

4.0 ENVIRONMENTAL CONSEQUENCES OF THE CONTINUATION OF EXISTING MANAGEMENT DIRECTION

As part of the Management Situation Analysis (MSA) process, the potential impacts on resources within the Rawlins Resource Management Plan Planning Area (RMPPA) of continuing the existing management direction have been identified. For the purpose of the MSA process, impacts are defined as—

The direct or indirect effects on resources that could result from individual or collective management objectives and actions over time. Such impacts may be positive or negative, be individually minor but collectively significant, occur at a single point of time or over a period of time, or be in one location or dispersed over a larger geographic area.

The four steps of the impact analysis process are—

- **Step 1.** Identifying and evaluating current management objectives and actions for each resource, as described in Chapter 2
- **Step 2.** Identifying and describing the resources present in the area that fall within the purview of the management objectives and actions or are affected by them, as described in Chapter 3
- **Step 3.** Identifying and describing the potential impacts that the continuation of current management objectives and actions (described in Chapter 2) would have on the resources described in Chapter 3 in conjunction with assumptions made about the reasonably foreseeable development levels for, or the future availability of, each resource.
- **Step 4.** Articulating how the current management objectives and actions collectively affect each resource and whether the combined impact is negative or positive in nature.

This four-step process shows the interrelationships between Chapters 2, 3, and 4 within this MSA. The impact analysis discussion (Chapter 4) identifies potential impacts of the management actions (as summarized in Chapter 2) on the existing environment (as summarized in Chapter 3). This shows a direct link between the Bureau of Land Management's (BLM) management actions and potential impacts on the existing environment.

The identification, description, and evaluation of the impacts of these management objectives and the actions performed to implement them (Steps 3 and 4) are presented below for each of the resources described in Chapter 3. The assumptions integral to this discussion of impacts are provided in Table 4.0-1.

The impact analysis presented in this MSA relates only to the continuation of existing management direction. Once refined during the Environmental Impact Statement (EIS) process, the continuation of existing management direction will become the basis for the

No Action alternative evaluated within the EIS. The impact analysis within this MSA should be considered preliminary in nature; additional impact analysis will be performed as part of the EIS process. The impact analysis discussions within the EIS will include more quantification of potential impacts.

4.1 AIR QUALITY

Impacts on air resources potentially affect the quality of the air. Characterization of potential air quality impacts within the RMPPA is based on data sources within the RMPPA when available and on use of nearby representative data outside the RMPPA to fill data gaps or when otherwise appropriate. The *Federal Land Policy and Management Act* and the *Clean Air Act* prohibit the BLM or any federal land management agency from conducting, supporting, approving, licensing, or permitting any activity on federal land that does not comply with all applicable local, state, and federal air quality laws, statutes, regulations, and implementation plans. Adherence to the air quality regulatory standards through participation in such projects as the ongoing visibility monitoring by the Interagency Monitoring of Protected Visual Environments (IMPROVE) and coordination with other federal and state agencies is a key to meeting air quality standards. The consideration of potential air quality impacts is qualitative at this stage of the EIS process. After management alternatives are developed, a more quantitative, modeled analysis would be used.

Within the criteria air pollutant data most applicable to the Rawlins RMPPA, the criteria pollutant that is closest to exceeding the National Ambient Air Quality Standards and the Wyoming Ambient Air Quality Standards is ozone (O₃), which is at 94 percent of the 8-hour standard. The primary sources of impacts on air quality in the Rawlins RMPPA are fire and oil and gas resource development.

Although fire itself can have devastating short-term air quality impacts through particulates and hazardous air pollutants, management of fire within the RMPPA includes actions that minimize impacts on air quality. Prescribed or controlled burns reduce vegetative fuels, enhance forage, and alter plant succession. These burns are managed in a way that minimizes any negative short-term impacts on air quality by precluding the extremely hot fires that can result after buildup of excessive fuels. Fuel reduction through mechanized means is one method that is being used to reduce the potential of intense fire, thus reducing the potential for short- and long-term air pollution. BLM will continue to cooperate with other agencies to reduce the threat of fires and its indirect impacts on air quality through the National Fire Plan and other appropriate actions.

Management actions associated with forest resources have the potential to increase short-term localized impacts on air quality associated with emissions from logging trucks and increased air particulates associated with dust. Although harvesting of timber is a current objective, with a planned harvest of up to 20 million board feet per decade, the impacts on air quality from these activities are minimal due to limited logging within the Rawlins RMPPA.

Increased mineral production has the potential to negatively impact air resources due to increased vehicle emissions, gas-flaring operations, and airborne particulates related to increased traffic on roads and construction of additional roads. BLM has implemented management actions to reduce these negative impacts through permit and lease requirements for mineral operations within the RMPPA. These air quality impacts tend to be short term and localized, but increased mineral production may lead to declining air quality in some areas if operator requirements and appropriate monitoring are not implemented.

Surface treatment of roads associated with transportation and access management objectives, as well as mineral production, produce positive impacts on air quality by limiting dust and airborne particulates. In addition, protection of visual resources through the Visual Resource Management (VRM) system has positive impacts on air quality.

Other BLM programs that have the potential to increase minor short-term localized adverse impacts on air quality include management of hazardous materials, off-highway vehicle (OHV) use, and recreation. Although typical impacts from these activities may be localized and short term, they occur on a frequent basis and collectively represent a long-term impact. Regulation and monitoring of these activities should limit the negative impacts.

4.2 CULTURAL RESOURCES

Protection of cultural resources is supported throughout the RMPPA, with a focus on the viewshed and interpretive landscapes for Traditional Cultural Properties and on sites eligible for *National Historic Preservation Act* listing. The management objectives provide for enhancement of the scientific and sociocultural values of cultural resources by avoiding or mitigating impacts on these resources and by considering cultural resources in all land management decisions. Preparation of activity plans on any current or future sites listed on, or determined to be eligible for, the National Register of Historic Places would provide greater protection of significant sites by implementing the site-specific management prescriptions included in activity plans.

Although only about 11 percent of the Rawlins RMPPA has been inventoried at the Class III level, approximately 12,485 cultural resource sites have been recorded. They include rock art, lithic scatters, prehistoric open camps, rock features, etc. The most likely potential impacts on these and other cultural resources are expected to be from surface-disturbing activities within the Rawlins RMPPA.

Mineral development has the potential to inadvertently damage important cultural resources through surface disturbance. Although following necessary federal and state regulatory requirements and processes help minimize impacts through increased surveys and assessment and monitoring activities, avoidance of inadvertent damage to, or destruction of, cultural resources located on BLM-administered lands is difficult because of the complexity of the buried archaeological record and unanticipated discoveries. Artifact pilfering on long-term and well-established oil fields has also been an issue in the Rawlins RMPPA. However, mineral development may have a positive impact on

cultural resources by increasing the number of surveys and assessments that are performed throughout the RMPPA.

