

4.19 WILDLIFE AND FISHERIES RESOURCES

Impacts from decisions concerning Paleontological Resources and Visual Resource Management would have a negligible effect on wildlife in the Vernal Planning Area (VPA) and therefore will not be discussed further in this analysis. All other proposed management decisions have the potential to impact wildlife in the VPA. A detailed description of these impacts is given below. It should be noted that the effects of livestock grazing decisions on wildlife and fisheries resources would be generally limited to the disease transmission issues of domestic sheep to bighorn sheep. Forage allotments that currently allow domestic sheep would continue to be phased to cattle allotments if they are associated with bighorn sheep reintroduction areas.

4.19.1 Effects of Resource Management Decisions Common to All Alternatives

BLM would, wherever possible, provide habitat for a diversity of wildlife and fish species within the planning area, maintain and protect existing crucial habitats for big game and upland game species, restore degraded habitats, and manage for large un-fragmented blocks of continuous wildlife habitat that would provide the life cycle requirements of a variety of wildlife species. BLM recognizes the need to identify species and habitats most in need of conservation so that these areas can receive prioritization in preserving valuable wildlife habitats. BLM also recognizes the important role of UDWR in managing wildlife populations, hunting, and fishing associated with lands managed by BLM. Specific BLM actions to achieve these goals are listed in Chapter 2. These actions note that habitat preservation and cooperative wildlife management would be important in maintaining the wildlife populations associated with lands managed by BLM in the VPA.

4.19.2 Effects of Resource Management Decisions on Wildlife and Fisheries by Alternative

4.19.2.1 Effects of Cultural Resources Decisions on Wildlife and Fisheries Resources

Under Alternatives A, B, and C, closing or limiting OHV use to designated trails in the Uintah Foothills, Little Devil/Big Hole, Upper Willow Creek, and Four Mile Wash areas would reduce surface-disturbing activities and thus would have beneficial protection-related impacts to wildlife in the vicinity of cultural sites and traditional sacred properties. The No Action Alternative would maintain these areas as open to OHV use, and areas in the vicinity of cultural sites and traditional sacred properties would not provide protection to wildlife from OHV use, when compared to the action alternatives.

4.19.2.2 Effects of Fire Management on Wildlife and Fisheries Resources

Alternatives A, B, and C allow for prescribed fire on approximately 156,425 acres per decade. The effects of prescribed fire on wildlife and fish populations would be direct and adverse in the short term by removing habitat, reducing short-term habitat quality and causing individual mortality. Additionally, the use of fire lines and fire suppression activities for wildfire under the Fire Management Plan would likely have similar short-term direct adverse effects from habitat removal. However, fire management decisions would generally have a long-term beneficial impact to wildlife and fish populations by helping to restore the natural fire regime, which would improve habitat health and increase habitat diversity. Restoring the natural fire regime would also reduce the chance of catastrophic fire, and the subsequent loss of major ecosystem components, in comparison to the No Action Alternative. The No Action Alternative provides

for a total of 50,900 acres per decade of prescribed fire (27,950 and 22,950 acres for the Book Cliffs and Diamond Mountain RMPs respectively). This alternative provides for fewer acres of disturbance and therefore would likely have fewer short-term direct adverse impacts to wildlife and fish populations, but would likely result in a higher long-term risk of catastrophic wildfire than the action alternatives. This, in turn, would result in greater long-term risk to wildlife and fish populations than the action alternatives.

4.19.2.3 Effects of Forage Allocation on Wildlife and Fisheries Resources

4.19.2.3.1 Alternative A

Alternative A would restrict forage utilization on uplands to a maximum of 50% utilization, compared to Alternative D – No Action, which would not specify forage utilization on uplands. Alternative A would allocate 104,871 animal unit months (AUMs) for wildlife, which would include all wildlife species and populations. This would be an increase of 8,264 AUMs allocated to wildlife in comparison with the No Action Alternative.

If forage allocation reductions are necessary to make significant progress towards or sustain rangeland health in the Bonanza, Diamond Mountain, Book Cliffs (excluding wild horse herd areas), and Blue Mountain localities or the Bonanza Wild Horse Herd Area, AUMs allocated to big game would be reduced proportionally with those allocated to livestock. If reductions are necessary in the Hill Creek and Winter Ridge Wild Horse Herd Areas big game would be reduced proportionally with AUMs allocated to livestock and wild horses. However, AUMs allocated to pronghorn would not be reduced below 502 AUMs in the Bonanza locality and 239 AUMs in the Bonanza Wild Horse Herd Area locality. These strategies would provide additional forage to wildlife in the Bonanza Wild Horse Herd Area locality under these conditions when compared to the No Action Alternative. Reductions in forage allocation for wildlife in the Bonanza, Book Cliffs, and Blue Mountain localities would not be specified under the No Action Alternative. There would be no reductions to forage allocation for wildlife in the Diamond Mountain locality on crucial habitat; on non-crucial habitat, allocations would be reduced equally with livestock under the No Action Alternative.

If additional forage is available and rangeland health is being sustained, or significant progress is being made towards sustaining rangeland health in the Bonanza, Blue Mountain, and Diamond Mountain localities and the Bonanza Wild Horse Herd Area, additional forage allocations would be divided proportionally between big game and livestock. Additional forage in the Book Cliffs locality (excluding wild horse herd areas) would be allocated 40% to wildlife and 60% to restore suspended cattle AUMs. After restoring all suspended AUMs, additional forage would be allocated proportionally between cattle and wildlife. In the Hill Creek and Winter Ridge Wild Horse Herd Areas additional forage would be divided proportionately between livestock, big game, and wild horses. On winter sheep ranges in the Book Cliffs locality, additional forage would be allocated proportionately between livestock and big game. If wild horses or big game in the Winter Ridge Wild Horse Herd Area do not need additional forage, it would be allocated to livestock. Additional forage in the northern-half of the Diamond Mountain locality (Diamond Mountain and Browns Park) would be provided to livestock until wildlife demands require them. These strategies would provide additional forage to wildlife under these conditions when compared to the No Action Alternative.

4.19.2.3.2 Alternative B

Alternative B would restrict forage utilization on uplands to a maximum of 60% utilization. Currently there is no specification for forage utilization on uplands under the No Action Alternative. Alternative B would allocate 104,871 AUMs for wildlife. This would be an increase of 8,264 AUMs allocated to wildlife in comparison with the No Action Alternative.

If forage allocation reductions are necessary to make significant progress towards or sustain rangeland health in the Bonanza locality, first, AUMs allocated to pronghorn would be reduced to 502. Secondly, appropriate reductions would be made in big game prior to making needed reductions in livestock numbers. In the Bonanza Wild Horse Herd locality, after considering all other viable management options, such as but not limited to providing additional water structures and adjusting timing of livestock use, wildlife use would be reduced but antelope use would not be reduced below 239 AUMs nor deer use below 147 AUMs. Big game use would be reduced within the Book Cliffs locality. These strategies would provide additional forage to wildlife in the Bonanza Wild Horse Herd Area locality under these conditions when compared to the No Action Alternative. Reductions in forage allocation for wildlife in the Bonanza, Book Cliffs, Blue Mountain, and Diamond Mountain localities under Alternative D are the same as those discussed under Alternative A.

