Three and the mitigation developed to reduce recreational impacts, livestock grazing on the allotment would not contribute to the trends documented in the affected environment. Therefore, cumulative impacts to the recreation setting and the available/realized experiences and benefits would occur at a similar rate to that documented in the affected environment.

Since Alternative Three maintains the existing setting, and experiences and benefits for the general allotment, there would be no offsite impacts to the recreation features as a whole. Alternative Three maintains the distinct niche represented by the setting of the GMCA.

In addition to the social benefits accruing from extractive uses of natural resources – grazing, farming, timber, and

mining- recreation and wildlife uses are becoming increasingly valuable to the local economy. With increased tourism, protection of natural resources and open space values that attract visitors to the area would become increasingly important as local and regional populations continue to grow and attract a diversity of people from outside the county and state.

CUMULATIVE IMPACTS ON WILDERNESS STUDY AREAS AND WILD AND SCENIC RIVERS

The cumulative impacts associated with the implementation of Alternative Three are expected to be light. Under this alternative, there are no plans to construct additional range improvements, such as fences, water wells and troughs or pipelines. No impacts exceed maximum allowable standards, as identified in the Interim Management Policy for Lands under Wilderness Review. Since this alternative relies on extensive herding, utilization triggers, a deferred grazing rotation system and penalties if permittees are in non-compliance, the intensity of impacts as a result of implementing Alternative One are expected to be light.

CUMULATIVE IMPACTS ON SOCIOECONOMICS

Adjustments in grazing operation to comply with the Wyoming Standards for Healthy Rangelands (USDI, BLM 1997) would affect livestock operators. These adjustments would include changes in season or duration of use, the continued development of riparian pastures and exclosures, and imposing a more restrictive forage utilization standard.

The reduction in AUMs under Alternative Three would likely cause some GMCA permittees to leave the ranching business and to sell private lands within their ranching operations. Some of those private ranch lands are surrounded by or adjacent to BLM-administered public lands within the GMCA. Others are located within view of US Route 287, one of the main tourist routes to the National Parks and a major thoroughfare for the area's residents. The potential for the development of rural subdivisions in and near the GMCA would likewise increase as a result of the sale of these private lands. The grazing program on federal lands within the GMCA, however contributes less than 1% of the overall economic makeup within Fremont County, therefore no significant cumulative socioeconomic impacts are predicted as a result of implementing this alternative.

ALTERNATIVE 4

CUMULATIVE IMPACTS ON SOIL AND WATER RESOURCES

There are currently 133 acres undergoing impacts from livestock (i.e., sacrifice areas) and/or project developments (e.g., springs, wells, fences, and reservoirs) from projects completed since implementation of the 1999 Final Decision. This alternative would call for the completion of 12 spring developments, 16 new wells, and three reservoirs. Alternative Four would create 114 acres of new sacrifice area disturbance. This would amount to a total 247 acres of sacrifice areas. The cumulative impacts as a result of implementing this alternative are similar to those under Alternative One.

CUMULATIVE IMPACTS ON VEGETATION RESOURCES

Potential cumulative impacts to vegetation communities would result from surface disturbing actions that contribute to either short or long-term loss of vegetation, and other actions that contribute to altering vegetation attributes through foraging, trampling, vehicle routes, dust and application of vegetation treatments. Under Alternative Four, impacts to plant communities would not be considered significant; however, varying acreage of disturbance would occur, depending on the level of grazing use associated with a one-herd deferred grazing system.

The continued expansion of weeds within and adjacent to the area of analysis would have a slightly negative impact to livestock, and to lesser degree, wildlife and wild horses through reduced forage and increased death loss from poisonous plants.

CUMULATIVE IMPACTS ON WILDLIFE/FISHERIES HABITAT AND SPECIAL STATUS SPECIES

Cumulative impacts for Alternative Four would be similar to those given for Alternative One except that Alternative Four proposes a total of 28 miles of fence construction or 19 miles more than Alternative One. At 1.5 acres of habitat loss per mile this represents a total of 42 acres or 28.5 acres more than Alternative One.

