4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

4.1. INTRODUCTION

This chapter analyzes the environmental consequences of the management decisions proposed under the five alternatives described in Chapter 2. These decisions were developed as alternative ways of managing and allocating resources and uses of the public lands within the Monticello Planning Area (PA) to balance these uses under the multiple-use, sustained-yield mandate of the Federal Land Policy and Management Act (FLPMA). The Bureau of Land Management (BLM) planning decisions about resource use and management in the Monticello Planning Area (PA) will be based on this analysis. Note that there are two sections on management decisions common to the alternatives. One section discusses management decisions shared by all of the alternatives (A, the No-Action Alternative, and the Action Alternatives); the other section describes decisions shared by only the Action Alternatives (B through E).

Alternative A (No Action) continues the existing management practices defined in the San Juan Resource Management Plan (RMP). Alternative B would minimize human activities within the Monticello PA. Alternative C would protect important environmental values and sensitive resources while allowing the development of oil and gas resources, recreational facilities, and other human uses. Alternative D would emphasize resource development and human consumption of resources. Alternative E would minimize human activities and manage more acreage for a natural state, primitive recreation, and solitude. This draft RMP/draft Environmental Impact Statement (DRMP/DEIS) provides a landscape-scale, "big picture" analysis because in most cases the exact locations of projected development and other changes are not known at this time. Impacts for each specific resource or use presented in Chapter 3 are discussed under each alternative. *Impacts* are defined as modifications to the existing environment brought about by implementing an alternative. They can be beneficial or adverse, result from the decisions directly or indirectly, and be long-term, short-term, temporary, or cumulative.

BLM staff used existing data, current methodologies, professional judgments, and projected actions and levels of use to compile the analysis, which takes into account the mitigation measures and stipulations described in Chapter 2 and Appendices A, F, I, and M. If impacts are not discussed, the analysis has indicated that none would occur, or their magnitude would be negligible.

When impacts of a decision are the same under more than one alternative, they are disclosed under the first applicable alternative discussed, and then referenced under other pertinent alternatives.

Chapter 4 discusses and analyzes the environmental consequences of program decisions on each listed resource or use. Resources and uses are presented in alphabetical order. The environmental consequences of the decisions imposed by other programs on that resource are also delineated for each of the five alternatives. For half of the resources, the analysis identifies the impacts of each of the other program decisions on that resource value or use, by alternative. For example, the impacts of recreation decisions on vegetation are listed under each of the five alternatives:

Vegetation

Impacts of Recreation Decisions on Vegetation

Alternative A
Alternative B
Alternative C
Alternative D
Alternative E

Resources and uses organized this way include fire management, non-WSA lands with wilderness characteristics, paleontological resources, recreation, riparian resources, socioeconomic conditions, soils and water resources, special designations, special status species, travel management, vegetation, and wildlife and fisheries.

For resources and uses largely unaffected by other program decisions, the impacts are grouped under each of the five alternatives. This format made the disclosure of environmental consequences on these resources easier to understand. For example, the impacts of other program decisions on lands and realty under Alternative A appear all together:

Lands and Realty

Impacts of Alternative A
Impacts of Alternative B
Impacts of Alternative C
Impacts of Alternative D
Impacts of Alternative E

Resources and uses organized this way include air quality, cultural resources, health and safety, lands and realty, livestock grazing, minerals, visual resources, and woodlands.

4.1.1. ANALYTICAL ASSUMPTIONS AND GUIDELINES

Following are the general assumptions used to assess all alternatives. Assumptions specific to an individual resource value, use, or program (e.g., wildlife habitat, recreation, or fire management) appear at the beginning of the analysis for that section.

- All resource decisions recognize valid existing rights.
- The entire planning area is allocated one the following leasing stipulations for oil and gas development:
  - Open subject to standard lease terms;
  - Timing limitations and controlled surface use;
  - No surface occupancy; or
  - Closed.
- BLM would have the funding and work force to implement the selected alternative.
- Additional National Environmental Policy Act (NEPA) analysis would be required to determine the impacts from site-specific actions (activity plans) and could identify additional mitigating measures.
- All lands identified for disposal are free of encumbrances and can be disposed of. This includes cultural-resource clearances.

- Demand for recreational activities (both dispersed and concentrated), energy production, vegetative resources, and wildlife use (nonconsumptive and consumptive) will increase over time.
- Short-term impacts are those that would last for fewer than 5 years.
- Long-term impacts are those that would last for 5 years or more.
- State highways and county B class roads through the Monticello PA will remain open and accessible.
- All decisions, projects, activities, and mitigation for the alternatives would be completed as described in Chapter 2 and Appendix A (Surface Stipulations Applicable to Oil and Gas Leasing and Other Surface Disturbing Activities).
- Acreages were calculated using GIS technology, so there may be slight variations in total acres between disciplines. These variations are negligible and will not affect analysis.
- The decisions of the RMP apply only to public lands managed by the BLM. They do not apply to inheld or adjacent private, state, or other lands.
- Reasonable access across BLM lands to state lands must be provided under all alternatives.

4.1.2. Assumptions and Methodology for Mineral Development

The BLM prepared a mineral potential report (MPR) for the Monticello PA in July 2005. The report outlined the potential for occurrence and reasonable foreseeable development (RFD) of all mineral resources for the Monticello PA for the next 15 to 20 years. The potential for future oil and gas activity and the associated surface disturbance are presented in Table 4.1, and the predicted geophysical activity and its consequences are outlined in Table 4.2. This activity includes potential mineral development and geophysical activities on state, private, United States Department of Agriculture Forest Service (USFS), tribal, BLM, and National Park Service (NPS) lands within the Monticello PA. Table 4.3 shows the existing and predicted cumulative surface disturbance for all of these lands.

Table 4.1. Predicted Oil and Gas Drilling and Associated Surface Disturbance for Each Development Area within the Monticello PA (see Map 14)

Development Area	Number of Wells Projected to Be Drilled	Estimated Future Surface Disturbance from Drilling Wells (acres)
Paradox fold and fault belt (per year)	1–6	9.6–57.6
Blanding sub-basin (per year)	3–13	28.8–124.8
Monument upwarp (per year)	1–2	9.6–19.2
Totals per year for next 15 years	**5–21**	**48.0–201.6**
Average per year for next 15 years	**13**	**124.8**
Total for next 15 years	**195**	**1,872.0**

Source: BLM 2005b.

Table 4.2. Predicted Amount of Geophysical Activity and Associated Surface Disturbance for Each Development Area within the Monticello PA

Development Area	Projected Linear Miles of Geophysical Surveys	Estimated Future Surface Disturbance from Geophysical Surveys (acres)
Paradox fold and fault belt (per year)	24–53	43.6–96.4
Blanding sub-basin (per year)	18–40	32.7–72.7
Monument upwarp (per year)	9–20	16.4–36.4
Totals per year for next 15 years	**51–113**	**92.7–205.5**
Average per year for next 15 years	**82**	**149.1**
Total for next 15 years	**1,230**	**2,236.4**

Source: BLM 2005b.

Table 4.3. Total Existing and Predicted Surface Disturbance from All Drilling Activities and Predicted Reclamation within the Monticello PA

	Number of Wells	Total Surface Disturbance
Total existing surface disturbance	**1,615**	**15,504**
Active wells	1,135	10,896
Abandoned wells	480	4,608
Future surface disturbance for the next 15 years	**195**	**1,872**
Gross surface disturbance for the next 15 years	**1,810**	**17,376**
Total predicted reclamation in the next 15 years	**527**	**5,059**
Reclamation of future dry wells	27	259
Reclamation of existing abandoned wells	480	4,608
Reclamation of future abandoned wells	20	192
Total net surface disturbance for the next 15 years		**12,317**

Source: BLM 2005b.

Predicted surface disturbance for oil and gas development by alternative on BLM lands was calculated by multiplying the percentage of BLM lands open for development under each of the alternatives by the total number of wells predicted for all lands. For oil and gas, the resultant number of wells was multiplied by surface-disturbance assumptions per well to arrive at the total disturbance (Table 4.4). Geophysical disturbances were calculated in the same manner (Table 4.5). It should be noted that the total number of wells cited in the RFD report do not represent upper limits on the number of wells that could be drilled in the Monticello PA during the life of the plan (LOP). The RFD is not intended to and does not place a cap on the total number of wells that may be drilled in the Monticello PA under this plan. The RFD well totals represent the BLM's best estimate of future reasonably foreseeable development to allow the BLM to assess the impacts of this development and inform the decision maker about anticipated consequences of the alternative management decisions. The total number of wells permitted would be determined through site-specific NEPA analysis of development projects.

Table 4.4. Summary of RFD-Predicted Wells and Surface Disturbance for Oil and Gas on BLM Lands

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Blanding sub-basin					
Avg. number of wells/LOP	41	38	41	41	38
Avg. surface disturbance/yr.	26	24	26	26	24
Avg. surface disturbance/LOP	394	363	395	395	364
Monument upwarp					
Number of wells/LOP	7	8	9	9	7
Avg. surface disturbance/yr.	5	5	5	6	5
Avg. surface disturbance/LOP	69	79	82	86	71
Paradox fold and fault belt					
Number of wells/LOP	25	20	24	25	18
Avg. surface disturbance/yr.	16	13	16	16	11
Avg. surface disturbance/LOP	236	194	233	240	170

[1] These numbers are based on several calculations that have been prorated and subsequently rounded, so there may be slight discrepancies in the summary numbers. For example, under Alternatives C and D, nine wells are predicted, but the resulting surface disturbance numbers are slightly different. This is a result of the base well numbers being rounded. You could assume under Alternative C that the well number was closer to 9, whereas under Alternative D the well number was closer to 10. Detailed information on the calculations is available in the Monticello FO.

Table 4.5. Summary of Geophysical Disturbances on BLM Lands

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Blanding sub-basin					
Avg. miles/yr.	10	9	10	10	9
Avg. miles/LOP	205	188	205	205	188
Avg. acres/yr.	18	16	18	18	16
Avg. acres/LOP	271	249	271	271	250
Monument upwarp					
Avg. miles/yr.	5	5	6	6	5
Avg. miles/LOP	83	95	99	103	85
Avg. acres/yr.	8	9	10	10	8
Avg. acres/LOP	120	137	143	149	123
Paradox fold and fault Belt					
Avg. miles/yr.	18	15	17	18	14
Avg. miles/LOP	271	224	269	277	211
Avg. acres/yr.	33	28	33	34	26
Avg. acres/LOP	495	408	489	504	388

Table 4.5. Summary of Geophysical Disturbances on BLM Lands

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
All RFD areas					
Total miles/yr.	37	34	38	39	32
Total acres/yr.	59	53	61	62	50
Total miles/LOP	559	507	572	585	484
Total acres/LOP	886	794	903	924	761

4.1.3. Types of Impacts to Be Addressed—Direct, Indirect, and Cumulative

Direct impacts result from an alternative affecting a specific resource and generally occur at the same time and place. *Indirect impacts* can result from one resource affecting another (e.g., soil erosion and sedimentation affecting water quality) or can happen later in time or farther away (e.g., disturbed soil moving downslope into a stream and affecting water quality), but they are still reasonably foreseeable. *Long-term impacts* persist for years (longer than 5 years, for this DRMP/DEIS). *Short-term impacts* cause temporary or ephemeral changes to the environment that end once the activity stops (those that persist for less than 5 years, for this document), such as air-polluting emissions caused by earthmoving equipment during construction. Short-term impacts result in changes to the environment that are stabilized or mitigated rapidly, such as surface disturbance that is revegetated immediately after earthmoving is completed. Impacts can vary from a slightly discernible change to a full modification or elimination of the environmental condition. Cumulative impacts can also result from past, present, and reasonable foreseeable future actions by federal, state, and local governments; private individuals, and operators in or near the Monticello PA.