If additional forage is available and rangeland health is being sustained, or significant progress is being made towards sustaining rangeland health, up to 502 AUMs of forage would be used for antelope in the Bonanza locality. Additionally, sheep and/or cattle use would be increased in accordance with the available forage. If the additional AUMs were not needed for livestock or antelope, the additional forage allocations would go to deer. In the Bonanza Wild Horse Herd location, sheep and cattle use would be increased in accordance with available forage. Additional forage in the Book Cliffs locality (excluding wild horse herd areas) would be allocated 40% to wildlife and 60% to restore suspended cattle AUMs. After restoring all suspended AUMs, additional forage would be allocated to cattle. On sheep allotments in the Book Cliffs, additional forage would be allocated to sheep. If wild horses or big game in the Winter Ridge or Hill Creek Wild Horse Herd Areas do not need additional forage, it would be allocated to livestock. Additional forage in the northern-half of the Diamond Mountain locality (Diamond Mountain and Browns Park) would be provided to livestock. These strategies would provide additional forage to wildlife under these conditions when compared to the No Action Alternative.

4.19.2.3.3 Alternative C

Alternative C would restrict forage utilization on uplands to a maximum of 50% utilization (the same as Alternative A). Currently there is no specification for forage utilization on uplands under the No Action Alternative. Alternative C would allocate 106,196 AUMs for wildlife. This would be an increase of 9,589 AUMs allocated to wildlife in comparison to the No Action Alternative.

If forage allocation reductions are necessary to make significant progress towards or sustain rangeland health in the Bonanza, Book Cliffs, Diamond Mountain, and Blue Mountain localities or the Bonanza, Hill Creek and Winter Ridge Wild Horse Herd Areas, livestock use would be reduced accordingly. Pronghorn antelope and deer use would not be reduced. These strategies would provide additional forage to wildlife. Reductions in forage allocation for livestock in the Bonanza locality and Winter Ridge and Hill Creek Wild Horse Herd Areas were not specified under the No Action Alternative.

If additional forage is available and rangeland health is being sustained, or significant progress is being made towards sustaining rangeland health in the Bonanza, Blue Mountain, and Diamond Mountain localities and the Bonanza, Hill Creek and Winter Ridge Wild Horse Herd Areas, wildlife use should be increased in accordance with the available forage. Livestock use would not be increased above permitted use. After restoring all suspended AUMs in the Book Cliffs locality, additional forage would be allocated to wildlife. These strategies would provide additional forage to wildlife under these conditions when compared to the No Action Alternative.

4.19.2.3.4 Alternative D - No Action

Currently there is no specification for forage utilization on uplands under the No Action Alternative. The No Action Alternative would allocate 96,607 AUMs for wildlife.

If forage allocation reductions are necessary to make significant progress towards or sustain rangeland health, there is no specified management plan for the Bonanza and Book Cliffs localities. In the Bonanza Wild Horse Area locality pronghorn use would be reduced but not below 289 AUMs. The Blue Mountain locality states that livestock AUM figures are not the final stocking levels. Rather, all livestock use adjustments would be implemented through documented mutual agreement or by decision. When livestock use adjustments would be implemented by decision, it would be based on operator consultation and monitoring of resource conditions. Additionally, any necessary adjustments in stocking levels or other management practices, including changes or additions to existing management facilities, would be based on allotment evaluations. Decreases in livestock would be implemented over a 5-year period. The Diamond Mountain locality would make reductions using the following criteria. (1) Livestock temporary, nonrenewable AUMs above permitted use would be reduced first. (2) On wildlife crucial habitat, livestock permitted use would be reduced if there is a conflict between use by livestock and wildlife, and if wildlife numbers are within the herd unit or population objective levels. If there is no conflict and the reduction is necessary because of overuse by either livestock or wildlife, the number of grazers would be reduced. (3) On non-crucial wildlife habitat, livestock permitted use and wildlife numbers would be reduced equally. The first year, there would be an initial 10% adjustment in permitted use. Five-year agreements would be developed and signed at the same time outlining the process for phased reductions in the desired level. (4) Temporary adjustments in use due to effects of drought would be made to livestock and/or wildlife as shown needed by monitoring.

If additional forage is available and rangeland health is being sustained, or significant progress is being made towards sustaining rangeland health in the Bonanza Area, additional forage allocations would: (1) Provide for optimum wildlife levels where conflicts with livestock do not exist. Specific to deer, habitat would be managed to support significantly increased levels; and specific pronghorn, habitat would be managed to support increased levels. (2) Target livestock AUM figures are not final stocking levels. Rather, all livestock use adjustments would be implemented through documented mutual agreement or by decision. When livestock use adjustments would be implemented by decision, it would be based on operator consultation and monitoring of resource conditions. Additionally, any necessary adjustments in stocking levels or other management practices, including changes or additions to existing management facilities, would be based on allotment evaluations. Within the Bonanza Wild Horse Herd locality, additional forage allocations would be distributed in the following ways: (1) Increase pronghorn use until there are conflicts with sheep; and (2) increase sheep use in accordance with available

forage. Additional forage in the Book Cliffs locality would be used to provide for optimum wildlife levels where conflicts with livestock do not exist; specific to deer, habitat would be managed to support significantly increased levels. Target livestock AUM figures are not final stocking levels. Rather, all livestock use adjustments would be implemented through documented mutual agreement or by decision. When livestock use adjustments would be implemented by decision, it would be based on operator consultation and monitoring of resource conditions. Additionally, any necessary adjustments in stocking levels or other management practices, including changes or additions to existing management facilities, would be based on allotment evaluations. Additional forage would be allocated in the Blue Mountain area the same as described for Book Cliffs except habitat for deer would be managed to support current levels. Diamond Mountain additional forage would be used to provide additional AUMs (over permitted use) to livestock on a temporary, nonrenewable basis until identified for crucial wildlife needs. Additional AUMs outside crucial wildlife areas may be assigned to livestock.

4.19.2.4 Effects of Land and Realty Management on Wildlife and Fisheries Resources

4.19.2.4.1 Alternatives A, B, C, and D

Land withdrawals would benefit vegetation in both the short- and long-term by reducing the potential for surface disturbance by mineral extraction activities. Alternatives A, B, and C would pursue locatable mineral withdrawal in the Green River Scenic Corridor in Browns Park (8,208 acres), relict vegetation areas in Lears Canyon (1,377), and the Lower Green River ACEC (17,063 acres). Alternative D would pursue mineral withdrawals in the above areas, but with different acreages designated for withdrawal: Browns Park (19,400); Lears Canyon (3,600 acres); and Lower Green River (7,900 acres).

These withdrawals and protective measures would likely have a long-term benefit to wildlife and fisheries associated with these areas by protecting them and their habitats from disturbance associated with minerals development. Impacts to wildlife and fisheries and their habitat would depend on the area involved in a lands and realty activity. Acquisition or withdrawal of lands with special status species habitat would generally contribute positively to the objectives of wildlife and fisheries habitat protection.

4.19.2.4.2 Alternative D - No Action

In addition to the above protections and withdrawals, the No Action Alternative recommends the withdrawal of 5,000 acres associated with developed and potential recreation sites. However, because of the developed nature of these sites, their withdrawal from mineral development would have negligible impacts on wildlife and fisheries populations.