Fire management can have various impacts on cultural resources. For instance, damage to cultural resources can occur due to wildfires themselves and through surface disturbances caused by activities designed to control such fires (e.g., fire lines). Fire management objectives to minimize the potential for devastating wildfires have the added benefit of protecting cultural resources that can be lost in such events. Cultural resources are also protected through soil stabilization actions that work to minimize erosion and loss of site integrity.

Through lands and realty actions, the BLM retains lands with important cultural and historic resources, ensuring their protection. Although management actions do not promote the acquisition of private parcels with cultural resources, the presence of cultural resources is important in any land exchange proposed with the state.

Increased recreational use, including OHV activities, has varying impacts on cultural resources. Increased public exposure to cultural resource issues can increase awareness, knowledge, and the overall importance of cultural resources within the RMPPA. However, increased visitation to such sites can potentially lead to increased impacts from overuse and vandalism. Similar impacts are associated with transportation and access management, and negative impacts can be controlled only through effective planning and mitigation strategies.

4.3 FIRES

Wildfires are an unavoidable occurrence within the RMPPA and would continue to occur both naturally and through human interaction with the natural environment. There are two distinct management directions for fire. First, BLM supports the National Fire Plan in minimizing the impacts of devastating wildfires, with an emphasis on protecting sites of environmental and human value, including protection of lands interfacing with urban areas. BLM's effort to suppress or otherwise manage wildfires acknowledges the potentially devastating impacts of wildfires on the affected area. Second, BLM uses prescribed and managed fires (as well as chemical and mechanical methods) as a management tool for fuel reduction and vegetative control and to enhance range condition and wildlife habitat.

Wildfire intensity and severity can be affected by management actions. The use of managed fire, (management or natural ignitions) are typically beneficial because they are allowed to burn when the likelihood of a large, high intensity, resource damaging fire is remote. Also, managed fires reduce safety hazards to people and property by removing fuel when safe to do so. Managed fire or other management actions that lead to a more diverse vegetation age class or structure further reduces the likelihood of catastrophic fires by breaking up large, contiguous areas of mature and over-mature vegetation.

Management actions that increase transportation routes aid in wildfire suppression by providing improved access, shortened response time, and fire breaks. Grazing reduces

fine fuel loading, which can reduce the spread potential of wildfires and timber harvesting creates firebreaks by reducing heavy fuel loading.

Recreational activities, including OHV use, through transportation and access to remote areas, have the potential to increase the occurrence of wildfires associated with increased human interaction with the natural environment. The occurrence of most human-caused fires along I-80 and the railroad corridors attests to this trend, as does the occurrence of past fires in association with fireworks, campfires, and machinery. Education can reduce this potential but would not completely eliminate the threat of increased wildfires due to increased human presence in remote areas. The potential occurrence of natural wildfires (e.g., from lightning) and their associated magnitude and location of impact cannot be predicted with any degree of accuracy. Even with proper planning and management preparation, the effects of wildfires can be significant. In some cases, many years are required before sites affected by wildfire return to productive, healthy ecological function.

4.4 FORESTRY

Forest resources occur only in two areas within the RMPPA: the Shirley Mountains and Elk Mountain. Because these units are located in different geographic areas, impacts of management by other resource programs vary between the two. Especially in the Shirley Mountains, wildlife management decisions made to protect elk habitat are of particular importance. The forestry resource is primarily impacted by timber harvest activities, disease, and forest management for specific other uses, especially wildlife habitat and recreation.

Proper management of forest resources has several benefits for these resources, including the provision of a sustainable supply of forest products to the public and the enhancement of ecological resources. Harvesting and thinning can provide valuable forest products. Although the impacts from forestry management on wildlife habitat can be negative in the short term for species having large home ranges, they may also be positive (providing habitat diversity). Limited clear-cutting can be used as a management tool to enhance forest regeneration and control plant intrusions and diseased trees, if performed carefully. Impacts associated with timber harvesting are minimal in the Rawlins RMPPA due to the small acreage that is harvested each year.

Several programs help to enhance the forest resources within the RMPPA. These include fire management, which helps reduce fuel for wildfires, enhances wildlife habitat, supports increased forest regeneration, and promotes the regeneration of certain species (e.g., lodgepole pine). In addition, management programs focused on soils and watershed would help improve forest health, improve regeneration, and minimize erosion. Wildlife and fisheries management can help promote overall forest health while reducing insect infestation. In addition, transportation planning can lead to increased access to forest resources.

Certain situations may complicate the management of forest resources in the RMPPA. These include the presence of cultural resources that can affect the ability of the BLM to

approve a timber sale. Air quality requirements can restrict the timing and use of burning slash as a management tool for timber harvesting.

Timber harvesting may be prohibited or limited in areas with important recreational values. In addition, other methods used for managing forest resources, such as prescribed fires, may be limited due to recreational activities or protection of other resources within the RMPPA.

4.5 HEALTH/SAFETY AND HAZARDOUS MATERIALS

Health/safety and hazardous materials are managed throughout the RMPPA following applicable local, state, and federal regulations, including BLM Manuals H-2101-4 and H-1703-1. However, as development continues and as more people use the public lands, health and safety hazards associated with the traditional ranching lifestyle may diminish, and health and safety hazards associated with resource development, and the possibility of hazardous waste spills or material mishandling, would increase. Under the current regulatory framework, responsible parties are required to clean up hazardous waste spills to avoid endangering human health or causing environmental damage. Lands are inspected before transfer from public ownership or before acquisition, to protect the public from contact with hazardous materials.

Health and safety impacts from accidents are due to the presence of more people using the public lands, resource development, and fire management. The seriousness of accidents and injuries may be magnified if individuals become injured in locations that are far from medical help. Adherence to Occupational Safety and Health Administration (OSHA) standards in the workplace, and comparable care taken in private operations and activities, can minimize impacts on health and safety.

Management of wildfires can introduce hazardous materials into localized areas through the use of fire slurries or other fire fighting treatments. In addition, if wildfires occur near oil and gas operations, the hazardous materials associated with the oil and gas operations can be introduced into the environment.

Increased oil and gas development has the potential to increase spills of hazardous materials either at the site or in transport to or from the site. Such spills may be from tanks, tanker trucks, or ruptured pipelines. However, these operations must comply with an extensive regulatory framework that limits the potential for spills and establishes guidelines and responsibilities for management and cleanup of spills. This framework serves to minimize such potential impacts in most cases. The potential for hazardous material or hazardous waste spills or accidents can never be eliminated, even with the most thorough management objectives and actions, simply because human error and mechanical failure can never be eliminated. As a further complication, certain hazardous waste sites, such as former uranium or other mines, can be classified as cultural resources that deserve certain protection.

