

4. Environmental Consequences (Socioeconomics)

4.1 SOCIOECONOMICS

This section describes potential impacts on socioeconomics from management actions. Existing conditions are described in **Section 3.16, Socioeconomics**.

4.1.1 Methods of Analysis

The region of analysis includes all of Garfield County and Kane County. Coconino County was not included in the analysis in order to avoid distortions to the dataset. Including Coconino County in the analysis would distort the dataset due to the county's distant population centers, such as Flagstaff. The types of economic impacts analyzed are limited to gross and net revenue to ranchers, differences in one-year and ten-year revenue, and direct, indirect, and induced impact on output, spending, and employment.

Impacts on Livestock Permittees

The model used in calculating the economic impacts of changes in permitted AUMs applies a partial budgeting, marginal analysis approach to economic analysis of an agricultural enterprise.

The model is based on a series of assumptions related to both market conditions and how the affected ranches might respond to changes in AUMs, given those conditions, as outlined below. The AUMs used as the baseline for the overall comparison in the model were taken from the total available AUMs listed in the descriptions of the alternatives. For the ranch-level impacts analyzed, the number of AUMs included was calculated for each scenario, depending on the head of cow/calf pairs.

The scenarios shown in **Table Error! No text of specified style in document.-1, Ranch Scenarios for Economic Analysis**, were used in the analysis. Scenarios 1, 2, 3, 5, and 6 were developed using data provided by participating local ranchers during a series of three public socioeconomic workshops held in communities near GSENM. Scenario 4 was developed using recent market data for the cattle industry (NASS 2016), combined with production data from a southern Utah cow/calf enterprise budget published by Utah State University Agricultural Extension (Utah State University 2016). The scenarios are listed in order based on the number of head of cattle in each.

AUMs and months of use for each alternative were inserted into the model to evaluate the economic impacts of the specific percentage increase or decrease in AUMs that would occur with the implementation of each alternative.

In the model, the maximum AUMs permitted in any given month on the allotment is the limiting factor in determining the maximum size of the herd from which annual production can be obtained. The total supported number of animal units is set by the number of AUMs divided by the number of months on the allotment. In other words, an allotment with 180 permitted AUMs spread over six months would be able to support no more than 30 animal units. The size of the herd is assumed to be constant throughout the year, regardless of how many months the herd grazes on the allotment being evaluated. Each animal unit is assumed to be equal to one cow/calf pair.

For the analysis of the alternatives, the specific production and market assumptions that were run through the model were developed from data gathered during the socioeconomic

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4. Environmental Consequences (Socioeconomics)

workshops and by accessing the latest available industry data at the time the analysis was conducted. Based on the information gathered during these workshops, if the number of permitted AUMs were reduced, the assumption was that the rancher would sell all cattle above the limit set by the number of AUMs. In other scenarios, the assumption was that the rancher would feed all excess cattle in an alternative location, in which case the rancher would feed hay to the excess cattle. Finally, in some scenarios, the assumption was that the rancher would feed some excess animals and sell others. For ease of calculation within this context, the assumption in this analysis was that half of the excess cattle would be fed and half would be sold. The cull cow weight and estimated market price differed by scenario.

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Ranch Scenarios for Economic Analysis