4.19.2.5 Effects of Mineral Resource Decisions on Wildlife and Fisheries Resources

The development of leasable minerals would have long-term direct and indirect adverse impacts to wildlife and fisheries populations in the VPA. Direct impacts include a reduction in the available AUMs available to wildlife, loss of wildlife and fisheries habitats, and disruption and/or alteration of seasonal migration routes due to the additional construction of roads, pipelines, well pads, compressor stations, power lines, and fences in areas where mineral development would occur. Indirect impacts include habitat fragmentation and changes in behavior, distribution, activity, and energy expenditure that are caused by human disturbance.

These disturbances can include human presence at project operations, improved hunter access and success, illegal hunting, and vehicle-related mortality.

The exact number and location of facilities relating to mineral development have not been determined and therefore are not analyzed in this programmatic EIS. The impacts of project-level mineral development, including location and timing, would be analyzed on a site-specific basis as required under NEPA. However, for the purposes of this programmatic analysis, it is assumed that all land categorized for mineral extraction would be developed to its full potential.

Accordingly, this analysis discloses the potential impacts of the maximum potential disturbance from this development on wildlife habitat throughout the entire VPA. Additionally, programmatic protective measures have been formulated to minimize or avoid these impacts wherever possible. These measures are described by alternative in the following sections.

4.19.2.5.1 Land Categorization

BLM has developed four land categories for oil and gas development that describe the conditions placed upon public domain lands in regard to their availability for fluid hydrocarbon leasing. These categories are discussed in the Minerals Section.

BLM has also made land use designations for the development of mineral materials, oil shale, phosphate, Gilsonite, and tar sands. A discussion of these mineral developments is made in the Chapter 3 and 4 Minerals Sections. These areas are either open or closed to development with the exception of tar sands RFD areas, which follows the same category designations as oil and gas RFD areas.

Tables 1-19 of Appendix I outline the land categorization of mineral development on BLM lands in the VPA by alternative with respect to important wildlife habitats. The impacts of these land categorizations on wildlife habitat and populations in the VPA are discussed by alternative in the following sections.

4.19.2.5.2 Habitat Fragmentation

Current habitat fragmentation by existing roads in the VPA was analyzed using three roads effects zones (660 feet, 1,320 feet, and 2,640 feet). An analysis of existing habitat fragments 250 acres or greater shows there is currently a broad range of number, average size, and percent of wildlife habitat available outside these roads effects zones. These road effects zones and the minimum fragment size were selected based on the latest literature dealing with wildlife habitat use and fragmentation (see Chapter 3 Wildlife Section). Although the analysis shows that there is a relatively low rate of fragmentation in most areas of the VPA, many of these remaining habitat fragments are categorized as being open for mineral development. This may lead to further fragmentation and loss of wildlife habitat and populations in these areas. This fragmentation can separate wildlife populations into smaller “meta” populations that are more susceptible to extinction from random events such as drought, disease, introduction of an exotic predator, etc. This fragmentation also makes movement between habitat fragments more difficult during periods when resources are limited or mates are not available. Fragmentation degrades the unique habitat characteristics of large, unbroken habitat tracts; characteristics such as accessible migration corridors, cover and forage that are free from disturbance, and areas isolated from hunting and predators. In many cases, habitats fragmented by human disturbances such as roads, buildings, and structures facilitate the invasion of noxious weeds and exotic species that are better adapted to human disturbance, usually to the detriment of native species.

Efforts would be made under all alternatives to reduce habitat fragmentation throughout the VPA to the extent possible by requiring oil and gas field development plans and encouraging such activities as well clustering, multiple drilling from a single pad, utilization of existing roads and pipelines, and other measures to minimize surface impacts.

The existing fragmentation showing all fragments and fragments larger than 250 acres created by roads and pipelines on BLM-administered lands in the VPA is outlined in Tables 20-32 of Appendix I. This analysis is also broken down by RFD area in Tables 33-39 of Appendix I. These tables show the number and average size of fragments at road/pipeline width (11.5 feet), at a 660-foot, 1,320-foot, and 2,640-foot buffer. These tables also show what proportion of these fragments would be open to surface occupying minerals development under the various alternatives. This analysis shows that the West and East Tavaputs Plateau RFD areas have the least amount of fragmentation with approximately 95% to 97% of the RFD area composing fragments larger than 250 acres; the Tabiona-Ashley Valley RFD and Monument Butte-Red Wash RFD areas with a moderate amount of fragmentation with approximately 96% of the RFD area composing fragments larger than 250 acres; and the Manila-Clay Basin RFD and Altamont-Bluebell RFD areas with the most fragmentation with approximately 89% of the RFD area composing fragments larger than 250 acres.

Even though the West Tavaputs Plateau has the least amount of fragmentation with regard to having the highest percent area consisting of fragments 250 acres or greater, this RFD area also has the highest proportion of large fragments categorized to be open to minerals development of any of the RFD areas. This indicates that the existing minerals development land categorization has the potential to increase fragmentation at a greater degree in this less-disturbed RFD area than in RFD areas that are already more developed. This land categorization may be inconsistent with the direction to manage for large un-fragmented blocks of continuous wildlife habitat in the VPA as identified in Chapter 2, Management Common to All for Wildlife and Fisheries.

The Altamont-Bluebell RFD area is the smallest in the VPA but has the highest road and pipeline density of all the RFD areas with approximately 8 miles of roads and pipelines per square mile. The Monument Butte-Red Wash RFD area is the largest RFD area and, while having a considerable number of large fragments over 250 acres, also has a relatively high road and pipeline density of approximately 4 miles of roads and pipelines per square mile. As buffers on these roads are extended out to the 2,640-foot buffer, the proportion of large fragments outside of this buffer is reduced to only 32% of the RFD area, which is the lowest proportion of large fragments of all the RFD areas. The other RFD areas average between 1 and 1.5 miles of roads and pipelines per square mile. All alternatives would reduce the road and pipeline densities in all RFD areas when compared to the No Action Alternative, except for in the Monument Butte-Red Wash RFD area, which would increase road densities by approximately 10% (see Tables 4.19.1 through 4.19.6).

TABLE 4.19.1. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE MANILA-CLAY BASIN RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	1.67	1.67	1.65	1.72
Percent outside a Functional Habitat Loss-660' zone	84%	84%	84%	80%
Percent outside a Functional Habitat Loss-1,320' zone	72%	72%	72%	65%
Percent outside a Functional Habitat Loss-2,640' zone	52%	52%	52%	42%

TABLE 4.19.2. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE TABIONA-ASHLEY VALLEY RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	1.23	1.22	1.12	1.36
Percent outside a Functional Habitat Loss-660' zone	88%	88%	89%	84%
Percent outside a Functional Habitat Loss-1,320' zone	78%	78%	80%	71%
Percent outside a Functional Habitat Loss-2,640' zone	62%	62%	65%	50%

TABLE 4.19.3. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE ALTAMONT-BLUEBELL RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	7.96	7.96	7.96	8.09
Percent outside a Functional Habitat Loss-660' zone	10%	10%	10%	8%
Percent outside a Functional Habitat Loss-1,320' zone	0%	0%	0%	0%
Percent outside a Functional Habitat Loss-2,640' zone	0%	0%	0%	0%

TABLE 4.19.4. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE MONUMENT BUTTE-RED WASH RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	4.10	4.10	4.08	3.68
Percent outside a Functional Habitat Loss-660' zone	63%	64%	64%	62%
Percent outside a Functional Habitat Loss-1,320' zone	35%	35%	35%	32%
Percent outside a Functional Habitat Loss-2,640' zone	0%	0%	0%	0%