4.6 LANDS AND REALTY

The BLM Lands and Realty Program applies to all public lands within the RMPPA. The most likely impacts on lands and realty are from ownership or use changes, forest management actions, corridor designations, the expanding transportation network, and communication site development.

The management commitment given to land ownership adjustments may serve to minimize some adverse impacts on some resources. Consolidation of BLM lands would be undertaken where there are willing state or private landowners and when such consolidation supports other public land resource management goals and objectives. Management of transportation and access can also motivate exchanges to provide access. Management of transportation network and access easement acquisition may also benefit from landownership adjustments.

Land exchanges and sales may be influenced by the presence of cultural resources in some cases. BLM may dispose of lands to other agencies with the capabilities and resources to further protect important cultural resources. For instance, identified National Natural Landmarks (NNL) within the Rawlins RMPPA, including the Gangplank NNL, the Big Hollow NNL, and the Sand Creek NNL, are being considered for disposal to entities that would manage these sites in accordance with their NNL status. As part of existing management actions, procurement of access to land parcels for forestry and recreation has been prioritized as of high, moderate, or low importance. For example, BLM is also considering agreements with other agencies and landowners to help protect areas along historic trails throughout the RMPPA. Permitting activities are also greatly affected by the potential presence of cultural resources and the management requirement that site assessments and reviews be completed before approval of relevant permits.

The presence of hazardous materials can complicate land transactions. However, the requirement that liability issues associated with hazardous materials be addressed in BLM land transactions improves land values, desirability, and public safety.

Right-of-way (ROW) processing is a major current activity within the Lands and Realty Program. The increasing requests for new ROWs may result from the need to access a specific resource, such as oil and gas. Land and realty management can also be affected by the desire to improve recreational experiences. On a case-by-case basis, lands may be acquired to expand the number, quality, or diversity of recreational assets within the RMPPA, or to improve access to existing recreational areas. Particularly between segments of the various historic trails that cross the Rawlins RMPPA, potential easements or other access to allow the public to experience cohesive lengths of trail would be a beneficial management option.

4.7 LIVESTOCK GRAZING

Livestock grazing is managed in designated livestock allotments. BLM is managing domestic livestock in accordance with the *Standards for Healthy Rangelands*. The standards are used to enhance sustainable livestock grazing and wildlife habitat while

protecting watersheds and riparian ecosystems. The most likely impacts on livestock grazing are from changes in grazing preference objectives; fire management; ROW, corridor, or transportation development; the presence of cultural resources; oil and gas development; recreation expansion; soil and watershed protection; management for wildlife; wild horse management; and air quality protection.

The current grazing preference would fluctuate around the current number, with potential increases through implementation of allotment management plans (AMPs), range improvements, and vegetation manipulation, and with potential reductions through further conversions from sheep to cattle use. Of the 80 largest allotments that collectively make up 76 percent of the public land in the Rawlins RMPPA, 75 percent have grazing systems or adequate management for the resources present. Livestock management would be changed as needed to meet either Rangeland Standards or resource objectives. However, if these measures fail to provide the grazing preference objective while providing for protection of other resource values as established in the plan, livestock reductions might become necessary. Any adjustments in livestock grazing use would be made as a result of monitoring and in consultation with grazing permittees and other affected interests. Any such short-term reductions of active preferences necessary to maintain range condition could have significant impacts on individual permittees. However, long-term benefits from such actions would include more sustainable range use.

Protection of air quality has a positive impact on livestock grazing by limiting dust on forage, thereby improving the health of livestock. Management of cultural resources can constrain livestock operations by complicating management in locations near cultural resources and limiting the location, extent, and scope of rangeland improvements.

Fire management benefits livestock grazing in two ways. First, use of prescribed burns can improve forage within allotments. In addition, control of wildfires would limit loss of livestock and long-term damage to forage. Improved range conditions also result in areas subjected to other types of vegetation manipulation. Control and management of hazardous materials can provide localized benefits to livestock grazing by limiting spills and accidents.

Management actions associated with sales, ROWs, disposals, and exchanges can limit the available forage for livestock grazing. In addition, the demand for additional ROWs disrupts grazing operations and creates conflicts between uses. AMPs are beneficial to allotment management, especially in areas where multiple parties own lands tied to the allotments (e.g., private and public). These allotments are assessed on a case-by-case basis, but monitoring and access are difficult because of the pattern of multiple land ownership. Management requirements for different resources may limit the number or amount of conversions between different domestic livestock. For instance, cattle to buffalo conversions occur infrequently. Conversions from sheep to cattle also occur infrequently, but are due more to the fact that most permits that were historically sheep have already been converted to cattle. Improved transportation and access can aid in the movement of animals between public and private lands as well as between allotments. Improved transportation can also improve flexibility in the season of use by providing

access during the winter to check on livestock and to supplemental feed when needed. However, increasing roads can cause fragmentation and further complicate livestock grazing management.

Avoidance of significant cultural resource sites, limitations on activities within one-quarter mile of historic trails, and subordination of activities to the historic landscape may limit BLM's ability to construct rangeland improvements aimed at achieving better distribution and management of livestock. Cultural resource management can increase costs of grazing operations by requiring additional surveys and design changes to avoid important sites.

Oil and gas development can be disruptive to livestock management. Impacts include construction activities, open trenches, large areas of soil disturbance, increased vehicle traffic, loss of forage, and shifts in grazing distribution. Development of new facilities and roads can increase management time and cost for grazing operations. In areas where heavy truck traffic from fluid mineral development is prevalent, livestock tend to concentrate in the less active areas.

Reclamation of disturbed pipelines, roads, and drill pads can increase forage diversity, productions and availability for livestock use. Water wells developed for drilling and later turned over for use by livestock and wildlife can improve management flexibility and distribution of use.

The *Standards for Healthy Rangelands* govern range conditions that may be impacted by recreational uses as well as grazing. This is especially important within critical habitat areas that are important for big and small game habitat. Increasing OHV use may increase the harassment of livestock.

Protection of soils promotes healthy rangelands in accordance with the *Standards for Healthy Rangelands*. In addition, management actions taken to improve vegetation can have positive impacts on livestock grazing by increasing forage and rangeland health. Management actions needed to meet riparian area objectives would emphasize the manipulation of the season and duration of use by livestock or other grazers. Permitted active preference could be reduced to minimize utilization of riparian vegetation by livestock in some allotments, and costs could be increased by requiring alternative water development facilities.

Management of wildlife and wild horses can impact livestock grazing management. Seasonal movement of animals across fences can cause damage and increase maintenance costs. Fighting between wild horse studs across fences can also increase maintenance and mixing of cattle between allotments. Current and future AMPs would establish practices to improve or maintain wildlife and wild horse habitat conditions. As AMPs are evaluated, adjustments to active grazing preference, grazing management, season of use, or kind of livestock may be necessary to ensure adequate wildlife habitat and forage availability. Competing use of vegetation could occur in areas where wildlife numbers are above strategic plan levels and active licensed grazing use is at or near preference. Management considerations associated with wildlife and wild horses also

limit BLM's ability to construct fences or water developments and to improve grazing management.