Head	15 to 60	60 to 150	150 to 300	650	300 to 1000	1000 +
Season of use	October to April	Year-round	Year-round	October to April	October to May	November to June
Cull rate	10%	10%	10%	20%	10%	10%
Cull or feed	Feed all	Feed some, sell some	Sell all	Feed some, sell some	Sell all	Feed some, sell some
Cost for alternative AUMs	\$7.50 to \$12 per AUM	\$18 to \$20 per AUM	\$40 to \$60 per AUM	\$60 per AUM	\$80 to \$90 per AUM	\$18 to \$20 per AUM
Herd-moving costs	\$80 per head	\$80 per head	\$60 per head	\$52 per head	\$60 per head	\$60 per head
Herd-maintenance costs	\$150 per head	\$160 per head	\$175 per head	\$163 per head	\$150 per head	\$125 per head
Percent of crop to sale	65% to 70%	80% to 85%	90% to 95%	91%	80%	85%
Calf sale weight	350 to 400	450 to 500	550 to 600	545	500 to 600	75% 450 to 500, 25% 750 to 800
Calf sale price (per pound)	\$1.25 to \$1.40	\$1.40 to \$1.60	\$1.60 to \$1.85	\$1.52	\$1.50 to \$1.60	\$1.40 to \$1.60
Cull sale weight (pounds)	800	1,000	1,100	1,100	1,250	1,000
Cull sale price (per pound)	\$0.60 to \$0.70	\$0.70 to \$0.80	\$0.80 to \$0.90	\$0.72	\$0.70 to \$0.80	\$0.60 to \$0.80
Infrastructure value	\$10,000 to \$20,000	\$20,000 to \$80,000	\$80,000 to \$100,000	\$83,980	\$100,000 to \$200,000	\$200,000 to \$300,000

Scenarios were developed during the public Socioeconomic Workshops

Under Alternative D, the total number of animal units would increase slightly, so the assumption is that under each scenario, the rancher would purchase additional cattle to use the increased number of AUMs. The cost of additional cattle is annualized over ten years as a stream of costs added to overall operating costs for the allotment.

Expected annual revenue includes proceeds from calf sales and any revenue stream derived from the sale of excess cattle. Expected annual costs include those for herd maintenance and moving, "off-allotment" feeding, grazing permit{ XE "Permit, Grazing" }, and any stream of costs resulting from the purchase of additional cattle.

4. Environmental Consequences (Socioeconomics)

The model does not include ranch operations' fixed costs, costs or returns on land investments, or depreciation, which is consistent with the partial budgeting approach to the analysis. The mathematical model provides the ability to include investments in fixed infrastructure on range allotments as part of the overall economic analysis. In order to make the analysis comparable across allotments, however, and without information on future range allotment permitting decisions, infrastructure costs were not included in the completed economic analysis. Total expected annual net revenue in the model equals expected annual revenue minus expected annual costs.

After ranch-level impacts were estimated, output from the model was used as the basis for analyzing the economic impacts of changes in active AUMs under each alternative on the study area as a whole. Regional economic impacts, in terms of direct, indirect, and induced output, spending, and employment, were evaluated using IMPLAN regional economic analysis software.

Contribution to Socioeconomics from Rangeland Ecosystem Goods and Services

Healthy rangeland ecosystems can provide multiple goods and services that can increase the economic, social, and cultural well-being of individuals and communities. To the degree that rangeland resources are degraded, an opportunity exists, through restoration of ecosystem health, to obtain these goods and services at a higher and more productive level.

According to participants in the Sustainable Rangelands Roundtable, an organization of researchers on the subject of rangeland management, rangeland ecosystem goods and services are divided into three main categories: biological, hydrological/atmospheric, and miscellaneous (Maczko and Hiding 2008). The roundtable participants identified a list of goods and services available from healthy rangelands. **Table Error! No text of specified style in document.-2**, Rangeland Ecosystem Goods and Services, lists some of these goods and services as relevant to the physiography of the GSENM region. There may be even more potential goods and services that could be provided in greater amounts by an increase in rangeland health{ XE "Rangeland Health" } in the area.

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Rangeland Ecosystem Goods and Services

Biological	Hydrological/Atmospheric	Miscellaneous
Forage{ XE "Forage" } for domestic livestock	Drinking water	Views and scenes
Fiber	Water for economic benefit	Cultural and spiritual resources
Habitat for wildlife	Floods for channel and riparian area{ XE "Riparian Area" } rejuvenation	Historical and archaeological sites
Fishing, hunting, and viewing wildlife	Flood mitigation	Scientifically significant sites
Genetic material	Water bodies for recreation/tourism	Recreation and tourism sites
	Minimizes contributions of chemicals and particulates	Ornamental resources
	Contributes to clean, fresh air	Ceremonial resources

Source: Maczko and Hiding 2008

Some of the potential benefits of increased rangeland health{ XE "Rangeland Health" } would be realized by individuals who live far from the GSENM region. Those who value the existence of

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4. Environmental Consequences (Socioeconomics)

GSENM characteristics, regardless of whether they are able to visit the area in person, can be assumed to benefit from knowing that these characteristics are being protected and that they will be in place for their future enjoyment.