TABLE 4.19.5. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE WEST TAVAPUTS PLATEAU RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	1.47	1.47	1.41	1.82
Percent outside a Functional Habitat Loss-660' zone	83%	83%	84%	78%
Percent outside a Functional Habitat Loss-1,320' zone	68%	68%	70%	60%
Percent outside a Functional Habitat Loss-2,640' zone	42%	42%	42%	28%

TABLE 4.19.6. FUNCTIONAL HABITAT LOSS CREATED BY PROPOSED ROADS AND PIPELINES ON BLM LANDS IN THE EAST TAVAPUTS PLATEAU RFD AREA				
	Alternative A	Alternative B	Alternative C	Alternative D
Road and Pipeline Densities (mi/mi ²)	1.18	1.18	1.12	1.80
Percent outside a Functional Habitat Loss-660' zone	87%	87%	87%	79%
Percent outside a Functional Habitat Loss-1,320' zone	74%	74%	76%	61%
Percent outside a Functional Habitat Loss-2,640' zone	53%	53%	55%	33%

Table 4.19.7 indicates existing habitat fragmentation within the VPA and the percentage of fragments that would be open to minerals development under each alternative.

TABLE 4.19.7. HABITAT FRAGMENTS CREATED BY ROADS AND PIPELINES IN THE VPA AND ROAD-EFFECTS ZONES ASSOCIATED WITH THESE FRAGMENTS

Fragment Categories	<i>All Fragments</i>				<i>Fragments 250 Acres or Greater</i>			
	Number	Average Size (acres)	% of Total Area	% Open to Minerals Development	Number	Average Size (acres)	% of Total Area	% Open to Minerals Development
Fragments created by roads or pipelines	4,485	383	99.6	Alt A: 93.2 Alt B: 95.0 Alt C: 84.5 Alt D: 89.0	736	2,194	93.6	Alt A: 80.6 Alt B: 82.2 Alt C: 73.2 Alt D: 77.6
Fragments outside the 660-foot road effects zone	2,849	492	81.2	Alt A: 92.7 Alt B: 94.8 Alt C: 83.5 Alt D: 88.3	696	1,891	76.3	Alt A: 79.6 Alt B: 81.4 Alt C: 71.7 Alt D: 76.5
Fragments outside the 1,320-foot road effects zone	2,394	477	66.1	Alt A: 92.1 Alt B: 94.6 Alt C: 82.4 Alt D: 87.5	593	1,803	62.0	Alt A: 78.5 Alt B: 80.5 Alt C: 70.2 Alt D: 74.9
Fragments outside the 2,640-foot road effects zone	1,510	505	44.2	Alt A: 90.8 Alt B: 93.9 Alt C: 80.2 Alt D: 85.3	413	1,728	41.4	Alt A: 76.6 Alt B: 79.2 Alt C: 67.4 Alt D: 72.3

As shown in the above table, Alternative B would have the greatest amount of impact on large habitat fragments, followed by Alternatives A, D, and C respectively. In comparison with Alternative D, the No Action Alternative, Alternative B would have a 4.6% to 6.9% higher acreage of large habitat fragments open to development, Alternative A would have a 3% to 4% higher acreage, and Alternative C would have 4.4% to 4.9% lower habitat fragments acreage open to mineral development.

The sections below describe the amount of habitat for specific wildlife groups that would be in areas open to mineral development or in areas open to mineral development but subject to controlled surface use. Typically those areas designated as controlled surface use for mineral development are subject to minor constraints and seasonal restrictions to reduce impacts to wildlife or other resources. Conversely, areas open to mineral development are subject only to standard stipulations and may not cater to specific on-site wildlife concerns. Accordingly, mineral development in areas open to mineral development would typically have a greater impact on wildlife impact than areas designated for controlled surface use.

4.19.2.5.2.1 Big Game Species

Big game populations in the VPA include populations of mule deer, Rocky Mountain elk, pronghorn, Rocky Mountain bighorn sheep, moose, black bear, and mountain lion. UDWR has prepared GAP habitat coverages for each of these species, and for mule deer and Rocky Mountain elk, has further subdivided these habitat coverages into seasonal use areas (crucial winter range, migration corridor, and fawning/calving habitat). These habitat coverages were

compared to the land categorization for minerals development provided by BLM to determine potential impacts to the big game populations occurring in the VPA. The minerals development land categorization proposed in Alternatives A, B, C, and D would have long-term and short-term, direct and indirect adverse impacts on these big game populations when compared to the existing levels of minerals development in the VPA.

Irby et al. (1987) were unable to detect a response by mule deer to low intensity oil and gas exploration and drilling activities along the east slope of the Rocky Mountains in north-central Montana. However, they did identify that high intensity hydrocarbon development had the potential to make wintering areas in that area unsuitable for mule deer and that strategies for oil and gas development in individual units should be decided prior to development. In the Book Cliffs, Karpowitz (1984) investigated the impacts of energy development on mule deer and found it difficult to assess. He could not quantify the effects of drilling on mule deer, but speculated that there was avoidance of active drilling sites. He observed mule deer returning to those sites after drilling ceased, but noted that habitat loss occurred as a result of drilling operations due to the construction of roads and drill pads.

Van Dyke and Klein (1996) found that elk subjected to oil well drilling in Wyoming maintained their fidelity to seasonal and annual ranges, but were observed making use of habitat and topographic features to minimize visual contact with the disturbance and avoiding direct contact with the site of disturbance which slightly reduced the total area of range that was used. Ward (1995) monitored a hunted elk population on winter range by visual observation and telemetry during short-term seismographic activity, including above ground explosions, truck vibrators, and drill and shoot activities. He observed that elk were displaced to areas beyond visual contact by all three forms of seismograph activities, with the most extreme response resulting from people walking through the project area. However, he observed that elk returned to the seismograph use areas within a few days after human activity stopped. Lyon (1997) and Lyon et al. (1985) documented a shift in elk distribution away from areas with roads or other long-term disturbances.

Alternatives A and B would increase the proportion of big game habitat open to surface occupying oil and gas development by approximately 7% and 8.5% respectively, when compared to the No Action Alternative. These alternatives would increase the proportion of big game habitats in areas subject to controlled surface use by approximately 20% and 24.6% respectively, when compared to the No Action Alternative, with the exception of decreases of acreages subject to controlled surface use in overall mule deer (-5%), moose (-5%), and black bear (-18%) habitat under Alternative B, and pronghorn habitat under both Alternatives A (-27%) and B (-28%). Alternative C would decrease the proportion of most big game habitats open to surface occupying oil and gas development by approximately 7% when compared to the No Action Alternative. Exceptions include an increase in pronghorn and moose habitats open to surface occupying oil and gas development by approximately 1% and 10%, respectively. Alternative C would also increase the proportion of big game habitat subject to controlled surface use by approximately 15% when compared to the No Action Alternative, with the exception of pronghorn and black bear habitat, which would have approximately 15% and 12% less acreage subject to controlled surface use, respectively (see Tables 1 to 19 in Appendix I).