Impacts to livestock from weeds include potential poisonings, physical injury and reduction of forage quantity and quality.

4.8 MINERALS, GEOLOGY, AND TOPOGRAPHY

Geologic resource impacts are essentially impacts on minerals, since no actions are envisioned that would impact either geology or topography. Mineral development can occur throughout the Rawlins RMPPA, with particular focus on areas designated for oil and gas and mineral development. To date, 59 percent of all wells have been drilled on federal lands, with concentration in the eastern Green River Basin (Great Divide Basin, Wamsutter Arch, and Washakie Basin) and increasing interest in gas from coalbeds in Atlantic Rim, along Seminoe Road, and in Hanna Draw. Each of the two operating coal mines near Medicine Bow has only about 2 years of economically-recoverable reserves remaining. Proper management of these operations requires substantial predevelopment evaluation and impact monitoring. The primary likely impacts on mineral operations are increased costs; temporal or spatial access restrictions; competing visual, air quality, ground and surface water, riparian, cultural, and recreational resource values; and constraints on hazardous material uses and soil erosion.

Increased access to lands for exploration, gathering lines, and pipeline capacity is essential to future development of oil and gas resources. This is especially true for natural gas, because the demand for this resource is expected to continue to increase in the future and because there are substantial reserves within the RMPPA. The designation of ROW avoidance and exclusion areas could increase the cost of transporting gas. The cost of geophysical activities could also be increased, with some activities being limited to certain times of the year or displaced from areas of conflict with other resources such as wildlife, recreation, and cultural resources.

Mineral development is restricted in areas known to contain threatened and endangered (T&E) plant and animal species. Operations may also be interrupted if T&E species are found on site. Development locations near important wildlife habitat may be constrained by seasonal use restrictions, buffer zones, and noise controls. For example, surface-disturbing activities would be restricted and intensively managed in the Areas of Critical Environmental Concern (ACEC), the Baggs Elk Crucial Winter Range, and in other big game-crucial winter ranges, to protect their value as wildlife habitat.

In addition to the surface disturbance impacts typical of oil and gas development (e.g., roads, well pads), extraction of gas from coalbeds requires disposal of substantial amounts of ground water, as does oil and gas extraction from some other geologic formations. Reinjection of this water into the appropriate aquifer depths having water quality lower than that of the water being reinjected is stipulated. This action eliminates surface impacts that could result from surface disposal of produced water and protects the natural water quality of existing aquifers. Other options are treatment and some surface

uses of this water if it can be brought up to acceptable standards and if proper permits are obtained.

Protection of visual resources can add additional constraints to mineral development by restricting well locations and density if mitigation measures are required to reduce the impacts of mineral operations on important viewsheds. Additional requirements can be placed on mineral operations to protect ground and surface waters and to limit impacts on riparian areas.

Management of air quality imposes limits on the impacts of mineral operations by requiring reduction of particulates, dust, and emission of hazardous air pollutants. These actions can restrict drilling by location and time of year for many mineral operations.

Protection of important recreational areas minimizes potential surface disturbances from increased mineral development but may limit the areas where development can occur.

Control of hazardous materials would reduce the threat of spills and accidents associated with mineral development. Fire management would benefit mineral operations by providing additional protection against devastating wildfires.

Management objectives seeking to enhance soil stability would limit mineral activities in certain areas such as those locations with highly erodible soils and steep slopes. Transportation management requirements impose additional limits on the number and location of roads and require mitigation measures to reduce impacts.

All of the above locational and temporal constraints on mineral resource exploration and development from other BLM-managed resources and resource management programs increase the costs of mineral development and delay the evaluation and approval of proposed activities.

4.9 OFF-HIGHWAY VEHICLE USE

OHV use is limited to specific designated areas within the Rawlins RMPPA. Preparation of an OHV Management Plan and provision of additional OHV use designations in the RMPPA may be needed to ensure that dispersed and developed OHV opportunities would continue. Anticipated impacts on OHV use are from seasonal closures, the presence of T&E and sensitive species, oil and gas development, timber harvesting, shifts in recreational use patterns, and travel management plans.

Instituting seasonal closures for OHV use would adversely affect this activity by displacing users and would in some cases eliminate OHV use entirely. Impacts on OHV use would occur from management actions that close areas due to the presence of T&E plant and animal species, cultural sites, and Wilderness Study Areas (WSA) or to conflict with other recreational users and the type of experience they desire.

Timber harvesting activities have the tendency to shift recreational OHV activities from semiprimitive motorized areas to roaded natural settings. Increased road development and access would have a tendency to increase, not only OHV use, but also activities

associated with OHVs, such as hunting, firewood gathering, dispersed camping, etc. This development may disperse nonmotorized activities to other areas. The result is an increase and change in the patterns of recreational use. Travel management planning can reduce OHV impacts, and can also place seasonal restrictions on OHV use.

4.10 PALEONTOLOGY

Como Bluff NNL is the most important paleontological resource in the Rawlins RMPPA. It has yielded fossil evidence for at least 80 new vertebrate species and includes an uncommon concentration of well-preserved dinosaur fossils. Other paleontological resources are scattered throughout the RMPPA. BLM supports identification and protection of paleontological resources throughout the RMPPA. The impacts of other programs on paleontological resources are very similar to the impacts on cultural resources.

Development has the potential to impact paleontological resources during surface-disturbing activities and potential impacts are evaluated on a case-by-case basis. Currently, an operator-committed resource protection plan has been developed to mitigate impacts; however, the plan does not require paleontological resource monitoring by independent, qualified paleontologists during surface disturbance. The current policy relies solely on the oil and gas operator to report paleontological resource finds while excavating (BLM Procedural Manual—Application for Permit to Drill [APD] Procedure).

Increased recreational and OHV use may increase the knowledge, use, and interpretation of these resources but may also increase overuse and vandalism. Protection of visual resources and air quality would indirectly benefit these resources.

4.11 RECREATION RESOURCES

Recreation activities can occur in designated or undesignated areas throughout the RMPPA, with management emphasis given to Special Recreation Management Areas (the Shirley Mountain, North Platte River, and Continental Divide National Scenic Trail SRMAs), WSAs (the Adobe Town, Ferris Mountains, Encampment River Canyon, Prospect Mountain, and Bennett Mountains WSAs), and the numerous developed camp sites. Nearly 57 percent of the recreation in these and other areas is centered on the wildlife resources in the RMPPA. Management activities that continue to support the availability of outdoor recreational activities, protect health and safety of visitors, and mitigate conflicts between resource uses would improve the recreational experience throughout the Rawlins RMPPA. The anticipated impacts on recreation resources are from management of cultural resources, timber harvesting, wildlife habitat and riparian areas, oil and gas development, air quality, and visual resources.