Economists regularly quantify the value of ecosystem goods and services in dollar terms (Turner et al. 1993). Techniques used to estimate the dollar value of these benefits are as follows, and each is explained below:

- Revealed preference methods
 - Hedonic pricing
 - Travel cost
- Expressed preference methods
 - Contingent valuation
 - Welfare measures
- Replacement cost method
- Dose-response methods
- Opportunity cost calculation

Revealed preference methods of valuation estimate the proxy market prices, based on the activities and choices made by actual people.

In the hedonic pricing method of assessing value, the analyst identifies the contribution that environmental or ecosystem services make to the price of other goods and services. For example, a piece of land or home with a scenic view will generally command a higher market price than a similar piece of land or home without the same view. Therefore, if a thriving ecosystem or unaltered, natural landscape provides a more beautiful view, the difference in price between that property and the one without the view could be attributed to the ecosystem itself.

To use the travel cost method of analyzing the value of ecosystem goods or services, the analyst surveys the amount of money people either are willing to spend or actually do spend on visits to a particular place. Expenditures on fuel, vehicle depreciation due to usage, airfares, motels and hotels, restaurant food, and entry fees, among others, can be interpreted as the value the traveler places on the experience of visiting that location. Complicating factors include income impacts, differences in the values visitors place on the time they spend traveling to the location, proximity of the location to the visitors' starting points, and declining willingness to spend money on subsequent visits.

Expressed preference methods use hypothetical economic data, based on interviews or surveys to estimate the market value of ecosystem goods and services.

Contingent valuation methods rely on surveys in which people are asked how much they would be willing to pay to obtain an ecosystem good or service, or they are asked to state how much they would have to be compensated in dollars in exchange for giving up an ecosystem good or service.

4. Environmental Consequences (Socioeconomics)

For example, landowners might be asked how much they would be willing to pay in order to establish a specific wildlife population on a nearby piece of public land. The total amount for all surveyed landowners could be used as a statistical basis to approximate the market value of establishing the proposed wildlife population. Alternatively, the same landowners could be asked how much they would have to be paid to give up an existing wildlife population on nearby land.

Contingent valuation methods are sometimes less than ideal due to strategic “voting” by survey participants. They are also subject to some unsurprising distortions. People are usually more conservative when they state how much they would be willing to pay to obtain something in contrast with how much they would have to be paid by someone else in order for them to give up something they already possess or that they might possess in the future.

Welfare measures of value refer to methods in which the total consumer welfare associated with an ecosystem good or service is measured by comparing the estimated dollar amounts that all prospective consumers are willing to pay for an ecosystem good or service, compared with the actual cost to society of providing that good or service. To the degree that the actual cost falls below the amount individuals are willing to pay, an economist would say that consumer surplus (surplus economic enjoyment) is generated by the good or service being evaluated.

In the replacement cost method, economists add up the amount it would cost to provide a specific ecosystem good or service by means of a human-built method. For example, vegetation on a healthy landscape provides water filtration benefits. To calculate the monetary value of those filtration benefits, an economist would use engineers’ estimates of the cost of building one or more water treatment plants to treat the same volume of water to the level provided by the ecosystem. This method can also be used to estimate the value of ecosystem services that are expected to be obtained through restoring a degraded landscape.

The dose-response method is used to estimate the value of a healthy ecosystem by identifying the cost of treatment for ecological damages, where treatment or mitigation is required locally, downstream, or downwind. For example, a degraded ecosystem could allow elevated levels of nutrients to pollute a water body that is a source of drinking water at some point downstream. In such a scenario, the cost of treating human or livestock illnesses caused by the polluted water could be used to estimate some of the value of repairing the ecosystem so that nutrient runoff is reduced or eliminated.