4.19.2.5.2.2 Upland Bird Species

The minerals development land categorization proposed in Alternatives A, B, C, and D would have long-term and short-term, direct and indirect adverse impacts on upland bird populations in the VPA. The analysis in this section covers pheasant, Rio Grand turkey, blue grouse, and chucker habitat managed by BLM in the VPA. A discussion of impacts to greater sage-grouse is given in the TES species section UDWR has prepared GAP habitat coverages for each of these species and these habitat coverages were compared to the land categorization for minerals development provided by BLM to determine potential mineral development impacts to the upland bird populations occurring in the VPA.

Alternatives A and B would increase the proportion of upland bird habitat open to surface occupying oil and gas development by approximately 10% and 14% respectively, when compared to the No Action Alternative. These alternatives would also decrease the proportion of upland bird habitat subject to controlled surface use by approximately 8% and 14% respectively, when compared to the No Action Alternative. Alternative C would also increase the proportion of upland bird habitat open to surface occupying oil and gas development by approximately 2% when compared to the No Action Alternative. This alternative would also decrease the proportion of upland bird habitat subject to controlled surface use by approximately 8% when compared to the No Action Alternative (see Tables 1-19 in Appendix I).

None of the alternatives presented contained stipulations and mitigation measures relative to minerals development meant to protect and/or enhance existing upland bird habitat.

4.19.2.5.2.3 Raptors

All alternatives would apply spatial and temporal buffers to minimize disturbances in the vicinity of nesting raptors. The buffers were tailored to the individual raptor species involved, and were based on factors such as line of sight distance between nest and disturbance, type and duration of disturbance, nest structure security, sensitivity of the species to disturbance, observed responses to related disturbances, and the amount of existing disturbances near the nest. Under all alternatives, BLM would also pursue a partnership between industries, local governments, USFWS, DWR, and others to establish a raptor management fund to be utilized for raptor population monitoring and habitat enhancement. BLM would also cooperate with utility companies, DWR, and USFWS to prevent electrocution of raptors. A detailed description of the effects of resource decisions on special status raptor species can be found in the Special Status Species section.

4.19.2.5.2.4 Neotropical Migrants, Small Mammals, and Amphibians

Lowland riparian and cottonwood forest areas have been identified as areas typically associated with high concentrations of biodiversity and include wildlife such as neotropical migrants, small mammals, amphibians, and other wildlife species. A stipulation for mineral development common to all alternatives is that surface mineral developments cannot be placed in wetlands or riparian zones, and must occur outside the 100-year floodplain. This stipulation would protect these lowland riparian and cottonwood forest habitats from minerals development. Therefore, minerals development would not directly impact these habitat types and those wildlife species that use them. Additionally, all alternatives would incorporate conservation measures in accordance with Executive Order 13186 for the protection of migratory birds, as outlined in the

Utah Partners-In-Flight Avian Conservation Strategy, and other scientific information into all surface-disturbing activities.

4.19.2.5.2.5 Fisheries and Riparian/Aquatic Species

Riparian areas, wetlands, and marsh areas are typically areas associated with high concentrations of biodiversity and include wildlife such as shorebirds, wading birds, waterfowl, and other fish species. A stipulation for mineral development common to all alternatives is that surface mineral developments cannot be placed in wetlands or riparian zones, and must occur outside the 100-year floodplain. This stipulation would protect these wetland and riparian zone habitats from minerals development. Therefore, minerals development would not directly impact these habitat types and those wildlife species that use them.

The VFO would also assist in implementing the strategic plan for Utah's Initiative on Blue Ribbon Fisheries by managing aquatic and riparian habitats to maintain a quality cold-water sport fishery along the Green River from the Ashley National Forest border to the Colorado/Utah border. Additionally, the VFO would assist in managing Pelican Lake as a quality warm-water sport fishery. Any other aquatic and riparian habitats associated with identified Blue Ribbon Fisheries would be managed by BLM for quality sport fisheries. The VFO would implement this initiative to the extent consistent and appropriate with the Vernal RMP and other land use authorizations.

Although the restrictions on mineral development in wetlands, riparian zones, and floodplains protect aquatic resource from direct impacts, it would not protect them from indirect impacts. The Water Quality section of this EIS identifies that although stipulations would mitigate the negative impacts of minerals development on water quality, the mineral development outlined for each alternative would result in increased risk of indirect, long-term, adverse impacts to water quality through soil erosion, sedimentation, and the potential for petroleum discharges to surface water. These impacts would have a correspondingly increased risk of adverse impacts to fisheries associated with these areas. In general, the level of risk of impacts would be commensurate with the level of mineral development under each alternative. Accordingly, Alternative B would have the greatest potential of impacts to aquatic habitat, followed by Alternatives A, D, and C respectively.

Mineral development under each alternative has the risk of increasing surface disturbance in selenium rich soils, and consequently impacting aquatic organisms. However, at this programmatic level, it is not know where specific developments would occur. Accordingly, the impacts of actual implementation phase of mineral development on selenium rich soils and associated aquatic resources would be analyzed on a site-specific basis at the project level under NEPA.

4.19.2.6 Effects of Rangeland Improvements on Wildlife and Fisheries Resources

Wildlife and fish populations would directly benefit over the long-term from rangeland improvements proposed under all alternatives. These rangeland improvements would include conducting vegetation treatments aimed at improving forage composition, installing additional fencing, constructing guzzlers or other reservoirs, constructing wells or improving springs, and installing additional water pipeline. These improvements would improve existing wildlife habitat and provide water during high-stress drought periods. It can be assumed that the level of relative positive impacts of each alternative would be directly related to their respective level of

rangeland improvements. The amount of each of these rangeland improvements under each alternative is described in Table 4.19.8 below.

TABLE 4.19.8. RANGELAND IMPROVEMENTS PROPOSED UNDER THE ALTERNATIVES				
	Alternative A	Alternative B	Alternative C	Alternative D
Vegetation Treatment (acres)	34,640	50,900	45,860	40,390
Fencing (miles)	68.5	368.5	129	65
Guzzlers/reservoirs	812	1,165	811	775
Wells/springs	51	78	87	74
Water pipeline (miles)	37.5	51	29.5	35

Alternative A would increase the miles of fencing and water pipelines over the No Action Alternative. This alternative would decrease the amount of vegetation treatment and the number of wells/springs that would be developed area.

Alternative B would propose more vegetation treatments, more miles of fencing and water pipelines, as well as additional guzzlers/reservoirs and wells/springs than the No Action Alternative.

Alternative C would propose more vegetation treatments and more miles of fencing as well as additional guzzlers/reservoirs and wells/springs than the No Action Alternative. However, it would propose fewer miles of water pipelines.

4.19.2.7 Effects of Recreation and Travel on Wildlife and Fisheries Resources

Alternatives A and B would designate Seep Ridge, Book Cliff Divide, and Atchee Ridge Roads as BLM Back Country Byways. Alternative C would not designate these roads as BLM Back Country Byways. Alternative A, C, and D would designate Browns Park (Alternatives A, C and D: 52,721 acres; Alternative B: 18,474 acres), Red Mountain/Dry Fork (Alternatives A, B, and C: 24,285 acres), and Nine-Mile Canyon (Alternatives A and C: 81,168 acres; Alternative B: 44,181 acres) as SRMAs. Alternatives A and C would also designate the White River (24,183 and 47,130 acres respectively), Blue Mountain (42,758 acres), and Book Cliffs (273,486 acres) as SRMAs and improve and/or develop up to 400 miles of hiking, horseback riding, and mechanized trails. Alternative C would also designate Fantasy Canyon (69 acres) as an SRMA. Alternative B would not designate these areas as SRMAs or improve and/or develop any additional trails.