4.2. Impacts to Critical Elements

The following critical elements are not impacted by the decisions proposed in the alternatives, or are adequately mitigated to prevent significant impacts, and will not be discussed further in this analysis. The other critical elements are addressed in further detail in the analysis of the DRMP/DEIS.

4.2.1. Impacts of Alternatives on Prime and Unique Farmlands

All alternatives in this DRMP/DEIS coincide with the intent of the Secretary of Agriculture's Memorandum 1827 for prime land. The Monticello PA does not include any prime farmland, nor do any of the alternatives impact any prime farmland soils (NRCS 1993).

4.2.2. Impacts of Alternatives on Invasive and/or Noxious Non-native Plants

Vegetation and surface-disturbing changes would result from all the alternatives in this DRMP/DEIS. These disturbances all increase the risk of propagation of exotic, invasive or noxious nonnative plants. However, effective implementation of management decisions common

to all of the alternatives would prevent the risk from becoming greater than at present and help reduce risk in the future.

4.2.3. INCOMPLETE OR UNAVAILABLE INFORMATION

This study was done using the best available information, data that are believed sufficient to make a programmatic analysis of the impacts of multidisciplinary decisions on management direction for the entire PA. This information includes, but is not limited to, landscape-level data, such as geophysical analysis program (GAP) vegetation data, Soil Survey Geographic database (SSURGO) soils data, and FO information on wildlife habitat boundaries. Additional site-specific data (including cultural-resource and threatened, endangered, and sensitive (TES) surveys) will be required to complete NEPA analysis necessary before actions can be implemented.

4.3. ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

4.3.1. AIR QUALITY AND CLIMATE

The Monticello PA is located in a region designated as unclassifiable for PM_{10} and unclassifiable/attainment for all other airborne pollutants [See 40 CFR, Part 81] (EPA Region VIII 2005). The five proposed management alternatives have been evaluated using requirements and assumptions that identify potential air quality issues as accurately as possible for each alternative. The following assumptions were made and considered in analyzing the impacts of the proposed RMP decisions on air quality within the PA:

- Mineral extraction potential in the Monticello PA was identified as low for the majority of commodities assessed: coal, potash and salt, tar sands, copper, and gold. A moderate to high extraction potential was identified for uranium/vanadium, depending on the mining area, and a high extraction potential exists for limestone, building stone, and clay. The extraction potential for sand and gravel was rated as moderate to high depending on the relative distance from an established road.
- Because mineral extraction requires a permit, and a range of regulations exist to ensure that pollutant levels do not increase above identified thresholds and/or air quality criteria, it is assumed that extraction operations would be carried out in compliance with existing policies and regulations at both the state and federal level. It is further assumed that roads, excavations, and other disturbances resulting from mineral development in areas with soils susceptible to wind erosion (i.e., sensitive soils) would be appropriately treated (piles covered where appropriate, graveling or surfactants applied to roads, etc.) to reduce fugitive dust generated by traffic and related activities. Such treatments should also be applied on local and resource access roads that represent a dust problem. Lower speed limits, enforced by the appropriate authority, would also limit dust in project and adjacent areas.
- In the absence of quantitative data about local extraction activities, and because state and federal preconstruction/excavation permit processes must assess cumulative impacts of proposed activities to ensure that those activities would not contribute to noncompliance or violations of the national ambient air quality standards (NAAQS), management decisions related to mineral extraction are not projected to generate emissions that result in noncompliance with air quality criteria. Therefore, this section will not discuss the

management of these resources any further. Development potential for mineral resources in the Monticello PA is discussed in greater detail in Section 4.3.7, Minerals.

- Several areas with high to moderate fluid-hydrocarbon-extraction potential (oil and gas wells) are identified in Section 4.3.7, Minerals. Existing wells are relatively common in the Monticello PA. The total number of wells (oil and gas) within the PA (which includes lands other than those managed by the BLM) is 1,615. If approved, future drilling is projected to occur at a rate of 5 to 21 wells per year over the next 15 years.
- To assess the potential for air quality impact from oil and gas extraction, it was assumed that the average surface disturbance per existing well would be similar for future well sites. An average disturbance area of 9.6 acres per well was estimated using existing roads and pipelines associated with similar locations where oil and gas extraction has occurred. This figure, multiplied by the total number of wells, was used to calculate a projected area of disturbance of 15,504 acres, based on the predicted RFD scenario for oil and gas (BLM 2005d). This average disturbance area (9.6 acres per well) is assumed to be the same for all the alternatives.
- For the purposes of this analysis, the number of wells drilled in any of the RFD areas (Blanding sub-basin, Monument upwarp, and Paradox fold and fault belt) was assumed to be proportional to the acreage of land open for mineral development under that alternative. The percentage of available acreage and predicted number of wells on BLM lands within the three RFD areas were used to analyze air quality impact from future oil and gas development within the Monticello PA. The impacts on air quality were estimated for the lifetime of the RMP.
- Full-scale dispersion modeling was not conducted for this analysis. To better understand the impact of proposed oil and gas development on air quality in the Monticello PA, basic dispersion principles and generalized plume-behavior calculations were used (Walcek 2002, Holzworth 1972, ARL 2006, ES&H 2006, NWS 2006). Conclusions and projections on air quality impacts are therefore semi-quantitative to qualitative in nature and are intended to forecast potential trends, rather than identify absolute air-pollutant concentrations. Highest possible estimates were used to ensure that the findings would not underestimate future impacts. For example, it was assumed that all proposed wells would go into production within 15 years, then operate at full production levels with no "dry holes" or "shut ins," while in reality a small percentage of dry holes and shut-ins would be expected. All emission sources were assumed to operate at their average maximum rates simultaneously throughout the lifetime of the project. In reality, some sources would only emit during a portion of any given day or year. It was also assumed that primary road traffic would occur during working, daylight hours (7:00 a.m. to 7:00 p.m.), particularly during the construction period of the wells, and that 50% control of particulate (fugitive dust) emissions would be maintained by watering.
- For each development scenario, the number of expected compressors was based on expected gas production, expected number of new wells per year, expected gas production potential of each well, and proximity to other wells. In the absence of yearly data, and because all analyses were meant to represent the total development throughout the lifetime of the RMP, the total number of wells proposed for each alternative was used. The number of compressors necessary for each alternative was based on a detailed air quality model prepared for the BLM Vernal FO that analyzed the impacts of oil and gas development on air quality and

determined the average number of compressors (0.063 per well) required for projected oil and gas development (Trinity and Nicholls 2006). To reflect the potentially great distance between wells and the separation between RFD areas, it was assumed that a minimum of two compressors would be required per area. The analysis also assumed there would be one glycol dehydrator per gas well, with a well spacing of 40 acres.

- Generalized projected emissions from compressors include CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$. Emission rates were calculated using AP-42 factors for 4-stroke, lean-burn engines (EPA 2003e). NO_x emission rates for compressors were calculated based on a best available control technology (BACT) limit of 0.7 grams per horsepower hour (g/hp-h). Emission rates calculated for each pollutant are assumed to be even throughout the year and are displayed in Table 4.6.

Table 4.6. Emission Rates Used for Estimating Compressor Emissions

Pollutant	Emission Rate (g/s)
CO	5.78e-01
NO_x	1.94e-01
PM_{10}	1.04e-02
$PM_{2.5}$	1.04e-02
SO_2	6.10e-04

- An average emission rate of 1.45×10^{-7} grams per second (g/s) of hydrogen sulfide (H_2S) was assumed for all glycol dehydrators (Trinity and Nicholls 2006). All H_2S was assumed to convert to SO_2 for the purposes of this assessment (ATSDR 1999).
- Based on the previous discussion of local wind conditions, a generous assumption of 3 miles per hour (~1.5 m/s) winds and an upper dispersion boundary of 50 meters were applied (ARL 2006).
- It was assumed that well placement and pad construction would produce the most fugitive dust emissions and that construction activities would occur during the 12-hour period from 7:00 a.m. to 7:00 p.m. A total of 10 construction vehicles operating on-site at any one time was estimated; 4 of these would be stationary (e.g., compressors, generators, pumps and similar equipment), and the others were expected to be 2 heavy (6 tons or more), 2 midrange (3 tons), and 2 light-duty (2-ton) mobile vehicles. Soil moisture content of 5% or less and soil silt content of 5% were assumed. Soil silt content was approximated from the relative percentage of silty soils present in each alternative footprint. Mean vehicle speed on the construction site was assumed to be 10 miles per hour. It was assumed that all 6 mobile vehicles would be working at any one time on-site. This scenario is assumed to be representative of periods of intense activity and, therefore, overestimates critical conditions.
- It was assumed that all exposed disturbance areas (e.g., work and staging areas and roads) on the construction site would be watered as needed during the construction period. Because soils within the project area vary in their susceptibility to wind erosion, a generous control efficiency of 37% for all exposed/graded areas and 3% for all well-traveled roads was assumed to allow for critical conditions (CEQA 2002).
- PM_{10} emissions related to travel to and from the proposed well sites were assumed to be less intense than construction emissions because well sites will be relatively far apart and

presumably will not be visited simultaneously. Therefore, air quality impact resulting from post construction operation, maintenance, and public use of created roads was assumed to be sporadic and spread out over a longer time period than during the intensive construction period.

- Projected concentrations were not compared to prevention of significant deterioration (PSD) Class I and II increments because of the limitations of the analysis. It was assumed that regulatory PSD increment consumption analyses are the responsibility of the state air quality agency (under Environmental Protection Agency [EPA] supervision) and would be conducted where appropriate during the permit process.
- This analysis recognizes the uncertainty regarding the actual level of final resource development. This uncertainty includes the exact number of wells, the type and amount of equipment used, the specific location of development, etc. Due to this uncertainty, actual impacts may vary from the projected values and would potentially be regulated by permit requirements.
- The contribution to the degradation of air quality from other mineral development (e.g., the extraction of solid leasables, mineral materials, and surface management) outside of the modeled impacts from dust due to increased activity and road building was considered to be small because oil- and gas-related activities are assumed to be the largest component of mineral exploration within the Monticello PA. Therefore, only oil- and gas-related emissions were directly considered in assessing impacts to air quality. If recent changes in the metals market continue to accelerate, this assumption may require revision.

It should be noted that full-scale dispersion modeling was not used to analyze potential air quality impact from oil and gas extraction. Due to the limitations in available data and the necessarily straightforward nature of the methodology used, the calculation of emission concentrations should be considered semi-quantitative and is intended only to forecast relative concentrations (compared to measured constituents and NAAQS) and identify potential trends. The results of this analysis should not be considered as absolute constituent concentrations. This report contains only relative concentration information. Care was taken to employ broad assumptions to help ensure that the findings do not underestimate future impacts. The determination of quantitative atmospheric concentrations would require a more complex, full-scale dispersion-modeling procedure.

4.3.1.1. Impacts Common to All Alternatives

All the alternatives stipulate that standard state and federal policy and regulations should govern air quality resources. These policies and regulations call for appropriate management of air quality within the Monticello PA and include application of the BACT provided by the Utah Division of Air Quality (UDAQ) to meet air quality standards; compliance with Utah Air Conservation (UAC) regulation R307–205, which identifies appropriate dust-abatement measures for construction, demolition, clearing, or excavation of land areas larger than one-quarter acre (UAC R307-205, August 1, 2006); and management of emissions to prevent deterioration to air quality in PSD Class I air sheds (UAC R307-405, August 1, 2006). These policies, standards, and guidelines would have long term, beneficial impacts on PA air quality by ensuring the continued protection of human health and maintaining scenic quality.