Similarly, the cost of water treatment downstream to remove the nutrient load (thus preventing contamination-related illnesses) can also be used to approximate the value of upstream ecosystem restoration. This method is sometimes closely correlated with the replacement cost method.

In the opportunity cost method of valuation, the following rule is applied: The value of something is equal to the value of whatever must be given up in order to obtain it. Conversely, based on the rules of mathematical equality, this must mean that the value of what was given up is equal to the value of what was obtained in the exchange. This method is sometimes used to make a statement on the value of an ecosystem when a damaging activity either is proposed or has already occurred. For example, if a new gold mine is opened on a piece of land, then the

4. Environmental Consequences (Socioeconomics)

total value of the ecosystem goods and services that were given up in order for the mine to be opened and operated is said to be equal to the total economic value generated by the mine.

These and other methods all provide a means of quantifying, in dollars, the value of goods and services not directly traded in existing markets. Many of the goods and services provided by healthy rangeland ecosystems are already traded in existing market systems and could be valued by means of identifying the quantities and qualities in which they exist. The estimation of the market value of all the goods and services provided by the rangeland within GSENM falls outside the scope of the present analysis.

In addition to the assumptions in **Table Error! No text of specified style in document.-I,** Ranch Scenarios for Economic Analysis, above, the analysis is based on the following assumptions:

- Ranchers will sell mother cows that are in excess of permitted numbers (due to reduced AUMs) as cull cows, and revenues from those sales will earn one percent interest.
- In the case of an increase in permitted AUMs, ranchers will purchase additional cows to use the additional AUMs.
- No private pasture is available as a source of replacement forage.
- Federal grazing fee per AUM is \$2.11.
- Costs of ownership/capital costs were not included in the analysis.
- Permitted AUMs within an allotment is the limiting factor that sets maximum herd sizes.

Throughout the analysis, numbers are expressed as fractions in the number of head. While this is not realistic, it does allow for a more accurate comparison across alternatives and scenarios. Although these fractions were not rounded to make them more realistic, they do not affect the overall analysis. However, they do slightly affect the outcomes of the various scenarios in degrees that increase as the size of the modeled cattle operation decreases. Infrastructure spending was not included in the analysis.

Implementation-level decisions, such as specific fences, watering facilities, and other infrastructure, as well as decisions on nonstructural range improvements{ XE "Range Improvement" }, are considered during permit renewal or through separate NEPA{ XE "National Environmental Policy Act (NEPA)" } analyses. Therefore, these are outside of the scope of this planning-level document and are not included in the socioeconomic analysis.

Impacts on Socioeconomics Resulting from Changes in Recreation

Indirect changes to the recreation industry in the planning area could occur from changes in livestock grazing management. A reduction in AUMs may increase recreation, due to decreased conflicts between these user groups, thereby increasing revenues for the regional tourism and recreation industries. Alternatively, a reduction in AUMs may result in less attraction for tourists to the decision area and reduced revenues for the regional tourism and recreation industries. Many of the management decisions that would drive these changes would occur at

4. Environmental Consequences (Socioeconomics)

the permit renewal level and are outside of the scope of this analysis. Furthermore, additional and currently unavailable information would be needed to assess whether a change in permitted AUMs has an overall direct or inverse economic correlation to the recreation and tourism industries in the planning area.

4.1.2 Factors for Analysis

The factors for analyzing impacts on socioeconomics are the following:

- AUMs available for grazing
- Output, spending, and employment regional economic multipliers and estimated secondary economic activity generated as a result of economic activity within the ranching sector
- Gross and net revenue, both total and for each representative scenario
- Difference in one-year and 10-year net revenue for each representative scenario
- Nonmarket benefits and ecosystem services

4.1.3 Nature and Type of Impacts

Changes to the active AUMs in the decision area will induce socioeconomic impacts in the regional economy. These impacts include changes in gross and net revenue on ranchers who hold permits in the decision area, changes in employment and income, in tax revenue for local, state, and federal government entities, and in demand for housing and government services. Generally, increasing the active AUMs results in greater revenue for permittees, while reducing AUMs will reduce revenue for permittees. Similarly, changes in permitted AUMs also result in direct, indirect, and induced impacts throughout the regional economy. Within the economic structures of the communities that support the ranching sector, these impacts would result in changes in employment, spending, and output in the ranching sector. Increasing AUMs generally grows the economic size of this sector, while decreasing AUMs generally shrinks the size of the sector.