Alternative Four proposes 31 new water developments for an additional 3,875 acres of potential habitat loss or impairment. This is 1,625 acres more than that described under Alternative One.

Cumulative impacts from the Devon CO2 pipeline and energy development would remain the same as those described under Alternative One.

CUMULATIVE IMPACTS ON WILD HORSES

The pasture and riparian fencing would be detrimental to the free-roaming character of the wild horse herds in the allotment. Any fencing would impede natural movements of wild horses within the herd areas. Fencing could also prevent horses from moving to open areas that are blown free of snow during winter months; this could cause stress and winter die-offs that have previously not occurred.

CUMULATIVE IMPACTS ON CULTURAL RESOURCES

Grazing developments: Under Alternative Four, most of the proposed grazing developments are not expected to significantly affect cultural resources values. However, there are several new range improvements being proposed. These include the following: 12 spring developments, 12 water wells, 1 livestock reservoir and 19 miles of new fencing. These projects would cause surface disturbance, and would increase grazing pressure on cultural resources. Unless these projects are mitigated, the cumulative effects on this cultural resource would be adverse.

Grazing systems: Under Alternative Four, the proposed grazing system is projected to have the following effects: in the short term, Alternative Four is expected to continue current levels of grazing pressure on riparian areas; in the long term, Alternative Four is expected to reduce grazing pressure on riparian areas. Reduced grazing pressure in the long term will in turn also reduce effects on cultural resources along riparian areas. In other words, if properly implemented, Alternative Four's grazing system would eventually have a beneficial effect on cultural resources along riparian areas.

Conclusion: The grazing developments proposed in Alternative Four would cause both cumulative adverse and beneficial effects on cultural resources. This is because one development would cause negative effects to significant resources, while the other proposed developments would be relocated to avoid conflicts with cultural resources. Overall, this would result in a slightly adverse effect. The grazing system proposed in Alternative Four would cause cumulative beneficial effects on cultural resources. This is because there would be less long-term grazing pressure on riparian areas, which would mean less long term disruption and erosion at cultural resource sites in those areas. The overall cumulative effect on cultural resources from Alternative Four would be mostly positive, but would have more cumulative impacts than Alternatives One or Three.

CUMULATIVE IMPACTS ON RECREATION AND VISUAL RESOURCES.

The actions and the intensity of those actions authorized (and the developed mitigation) under Alternative Four would not comprehensively compound the trends documented in the affected environment. Therefore, cumulative impacts to the recreation setting and the available/realized experiences and benefits would occur at a similar rate to that documented in the affected environment.

CUMULATIVE IMPACTS ON WILDERNESS STUDY AREAS AND WILD AND SCENIC RIVERS

The intensity of impacts as a result of Alternative Four would not exceed maximum allowable impacts for the WSA and WSR resource. The impacts that would occur are on a localized level and probably could be mitigated without causing additional impacts. Potential to impact recreationists experience and benefit realization level exists, however this would occur in access areas and during the trip into the core WSA only. The area contained within the WSA and WSR does not have any known reasonable foreseeable actions that might synergies with the above impacts. In addition, no impacts to the WSA resource as a whole are anticipated as a result of the actions planned for Alternative Four.

CUMULATIVE IMPACTS ON SOCIOECONOMICS

Cumulative impacts on socioeconomics under Alternative Four are similar to those under Alternative Three, except that under Alternative 4, all GMCA grazing permittees would be required to graze their livestock under a one-herd grazing system. Under the concept of a one-herd grazing system, the GMCA permittees would likely have to develop a formal grazing association, or similar arrangement to ensure a successful grazing program. As with Alternative Three, the implementation of this alternative would cause an economic hardship to many of the GMCA grazing permittees individually, however it would not significantly impact the local or regional economy.