Fire-management decisions apply to all alternatives. Under all alternatives of the Monticello DRMP, approximately 15,000 acres of pinyon-juniper woodland vegetation would be subject to prescribed fire, and approximately 27,000 acres would receive non-fire treatments (42,000 acres total) over the next 10-year period. The preferred schedule of these treatments would be 5,000 to 10,000 acres per year across the PA, depending on budgetary and time constraints.

Several pollutants of concern are specific to prescribed burning, chiefly particulate matter and carbon dioxide (CO_2). Particulate matter produced in prescribed burns is predominantly $PM_{2.5}$ (70% of the smoke from burns falls into this category). Increased particulates are especially generated in high-intensity, wildland fire. Fire also produces carbon dioxide (CO_2), a gas that is potentially related to incremental global climate change. Biomass burning contributes to the release of greenhouse gases (such as CO_2) and eliminates a carbon sink. Prescribed fire would likely result in a short-term increase in particulate (primarily $PM_{2.5}$), CO_2, and ozone emissions in burn areas and locations immediately downwind. The air quality impacts from wildfire would likely be more detrimental than those from prescribed fire and have a more adverse impact on air quality in the Monticello PA because of the likelihood of a larger burn area with more burned vegetation.

Direct impacts of prescribed fire fall into two general categories: short-term and long-term. Projected short-term air quality impacts from prescribed burns include a general increase in $PM_{2.5}$ particulate and CO_2 emissions in the burn area and downwind locations. The magnitude of the increase depends directly on the size, extent, and controlled level of the burn. The type and amount of air pollutants released from burning wildland vegetation vary according to the type of fuel, moisture content, temperature of the fire, and amount of smoldering after the fire. Since prescribed burning occurs irregularly, it is generally possible to restrict it in potential nonattainment areas on "bad air quality days" to avoid violating standards. Projected long-term, direct air quality impacts from prescribed burns include a general increase in airborne particulates from the burn site as a result of ash dispersion and transport. This increase would occur only until revegetation occurs and growth matures.

Short-term and long-term indirect impacts on air quality from prescribed burns include an increase in airborne particulates from the burn site as a result of wind-based erosion of devegetated areas. This effect is expected to be small because vegetation management is an active component of fire management. Fuel-reduction treatments could potentially decrease the number and intensity of wildland fires and concurrently reduce the amount of particulates. A greater long-term impact of prescribed burning would be a reduction in particulate, CO_2, and ozone emissions produced by wildfires in unmanaged areas. Ozone, a product of biomass combustion formed through the interaction of ozone precursors, volatile organic carbon compounds (VOCs), and nitrogen oxides, is a precursor to greenhouse gases and a major constituent of photochemical smog. Although ozone produced by prescribed fire is quickly diluted and dispersed into the air, it may contribute to the greenhouse effect. Since ozone is a criteria pollutant, its production may be regulated by a state implementation plan (SIP), or burns may be banned under ozone alerts.

BLM fire-management policy coincides with the UDAQ permit process and, therefore, can be timed in conjunction with meteorological conditions to minimize air quality impacts. The BLM implements specific policies, rules, and procedures to minimize air quality impacts and production of regional haze due to fire. Under these requirements, BLM would comply with the

current smoke-management plan (SMP) and memorandum of agreement (MOU) shared by the BLM, USFS, and UDAQ. The MOU, in accordance with UAC regulation R307-204, requires that the size, date, fuel type, and estimated air emissions from each prescribed burn be reported. All prescribed burns, mechanical and chemical treatments, and impacts would be analyzed under a project-specific NEPA process.

Health and safety decisions shared by all the alternatives have the potential for direct, short-term, adverse impacts on air quality. Possible impacts relate to the remediation of AML sites that pose a risk to human health and safety. Remediation techniques generally include collapsing or sealing open shafts and adits and/or capping or removing tailings or other hazardous materials. Land disturbance associated with these practices and operating heavy equipment during remediation could result in incremental increases in short-term concentrations of particulate matter (PM_{10} and $PM_{2.5}$), SO_2, NO_x, hydrocarbons, and combustion by-products. Actual pollutant loads produced depend on the number and type of emission sources on-site, the area of disturbed earth, the source location, the duration of work, local topographical and meteorological conditions, and other site-specific factors. Short-term and long term impacts on air quality are expected to be negligible to minor since remediation would be carried out in accordance with the appropriate air quality policies and regulations, and the surface disturbances would be stabilized in accordance with these same policies and regulations.

Management decisions related to cultural resources, non-WSA lands with wilderness characteristics, paleontology, special designations, special status species, and visual resource managment are likely to have minor, indirect, long-term, beneficial impact on air quality due to reduced ground-disturbing activities in protected areas and the limitations they impose on development, access, or site use. Therefore, the management of these resources will not be discussed further in this subsection.

Livestock grazing, riparian, soil and watershed, travel, vegetation and TES vegetation, wildlife, and woodlands management decisions that limit or reduce surface and vegetation disturbance and grazing intensity and time; manage for greater vegetation retention and generation; and improve/upgrade existing road surfaces are generally projected to produce negligible impacts on short-term and long-term air quality. This is because managing livestock grazing allotments to ensure proper functioning conditions and forage utilization levels, protecting riparian vegetation and soils, protecting sensitive soils and water resources, improving vegetation communities through treatments, protecting wildlife species and their habitat, and managing woodlands for sustainable harvesting would not likely affect air quality.

Proposed management decisions generally include lower overall surface/soil disturbance. Potentially beneficial impacts from these management decisions would include reduced PM_{10} and other wind-borne particulates from erosion of exposed soils as vegetation and soil cohesion improve over time. Short-term benefits to air quality would most likely not be measurable in the PA. Long-term impacts are generally projected to produce negligible to minor beneficial impacts on long-term air quality, primarily as a result of limiting vehicular travel during critical periods. As the impacts of these management decisions are generally expected to be beneficial, minor, and unmeasurable within site-specific areas, they will not be discussed further in this section. Land and realty management decisions, other than those related to compressor stations, are projected to have no significant impact on air quality unless they affect other management

decisions. The projections and modeling assumptions and impacts from these facilities are discussed in detail in Section 4.3.7, Minerals.

Recreation and mineral-extraction management decisions are expected to have the greatest impacts on the air quality. The projected impacts of management decisions on these resources are discussed in detail below.

4.3.1.2. IMPACTS FROM ALTERNATIVES

4.3.1.2.1. ALTERNATIVE A

4.3.1.2.1.1. Impacts of Mineral Decisions on Air Quality Under Alternative A

The minerals management decisions under Alternative A would maintain existing levels of use without additional constraints.

This assessment has defined four primary BLM leasing categories for fluid hydrocarbons:

- Standard lease terms (Standard)
- Special conditions, or timing limitations and/or controlled surface use (Limited)
- No surface occupancy (NSO)
- Closed (lands designated as closed are not available for fluid hydrocarbon extraction and therefore were not included in this analysis)

The calculated wells for each RFD area under Alternative A are listed in Table 4.7.

Table 4.7. Average Predicted Oil and Gas Wells on BLM Lands within RFD Areas under Alternative A

RFD Area	Average Predicted Oil and Gas Wells[1]	Estimated Compressors Necessary[2]	Estimated Glycol Dehydrators Necessary[2]
Blanding sub-basin	41	3	41
Monument upwarp	7	2	7
Paradox fold and fault belt	25	2	25
Total	**73**	**7**	**73**

Note: Calculations are based on oil and gas RFD on BLM-administered lands only.

[1] The number of oil and natural gas wells was calculated as a cumulative total, not independently. For the purpose of analyzing impacts of mineral decisions on the total number of oil and natural gas wells, BLM lands designated as NSO were not included because they are not considered available for development.

[2] Necessary compressors were calculated at 0.063 per well (minimum of 2 per RFD area). Necessary glycol dehydrators were calculated at 1 per well (Trinity and Nicholls 2006).

The identified primary emission sources for oil and gas extraction were gas-fired compressors (a minimum of 2 per RFD area), glycol dehydrators (1 per well), flaring (occurring in 60% of the wells, flared gas was assumed to be "sweet" [i.e., no sulfur emissions]), vehicle exhaust, and construction-related fugitive dust. Primary emission components were identified as CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

Calculation of projected average maximum pollutant concentrations was based on a simple box-dispersion scenario with a well spacing of 40 acres, a wind speed of 3 miles per hour (~1.5 m/s), a straight-line trajectory, an average plume rise of 50 meters (ARL 2006), a plume dispersion factor of 0.025, and planar topography. Average emission rates were used for all calculations. Local meteorology or topography factors were not incorporated because well placement is not known at this time.

Gas-fired Compressors

Based on the assumptions discussed above, the development of oil and gas resources as proposed under Alternative A would require approximately 7 compressors (3 in the Blanding sub-basin, a defined minimum of 2 in the Monument upwarp, and 2 in the Paradox fold and fault belt).

Carbon Monoxide (CO). Using the specifications previously derived and the generalized emission rates depicted in Table 4.6, and assuming a 40-acre spacing between wells and consistent operation and emissions over the course of a year, calculations for the average maximum CO emissions possible from natural gas-fired compressors are well below the applicable NAAQS of 40,000 μg/m³ (1 hour) and 10,000 μg/m³ (8 hours) for BLM wells under Alternative A.

Oxides of Nitrogen (NO_x). Using the emission rates and assumptions already identified for CO, calculations for the average maximum NO_x emissions possible from natural gas-fired compressors are well below the applicable NAAQS of 100 μg/m³ (annual) as NO_2 for PA wells under Alternative A.

Sulfur Dioxide (SO_2). Using the emission rates and assumptions already identified for CO, calculations for the average maximum SO_2 emissions possible from natural gas-fired compressors are well below the applicable NAAQS of 1,300 μg/m³ (3 hours), 365 μg/m³ (24 hours), and 80 μg/m³ (annual) for BLM wells under Alternative A.

Particulate Matter (PM_{10} and $PM_{2.5}$). Using the emission rates and assumptions already identified for CO, calculations for the average maximum PM_{10} and $PM_{2.5}$ emissions possible from natural gas-fired compressors are well below the applicable NAAQS of 150 μg/m³ (24 hours) and 50 μg/m³ (annual), and 65 μg/m³ (24 hours) and 15 μg/m³ (annual), respectively, for wells under Alternative A.

Glycol Dehydrators

Based on the calculations derived in the preceding section, the development of oil and gas resources as proposed in Alternative A would require approximately 73 glycol dehydrators.

Hydrogen Sulfide (H_2S). Using an average emission rate of 1.45×10^{-7} g/s (Trinity and Nicholls 2006) and the estimates for gas-fired compressors, calculations for the average maximum SO_2 emissions possible from glycol dehydrators are well below the applicable NAAQS of 1,300 μg/m³ (3 hours), 365 μg/m³ (24 hours), and 80 μg/m³ (annual) for Monticello PA wells under Alternative A. A broad assumption that all H_2S will be converted to SO_2 was used for this assessment (ATSDR 1999).