The degree to which each impact under the various proposed alternatives would affect individual permittees, their families, and the regional economy would depend on the individual circumstances of these economic units. While some permittees might be able to comfortably absorb reductions in gross and net revenue, for other permittees even small reductions in income could tip operations from solvency to insolvency.

Generally, increased livestock grazing reduces ecosystem goods and services, such as providing clean water, wildlife habitat, and forage for wildlife.¹ Conversely, reducing livestock grazing generally increases the provision of these goods and services. However, in instances where a permittee's livestock operation becomes uneconomical to continue, the permittee may elect to sell the ranch base property. The sale could result in further development of the property, which would result in the loss of ecosystem goods and services associated with open spaces, wildlife habitat, and undeveloped views. Additionally, livestock grazing management can increase rangeland ecosystem goods and services through such mechanisms as the treatment of

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¹ See the *Vegetation, Soils, Water, Fish and Wildlife*, and *Special Status Species* sections for a complete discussion of the impacts on these resources from livestock grazing.

4. Environmental Consequences (Socioeconomics)

invasive plant{ XE "Invasive Species" } species and mitigation work to reduce streambank erosion. Actions such as these are taken at the implementation level through the permit renewal process and are therefore not included in this planning level analysis.

In addition, management actions could alter the attitudes and opinions concerning the use of BLM-managed lands.

4.1.4 Direct and Indirect Economic Impacts

Impacts Common to All Alternatives

There are no impacts that are common to all alternatives in the analysis.

Alternative A

Under Alternative A, there would be no change in the number of permits on the Monument, leaving 136 grazing permits in place. The current level of active AUMs and average use would remain unchanged, at 76,957 and 41,343, respectively. The expected initial annual gross revenue under active use is estimated to be \$6,658,789, and estimated net revenue is \$3,220,388, given present market conditions. For average use AUMs only, gross revenue is estimated to be \$3,577,249, and net revenue is estimated to be \$2,214,704. Under Alternative A, these figures would be affected from year to year, as economic conditions for ranchers fluctuate over time with changing market conditions, changes in climate and weather patterns, and changes in family and business circumstances. See **Table Error! No text of specified style in document.-3**, Impacts of Alternatives B through E: Active AUMs, and **Table Error! No text of specified style in document.-**, Impacts of Alternatives B through E: Average Use AUMs.

Summary of Alternatives B through E

The economic attributes and impacts for Alternatives B through E are summarized in the tables below for active AUMs and for average use AUMs only. The impacts for the alternatives in comparison with Alternative A vary by scenario, as described above. Impacts were evaluated for the following four settings:

	All AUMs	Active AUMs
Workshop Assumptions	Scenarios 1 through 6	Scenarios 1 through 6
<u>Increased Production</u>	Scenarios 1 through 6	Scenarios 1 through 6

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"Workshop assumptions" indicates that, when cattle are moved off an allotment and fed in an alternate location, there would be no additional weight gain or calf survival rates beyond that shown in the scenarios developed during the socioeconomic workshops. "increased production" indicates that calves are raised in a controlled setting, where the cattle are fed hay and are protected from predators, disease, accidents, and other hazards. As a result, overall calf weight gain will be 25 percent higher than on range allotments, and the success rate in taking calves to market is increased to 95 percent for all scenarios.