Implementing cultural resource management actions in most cases enhances recreational experiences through emphasis on interpretive programs and historical features. This can increase public awareness, knowledge, and use of resources.

Managing timber resources to maintain forest health benefits recreational uses by providing opportunities for consumptive and nonconsumptive recreation. For instance, management efforts to reduce mistletoe outbreaks in the Shirley Mountain area would protect and enhance recreational activities.

Recreational values would benefit from receiving high-priority status when evaluating realty actions such as sales, land exchanges, and ROWs. Improving access to public lands could increase recreational opportunities. This effort is not only important in the checkerboard region of the RMPPA, but also critical to improving access to the North Platte River. More river access to such areas would help to spread out usage to maintain visitor perceptions of solitude.

Protecting and improving habitat and riparian areas would benefit recreation values and potentially increase recreational visitors associated with fishing, hunting, and other nonconsumptive uses. In addition, restricting surface disturbances to improve wildlife habitat would positively affect important recreational uses in the RMPPA, such as wildlife viewing, hunting, and fishing. Protection of big game-critical winter range is essential to protecting and increasing wildlife populations, which in most cases results in improved recreational experiences.

There may be an increase in conflicts between oil and gas development and some recreational uses as development continues to increase in the RMPPA. Oil- and gas-related activities can also create visual conflict with some recreational uses.

Direct, short-term effects from OHV-produced noise would tend to diminish the recreational quality for those users who seek solitude, quiet, and natural settings for camping, hiking, and related recreational activities not involving OHV use.

Management of air quality and visual resources can improve the recreational experience, especially along historic trails in the RMPPA. Proper management of vegetative resources through fire management that improves range and wildlife habitat can benefit recreational activities, especially wildlife viewing and hunting.

4.12 SOCIOECONOMICS

BLM does not manage socioeconomic resources. Rather, it manages public lands and the natural resources that occur on them, working cooperatively with other federal agencies and with state agencies to manage natural resources that multiple agencies have a mandate to protect and manage (e.g., fossils, artifacts, fish, and wildlife). Nevertheless, as can be seen in numerous sections of this MSA (e.g., Sections 4.5, 4.8, 4.9, 4.11, 4.14, 4.15, 4.16, 4.19, and 4.20), socioeconomic resources are integrally connected with BLM's management of public lands. For the Rawlins RMPPA, it is likely that management actions would affect individuals and communities in Albany, Carbon, Laramie, and Sweetwater counties.

Increases in population in urban areas result in additional recreational pressure on public lands. The presence of extensive public lands that can provide high-quality recreational

experiences may in fact draw people to nearby urban areas that otherwise might be less attractive. Economic and political factors, as well as population increases, increase the pressure for more active oil and gas activities. Therefore, public lands are strongly influenced by their socioeconomic setting. BLM's management decisions impact, and are impacted by, the population in the areas surrounding BLM-managed lands. BLM has its most direct control of these interactions through its management of when, where, how, and how many oil and gas leases are actively explored and developed.

Under the Existing Management Direction, some areas within or near the Rawlins RMPPA would continue to show an increasing population trend. Any increases in population would tend to be driven by continued growth of the oil and gas development industry and by increasing demand for areas with high-quality recreational resources and quality of life. Some parts of the Rawlins RMPPA would not see population increases, because of constraints on housing availability and costs or because these areas offer a quality of life that is perceived to be lower than that offered by other locations.

Based on trends already under way (Section 3.12), an increasing proportion of income in the socioeconomic study area would come from nonearned income sources, such as pensions, interest, and dividends. Increases in earned income would accrue from oil and gas operations, which have relatively high wage levels compared with the service and retail economic sectors.

For those RMPPA areas with increasing populations, experience in other areas indicates that there would be indirect effects on housing and public services. Housing supply is a private sector function, with little or no involvement of governments except for the review and approval of development plans and necessary zoning requirements. It is assumed that public services necessary to support additional housing in towns and cities throughout the Rawlins RMPPA would be approved before the construction of new housing or developments, as necessary, to accommodate added demand. Therefore, an increasing demand for public services could affect service-provider (e.g., cities, counties, and special districts) budgets. Increased oil and gas development, however, would generate substantial revenues for the U.S., state, county, and local governments (including school districts) through ad valorem taxes, severance taxes, federal royalties, payments in lieu of taxes (PILT), and other taxes on facilities and production. An increased BLM personnel presence would also contribute positively to the local economy. (Note: More specific information on potential economic impacts will be provided in the Draft EIS documentation to be developed later in the Resource Management Plan (RMP) process.)

The socioeconomic setting would continue to see conflicts among extractive industries, recreation, preservation of natural settings, and protection of natural resources. Lifestyles and perceived quality of life would continue to differ among individuals and groups based on values, beliefs, and goals.

4.13 SOILS

Of highest management concern to soils are fire and other activities, such as transportation, mineral development, and OHV use, that may occur in riparian areas or elsewhere where soils are susceptible to erosion and compaction. Such concerns are most intense in areas such as the Muddy Creek, Sage Creek, Second Creek, and Third Sand Creek watersheds where soils are highly erodible.

Efforts to achieve Proper Functioning Condition (PFC) in stream and riparian areas would benefit soil resources, especially since properly functioning streams and riparian areas are indicative of proper function throughout the watershed, including the uplands. PFC assessments are conducted as part of the management actions relating to the interrelationships of hydrology, vegetation, and soil/landform.

Fire would cause increased soil erosion in burned areas at rates dependent on the intensity of the fire and suppression efforts. Prescribed burns generally affect soil much less than do wildfires; although soil loss may occur immediately after any burn because of the removal of vegetation. Nevertheless, in the long run, prescribed burns can reduce soil losses by producing improved vegetative cover and health. Management of vegetation, including forests, can cause short-term localized impacts on physical and chemical characteristics of soils, increasing the potential for erosion through loss of ground cover. However, in the long term, the increase of vegetation over pretreatment levels would decrease erosion potential.

Livestock and other grazers create concentration areas and trails that result in soil compaction and loss of vegetation cover. These impacts can lead to increased soil erosion, reduced moisture holding capacity and fertility. In contrast to these concentration areas, hoof action by grazers can help break soil crusts, plant seeds, and increase water infiltration. This promotes greater vegetative cover, lower soil erosion, and leads to improved soil moisture, fertility and structure.

Management of transportation and access can negatively affect soils through increased road density. Roads tend to increase storm water runoff, causing rill and gully formations on and below roads. This provides more sediment transport and erosion. Roads and other activities also cause soil compaction, which serves to limit the capacity of soils to support vegetation.

Surface disturbance in conjunction with mineral development has the potential to affect soils in localized areas through contamination, compaction, and increased erosion. Drilling fluids and accompanying chemicals can contaminate localized areas. Proper disposal and recycling of drilling fluids, following BLM policies, eliminates the effects on soils near drilling locations.