Flaring

Carbon Monoxide (CO). Assuming flaring occurred in 60% of the new wells, that conditions identified previously and generalized emission rates specified in BLM 2004h applied, that a 40-

km spacing existed between wells, and that operation and emissions were consistent over the course of a year, calculations for the average maximum CO emissions possible from flaring would be well below the applicable NAAQS of 40,000 µg/m³ (1 hour) and 10,000 µg/m³ (8 hours) for wells within the PA under Alternative A.

Oxides of Nitrogen (NO_x). Using the emission rates and assumptions just identified for CO, calculations for the average maximum potential NO_x emissions from flaring would be well below the applicable NAAQS of 100 µg/m³ (annual) as NO_2 for BLM wells under Alternative A.

Vehicle Exhaust

Exhaust generated by construction equipment and other vehicles contains hydrocarbons, combustion by-products, and particulates.

A six-month construction season was assumed to calculate annual concentrations, and the vehicle type and size specifications defined previously were used. It was estimated that a total of 10 construction vehicles would be operating on-site at any one time. It was assumed that 97% of the particulate matter in exhaust and crankcase emissions would be smaller than 2.5 microns ($PM_{2.5}$) and that this figure also applied to the calculated emissions loading (EPA 2004). $PM_{2.5}$ thresholds were used to evaluate particulate concentrations.

The equation used to calculate emissions for a pollutant (including NAAQS constituents: particulates, carbon monoxide [CO] and nitrogen dioxide [NO_2]) employed standardized emission factors based on vehicle age and engine size. The equation also took into consideration engine load, equipment population, hours of use, and activity level (EPA 2003c).

An *emission factor* is defined by the EPA as the average emission of a pollutant from a specific equipment category and is usually expressed in grams per horsepower-hour (g/hp-h). Equipment population is the number of pieces estimated to be in use at any one time. Hours of use were assumed to be full time over the 12-hour daily work period, 7 days per week. This is an overestimation of emissions for the majority of the construction period, but it represents periods of intense activity and, therefore, serves as a broad estimate of critical conditions (EPA 2003c).

If older equipment (pre-1997) is used for the project work, it should be understood that emissions could be as much as two times higher than those calculated for this assessment (EPA 2003c). However, it is unlikely that all the equipment will be older than 1997. The overestimates for hours of use, total equipment population, and wind conditions are expected to sufficiently protect air quality from project-related exhaust emissions.

Using the methodology and assumptions outlined previously, estimates of the average maximum CO emissions possible from construction equipment and vehicles are well below the applicable NAAQS for CO of 40,000 µg/m³ (1 hour) and 10,000 µg/m³ (8 hours).

The average maximum NO_2 concentrations possible during project construction were modeled using standardized emission factors with an adjustment of 0.75 (in accordance with standard EPA methodology) to convert the modeled NO_x concentration to NO_2 *(Federal Register* 60:153, p. 40469, August 9, 1995). Estimates of the average maximum-modeled annual NO_2 concentration are well below the applicable NAAQS of 100 µg/m³.

The average maximum PM_{10} emissions possible from construction equipment and vehicles are estimated to be well below the applicable NAAQS of 150 µg/m³ (24 hours), and the average

maximum potential $PM_{2.5}$ emissions are also estimated to be well below the applicable NAAQS of 65 µg/m³ (24 hours).

Fugitive Dust (Construction Period)

The potential for fugitive dust generation was estimated using a calculation model and EPA emission factors (EPA 2003e, WRAP 2004). The equation to calculate dust generation (including NAAQS constituents PM_{10} and $PM_{2.5}$) employed standardized emission factors based on soil type, vehicle type and activity, and distance traveled (EPA 2003e).

Soils in the Monticello PA have been characterized as having low to moderate susceptibility to wind erosion. For Alternative A (all RFD areas), approximately 30% of the soils were estimated to have low susceptibility, 44% were described as moderately susceptible, and 6% were expected to be highly susceptible to wind erosion. There were no data on wind erosion available for the remaining soils in the PA.

Because construction at all proposed wells would not occur simultaneously, it was assumed that total soil disturbance within each RFD area at any given time would not exceed 9.6 acres (the total disturbance area expected within a single well site). Previously discussed assumptions about vehicle number, type, size, and speed of travel; soil moisture and silt content; wind speed and dispersion height; and soil stabilization procedures and effectiveness were applied at a level representative of intense construction activity.

Using the methodology and these assumptions, estimates of the average maximum PM_{10} emissions resulting from construction activities, equipment, and vehicles are well below the applicable NAAQS of 150 µg/m³ (24 hours) for BLM oil and gas wells under Alternative A.

The average maximum $PM_{2.5}$ emissions possible from construction activities, equipment, and vehicles are estimated to be well below the applicable NAAQS of 65 µg/m³ (24 hours) for BLM wells under Alternative A.

Using the methodology and assumptions outlined previously *and* assuming that all exposed disturbance areas (e.g., work and staging areas, and roads) on the construction site would be watered frequently enough to keep soils moist during working hours, a control efficiency of 75% for all exposed/graded areas and 10% for all well-traveled roads was applied (CEQA 2002). Adding this dust-abatement mechanism reduced estimates of the average maximum potential PM_{10} and $PM_{2.5}$ emissions from construction activities, equipment, and vehicles by 50%.

In addition to construction-specific actions under Alternative A, some additional short-term post construction particulate (dust) emissions are expected to occur due to loss of vegetation within the construction and staging areas. With appropriate soil stabilization and revegetation measures, these emissions are estimated to have negligible impacts on air quality.

Cumulative Assessment of Projected Emissions

Background CO-concentration information was not available within the Monticello PA, so concentrations at Grand Junction, Colorado (Table 3.2) were used for comparison. The measured CO concentrations at Grand Junction represent an overestimate of background CO in the Monticello PA because the Grand Junction area is more densely populated and possesses a greater number of emission sources. However, when cumulative projected BLM project-related

CO concentrations were combined with background concentrations, the total was still well below the applicable NAAQS for CO of 40,000 µg/m³ (1 hour) and 10,000 µg/m³ (8 hours).

Background NO_x concentration data were not available within the Monticello PA. Concentrations from La Plata County, Colorado, were available (Table 3.2), however, and were used for comparison. The measured NO_x concentrations at La Plata represent an overestimate of background NO_x in the Monticello PA because the La Plata/Durango area is more densely populated and possesses a greater number of emission sources. However, when cumulative projected BLM project-related NO_x concentrations were combined with background concentrations, the total was still well below the applicable NAAQS for NO_2 of 100 µg/m³ (annual).

Background SO_2 concentration data were also not available within the Monticello PA, but background NO_x concentrations from Shiprock, New Mexico, were available (Table 3.2) and were used for comparison. The measured NO_x concentrations at Shiprock represent an overestimate of background NO_x in the Monticello PA because the Shiprock area is more densely populated and possesses a greater number of emission sources (2006 U.S. Census Bureau estimated populations for San Juan County, New Mexico and San Juan County, Utah are 126,473 and 14,265, respectively [USCB 2007a, 2007b]). However, when cumulative projected BLM project-related NO_x concentrations were combined with background concentrations, the total was still well below the applicable NAAQS for NO_2 of 100 µg/m³ (annual).

Background PM_{10} and $PM_{2.5}$ concentration data were not available within the Monticello PA, but concentrations were available from Telluride, Colorado, (Table 3.2) and were used for comparison. Background PM_{10} and $PM_{2.5}$ concentration data were also available for Durango, Colorado (Table 3.2), but the Telluride data were assumed to represent the rural nature of the Monticello PA more accurately. When cumulative projected BLM project-related PM_{10} and $PM_{2.5}$ concentrations were combined with the background concentrations, the totals were well below the applicable NAAQS for PM_{10} and $PM_{2.5}$ of 150 µg/m³ (24 hours) and 50 µg/m³ (annual), and 65 µg/m³ (24 hours) and 15 µg/m³ (annual), respectively.

Assuming appropriate application of control measures, no substantial, long-term, adverse air quality impacts are projected within the Monticello PA from oil and gas development under Alternative A.

4.3.1.2.1.2. Impacts of Recreation Decisions on Air Quality Under Alternative A

Recreation management decisions under Alternative A would maintain existing levels of motorized vehicle use, without additional constraints. Projected affects on air quality would primarily result from combustion by-products from automobiles, OHVs, and other hydrocarbon-associated vehicles, and surface disturbance from off-trail and off-road activities. Projected air quality constituents of concern related to recreational use include particulate matter (PM_{10} and $PM_{2.5}$), hydrocarbons, and combustion by-products.

Because the locations of all future recreation sites within the Monticello PA are not presently known, accurate quantification of air quality impact is not possible. Since the Monticello PA is currently in attainment, continued recreational use at the current level is not likely to exceed the NAAQS in the long term. However, intense recreational use in a relatively small area may produce local conditions that contribute to short-term violations of air quality standards or PSD threshold levels.

Recreation management decisions that limit or reduce surface and vegetation disturbance and OHV and other off-trail access, and improve existing road and trail surfaces are generally expected to have negligible impacts on air quality in the short term, and negligible to minor, beneficial impacts on air quality in the long term. This is because short-term benefits to air quality would most likely not be measurable in the Monticello PA, and because long-term benefits would include site-specific reductions in wind-borne particulates due to less erosion of exposed soils as vegetation and soil cohesion improve over time.

4.3.1.2.2. ALTERNATIVE B

Alternative B is expected to have a slightly lower overall impact on air quality in the Monticello PA than Alternative A because the emphasis of management decisions on conservation of resources under this alternative would limit surface disturbances and other impacts to air quality.

4.3.1.2.2.1. Impacts of Mineral Decisions on Air Quality Under Alternative B

Mineral-extraction management decisions under Alternative B would result in a reduction of approximately 9% in opportunities for oil and gas extraction as compared to Alternative A. The calculated number of oil and gas wells for each RFD area in Alternative B is listed in Table 4.8.

Table 4.8. Average Predicted Oil and Gas Wells on BLM Lands within RFD Areas under Alternative B During the Life of the RMP

RFD Area	Average Predicted Oil and Gas Wells[1]	Estimated Compressors Necessary[2]	Estimated Glycol Dehydrators Necessary[2]
Blanding sub-basin	38	2	38
Monument upwarp	8	2	8
Paradox fold and fault belt	20	2	20
Total	**66**	**6**	**66**

Note: Calculations are based on development on BLM lands only and specifically reflect the life of the RMP.

[1] The number of oil and natural gas wells was calculated as a cumulative total, not independently. For the purpose of analyzing impacts of mineral decisions on the total number of oil and natural gas wells, BLM lands designated as NSO were not included because they are not considered available for development.

[2] Necessary compressors were calculated at 0.063 per well (minimum of 2 per RFD area). Necessary glycol dehydrators were calculated at 1 per well (Trinity and Nicholls 2006).

Gas-fired Compressors

The adverse impacts of gas-fired compressors on air quality under Alternative B would be similar to or less than those described for Alternative A because fewer compressors would be constructed, with fewer emissions than Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative B.

Glycol Dehydrators

The adverse impacts of glycol dehydrators on air quality under Alternative B would be similar to or less than those described for Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative B.

Flaring

The adverse impacts of well flaring on air quality under Alternative B would be similar to or less than those described for Alternative A because fewer wells would be drilled than under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative B.

Vehicle Exhaust

The adverse impacts of vehicle exhaust on air quality under Alternative B would be similar to or less than those described for Alternative A because fewer wells and infrastructure would be drilled and constructed, so fewer vehicles would be required for construction and maintenance than predicted under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative B.