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4. Environmental Consequences (Socioeconomics)

Alternative B

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4. Environmental Consequences (Socioeconomics)

Table Error! No text of specified style in document-3
Impacts of Alternatives B through E: Active AUMs with Workshop Assumptions

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10

4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Active AUMs with Workshop Assumptions

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11

4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Active AUMs with Workshop Assumptions

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4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Active AUMs with Workshop Assumptions

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4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Active AUMs with Increased Production

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4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Average Use AUMs with Workshop Assumptions

Summary of Impacts – Average Use AUMs

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November 2016

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17

4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Average Use AUMs with Workshop Assumptions

Summary of Impacts – Average Use AUMs

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4. Environmental Consequences (Socioeconomics)

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Impacts of Alternatives B through E: Average Use AUMs with Workshop Assumptions

Summary of Impacts – Average Use AUMs

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Impacts of Alternatives B through E: Average Use AUMs with Workshop Assumptions

Summary of Impacts – Average Use AUMs

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Impacts of Alternatives B through E: Average Use AUMs with Increased Production

Summary of Impacts – Average Use AUMs

November 2016

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20

4. Environmental Consequences (Socioeconomics)

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Summary of Impacts – Average Use AUMs

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Impacts of Alternatives B through E: Average Use AUMs with Increased Production
Summary of Impacts – Average Use AUMs

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Impacts of Alternatives B through E: Average Use AUMs with Increased Production
Summary of Impacts – Average Use AUMs

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4. Environmental Consequences (Socioeconomics)

Alternative C

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Alternative D

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Alternative E

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Summary of Impacts on Rangeland Ecosystem Goods and Services

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4. Environmental Consequences (Socioeconomics)

As described under *Nature and Type of Impacts*, Alternative B and to a lesser extent Alternatives C or E could result in increased goods and services, as compared with Alternative A. Alternative B could result in the loss of some goods and services currently provided by ranchers.

4.1.5 Direct and Indirect Social Impacts

Changes in permitted AUMs have the potential to impact the local economy and, in turn, to impact local social conditions in the following two ways:

- A reduction in a permittee's net revenues would result in lower spending in the community. The economic impact of the reduction in revenue coming into the area via the livestock industry would impact the regional economy, as described above, leading to changes in spending patterns and potentially increasing stress and pressure on the financial security of affected households.
- Changes to net ranch revenues would have an impact on the social aspects of normal ranch activities, such as routine stops at supply stores, cafes, and other gathering places, and on off-ranch participation of permit holders in community activities and events.

Together, these changes could result in an indirect impact on non-ranching residents of the area by impacting the general social setting of the region. Livestock grazing holds a central place in the contemporary culture in the communities surrounding GSENM. During public meetings, local ranchers and other community members expressed a desire that the cultural aspect of ranching and the "cowboy culture" be recognized and perpetuated as an important aspect of life in south-central Utah.

Research has highlighted the fact that ranching is more for ranchers than a simple production activity for generating income (Rimbey et al. 2007). Rather, ranchers value the lifestyle of ranching as well as the specific activities required of them in the course of conducting business. A loss of revenue, such that a ranch would lose its viability as an economic unit, would be expected to have social impacts that could not be offset or compensated for by earning income from alternate sources. The lifestyle impact, sense of self, and other intangible values would have a psychological cost to these individuals; this could change the social network of the region in undesirable ways for some members of the community.

A 2015 study completed for Kane County states the following (Miller and Heaton 2015):

Permit holders are dependent upon their GSENM permits. One hundred percent of permit holders said there is no cost effective way to replace their GSENM AUMs. Seventy-nine (79.31%) percent said they could not reduce the size of their operation to their private property and survive. Seventy-two percent (72.24%) stated they would be out of ranching. The difference between the two numbers is that some indicated that they would move to another location to continue ranching. Nearly sixty-two percent (61.90%) said they would need to sell the private holdings to developers. Sixty-two and one half percent (62.5%) said they would need to find off-ranch work if they were not already working off-ranch. Most of the others said they would retire in place of finding off-ranch work.

4. Environmental Consequences (Socioeconomics)

Permittees participating in the socioeconomic workshops expressed similar opinions.

The Kane County study highlighted the long-term family tenure of some ranches in the region. Although younger family members may be classified as new or beginning ranchers when they take over ranching activities, in some cases they represent the fifth generation within the same family that has ranched on the same property. Tenure on allotments in GSENM has not been as long as that noted in the study due to changes in customary allocation and federal grazing allotments since the late 1800s.