4.14 TRANSPORTATION AND ACCESS

Roads and trails occur on BLM-managed lands throughout the RMPPA. Management of transportation and access is essential in supporting other resource programs.

Transportation planning helps to provide efficient access by focusing on existing corridors and ROWs. Where necessary, transportation and access are constrained to existing corridors or limited in extent to minimize impacts on soils, vegetation, visual resources, wildlife, and air quality and the risk of wildfires.

Activities such as mineral development, timber harvesting, and recreation influence the location of access routes within the RMPPA. Transportation and access for these activities in part determine which access routes should be constructed, closed or expanded. ROWs on BLM lands has the impact of increasing access to otherwise inaccessible areas and providing efficient delivery of natural gas to outside markets.

Permitting of new roads and ROWs is affected by the requirements for cultural and paleontological resources, biological resources, soil, range management, vegetation, recreation and visual resources. These requirements can cause delays and increase costs of transportation and access planning. In addition, the presence of these resources can influence location and use of roads. In some cases, the most linear route of a road, pipeline, or other ROW may not be practicable because of the presence of resources needing protection from surface disturbance.

Access to areas within the planning area for recreational purposes is creating new problems for BLM, especially in the checkerboard region. Increasing access in this area requires private involvement and coordination. Increased recreation is creating more trespass problems, which are an administrative and law enforcement concern for BLM.

Protection of soils, watersheds, water quality, and riparian areas requires that roads and ROWs be constructed in a manner that reduces erosion and runoff, which can increase the cost of road or ROW development and maintenance. Access would be limited in certain areas to protect sensitive species and important habitat areas. For instance, access is being limited on Shirley Mountain to protect important habitat for big game animals such as bighorn sheep and elk.

Protection of visual resources through the VRM system can influence the locations and extent of transportation routes and ROWs. This situation is most likely to arise in or near areas that are identified as Class I and Class II areas, which are designated to retain the natural ecological character or where the management activity should not be evident in the characteristic landscape.

Land and realty actions can have a significant impact on transportation and access. This is especially true in areas with mixed ownership, such as the checkerboard area. Increasing access routes, or making access more efficient, in certain parts of the Rawlins RMPPA may require further consolidation of lands through sale, acquisition, easement acquisition, and exchange. Development of ROWs on BLM lands has the positive impacts of increasing access to otherwise inaccessible areas, and improving utility corridors, and providing efficient delivery of natural gas to outside markets.

4.15 VEGETATION

Management actions for many of BLM's resource programs protect plant species and their diversity.

Management actions designed to protect visual resources, wildlife habitat, special management areas, watershed values, and riparian areas generally benefit and protect native vegetative species. Some short-term disturbance of vegetation can be expected due to construction of wildlife habitat and watershed management improvements. Negative impacts on vegetation can occur if wildlife movements, use of other resources, or their management lead to concentrations of species in certain areas.

Management actions to protect sensitive plant species, wildlife habitat, and riparian areas generally benefit all vegetation. For example, actions to improve cutthroat trout habitat in Muddy Creek have benefited all of the components of the riparian ecosystem, including the plants. Similarly, forest management designed to protect and enhance forest health would increase the diversity of vegetative species and improve habitat within forested areas.

Forestry practices have the potential to bring in new weed species (from equipment) and spread existing species along increased disturbance areas such as roads and tree felling areas.

Roads, fencing, and habitat conversions on non-public lands have shifted and/or restricted migration routes and use of winter habitat by big game species, particularly antelope and mule deer. This has resulted in animal concentrations which are over-utilizing important browse species in certain portions of their winter range, and has led to the loss or decline in condition of crucial winter range habitat.

Management of wild horses would not impact vegetation in the long term but may cause short-term, localized impacts. Wild horses do not tend to concentrate near water sources as much as cattle do, so their impacts on vegetation may be more dispersed and diluted, similar to wildlife impacts. However, in desert areas with few, point sources of water, wild horse impacts can be more concentrated and result in negative impacts to upland and riparian vegetation. Cattle can cause localized impacts on vegetation, especially in riparian areas, through trampling, trailing, and repeated or overgrazing the vegetation. The degree to which this happens is dependent on the season and/or duration of use that occurs. If these poor management practices continue, impacts on vegetation can be more widespread and affect upland areas as well. Season and duration of use can also affect upland vegetation negatively, resulting in lower production, cover, diversity, and a change to less desirable species.

Mineral exploration and development removes vegetation through the construction of drill pads, roads, facilities, and other associated structures. APD conditions of approval, ROW terms and conditions, and other permit requirements minimize impacts. In heavily used areas, extensive management action and monitoring of activities are required to protect or restore affected vegetative resources. In the case of strip mining, vegetative

cover can be removed from a very large area. While most areas would be reclaimed according to the requirements of a very stringent federal and state regulatory program, impacts can be long term and ultimately result in a net loss in vegetation. Vegetation may also be impacted or lost through the development of other leasable, salable, and locatable minerals. However, these impacts tend to be very localized and short term if the disturbed area is reclaimed.

The development of new roads can lead to a loss in vegetation and other impacts, such as introduction of noxious weeds. Management actions to control dust along roads can benefit vegetation vigor and productivity. Also, livestock grazing spreads weed species thru surface disturbance, consumption and re-deposition, and physical transport of plant seeds and parts.

Prescribed burns can cause a short-term decline of shrub species and an increase in annual grasses and forbs. However, over the long term, burn areas would regenerate with perennial species as forage and habitat for some wildlife and livestock. Prescribed burns conducted during hot periods or with low soil moisture would limit sprouting of mountain shrubs and could cause less diverse species composition and longer post-burn recovery periods. Burns during cool seasons or when soil moisture is high provide greater opportunity for mountain shrub regeneration, greater species diversity, and shorter recovery periods.

Wildfires can lead to a short-term loss in forage for livestock and wildlife and longer term loss of habitat for some species. However, within 3 years, grasses and forbs may flourish in burn areas, increasing forage beyond original levels, and new habitat is present, albeit for different species. The surface disturbances associated with fire line construction, the use of heavy equipment, and other fire suppression activities can damage or destroy vegetation and accelerate erosion, causing at least short-term impacts.

Fires have the real potential to increase existing weed populations. Fire suppression techniques have the potential to bring in new weed species (from equipment) and spread existing species along increased disturbance areas such as fire lines and campsites.

Generally, management of hazardous materials would not affect vegetation resources, except in the case of a spill or illegal dumping, which could damage or destroy vegetation in a localized area.

OHV use often occurs in areas that are steep and readily eroded. Repeated OHV use can damage and destroy vegetation, leading to increased erosion and sedimentation. Concentrated recreational activities, especially near riparian areas, can damage vegetation through trampling, digging, cutting, and pulling. A particular concern is OHV use in the band of moving sand dunes across the northern portion of the RMPPA where blowout penstemon, an endangered plant species, has recently been identified.