Fugitive Dust (Construction Period)

Fugitive-dust concentrations under Alternative B would be similar to or less than those described for Alternative A, for reasons as discussed above: fewer wells would require fewer vehicles and surface disturbances would potentially produce fugitive dust. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative B.

Cumulative Assessment of Projected Emissions

When cumulative, expected BLM project-related emissions were combined with available background concentration data, all total air pollutant concentrations would be well below the applicable NAAQS for BLM wells under Alternative B (the same as Alternative A).

Assuming appropriate applications of air pollution control measures, no long-term, adverse air quality impacts would result from oil and gas development under Alternative B.

4.3.1.2.2.2. Impacts of Recreation Decisions on Air Quality Under Alternative B

Under Alternative B, recreation-management decisions would place more restrictions on motorized OHV use, when compared to Alternative A.

Recreation management decisions under this alternative that limit or reduce surface and vegetation disturbance and OHV and other off-trail access, and improve existing road and trail surfaces are likely to produce negligible impacts on short-term air quality and negligible to minor, beneficial impacts on long-term air quality. This is because the beneficial outcomes include site-specific reduced PM_{10} and other wind-borne particulates due to less erosion of exposed soils (and less production of fugitive dust) as vegetation and soil cohesion improve over time, and because the short-term air quality impacts would most likely not be measurable in the Monticello PA. Thus, the adverse impacts of recreation on air quality under Alternative B are would be similar to or less than those described for Alternative A.

4.3.1.2.3. ALTERNATIVE C

Alternative C is projected to have a similar impact on air quality in the Monticello PA as Alternative A because the management decisions that could impact air quality would be similar.

4.3.1.2.3.1. Impacts of Mineral Decisions on Air Quality Under Alternative C

Mineral management decisions under Alternative C would increase opportunities for oil and gas extraction approximately 1% as compared to Alternative A. The calculated wells for each RFD area in Alternative C are listed in Table 4.9.

Table 4.9. Average Predicted Oil and Gas Wells on BLM Lands within RFD Areas under Alternative C for the Life of the RMP

RFD Area	Average Predicted Oil and Gas Wells[1]	Estimated Compressors Necessary[2]	Estimated Glycol Dehydrators Necessary[2]
Blanding sub-basin	41	3	41
Monument upwarp	9	2	9
Paradox fold and fault belt	24	2	24
Total	**74**	**7**	**74**

Note: Calculations are based on development on BLM lands only and specifically reflect the life of the RMP.

[1] The number of oil and natural gas wells was calculated as a cumulative total, not independently. For the purpose of analyzing impacts of mineral decisions on the total number of oil and natural gas wells, BLM lands designated as NSO were not included because they were not considered available for development.

[2] Necessary compressors were calculated at 0.063 per well (minimum of 2 per RFD area). Necessary glycol dehydrators were calculated at 1 per well (Trinity and Nicholls 2006).

Gas-fired Compressors

The adverse impacts of gas-fired compressors on air quality under Alternative C would be the same as those described for Alternative A because the number of predicted gas compressors under this alternative is the same as under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative C, with the same impacts as discussed under Alternative A.

Glycol Dehydrators

The adverse impacts of glycol dehydrators on air quality under Alternative C would be the same as those described for Alternative A because the number of dehydrators predicted under this alternative would be similar to Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative C.

Flaring

The adverse impacts of well flaring on air quality under Alternative C would be the same or slightly increased when compared to Alternative A because more wells are predicted under this alternative than under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative C.

Vehicle Exhaust

The adverse impacts of vehicle exhaust on air quality under Alternative C would be the same as those described for Alternative A because the level of construction, minerals-related travel, and well maintenance would be practically the same as under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative C.

Fugitive Dust (Construction Period)

Fugitive-dust concentrations under Alternative C would be the same as those described for Alternative A, for reasons as discussed above: the level of development between the two alternatives is practically the same. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative C.

Cumulative Assessment of Projected Emissions

When cumulative expected BLM project-related emissions were combined with available background concentration data, all totals were well below the applicable NAAQS for BLM wells under Alternative C, with cumulative impacts the same as Alternative A.

Assuming appropriate application of control measures, no appreciable, long-term, adverse air quality impacts are projected due to oil and gas development under Alternative C.

4.3.1.2.3.2. Impacts of Recreation Decisions on Air Quality Under Alternative C

Under Alternative C, recreation management decisions would place minor additional restrictions on motorized vehicle use as compared to Alternative A.

Recreation management decisions under this alternative that limit or reduce surface and vegetation disturbance and OHV and other off-trail access, and improve existing road and trail surfaces are generally expected to produce negligible impacts on short-term air quality and negligible to minor beneficial impacts on long-term air quality. These beneficial outcomes include site-specific reduced PM_{10} and other wind-borne particulates due to less erosion of exposed soils as vegetation and soil cohesion improve over time. Short-term benefits to air quality would most likely not be measurable in the overall PA.

The adverse impacts of recreation on air quality under Alternative C are expected to be similar to those described for Alternative A because the minerals and recreation decisions would allow surface disturbances and emissions similar to those allowed under alternative A.

4.3.1.2.4. ALTERNATIVE D

Alternative D is projected to have a similar overall impact on air quality in the Monticello PA as Alternative A because the management decisions that could impact air quality would be similar.

4.3.1.2.4.1. Impacts of Mineral Decisions on Air Quality Under Alternative D

Mineral-extraction management decisions under Alternative D would increase opportunities for oil and gas extraction approximately 1% as compared to Alternative A and Alternative C. The calculated wells for each RFD area in Alternative D are listed in Table 4.10.

Gas-fired Compressors

The adverse impacts of gas-fired compressors on air quality under Alternative D would be similar to those described for Alternative A because the number of predicted compressors would be the same. As discussed for Alternative A, all projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative D.

Table 4.10. Average Predicted Oil and Gas Wells on BLM Lands within RFD Areas under Alternative D over the Life of the RMP

RFD Area	Average Predicted Oil and Gas Wells[1]	Estimated Compressors Necessary[2]	Estimated Glycol Dehydrators Necessary[2]
Blanding sub-basin	41	3	41
Monument upwarp	9	2	9
Paradox fold and fault belt	25	2	25
Total	**75**	**7**	**75**

Note: Calculations are based on development on BLM lands only and specifically reflect the life of the RMP.

[1] The number of oil and natural gas wells was calculated as a cumulative total, not independently. For the purpose of analyzing impacts of mineral decisions on the total number of oil and natural gas wells, BLM lands designated as NSO were not included because they are not considered available for development.

[2] Necessary compressors were calculated at 0.063 per well (minimum of 2 per RFD area). Necessary glycol dehydrators were calculated at 1 per well (Trinity and Nicholls 2006).

Glycol Dehydrators

The adverse impacts of glycol dehydrators on air quality under Alternative D would be similar to those described for Alternative A because a similar number of dehydrators are predicted under this Alternative as under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative D.

Flaring

The adverse impacts of well flaring on air quality under Alternative D would be similar to or slightly greater than those described for Alternative A because the number of wells predicted under this alternative would be slightly increased, when compared to Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative D.

Vehicle Exhaust

The adverse impacts of vehicle exhaust on air quality under Alternative D would be similar to or slightly greater than those described for Alternative A for reasons as discussed under Alternative C: a slight increase in the number of predicted wells would likely increase the number of vehicles required for well construction and maintenance. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative D.

Fugitive Dust (Construction Period)

Fugitive-dust concentrations under Alternative D would be similar to or slightly greater than those described for Alternative A for the reasons described above: an increase in the number of vehicles required to construct and maintain the increased number of predicted wells would slightly increase the amount of fugitive dust. All projected estimated emissions would be well below the applicable NAAQS for BLM sources under Alternative D.

Cumulative Assessment of Projected Emissions

When cumulative expected BLM project-related emissions were combined with available background concentration data, all totals would be well below the applicable NAAQS for BLM wells under Alternative D.

Assuming appropriate application of control measures, no appreciable, long-term, adverse air quality impacts are projected due to oil and gas development under Alternative D.

4.3.1.2.4.2. Impacts of Recreation Decisions on Air Quality Under Alternative D

Under Alternative D, recreation management decisions would place minor additional restrictions on motorized vehicle use as compared to Alternative A.

Recreation management decisions under this alternative that limit or reduce surface and vegetation disturbance and OHV and other off-trail access, and improve existing road and trail surfaces are generally expected to produce negligible impacts on short-term air quality and negligible to minor beneficial impacts on long-term air quality. These beneficial outcomes include site-specific reduced PM_{10} and other wind-borne particulates due to less erosion of exposed soils as vegetation and soil cohesion improve over time. Short-term benefits to air quality would most likely not be measurable in the overall PA.

The adverse impacts of recreation on air quality under Alternative D are expected to be similar to those described for Alternative A.

4.3.1.2.5. ALTERNATIVE E

Alternative E is projected to have a lower overall impact on air quality in the Monticello PA than Alternative A because less surface disturbances and emissions would be allowed under this alternative than under Alternative A.

4.3.1.2.5.1. Impacts of Mineral Decisions on Air Quality Under Alternative E

Mineral-extraction management decisions under Alternative E would reduce opportunities for oil and gas extraction approximately 26% as compared to Alternative A. The calculated wells for each RFD area in Alternative E are listed in Table 4.11.

Gas-fired Compressors

The adverse impacts of gas-fired compressors on air quality under Alternative E would be less than those described for Alternative A because fewer wells are predicted for construction during the life of the RMP. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative E.

Glycol Dehydrators

The adverse impacts of glycol dehydrators on air quality under Alternative E would be less than those described for Alternative A because fewer dehydrators would be constructed under this alternative than under Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative E.

Table 4.11. Average Predicted Oil and Gas Wells on BLM Lands within RFD Areas under Alternative E over the Life of the RMP

RFD Area	Average Predicted Oil and Gas Wells[1]	Estimated Compressors Necessary[2]	Estimated Glycol Dehydrators Necessary[2]
Blanding Sub-basin	36	3	36
Monument Upwarp	3	2	3
Paradox Fold and Fault Belt	15	2	15
Total	**54**	**7**	**54**

Note: Calculations are based on development on BLM lands only and specifically reflect the life of the RMP.

[1] The number of oil and natural gas wells was calculated as a cumulative total, not independently. For the purpose of analyzing impacts of mineral decisions on the total number of oil and natural gas wells, BLM lands designated as NSO were not included because they are not considered available for development.

[2] Necessary compressors were calculated at 0.063 per well (minimum of 2 per RFD area). Necessary glycol dehydrators were calculated at 1 per well (Trinity and Nicholls 2006).

Flaring

The adverse impacts of well flaring on air quality under Alternative E would be less than those described for Alternative A for reasons as discussed above: fewer predicted wells under this alternative would have fewer impacts on air quality from less flaring. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative E.

Vehicle Exhaust

The adverse impacts of vehicle exhaust on air quality under Alternative E would be less than those described for Alternative A because fewer vehicles would be required to construction and maintain wells, when compared to Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative E.

Fugitive Dust (Construction Period)

Fugitive-dust concentrations under Alternative E would be less than those described for Alternative A because, as discussed above, fewer vehicles would be used to construction and maintain wells, when compared to Alternative A. All projected estimated emissions would be well below the applicable NAAQS for BLM wells under Alternative E.

Cumulative Assessment of Projected Emissions

When cumulative expected BLM project-related emissions were combined with available background concentration data, all totals would be well below the applicable NAAQS for BLM wells under Alternative E.

Assuming appropriate application of control measures, no appreciable, long-term, adverse air quality impacts are projected due to oil and gas development under Alternative E.