While permittees and those in their community expressed concern about the impacts of reduced AUMs, some recreationists and representatives of other interest groups expressed a desire to see lower cattle usage where conflicts between recreational users and grazing cattle have been identified. While social impacts between varying user groups resulting from changes in grazing management is beyond the scope of this analysis, they are important to note, because they impact the social setting and relations in the planning area.

4.1.6 Cumulative Impacts

Cumulative economic impacts are regional impacts on jobs, labor income, and economic output, as summarized in the tables below.

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The degree to which changes in grazing management in the decision area will impact individual permittees, families, communities, and the overall regional economy depends on many additional and unpredictable factors; examples are regional, national, and global economic conditions, the state of the cattle industry in general and the cow/calf industry in particular, international monetary exchange rates, and other financial market conditions. Other management decisions by federal, state, and local governments and agencies, as well as private investment decisions and related factors, play a role in determining the degree to which impacts from grazing management in the decision area will affect the human environment.

4. Environmental Consequences (Socioeconomics)

4.1.7 References

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4. Environmental Consequences (Socioeconomics)

Table Error! No text of specified style in document.-43
Regional Economic Impacts for Active AUMs

Regional Economic Impacts for All AUMs	One-Year Total Gross Revenue	Regional Jobs Supported	Regional Jobs Impacts	Regional Labor Income	Regional Labor Income Impacts	Regional Economic Output	Regional Economic Output Impacts
Alternative A: No Action (Baseline)	\$9,189,245	79.03	0.00	\$926,717	\$0	\$12,966,245	\$0
Alternative B: No Grazing							
Feed all excess cattle	\$9,189,245	79.03	0.00	\$926,717	\$0	\$12,966,245	\$0
Sell all excess cattle*	\$1,274,159	0.00	-79.03	\$0	-\$926,717	\$0	-\$12,966,245
Sell half and feed half of excess cattle	\$5,231,702	44.99	-34.03	\$527,607	-\$399,110	\$7,382,057	-\$5,584,188
Alternative C: 40.5% decrease in AUMs (workshop assumptions)							
Feed all excess cattle	\$9,189,245	79.03	0.00	\$926,717	\$0	\$12,966,245	\$0
Sell all excess cattle	\$5,983,635	51.46	-27.57	\$603,438	-\$323,279	\$8,443,053	-\$4,523,193
Sell half and feed half of excess cattle	\$7,586,440	65.24	-13.78	\$765,077	-\$161,640	\$10,704,649	-\$2,261,596
Alternative C: 40.5% decrease in AUMs (adjusted production)							
Feed all excess cattle	\$10,324,142	88.79	9.76	\$1,041,169	\$114,452	\$14,567,612	\$1,601,367
Sell all excess cattle	\$5,983,635	51.46	-27.57	\$603,438	-\$323,279	\$8,443,053	-\$4,523,193
Sell half and feed half of excess cattle	\$8,153,889	70.12	-8.90	\$822,303	-\$104,414	\$11,505,333	-\$1,460,912
Alternative D: 1.7% increase in AUMs							
All AUMs	\$9,345,462	80.37	1.34	\$942,471	\$15,754	\$13,186,671	\$220,426
Alternative E: 28.2% decrease in AUMs (workshop assumptions)							
Feed all excess cattle	\$9,189,245	79.03	0.00	\$926,717	\$0	\$12,966,245	\$0
Sell all excess cattle	\$6,597,878	56.74	-22.29	\$665,383	-\$261,334	\$9,309,764	-\$3,656,481
Sell half and feed half of excess cattle	\$8,073,217	69.43	-9.60	\$814,168	-\$112,549	\$11,391,503	-\$1,574,742
Alternative E: 28.2% decrease in AUMs (adjusted production)							
Feed all excess cattle	\$9,979,470	85.82	6.80	\$1,006,410	\$79,693	\$14,081,272	\$1,115,026
Sell all excess cattle	\$6,957,191	59.83	-19.20	\$701,619	-\$225,098	\$9,816,763	-\$3,149,482
Sell half and feed half of excess cattle	\$8,468,330	72.83	-6.20	\$854,014	-\$72,703	\$11,949,017	-\$1,017,228

*Under this option under Alternative B, although ranchers would realize a stream of revenue from the sale of excess cows in year one, there would be no ongoing economic benefits from the cattle industry to the regional economy because there would be no jobs supported, no wages paid to employees, and no purchases of supplies associated with the allotments in the study area once the cattle had been sold.