4.16 VISUAL RESOURCES

Visual resources are managed throughout the RMPPA through the VRM system. The most visually sensitive areas are afforded the greatest protection. The most likely sources of potential future impacts on visual resources are OHV use and the rapid increase of oil and natural gas exploration and extraction in the Rawlins RMPPA. The ways in which other natural resources and fire are managed also affect visual resources.

Visual impacts result from OHV use that cuts new trails and roads and accelerates soil erosion. OHV-produced visual degradation caused by the production of fugitive dust within the area has been categorized as localized and short term. Visual degradation from trail creation is categorized as extensive and long term.

Mineral development has long-term detrimental impacts on visual resources. Mitigation measures can reduce the impacts but would not completely eliminate negative long-term effects of additional facilities and linear ROWs, such as roads and pipelines. These developments often require straight alignments, and reclamation measures require long time frames and even then may not eliminate the long-term impacts of ROWs on visual resources.

Even with strong adherence to guidelines, standards, and APD stipulations, oil and gas development affects the visual quality of large areas within the RMPPA to a degree dependent on the density of well pads and the extent to which roads to pads are properly sited and dust control measures are followed. Direct, local adverse effects result from—

- Fugitive dust from road and well pad construction, and vehicle traffic associated with development
- The large number of proposed drilling sites and their associated drilling towers and support facilities, which alter the form, line, color, and texture of the landscape
- Increased night lighting of these wells and facilities that may introduce new, intrusive, and potentially undesirable elements into the visual landscape, affecting recreational opportunities and the recreational experience.

The wells, roads, and support facilities introduce new visual elements into the landscape and alter the form, line, color, and texture of the existing landscape. Indirect, regional effects of oil and gas development may include degradation of air quality and the formation of regional haze (with associated loss of visual quality) from compressor engine emissions, vehicle emissions, and natural gases escaping from the oil and gas wells, especially when it is flared.

BLM's *Standards for Healthy Public Rangelands* and *Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming*, the *Guidelines for Surface-disturbing Activities*, and the specific buffer and mitigation actions required of fluid mineral operators developed in EIS records of decision within the Rawlins RMPPA constitute a substantial body of decisions aimed at

reducing the impact of development on the visual landscape. For the most part, these requirements are contained in APDs currently governing oil and gas (including coalbed methane) development. Monitoring and follow-up activities are key to ensuring that the visual character of the landscape is not affected beyond what is allowed by the VRM Class guidelines.

Actions such as maintaining, improving, and restoring riparian values to provide increased forage, habitat and stream quality, and managing forestlands for watershed, wildlife, and scenic values benefit visual resources. In addition, the active management of air quality throughout the RMPPA benefits visual resources by minimizing air particulates. Protecting National Historic Trails and other cultural and paleontological resources from visual disturbance enhances the visual quality of these resources throughout the RMPPA. Timber harvests and related road development can detract from visual resource quality.

Impacts on visual resources associated with fire management, timber harvests, and land and realty actions are generally short term. While wildfires and prescribed burns can be detrimental to visual resources, efforts to reduce the risks of wildfires would benefit visual resources. In addition, controlling the timing and methods used for prescribed burns minimizes short-term impacts on visual resources.

4.17 WATER QUALITY AND WATERSHEDS

As part of BLM's resource management programs, surface water watersheds, ground water aquifers, and surface and ground water quality are evaluated for potential impacts within the RMPPA, although portions of these resources may extend beyond the area's boundary. It is important that artificial limits, such as the RMPPA boundary, do not limit consideration of potential impacts on the appropriate water resources in a larger geographic context. The impacts on water quality and watersheds are associated with, grazing, mineral development, recreation, vegetation, wildfire, and roads and other surface disturbances.

Under the Existing Management Direction, management actions to control sediment and salinity buildup would continue to emphasize the reduction of soil erosion and contributions to the North Platte Basin water system. Of particular importance are those areas with highly saline soils in the western portion of the RMPPA, and crucial watersheds (Muddy Creek, Sage Creek, Second Creek, and Third Sand Creek) where surface disturbance should be minimized because of highly erodible soils. Management of waterflow must also take into account T&E species such as the least tern, piping plover, and Eskimo curlew, which occur downstream in the Platte River system. In addition, management of waterflow must consider the humpback chub, Colorado pikeminnow, bonytail chub, and razor back sucker, which are federally listed as endangered in the Colorado River watershed into which the southwestern portion of the RMPPA drains via the Little Snake River. An additional consideration in this drainage is salinity because of the *Colorado Salinity Control Act*.

Livestock grazing has the potential to negatively impact watershed resources and water quality if overgrazing occurs in riparian areas. Overutilization can lead to a loss in vegetation, soil compaction, and bank instability, causing increased erosion, sedimentation, and salt and phosphate loads in streams. Proper management of grazing operations in riparian areas can limit these impacts.

Mineral development, with associated surface disturbances, may have the largest impact on water resources. Potential impacts include stream sedimentation, soil contamination, salt loading, ground water contamination, changes in aquifers, augmented waterflows, and water disposal problems. APD and NEPA requirements would help minimize, but would not totally eliminate, impacts as development increases in the RMPPA.

Dewatering of coalbeds or other geologic formations could affect both quantity and quality of ground water.

Outdoor recreation near lakes and streams has the potential to impact water quality. Compaction of soils and loss of vegetation due to overuse of recreational areas can decrease stream stability, thereby causing increased sedimentation, and can add contaminants, such as salts and phosphate, to streams.

Vegetation loss due to fires or other causes can have adverse impacts on stream hydraulics. Vegetation removal can cause an augmented flow regime that forces stream channel readjustment to accommodate the larger flow. Water quality can be impacted by increased sedimentation and runoff after wildfire events because the vegetation has been removed. Conversely, improved vegetative cover in riparian areas and uplands benefits water quality and watershed resources by reducing sedimentation in streams and rivers.

Land uses such as ROWs and roads can have negative impacts on watershed resources by increasing runoff and sedimentation.

4.18 WILD HORSES

Potential impacts on wild horses are evaluated throughout the Rawlins RMPPA; however, these populations are confined to specific herd management areas (HMA) in the western portion of the RMPPA. Generally, current management actions are beneficial to wild horse populations within the three HMAs: Adobe Town HMA, Lost Creek HMA, and Stewart Creek HMA. These three areas are managed to support an estimated total of more than 2,159 wild horses inside the HMAs, plus about 145 individuals outside the HMAs, with a total AML of 920 horses for all three HMAs. Evaluation and adaptation of appropriate management levels for these areas using additional monitoring data would further benefit wild horses as well as management of other resources. Management actions taken to improve vegetation, soils, and riparian areas can have a positive impact on wild horses by improving forage and habitat in the HMAs.