4.3.1.2.5.2. Impacts of Recreation Decisions on Air Quality Under Alternative E

Under Alternative E, recreation management decisions would place additional restrictions on motorized vehicle use as compared to Alternative A, specifically for lands with non-WSA wilderness characteristics.

Recreation management decisions under this alternative that limit or reduce surface and vegetation disturbance and OHV and other off-trail access, and improve existing road and trail surfaces would produce negligible impacts on short-term air quality, and negligible to minor, beneficial impacts on long-term air quality. These beneficial outcomes would include site-specific reduced PM_{10} and other wind-borne particulates due to reduced erosion of exposed soils as vegetation and soil cohesion improve over time. Short-term benefits to air quality would most likely not be measurable in the overall project area.

The adverse impacts of recreation on air quality under Alternative E would be similar to or less than those described for Alternative A.

4.3.1.3. Summary of Impacts

Based on the projected low level of development and relatively small changes in expected recreational use from any of the proposed alternatives, management decisions associated with all the alternatives are projected to have virtually identical impacts on air quality.

Proposed management decisions under all alternatives have the potential to impact air quality in the following ways:

- Recreation and mineral (oil and gas development and extraction) activities would emit pollutants while they are occurring (e.g., vehicle emissions, well operations, compressor engines, etc.), along with producing fugitive dust from automobiles, OHVs, construction, and mineral extraction. Air quality impacts from the projected emissions related to these activities would be negligible.
- Air quality impacts from prescribed fire-management decisions would generally be adverse and take the form of particulate matter (primarily $PM_{2.5}$) and carbon dioxide (CO_2). Adverse mpacts would generally be short-term, with minor long-term impacts.
- Livestock grazing, riparian, soil and watershed, travel, vegetation and TES vegetation, wildlife, and woodlands management decisions are generally projected to produce negligible effects on short-term air quality and negligible to minor, beneficial impacts on long-term air quality unless they affect other management decisions.
- Land and realty management decisions, outside of those related to compressor stations discussed later, are projected to have no significant impact on air quality unless they affect other management decisions.
- Cultural, paleontological, special status species, and visual resource management decisions are projected to have only minor, indirect, long-term beneficial impact on air quality unless they affect other management decisions.

4.3.1.4. Mitigation Measures

Required mitigation measures are outlined in state and federal policies and regulations that govern the air quality permit process and include application of the BACT; compliance with

appropriate dust-abatement measures for construction, demolition, clearing, or excavation of land; management of emissions to prevent deterioration to air quality in PSD Class I air sheds; and restrictions imposed by regulatory agencies and management authorities on equipment and vehicle air emissions.

Additional mitigation measures may include additional surface stabilization, lower vehicle speed limits, and reclamation to improve surface vegetation.

4.3.1.5. Unavoidable Adverse Impacts

Prescribed fire would result in degradation of air quality because smoke and from an increase in wind-borne particulates (PM_{10} and $PM_{2.5}$) resulting from loss of vegetative cover unless revegetation treatments are consistently implemented and evaluated for success with current monitoring techniques. Adverse impacts to air quality are not expected under any of the proposed mineral-development alternatives.

4.3.1.6. Short-term Use versus Long-term Productivity

Prescribed fire may result in short-term and, to a lesser degree, long-term degradation of air quality because of an increase in wind-borne particulates (PM_{10} and $PM_{2.5}$) due to loss of vegetation. Such degradation is not expected to be substantial if revegetation measures are adequately monitored and supported for regrowth. Adverse impacts to air quality are not expected under any of the proposed mineral-development alternatives.

4.3.1.7. Irreversible and Irretrievable Impacts

There are irretrievable impacts to air quality that would occur over the life of the RMP. A number of activities contribute to the degradation of air quality, including smoke from prescribed burning, dust from motor vehicle travel on dirt roads, and industrial emissions to the atmosphere from motor vehicles and energy production. While these activities individually may not cause a significant quantity or duration of impacts, they would occur continuously over the life of the plan at some interval or frequency, and contribute some level of emissions to the air. Since the impacts would be continuous, impacts to air quality would be irretrievable over the life of the plan. However, because the impacts would cease if the activities ended, they would not be irreversible.

4.3.2. Cultural Resources

Impacts to the cultural resources of the Monticello FO would primarily result from surface and subsurface disturbance such as development projects, recreational use/OHV travel, and fire management. Impacts might, however, also result from specific cultural-resource management decisions and non-surface visual and noise disturbances. These latter impacts would be felt primarily at sites or locations deemed sacred or traditionally important by Native American tribes and used by these groups in ways that might be disrupted by visual obstructions and/or noise levels.

Because the majority of cultural resources identified in the Monticello PA consist of archaeological sites, the primary resource impacts-related concern would be disturbance of the artifacts, features, and architecture of sites in ways that reduce their integrity and the potential to recover data and alter their association with traditional values. Archaeological data consist of

both objects (in the broad sense of artifacts, architecture, features, etc.) and the spatial (horizontal and vertical) relationships among them. Our ability to interpret and understand the past is based on recovering not only its material culture in the form of artifacts, buildings, and the built environment but also on the spatial relationships among different aspects of that culture. Thus, surface and subsurface disturbances that not only destroy material culture but also the spatial relationships that are key to understanding and interpreting it can have the greatest adverse impact on cultural resources. Impacts include elimination or reduction of the data, including the setting and physical integrity of sacred or other sites, National Register of Historic Places (NRHP)–listed or –eligible sites, landscapes, and cultural-landscape areas; disruption or reduction of the religious values of sites and areas; and damage to traditional use areas or resource sites. In general, impacts on cultural resources from surface disturbance are long-term (i.e., permanent): once an archaeological site has been damaged or disturbed, the impact typically cannot be reversed. Short-term visual or noise impacts, however, can often be mitigated or accommodated.

Potential impacts to cultural resources from the proposed management decisions are difficult to precisely quantify as the revised DRMP management decisions do not stipulate specific areas where surface-disturbing activities are likely to occur, nor have the exact locations of all cultural resources been identified in the PA. However, it is possible to estimate impacts based on the proposed general locations of activities and the relationships of these areas of activity to zones where cultural resources are more or less likely to be found.

Impacts on cultural resources may be direct, indirect, negligible, or nonexistent, depending on the resource-management decision. Specifically, DRMP decisions for air quality, health and safety, and soils and watersheds would have negligible or very minor direct or indirect impact on cultural resources within the Monticello PA: protection of air quality, maintaining public safety around abandoned mine land sites (AMLs) and reducing the risks of hazardous materials spills, protecting sensitive soils, and safeguarding streams, creeks, and other waterways would not affect management decisions to inventory and protect cultural resources. Therefore, they will not be considered further in this analysis. All other resource decisions that could potentially impact cultural resources either beneficially or adversely are discussed in detail below.

Analyzing impacts to cultural resources involves developing methods for assessing the impacts of nonspecific and/or program management decisions on areas where the precise number, type, and location of cultural resources are either poorly known or unknown. As described in Chapter 3, no more than approximately 10% of the Monticello PA has been systematically inventoried for cultural resources, and surveying the entire area would not be feasible within the parameters of an RMP (i.e., at the programmatic level of analysis and resource management). Therefore, it is not possible to determine, at the planning stage, if site-specific management decisions would affect cultural resources because many areas are lacking data on the location, type, and number of the cultural resources that lie within them.

Importantly, a management prescription common to all five of the proposed RMP alternatives is that efforts to identify and assess cultural resources will be conducted as part of compliance with Section 106 of the National Historic Preservation Act (NHPA) prior to any site-specific actions. However, to conduct any kind of impact analysis, it is necessary to estimate the densities of sites that may be affected by management decisions under this DEIS. Including a site or sites in management decisions does not imply that they would necessarily be affected in any particular

way. Management activities could have beneficial, adverse, or negligible impacts to cultural resource sites, and, by using the Section 106 process, adverse impacts can nearly always be avoided or mitigated. The goal of this analysis is to assess the relative impact of management decisions on cultural resources in a consistent and replicable manner.

The BLM developed a model of cultural-resource site density at a landscape level as a means of estimating the effect of management decisions on the resource. This model built upon techniques used by other researchers in the region to estimate site densities (e.g., Tipps et al. 1988). The goal of the model is to be able to estimate whether large or moderate numbers of sites are probable within a given area of the landscape. The model is not designed to predict specific site locations, nor does it intend to determine that certain portions of the landscape may or may not be used in any particular way. It is a mechanism for assessing relative site densities. The model supplements, but does not replace, what Monticello FO resource specialists, who make land use decisions based on site-specific information, already know.

While this site-density prediction model is not perfect, it is sufficiently accurate to be used as a tool for analyzing potential impacts of management decisions on cultural resource sites. It has between a 70% and 80% success rate in defining 160-acre quadrants with 1, 2, or more cultural resource sites. The model is used in the analysis of impacts in this DRMP as a way to gauge whether a proposed management decision under a particular alternative would involve more acres of high or medium site-density land than another. The model cannot predict numbers of sites affected by decisions, nor should it be considered a replacement for cultural inventory. As noted, Section 106 of the NHPA requires that all specific actions with the potential to involve cultural resources must be supported by efforts, such as an inventory, to document cultural resources.

To assess the impacts of proposed management actions, it is important to ask how likely they are to produce surface-disturbing activities within high, medium, or low site-density zones. It is assumed that the potential for disturbance would be proportional to the total acres of land in each site-density category within the area likely to be disturbed. For example, assume that a proposed management area contains 100 acres, 20 acres (20%) of which the site-density model has classified with high site- density and 80 acres (80%) of which it has classified with medium or low site-density. Assume also that a particular management decision is expected to disturb 50 acres within that 100-acre area. It follows logically that 10 acres (20%) of that disturbance would affect the high site-density area, and 40 acres (80%) would affect the medium or low site-density area. Again, while not precise, this method results in a quantifiable assessment of probable relative effects of proposed management decisions.

4.3.2.1. Impacts Common to All Alternatives

Certain management decisions for various resource programs would apply to all of the proposed DRMP alternatives. These decisions have the potential to impact cultural resources in a variety of ways. For example, all alternatives stipulate that standard BLM policy and Sections 106, 110, and 111 of the NHPA should govern cultural resources. These policies and regulations call for both proactive and reactive management of cultural resources within the Monticello PA. *Proactive actions* include nominating worthy cultural sites for the NRHP, surveying areas for cultural resources in the absence of specific project-related activities establishing cultural-resource interpretation programs, and prohibiting the use of ropes and other climbing aids to access cultural sites. *Reactive actions* include conducting or requiring site-identification surveys

in response to applications for land development, use, or transfer; identifying measures to eliminate, reduce, or compensate for impacts to cultural sites resulting from management decisions; and limiting or eliminating access to cultural sites that are either being damaged by visitation or pose a threat to visitors. All of these proactive and reactive measures are designed to recognize the scientific and experimental, traditional, educational/public, and conservation values of cultural resources within the PA. Table 4.12 summarizes the anticipated impacts to cultural resources under all of the proposed alternatives.