These designations and improvements would have both long-term beneficial and adverse impacts on wildlife and fish populations in these areas. Beneficial impacts may include long-term protection of portions of these areas from some surface-disturbing activities such as minerals development, which would preserve wildlife and fish habitats in these areas. However, large portions of these SRMAs and areas associated with these BLM Back Country Byways and trails would be designated open for oil and gas development. Additionally, because increased visitor use is projected under this alternative, some adverse impacts on wildlife and fish populations found within BLM Back Country Byway and SRMAs would occur as a result of increased recreational activities. Both long-term beneficial and adverse impacts on wildlife and fish

populations in these areas would be much the same between alternatives, except that they would be proportionally smaller for Alternative B due to the substantially smaller areas proposed as SRMAs. However, it should be noted due to the management prescriptions associated with these SRMAs, potential impacts to wildlife would likely be confined to short-term disturbance caused by hikers and other recreationists instead of the long-term habitat loss associated with consumptive use such as mineral development.

The No Action Alternative would not designate any BLM Back Country Byways. BLM would continue to provide minimal management oversight for recreational use of the White River. No specific management plans would be made for Blue Mountain or Fantasy Canyon. The Book Cliffs would continue to provide for unlimited and unconfined recreation. Browns Park (18,474 acres), Red-Mountain Dry Fork (24,285 acres), and Nine-Mile Canyon (44,181 acres) would continue to be managed as an SRMA that would include providing important habitat for fisheries and wildlife. Roughly 55 miles of hiking and/or horseback trails along the Green River and on Dry Fork, Ashley Creek, Beaver, Willow, Nine-Mile, and other places in the resource area would be developed. Two miles of mountain bike trails using existing rural road and trails would be established. A non-motorized trail along Sears Canyon would be developed, and the Red Mountain trail would be managed as a motorized trail. The recreation decisions would continue a relatively hands-off approach to managing recreational areas associated with the VPA. This approach has historically allowed for relatively little disturbance to wildlife and fish populations in the area. However, this approach could lead to declines to wildlife and fish populations and habitats as areas in the VPA become more popular recreational destinations and other uses increase without additional protective measures placed on critical areas.

4.19.2.8 Effects of Riparian on Wildlife and Fisheries Resources

4.19.2.8.1 Alternatives A, B, and C

Under Alternatives A, B, and C, key streamside herbaceous riparian vegetation, where stream bank stability is dependant upon it, would have a minimum stubble height capable of trapping and assuring retention of sediment during high flows at the end of the growing season. Management actions would be based on residual stubble height or utilization of current year's growth at the end of the growing season. To maintain riparian conditions, stubble height on key riparian plant species would be set at four inches with 30% utilization. If riparian conditions need improvement, stubble height on key riparian plant species would be set at six inches with less than 20% utilization. Key riparian woody vegetation would not be browsed at a level that precludes adequate recruitment to maintain or recover the woody component. Woody vegetation would be managed for the sprouting and young categories rather than in the mature and dead categories. Woody vegetation utilization would be set at 30%.

This would help maintain or improve riparian areas in the VPA better than the No Action Alternative. Improvements in the riparian area have the potential to directly benefit fish and wildlife species associated with these riparian areas by providing improved habitat and resources.

4.19.2.8.2 Alternative D – No Action

Under this Alternative, the objective would be to maintain an average minimum herbage stubble height of three inches after livestock grazing where grazing is allowed on riparian areas within

the Diamond Mountain portion of the VPA. Efforts would be made to provide sufficient herbaceous biomass to meet requirements of plant, vigor, maintenance, bank protection, and sediment entrapment. However, this alternative would not provide the level of protection to riparian habitat and associated wildlife species that the action alternatives would.

4.19.2.9 Effects of Special Designations on Wildlife and Fisheries Resources

4.19.2.9.1 Alternatives A, B, C, and D

Special Designation areas (ACECs/Research Natural Areas [RNAs]) would generally have a long-term beneficial impact on the wildlife and fisheries known to occur within their boundaries. Normally, only activities that would maintain or enhance habitat used by wildlife and fisheries would be permitted in these areas, although some of these areas would remain open to minerals development. In areas where minerals development may impact wildlife and fisheries, restrictive lease stipulations would be required to minimize these impacts. The designation of these areas, or lack thereof, would have similar impacts between alternatives. Alternative C proposes the most ACECs/Research Natural Areas. Alternatives B and D propose the same ACECs/Research Natural Areas. Alternative A generally designates fewer acres in the existing and proposed ACECs/Research Natural Areas than Alternative C but more than Alternatives B and D. A summary of the total ACECs by alternative is given below in Table 4.19.9.

TABLE 4.19.9. ACEC DESIGNATIONS BY ALTERNATIVE				
ACECs	Acres			
	<i>Alt A</i>	<i>Alt B</i>	<i>Alt C</i>	<i>Alt D</i>
Bitter Creek	71,000	0	68,834	0
Bitter Creek/P.R. Spring	0	0	78,591	0
Coyote Basin	87,743	47,659	0	0
Coyote Basin - Coyote Basin	0	0	26,590	0
Coyote Basin - Kennedy Wash	0	0	10,670	0
Coyote Basin – Myton Bench	0	0	36,670	0
Coyote Basin - Shiner	0	0	21,957	0
Coyote Basin – Snake John	0	0	28,274	0
Four Mile Wash	0	0	50,280	0
Lears Canyon	1,375	1,375	1,375	1,375
Middle Green River	0	0	6,768	0
Lower Green River	10,170	0	10,170	8,470
White River	17,810	0	47,130	0
Browns Park	52,721	18,475	52,721	52,721
Red Mountain-Dry Fork	24,285	24,285	24,285	24,285
Nine-Mile Canyon	48,000	44,181	81,168	44,181
Pariette	10,437	10,437	10,437	10,437
Red Creek	24,475	24,475	24,475	24,475

TABLE 4.19.9. ACEC DESIGNATIONS BY ALTERNATIVE				
ACECs	Acres			
	<i>Alt A</i>	<i>Alt B</i>	<i>Alt C</i>	<i>Alt D</i>
Main Canyon	0	0	100,915	0
Total Acreage	348,016	170,887	681,310	165,944

4.19.2.10 Effects of Special Status Species Decisions on Wildlife and Fisheries Resources

Alternatives that incorporate decisions to protect special status plant and animal species would also likely benefit general wildlife and fish populations. Alternatives A and B would provide more protection than the No Action Alternative, but less protection than Alternative C for special status species, and indirectly other wildlife and fish populations.

4.19.2.11 Effects of Soils and Watersheds on Wildlife and Fisheries Resources

Alternatives A, B, and C would use oil and gas industry slope disturbance guidelines (Gold Book) to limit surface disturbances from oil and gas activities, which would provide indirect, long-term beneficial impacts to wildlife and fisheries by reducing soil erosion on steep hillsides.

4.19.2.11.1 Alternative A

Under Alternative A, surface disturbances on slopes between 21 – 40% would require erosion control, GIS modeling, and surveying, and slopes greater than 40% would not be disturbed unless other proposed construction alternatives would cause unnecessary degradation. These actions would also provide indirect, long-term beneficial impacts to wildland and fisheries by reducing soil erosion and subsequent stream sedimentation.