Avoidance of significant cultural sites and subordination of activities to historic landscape values in some areas may constrain BLM's ability to construct rangeland improvements that would benefit wild horses. Additional survey and design costs could

be necessary to avoid effects on cultural resources. Design and construction costs could increase for wild horse improvements that must comply with VRM system guidelines or in areas with sensitive vegetative species.

Prescribed burns and wild fires would cause short-term losses in forage to wild horses, but net increases in forage would occur in burn areas after 2 to 3 years.

Limiting OHV use to designated roads and trails or using seasonal restrictions would benefit wild horses. These management actions can decrease disturbance, distribution, and harassment of horses and can improve vegetation in and around areas that are no longer open for OHV use.

4.19 WILDLIFE AND FISH

Many different wildlife and fish species reside in or travel through the RMPPA. As with water resources, it is important to recognize that wildlife and fish are not necessarily year-round residents of the RMPPA and that evaluation of impacts on them should not be constrained by artificial limits such as the RMPPA boundary. For some wildlife or fish species, geographic units used by Wyoming Game and Fish Department (WGFD) are used to evaluate conditions or impacts within the RMPPA, although these units' boundaries may not be contiguous with RMPPA boundaries. Impacts on wildlife and fisheries are anticipated from management of other natural resources, oil and gas development, fire, and OHV use.

There are surface-disturbing activities that are implemented within habitat that has the potential to contain threatened, endangered, candidate, and proposed species. With implementation of conferencing and consultation with the USFWS, it is anticipated that the majority of actions implemented within the RMPPA would have no effect on listed, candidate, or proposed species. In cases when surface-disturbing activities are located within potential habitat for T&E species, then conferencing and/or consultation occurs with the Service and mitigation is applied; therefore, the activities may affect, but are not likely to adversely affect T&E species. There are a few cases where surface-disturbing activities are located within T&E species habitat and formal consultation occurs with the Service. Although mitigation is applied in these cases, the activities may affect T&E species and their associated habitat. Impacts to T&E species could include loss of habitat, disturbance during critical life cycle periods (i.e., breeding, nesting, etc.), and possible take of a particular species and/or their habitat.

Note: A complete description of impacts to Threatened and Endangered, Proposed, and Candidate species will be covered in the biological assessment. The biological assessment will be available as part of the draft environmental impact statement.

Management actions to improve vegetation, soils, and riparian areas have positive impacts on wildlife. Riparian management actions benefit wildlife habitat by restoring preexisting plant communities. Since 70 percent of the wildlife in Wyoming reside in riparian areas or use them as an important component of their habitat, these areas' restoration can have tremendous benefits for the wildlife and fisheries in the RMPPA.

Vegetative treatment of riparian areas and river islands can enhance wildlife habitats and improve forage and plant diversity. Spawning areas could be negatively impacted in the short term following vegetative treatment, but the impacts can be minimized by using riparian buffer zones in treatment areas.

Native fish concerns relate to the introduction of non-native fishes and the reduction of suitable habitat.

An additional consideration that could result in wildlife impacts is the management of different biological aspects of the same species by different agencies, as when BLM manages habitat for a species whose population is intensively managed by the WGFD. Because these two agencies have different cultures, perspectives, and priorities, there is the potential for a mismatch between the population size and the carrying capacity of the land it occupies. Careful attention and coordination are required to prevent any such situations from having detrimental effects on individual big game populations. A harsh winter that is unanticipated could result in a rapid shift in the balance between a population and its habitat if sufficient resilience is not built into that balance.

Forest management in the RMPPA serves to enhance forest health, thereby improving wildlife habitat for several species. In addition, increasing forest health can reduce erosion and sedimentation, which can improve habitat for native fish species such as the Colorado cutthroat trout.

Existing and anticipated oil and gas development impacts several wildlife species throughout the planning area, including greater sage-grouse nesting habitat and cover, raptor nests, and big game-critical winter range and birthing areas. Big game habitat loss and fragmentation result from road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, and disturbance zones around these areas. Mitigation measures, transportation planning, and seasonal restrictions would minimize, but not eliminate, these impacts on wildlife. Livestock grazing can physically alter wildlife habitat and increase dispersal of wildlife as well as competition for forage and water. In addition to dispersing wildlife and competing for forage and water, livestock grazing also physically alters wildlife habitats. With some species, such as mountain plover, the changes in the vegetative community brought on by livestock grazing would be beneficial. Other species, such as greater sage-grouse, would be affected by grazing intensities which remove essential residual cover for nesting, or reduce the availability of necessary forbs in the community.

Land ownership patterns can exacerbate the impacts on wildlife resulting from development and use patterns. Where BLM manages large contiguous blocks of public lands, cohesive management of natural resources can occur. Where BLM-managed parcels are interspersed with private, state, and other federal agency lands, management is much more difficult because the various land holders may have different visions for development and use of the land. This issue is a particular concern in the Shamrock Hills area, which has one of the highest known and best-documented populations of nesting ferruginous hawks in Wyoming if not in the nation. There is a similar concern in the Jep Canyon area, which serves as crucial elk wintering range as well as an important raptor

nesting area. Both of these areas have been designated as ACECs to recognize their resource value and to enable their more focused management.

Fire management can have short-term negative impacts on wildlife through direct wildlife mortality from fires or fire suppression and reduction of forage and habitat in burn areas. After 2 to 3 years, these areas would regenerate additional grasses and forage that is beneficial to some grass-favoring species, but may take decades to become again suitable for species which require substantial shrub cover and sagebrush components in their habitat. Devastating wildfires can result in a much more long-term loss of wildlife habitat. In addition, wildfires can have dramatic impacts on streams and watersheds affecting habitat and spawning areas for native fish.

OHV management reduces the negative impacts of OHV use on wildlife. Such impacts result from harassment during any season, but are particularly severe during late winter when energy reserves of many wildlife individuals may be depleted and many females may have the added stress of pregnancy. OHV use to harass and even chase big game in an effort to collect their antlers can also result in population effects through disruption of birthing activities and cause excessive stress to big game animals at the end of the winter when their physical reserves are most depleted. Uncontrolled OHV use can cause displacement of ground nesting songbirds and destruction of nests. OHV management and enforcement reduce impacts on riparian areas, reduce stream sedimentation thus improving fish habitat, and decrease stress on wildlife from displacement and harassment.

Roads, fencing, and habitat conversions on non-public lands have shifted and/or restricted migration routes and use of winter habitat by big game species, particularly antelope and mule deer. This has resulted in animal concentrations and heavy use of important browse species in certain portions of their winter range, and has led to the loss or decline in condition of crucial winter range habitat.

4.20 SPECIAL MANAGEMENT AREAS

Effects on SRMAs would be similar to effects on other recreational resources, as discussed in Section 4.11.

(Note: More specific information on potential affects to special management areas will be provided in the Draft EIS to be developed later in the RMP process.)