Table 4.12. Impacts Common to All Alternatives

Resource Program	Impact on Cultural Resources
Cultural Resources	Program measures provide for avoiding, minimizing, or compensating for impacts to cultural resources, and supporting public enjoyment of the majority of the resources within the PA. These measures would result in long-term beneficial impacts to these cultural resources. The beneficial impacts would result from 1) continuing to implement policies and to follow regulations that are designed to identify important resources and either minimize or reduce impacts to them, 2) educating the public about protecting and valuing cultural resources, 3) restricting or prohibiting land uses that are known to cause direct and indirect, adverse impacts to specific cultural resources, and 4) expanding the FO staff's knowledge about the location and nature of cultural resources within their management responsibility.
Fire Management	A total of 12,760 acres would undergo prescribed fire. Approximately 10,185 acres lie in high cultural-resource site-density areas and 2,575 acres in medium site-density areas. An additional 26,412 acres would receive non-fire treatments, with approximately 20,796 acres described as high site-density and 5,616 acres as medium site-density areas. BLM fire-management policy requires surveys to identify cultural resources prior to any type of treatment for fuel reduction. Consequently, the actual risk to cultural resources within the Monticello PA from fire-management decisions would be minor because sites would be identified and the potential impacts would be mitigated.
Health and Safety	The AML program, whereby abandoned mine sites that pose a risk to human health and safety are remediated, would cause minor, direct, long-term, adverse impacts to historical structures and features associated with the mine sites because of actions required to remediate the sites. However, the AML program would be conducted in compliance with the NHPA so that avoidance or mitigation measures would be implemented as appropriate, thereby minimizing the adverse impacts.
Livestock Grazing	Maintaining the five side canyons of the Comb Wash allotment as unavailable to grazing would have long-term, beneficial impacts on cultural resources by protecting 16,599 acres of known high site-density lands from livestock trampling and rubbing. These include Mule Canyon below Highway 95, Arch Canyon, Fish Canyon, Owl Canyon, and Road Canyon.
Paleontology	Minor, adverse and beneficial impacts could occur from paleontological decisions. Beneficial impacts from predevelopment paleontological surveys could identify cultural resources and thereby allow site avoidance. Adverse impacts could result from recreational fossil collection: casual collectors may not distinguish between paleontological materials and cultural resources or may not recognize the difference between paleontological and cultural artifacts, thereby causing unintentional adverse impacts to cultural sites.

Table 4.12. Impacts Common to All Alternatives

Resource Program	Impact on Cultural Resources
Special Designations	Under all alternatives, WSAs would be managed under the IMP to protect wilderness values. The IMP stipulates that very low levels of surface disturbances would be allowed in order to maintain wilderness suitability for potential designation by Congress. The impacts would be beneficial and long term on cultural resources because surface disturbance-related impacts to cultural resources would be minimized.
Special-Status Species / Wildlife	Management decisions under these resource programs would have a direct beneficial impact on cultural resources because of spatial buffers around wildife areas that would prevent ground-disturbing activities around cultural sites within the buffer.
Vegetation	Under all alternatives, vegetation treatments would have negligible direct impacts on cultural resources because all areas proposed for treatments would have site-specific cultural inventories performed prior to treatment, and known cultural resources would be avoided. Exposure could create indirect adverse impacts, however, to avoided cultural sites in treatment areas because these sites would be noticeable to the public: treatment-avoidance of sites would make them obviously visible as areas that contrast with the surrounding treated areas, with potential disturbance through collection of artifacts.

4.3.2.2. IMPACTS COMMON TO ALL ACTION ALTERNATIVES

Cultural-resource management decisions common to all action alternatives (B through E) would have long-term, beneficial impacts on cultural resources. These management decisions would include developing cultural resource management plans (CRMPs) or cultural special recreation management areas (CSRMAs) to inventory and protect cultural resources in specific managment areas. In additions to protecting cultural resources, these plans would designate worthy sites to include in the NRHP, as appropriate, thereby raising awareness of the importance of the sites, removing access to specific sites at risk or otherwise restricting access, and proactively reducing fire hazards around sensitive sites. These actions would reduce impacts to cultural resource sites through early identification, assessment, and implementation of protective measures.

4.3.2.3. IMPACTS FROM ALTERNATIVES

Proposed management decisions for many resource programs within the Monticello PA vary by alternative. The potential impacts of these varying decisions are discussed in the following sections by alternative.

4.3.2.3.1. ALTERNATIVE A

Impacts to cultural resources from various BLM resource program decisions under Alternative A, excluding special designations, are summarized in Table 4.13. Because special designations incorporate an array of individualized management decisions, discussion of their impact on cultural resources follows the Table 4.13 summary.

Table 4.13. Impacts to Cultural Resources under Alternative A

Resource	Impact on Cultural Resources
Cultural Resources	Under Alternative A, the cultural resources on 37,433 acres of high site-density land in the Grand Gulch Special Emphasis area (GGSE)/Grand Gulch National Historic District (GGNHD) would be designated for special management. The plans for the GGSE/GGNHD provide protection for cultural resources that supplements that afforded by Section 106 of the NHPA. Cultural resources would be regularly monitored for impacts related to permissible uses, and measures to minimize or mitigate any impacts would be implemented when necessary. Restrictions on surface disturbances would reduce the risks of adverse impacts to cultural resources. These actions would also reduce the adverse impacts to sites, locations, and landscape features that are important to Native American tribes. The Old Spanish National Historic Trail would be afforded special consideration, including beneficial development of a management plan designed to protect the resource values that have made it nationally important. Under Alternative A, no allocation or group-size limits; restrictions on camping, OHV use, pets or dogs, or grazing; fire bans, fees, or other recreational limitations would be placed upon the Comb Ridge Cultural Special-Management Area (CRCSMA), the Butler Wash area east of Comb Ridge, the Tank Bench Cultural Special-Management Area (TBCSMA), the Beef Basin Cultural Special-Management Area (BBCSMA), or Monticello PA lands outside of these areas. No special considerations would be given to the proactive conservation, interpretation, investigation, or traditional allocation of cultural resources, except on an occasional case-by-case determination. Cultural resources in these areas would be avoided or impacts to them mitigated only through development or land uses that require permits or approval from the Monticello FO. There would be no restrictions on visits to the McLoydCanyon-Moon House site, although visitors are presently causing deterioration to portions of it (personal communication with Nancy Shearin, Monticello FO, May 7, 2003). Cultural resources not associated with areas of development or permitted use would continue to be subject to direct and indirect, adverse impacts from recreational activity, including OHV travel, group and individual camping, and hiking and touring in sites. Impacts of this nature are presently not quantifiable because records of them are not kept, and many incidents are unknown to the BLM owing to the remote and undocumented locations of many cultural resources within the Monticello PA.
Livestock Grazing	Allotments within the Monticello PA, with the exception of the five side canyons of Comb Wash, would be open to grazing, though site-specific closure or restrictions could be enacted if undue damage to cultural resources from livestock grazing occurred. Open allotments include 888,111 acres, in high site-density and 748,942 acres in medium site-density areas. This represents 90% of all estimated high site-density and 94% of all estimated medium site-density lands in the Monticello PA. Making grazing unavailable in certain high site-density areas would have a long-term, beneficial impact on their cultural resources. Trampling of archaeological sites and brushing and rubbing against structures and rock-art panels by livestock would be eliminated in these areas, though damage from hoofed wildlife would continue. Alternative A grazing decisions would be expected to pose slightly greater adverse risks to cultural resources than Alternatives B, C because Alternative A leaves more acres open to grazing. Alternative A would pose roughly comparable risk to cultural resources as Alternative D. However, under any alternative, the BLM may modify livestock grazing in specific areas when undue adverse impacts to cultural resource sites occur, which would reduce long-term adverse impacts.

Table 4.13. Impacts to Cultural Resources under Alternative A

Resource	Impact on Cultural Resources
Minerals, Oil, and Gas	Approximately 417 acres of land in high site-density and 313 acres in medium site-density areas would be subject to physical disturbance of varying degrees over the life of the RMP as a result of predicted RFD oil and gas development. This amounts to approximately 0.06% of the total acres of high site-density and 0.05% of medium site-density lands available for mineral development under Alternative A. The BLM's standard procedures require inventory of areas proposed for mineral development before it can occur. These inspections allow cultural resource sites to be identified and minimization, avoidance, or mitigation measures to be implemented. The Monticello PA contains several locations and landscape features that have been deemed culturally and/or spiritually important to Native American tribes with cultural patrimony in the area. Most of these areas, including Montezuma Canyon, the San Juan River, Comb Ridge, Mancos Jim Mesa, Spanish Mossback Mesa, and Allen Canyon, would be managed under a combination of NSO, controlled surface use (CSU), and standard leasing stipulations. Applying NSO and CSU leasing stipulations and restrictions would reduce the opportunities for surface-disturbing and other landscape-altering activities that would otherwise decrease the cultural, traditional, and/or spiritual values of these resources.
Minerals, Geophysical	Direct, adverse impacts to known cultural resources and sites from geophysical activities under this alternative are likely to be negligible to minor because resources and sites would be avoided or mitigated. Surface disturbance throughout the Monticello PA from geophysical activities under this alternative is estimated to be 886 acres over the life of the RMP. Assuming that the potential for such disturbance to occur in high and medium site-density areas is equal to the ratio of these lands available for geophysical work within the PA, then surface disturbance from geophysical work would be expected on approximately 479 acres (0.05%) of high site-density and 407 acres (0.05%) of medium site-density lands.
Non-WSA Lands with Wilderness Characteristics	Under this alternative, non-WSA lands with wilderness characteristics would not be protected or managed to preserve their wilderness values. Surface disturbances, impacts to cultural resources, and the mitigation applied to reduce impacts would be the same as analyzed and discussed under each resource for Alternative A.
Riparian Resources	Riparian resource-management decisions under Alternative A would be expected to have a negligible to minor, beneficial impact on cultural resources because they would restrict surface-disturbing activities in riparian zones and floodplains. Such management actions would affect approximately 14,383 acres of high site-density and 6,314 acres of medium site-density lands within the PA. This represents approximately 1.5% of all estimated high site-density and 0.8% of all estimated medium site-density lands within the PA. Limitations on surface-disturbing activities and other landscape alterations within riparian areas would provide some beneficial protection to waterways that possess culturally important features for Native American tribes.
Special-Status Species	The impacts would be the same as those described above under Impacts Common to All Alternatives (Section 4.3.2.1).
Travel	Travel management decisions under Alternative A would close 142,008 acres to OHV use in high site-density areas. This represents 14% of all estimated high site-density lands in the PA and would have long-term, beneficial impacts on cultural resources by minimizing OHV-related surface disturbances. Travel on an additional 422,805 acres (43%) in high site-density areas would be limited to designated roads and trails, with the same expected impact because no new OHV surface disturbance would be allowed. Because 423,619 acres (43%) in high site-density areas would be open to cross-country OHV use without restrictions, OHV travel in these areas would result in long-term, adverse impacts to cultural resources.