4.19.2.11.2 Alternative B

Alternative B would require erosion control, GIS modeling, and surveying on slopes greater than 20% for unavoidable surface disturbances, with similar indirect beneficial impacts to wildlife and fisheries as described for Alternative A, but without the restrictions to disturbances to slopes greater than 40% described under Alternative A.

4.19.2.11.3 Alternative C

Alternative C would have greater indirect beneficial impacts on wildlife and fisheries than the other alternatives by applying the same management actions on 21 – 40% slopes as Alternative A and by prohibiting surface disturbances (and thus reducing the risk of increased stream sedimentation) on slopes greater than 40%.

4.19.2.11.4 Alternative D - No Action

Alternative D restricts surface disturbance only for mineral activities on slopes greater than 40% and does not specifying slope restrictions on slopes less than 40% . The reductions in stream sedimentation imposed by management actions that limit surface disturbances would improve water quality and reduce stream embeddedness, which, in turn, would improve macroinvertebrate habitat and increase fish spawning success.

Alternatives A and B would provide more protection to aquatic resources than the No Action Alternative, but less protection than Alternative C. Alternative C would provide the most restrictions on surface disturbance, and would, consequently, provide the greatest protection for water quality and aquatic habitat.

4.19.2.12 Effects of Wildlife and Fisheries Management Decisions on Wildlife and Fisheries Resources

4.19.2.12.1 Alternative A

This alternative would not allow surface disturbance activities within McCook and Monument Ridge mule deer migration corridors from April 15 to May 31. This would result in an extension of the dates in the Monument Ridge area but a reduction of dates in the McCook area when compared with the No Action Alternative. Activities would not be allowed that would result in adverse impacts to mule deer and elk within crucial winter range from November 15 to April 30. This restriction would not apply if it is determined through analysis and coordination with UDWR that impacts could be mitigated. Factors to be considered would include snow depth, temperature, snow crusting, location of disturbance, forage quantity and quality, animal condition, and expected duration of disturbance. This would be an extension of the dates and provide UDWR an opportunity to be involved in analyzing impacts when compared to the No Action Alternative. New surface disturbance within crucial mule deer winter range would be limited to 560 acres per township, or 2.4% of the township, and prorated based on the percentage of the crucial mule deer winter range within the township. All surface disturbance within sagebrush habitat on crucial mule deer winter range would be reclaimed or enhanced at a ratio of 1.5 to 1. New surface disturbance or restoration in crucial mule deer winter range is not specified in the No Action Alternative. These actions would have an overall benefit to mule deer and elk populations when compared to the No Action Alternative.

Habitat and forage would be provided for the emigration and/or reintroduction of Rocky Mountain bighorn sheep in the following areas: the Upper Book Cliffs including the Willow Creek drainage upstream from Wood Canyon and the Bitter Creek drainage upstream from the Sweetwater confluence; the White River corridor; the Browns Park/Green River corridor including Red Creek Canyon, Sears Creek Canyon, Crouse Canyon, Tolivers Creek, Beaver Creek/Willow Creek area, Goslin Mountain and Teepee Mountain, Big Brush Creek, Little Brush Creek, and Ashley Gorge; and ridge tops on Diamond Mountain, Richard's Mountain, the Island Park/Dry Fork area, and Nine-Mile Canyon. This would expand the reintroduction effort for bighorn sheep in the VPA and would benefit bighorn sheep populations when compared with the No Action Alternative.

Habitat and forage would be provided for the emigration and/or reintroduction of bison.

Habitat and forage would be provided for the emigration and/or reintroduction of moose.

This would benefit moose populations in the VPA when compared with the No Action Alternative.

4.19.2.12.2 Alternative B

This alternative would not allow surface disturbance activities within McCook and Monument Ridge mule deer migration corridors from April 15 to May 31. This would result in an extension

of the dates in the Monument Ridge area but a reduction of dates in the McCook area when compared with the No Action Alternative. Disturbance activities would not be allowed from December 15 to March 15 that would displace mule deer and elk from more than 10% of their total winter habitat at any time. Waivers would be granted if deer and elk are not present, topography or other attributes screen the activity sufficiently so that the proposed activity would not displace the subject species, or disturbance resulting from the proposed activity could be mitigated. This would be a reduction of the dates when compared to the No Action Alternative. This alternative would not provide UDWR an opportunity to be involved in analyzing exceptions to these dates as with Alternatives A and C. Within crucial deer winter range, no more than 10% of such habitat would be subject to surface disturbance and remain un-claimed at any given time. This 10% surface disturbance threshold in crucial deer winter range would only apply to new disturbances. Disturbance within sagebrush habitat on crucial deer winter range would be reclaimed at or enhanced at a ratio of 1 to 1. New surface disturbance or restoration in crucial mule deer winter range is not specified in the No Action Alternative. These actions would have an overall benefit to mule deer and elk populations when compared to the No Action Alternative, but these benefits would not be as great as those outlined for Alternatives A and C.

BLM would only support Rocky Mountain bighorn sheep if natural emigration occurs in the following areas: Upper Book Cliffs including the Willow Creek drainage upstream from Wood Canyon and the Bitter Creek drainage upstream from the Sweetwater confluence, the White River corridor; the Browns Park/Green River corridor including Red Creek Canyon, Sears Creek Canyon, Crouse Canyon, Tolivers Creek, Beaver Creek/Willow Creek area, Goslin Mountain and Teepee Mountain, Big Brush Creek, Little Brush Creek, and Ashley Gorge; and ridge tops on Diamond Mountain, Richard's Mountain, the Island Park/Dry Fork area, and Nine-Mile Canyon. This would expand the reintroduction effort for bighorn sheep in the VPA and would benefit bighorn sheep populations when compared with the No Action Alternative. However, this alternative limits the establishment efforts for Rocky Mountain bighorn sheep to emigration versus reintroduction; therefore, benefits of this alternative to bighorn sheep are not as great as those outlined for Alternatives A and C.

This alternative would have adverse impacts to moose and bison, as BLM would not support them in the Book Cliffs.

4.19.2.12.3 Alternative C

This alternative would not allow surface disturbance activities within McCook and Monument Ridge mule deer migration corridors from April 15 to May 31 and September 1 to October 15. This would result in an extension of the dates in the Monument Ridge area but a reduction of dates in the McCook area when compared with the No Action Alternative. Activities would not be allowed that would result in adverse impacts to mule deer and elk within crucial winter range from November 15 to April 30. This restriction would not apply if it is determined through analysis and coordination with UDWR that impacts could be mitigated. Factors to be considered would include snow depth, temperature, snow crusting, location of disturbance, forage quantity and quality, animal condition, and expected duration of disturbance. This would be an extension of the dates and provide UDWR an opportunity to be involved in analyzing impacts when compared to the No Action Alternative. New surface disturbance within crucial mule deer winter range would be limited to 560 acres per township, or 2.4% of the township, and prorated based on the percentage of the crucial mule deer winter range within the township. All disturbance

within sagebrush habitat on crucial mule deer winter range would be reclaimed or enhanced at a ratio of 3 to 1. New surface disturbance or restoration in crucial mule deer winter range is not specified in the No Action Alternative. These actions would have an overall benefit to mule deer and elk populations when compared to the No Action Alternative.

This alternative would have identical impacts to Rocky Mountain bighorn sheep, moose and bison as those described for Alternative A.