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4. Environmental Consequences (Socioeconomics)

Table Error! No text of specified style in document.-54
Regional Economic Impacts for Average Use AUMs

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Regional Economic Impacts for Active AUMs	One-Year Total Gross Revenue	Regional Jobs Supported	Regional Jobs Impacts	Regional Labor Income	Regional Labor Income Impacts	Regional Economic Output	Regional Economic Output Impacts
Alternative A: No Action (Baseline)	\$3,577,249	30.76	0.00	\$360,758	\$0	\$5,047,584	\$0
Alternative B: No Grazing							
Feed all excess cattle	\$3,577,249	30.76	0.00	\$360,758	\$0	\$5,047,584	\$0
Sell all excess cattle*	\$496,013	0.00	-30.76	\$0	-\$360,758	\$0	-\$5,047,584
Sell half and feed half of excess cattle	\$2,036,630	17.52	-13.25	\$205,390	-\$155,368	\$2,873,734	-\$2,173,850
Alternative C: 19.3% decrease in AUMs (workshop assumptions)							
Feed all excess cattle	\$3,577,249	30.76	0.00	\$360,758	\$0	\$5,047,584	\$0
Sell all excess cattle	\$2,982,570	25.65	-5.11	\$300,786	-\$59,972	\$4,208,478	-\$839,106
Sell half and feed half of excess cattle	\$3,279,909	28.21	-2.56	\$330,772	-\$29,986	\$4,628,030	-\$419,554
Alternative C: 19.3% decrease in AUMs (adjusted production)							
Feed all excess cattle	\$4,019,049	34.56	3.80	\$405,313	\$44,555	\$5,670,975	\$623,390
Sell all excess cattle	\$2,329,348	20.03	-10.73	\$234,910	-\$125,848	\$3,286,766	-\$1,760,818
Sell half and feed half of excess cattle	\$3,174,198	27.30	-3.47	\$320,112	-\$40,647	\$4,478,870	-\$568,715
Alternative D: 3.7% increase in AUMs							
All AUMs	\$3,709,607	31.90	1.14	\$374,106	\$13,348	\$5,234,345	\$186,760
Alternative E: 1% decrease in AUMs (workshop assumptions)							
Feed all excess cattle	\$3,577,249	30.76	0.00	\$360,758	\$0	\$5,047,584	\$0
Sell all excess cattle	\$3,546,436	30.50	-0.26	\$357,651	-\$3,107	\$5,004,106	-\$43,478
Sell half and feed half of excess cattle	\$3,561,842	30.63	-0.13	\$359,205	-\$1,554	\$5,025,845	-\$21,740
Alternative E: 1% decrease in AUMs (adjusted production)							
Feed all excess cattle	\$3,884,872	33.41	2.65	\$391,782	\$31,023	\$5,481,648	\$434,063
Sell all excess cattle	\$2,708,340	23.29	-7.47	\$273,131	-\$87,628	\$3,821,533	-\$1,226,051
Sell half and feed half of excess cattle	\$3,296,606	28.35	-2.41	\$332,456	-\$28,302	\$4,651,590	-\$395,994

*Under this option under Alternative B, although ranchers would realize a stream of revenue from the sale of excess cows in year one, there would be no ongoing economic benefits from the cattle industry to the regional economy because there would be no jobs supported, no wages paid to employees, and no purchases of supplies associated with the allotments in the study area once the cattle had been sold.

4. Environmental Consequences (Socioeconomics)

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