4.19.2.12.4 Alternative D - No Action

This alternative would not allow surface disturbance activities within mule deer migration corridors on Monument Ridge from May 11 to May 31 or on McCook Ridge from October 2 to May 31. The allowable amount of new disturbance in crucial deer winter range and the reclamation of sagebrush habitat on crucial deer winter range would remain unspecified. Surface disturbing activities would not be allowed in crucial winter elk habitat in the Book Cliffs from November 1 to March 31 and in Diamond Mountain from December 1 to April 30, with exceptions if deer and/or elk are not present or if impacts could be mitigated through other management actions. These actions would benefit mule deer and elk populations in the VPA.

This alternative would allow for the reestablishment of bighorn sheep in Browns Park and provide forage and cover to support an average annual population of about 300 to 400 animals on public lands in the Browns Park Habitat Management Plan (HMP) area. This would benefit bighorn sheep in this area of the VPA.

The reintroduction of bison into the Southern Book Cliffs and moose throughout the VPA would remain unspecified. Therefore, this alternative would not benefit moose or potential bison populations in the VPA.

4.19.2.13 Effects of Wild Horse Decisions on Wildlife and Fisheries Resources

The alternatives would maintain wild horse herds as outlined in Table 4.19.10 below. In those areas where wild horse herds are maintained, there is the potential for wild horses to compete directly and indirectly with wildlife with respect to forage and habitat. However, efforts have also been made to allocate forage and habitat to wildlife and to wild horses to reduce the potential adverse impacts to wildlife populations from this competition (See Chapter 2).

	Bonanza HA	Winter Ridge HA	Hill Creek HA
Alternative A	No	Yes	Yes
Alternative B	No	No	No
Alternative C	Yes	Yes	Yes
Alternative D	Yes	No	Yes

4.19.2.14 Effects of Woodlands and Forest Management Decisions on Wildlife and Fisheries Resources

4.19.2.14.1 Alternatives A, B, and C

Alternatives A, B, and C would allow public utilization of forest and woodland products as one tool for conducting vegetative treatments to achieve desired future conditions in these forest and woodland habitats. These alternatives would treat/harvest up to 554,108 acres of forest and woodland habitat.

Alternatives A and C would manage forests and woodlands to maintain and restore ecosystems to a condition in which biodiversity is preserved and occurrences of fire, insects, disease, and other disturbances do not exceed levels normally expected in healthy forests and woodlands. These alternatives would maintain relict stands of vegetation for biological and genetic diversity. Forests and woodlands would be managed under the principles of multiple use and sustained yield without permanent impairment of the productivity of the land and the quality of the environment; and allow use of forest, woodland products, biomass, and certain vegetation products in areas specified for this use to meet RMP goals. Both of these alternatives would implement the National Healthy Forest Initiative and the National Fire Plan by conducting treatments to reduce fuel loadings, fire severity, and restoring historical disturbance regimes.

Alternatives A and B would initiate a proactive program of woodland management implemented for the salvage of forest and woodland products that are dead and/or dying due to, fire, disease, insect-kill or other disturbance with the management intent of promoting healthy forest and woodlands. Alternative C would allow for the salvage of forest and woodland products within proposed ACECs (242,760 acres) only when there is a threat to forest and woodlands or other resources in the ACEC. Alternative C would also allow for salvage of forest and woodland for other resources on up to 343,110 acres outside of proposed ACECs. Alternative B would allow harvesting forest and woodland stands that have reached culmination of mean annual increment (growth begins to decrease). Stands would thereafter be grown and thinned to approximately 80 to 90% of “normal (maximum) basal area” until the culmination of mean annual increment, at which time the stand(s) would be cut again.

In summary, Alternatives A through C would have some short-term impacts on wildlife habitat associated with cavity-nesters and other wildlife associated with woodland habitat, including snags. However, woodland harvest would also provide edge habitat that would benefit several big-game species, including deer, elk, and black bear. It would also likely improve long-term habitat by eliminating fuel loading, thereby reducing the risk of habitat loss from catastrophic wildland fire.

4.19.2.14.2 Alternative D - No Action

Alternative D would allow up to 88,200 acres of forest and 200,100 acres of woodlands to have treatments or be harvested. Accordingly, the No Action Alternative would have similar impacts to those described for the action alternatives, but to a lesser degree due to the lower treatment acreage.

4.19.3 Summary

In general, the greatest impacts to wildlife habitat would be fragmentation of essential wildlife and fisheries habitat due to continued minerals development. In this respect, Alternative B would have the greatest impact, followed by Alternatives A, D, and C, respectively. However, it should be noted that the difference in fragmentation impacts between these alternatives is proportionally less than 10% between the alternative with the least impacts (Alternative C) and the most impacts (Alternative B). The impacts of other resource management decisions on wildlife would be similarly ranked with Alternative B having the greatest adverse impact, followed by Alternatives A, D, and C, respectively.

4.19.4 Mitigation Measures

The mitigation measures developed to reduce impacts to wildlife and fisheries as a result of the implementation of management decisions have already been incorporated into the Management Common to All Alternatives (See Chapter 2). These mitigation measures would likely reduce significant impacts to wildlife and fisheries population viability in the VPA, but would not completely avoid adverse impacts to wildlife habitat.

4.19.5 Unavoidable Adverse Impacts

Unavoidable Adverse Impacts to fishery and wildlife populations due to management of other resources would occur due to habitat loss, degradation, and fragmentation; population isolation and reduction; loss of prey base; and ecosystem function. While mitigation measures described under Management Common to All (See Chapter 2) would reduce these impacts to the extent possible, they would still occur to a varying degree under all of the proposed alternatives, with the greatest unavoidable impact occurring under Alternative B, followed by A, D and C respectively. These unavoidable impacts could limit future expansion of wildlife and fishery populations in the VPA, particularly into current suitable habitat that may be unoccupied.

4.19.6 Short-term Uses Versus Long-term Productivity

Construction of roads and well pads associated with mineral development would provide a short-term resource use in terms of mineral extraction. However, that use could eventually result in long-term fragmentation of wildlife and fisheries habitat. These activities would also increase the occurrence of noxious weed infestations competing for water and space with native plants, which would likely reduce the long-term habitat productivity of the area. Other competing resource uses, such as off-highway vehicle (OHV) use and livestock grazing, provide a short-term resource use that would also result in long-term adverse impacts to wildlife and fishery populations through disturbance, habitat degradation, and spread of noxious weeds.

4.19.7 Irreversible and Irretrievable Impacts

Land categorization for minerals development in the VPA proposes to open approximately 80 to 100% of available habitat for most wildlife and fisheries managed by BLM to minerals development. The habitat fragmentation associated with this development would create an irretrievable impact to wildlife populations by potentially breaking up wildlife populations into smaller populations more susceptible to extinction from random events. Additionally, this fragmentation would make wildlife movement between fragments difficult, as well as decreasing the habitat suitability for large mobile wildlife species that may require large habitat areas. This

shift to smaller populations and smaller discrete habitats would create an irretrievable loss in wildlife productivity until the areas used as access roads and for other developments associated with minerals activities were reclaimed. Eventually those areas could be restored, so this impact would not necessarily be irreversible. However, there is the possibility of an irreversible loss of a small isolated wildlife population due to this fragmentation, particularly if reclamation of cleared well pads and roads does not occur within 20 to 30 years.

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