Table 4.13. Impacts to Cultural Resources under Alternative A

Resource	Impact on Cultural Resources
Visual Resources	Approximately 395,797acres of high site-density and 330,313 acres of medium site-density lands within the Monticello PA would be designated as VRM Class I or II. This represents 40% of all high site-density and 41% of all medium site-density lands in the PA. Management of these lands, especially those managed under VRM Class I objectives, would limit ground-disturbing activities that have the potential to impact cultural resources, which would have long-term, beneficial impacts on the resource.
Woodlands	Woodland harvesting zones would not be established, and all woodland areas within the PA, outside of WSAs, developed recreation areas, selected ACECs, and select cultural-resource management areas would be available for use. Within the PA, approximately 857,000 acres of land possess pinyon-juniper woodlands suitable for harvesting. Of those lands, approximately 464,446 acres are located in high site-density and 392,559 acres in medium site-density areas. This represents approximately 47% of all estimated high site-density and 49% of all estimated medium site-density lands in the PA. Permits to harvest and gather woodland products would be processed on a case-by-case basis. Collection of woodland products, except dead wood for camp fires, would be prohibited in all WSAs, as well as in several known high site-density areas, including Arch Canyon, the Alkali Ridge National Historic Landmark, the mesa tops of the GGNHD, the BBCSMA, Fable Valley, and the CRCSMA south of Highway 95. Collection of woodland products would also be prohibited on known cultural resource sites. Further, woodland product gathering under a permit would require pregathering identification and subsequent avoidance of cultural resources. Pinyon and juniper comprise the primary woodland targets for harvesting within the PA, and these vegetation environments are linked to relatively high densities of cultural resource sites. The restrictions placed on gathering and harvesting woodland products and the limited amount of ground disturbance associated with actual gathering within the Monticello PA under Alternative A would result in a low potential for direct, adverse impacts to cultural resources. However, the potential for indirect impacts would be relatively high because of OHV travel-related surface disturbances to harvest and collect woodland products, and the potential looting and vandalism resulting from use of the harvesting areas.

Special-designations management decisions under Alternative A would have both direct and indirect, long-term impacts on cultural resources within the Monticello PA. WSAs account for 386,027 acres on land within the PA and overlap with other special designation lands (e.g., Areas of Critical Environmental Concern [ACECs]) to a great extent (see Map 81). A total of 230,969 acres in WSAs are lands classified with high site density, and 153,926 acres are classified as having medium site density (totaling 384,895 acres). The WSA acreage is the same under all of the alternatives because WSA designation is not part of the RMP. WSAs are managed under the Interim Management Policy (IMP), which imposes restrictions on ground-disturbing activities that may impair the wilderness suitability of that WSA. Actions generally considered to meet this non-impairment standard are those that are short-term, do not create surface disturbances or do not allow the construction of permanent facilities. When completed, surface disturbances may not degrade the area to such an extent that they substantially constrain Congress's decision to designate the area as wilderness. Because of these restrictions on surface-disturbing activities, the impacts to cultural resources within WSAs would be long-term, indirect, and beneficial.

In addition to WSAs, special designation areas include ACECs and wild and scenic rivers (WSRs). The following discussion addresses these other special designation areas. High cultural-

resource site-density areas pose the greatest concern for potential adverse impacts in special designation areas, so this discussion focuses on them. Special designation areas (excluding WSAs) under Alternative A encompass approximately 121,769 acres with high site-density. This represents approximately 12% of all estimated high site-density lands within the Monticello PA. Within these special designation areas, management decisions include a range of prescriptions that would benefit cultural resources by affording them direct and indirect protection from potentially adverse impacts. These decisions include implementing NSO stipulations for mineral development on approximately 2,539 acres, managing approximately 2,272 acres under VRM Class I objectives (with limitations on surface disturbances), eliminating OHV use on approximately 2,904 acres, and prohibiting mineral disposal and geophysical work on 3,171 acres of high site-density lands. Table 4.14 lists the special designation areas where these decisions apply and the acreage of high site-density lands they contain. If a special designation area is not listed in the table, either the decisions do not apply to it, or no estimated acres of high site-density lands occur within it. The restrictions noted in the table reduce the potential impacts to cultural resource sites from surface disturbance. These sites include ones identified by Native American tribes as culturally, traditionally, or spiritually important that may be located either in or adjacent to special designation areas.

Table 4.14. Acres of High Site-Density Lands in Special Designation Areas with Decisions Affecting Cultural Resources, Alternative A

Special Designation (All ACECs)	NSO for Mineral Development	Closed to Mineral Development	Closed to Mineral Disposal	Closed to Geophysical Work	Designated as VRM Class I	Closed to OHV Use
Hovenweep	267	0	267	0	0	0
Indian Creek	2,272	0	2,272	0	2,272	2,272
Lavender Mesa	0	0	632	0	0	632
Totals	2,539	0	3,171	0	2,272	2,904

Within many special designation areas, surface-disturbing activities would still be allowed, but for the most part, regulations would limit the amount of actual disturbance (e.g., CSU stipulations for mineral development and requirements for non-mechanized vegetation treatments). Many of these areas would also be managed under VRM Class II objectives, which, while less restrictive than VRM Class I, would still provide a high level of protection to cultural resources by limiting surface-disturbing activities.

4.3.2.3.2. ALTERNATIVE B

Table 4.15 summarizes impacts to cultural resources from various BLM resource program decisions under Alternative B, excluding special designations. Because special designations incorporate an array of individualized management actions, discussion of their impact on cultural resources follows the Table 4.15 summary.

Table 4.15. Impacts to Cultural Resources under Alternative B

Resource Program	Impact on Cultural Resources
Cultural Resources	The impacts to cultural resources would be the same as under Alternative A, except that 98,348 acres of land in high-density site areas would receive special management consideration (restrictions on surface disturbance and OHV use) to protect important cultural resource values. Cultural resource special management would increase the beneficial impacts. Segments of the Old Spanish National Historic Trail would be designated for types of travel that would not damage or alter their historic condition. Additionally, special recreation permits would be authorized only for heritage tours and reenactments on the trail. Limiting damaging travel and trail use would have a direct, long-term, beneficial impact on the trail because intact segments would be better preserved. Imposing private and commercial size limits for recreational and land-use groups and implementing a permit system would have long-term beneficial impacts on cultural resources in restricted areas because reducing the number of people in or near cultural resource sites at any given time would minimize deterioration and degradation. The smaller the group-size on a given site at a given time, the lower the probable adverse recreational impact to a site. Specific group-size and visitation limits for the McLoyd Canyon-Moon House ruin would be more stringent than restrictions for other sites. These limitations would directly and beneficially impact the site in the long-term.
Livestock Grazing	Approximately 137,440 acres of land would be maintained as unavailable for grazing, and additional areas would also be unavailable for grazing in at least 11 known high site-density areas. Alternative B would also restrict livestock activities to trailing in at least 4 other high site-density locations. Beyond these unavailable or restricted areas, grazing would be permitted on 1,627,623 acres of land within the Monticello PA. These lands are located in both high (882,676 acres) and medium (744,947 acres) site-density areas. This represents 90% of all estimated high site-density and 93% of all estimated medium site-density lands in the PA. Cultural resource sites in these areas would be exposed to potentially adverse trampling by livestock. Alternative B would leave approximately the same total number of acres open to grazing as Alternatives A and C; however, Alternative B has approximately 5,435 fewer acres in high site-density areas than does Alternative A. Alternative B leaves the same number of acres in high site-density areas open to grazing as Alternative C, and approximately 9,200 fewer total acres than Alternative D. Consequently, Alternative B would presumably have a slightly lower, potentially adverse grazing impact on cultural resources than Alternatives A and D and roughly the same as Alternative C.
Minerals, Oil, and Gas	The impacts to cultural resources would be the same as under Alternative A, except that approximately 338 acres of land in high site-density and 298 acres in medium site-density areas would be subject to varying degrees of disturbance over the life of the RMP, based on the RFD predicted development of oil and gas resources. This would be approximately 0.04% of the total acres of high site-density and 0.04% of medium site-density lands available for mineral development under Alternative B. The exact number of sites involved in development cannot be predicted at this time; however, impacts to specific sites are not expected to be any greater than under Alternative A because Alternative B specifies the same level of identification of sites and avoidance, minimization, or mitigation of impacts. Alternative B decisions could have slightly less impacts on cultural landscapes in developed areas than Alternative A because the total number of acres subject to disturbance under Alternative B would be somewhat lower than Alternative A. The Monticello PA contains several locations and landscape features that have been deemed culturally and/or spiritually important to Native American tribes. Most of these areas, including Montezuma Canyon, the San Juan River, Comb Ridge,

Table 4.15. Impacts to Cultural Resources under Alternative B

Resource Program	Impact on Cultural Resources
	Mancos Jim Mesa, Spanish Mossback Mesa, and Allen Canyon, would be managed under a combination of NSO, CSU, and standard leasing stipulations. Applying NSO and CSU stipulations would reduce the opportunities for surface-disturbing activities and other landscape-altering activities that could decrease the cultural, traditional, and/or spiritual values of these resources.
Minerals, Geophysical	The impacts to cultural resources would be the same as under Alternative A, except that surface disturbance would be reduced to approximately 427 acres of high site-density and 367 acres of medium site-density lands. This represents 0.04% of all estimated high site-density and 0.05% of all estimated medium site-density lands within the PA. Alternative B would produce surface disturbance in approximately 92 fewer acres (52 in high site-density and 40 in medium site-density areas) than Alternative A.
Non-WSA Lands with Wilderness Characteristics	Under this alternative, non-WSA lands with wilderness characteristics would not be protected or managed to preserve their wilderness values. Surface disturbances, impacts to cultural resources, and the mitigation applied to reduce impacts would be the same as analyzed and discussed under each resource for Alternative B.
Riparian Resources	The same impacts are predicted as under Alternative A, except Alternative B would implement additional restrictions that would indirectly protect cultural resources within certain riparian areas. These restrictions apply to OHV use and livestock grazing (see Chapter 2 Alternatives, Riparian). The additional restrictions on the use and disturbance of riparian and floodplain resources under Alternative B are expected to produce slightly greater beneficial impacts to cultural resources in these restricted zones by further reducing opportunities for surface-disturbing activities.
Special Status Species	Limited long-term, indirect, beneficial impacts to cultural resources are likely from restrictions on surface disturbance in areas of special-species habitat. The benefit would be slightly greater than under Alternative A because the wildlife protection spatial buffers would be larger.
Travel	Because of 238,879 acres in high site-density areas would be closed to OHV use under Alternative B, there would be similar beneficial impacts, but to a greater degree, than those discussed under Alternative A. This acreage represents 24% of all estimated high site-density lands within the PA. When compared to Alternative A, travel in an additional 325,669 acres (76%) in high site-density areas would be limited to designated roads and trails with the same long-term beneficial impacts to cultural resources. No areas within the Monticello PA would be open to cross-country OHV use, with greater long-term, beneficial impacts than Alternative A because 1) 423,619 acres (43%) in high site-density areas (open under Alternative A) would be protected from travel-related surface disturbances, and 2) Alternative B would identify approximately twice as many acres for limited use (designated route restrictions) as Alternative A, which would result in long-term beneficial impacts on cultural resources.
Visual Resources	Approximately 431,797acres of high site-density and 315,022 acres of medium site-density lands within the Monticello PA would be managed under VRM Class I or Class II objectives. This represents 44% of all high site- density and 40% of all medium site-density lands in the PA. The impacts from Alternative B on cultural resources would be similar to, but greater in degree, than those under Alternative A because more area would be protected under VRM Class I and Class II designations.

Table 4.15. Impacts to Cultural Resources under Alternative B

Resource Program	Impact on Cultural Resources
Woodlands	Although 307,179 acres of high site-density and 504,391 acres of medium site-density areas would be open for woodland harvesting, there would be limited restrictions on OHV travel into these areas. These areas represent 31% of all estimated high site-density and 63% of all estimated medium site-density lands in the PA. Cultural-resources inventories would be required before woodlands could be harvested on lands within the North Comb (Comb Ridge) area north of Highway 95 and the Montezuma watershed. The Cedar Mesa Cultural SRMA, outside of the WSA, would be closed to harvesting. Gathering woodland products for private use would have a low potential for long-term, adverse impacts on cultural resources within open areas, except in instances where OHV travel to gather these products is permitted. Commercial woodland harvesting would have greater impact than private use because it would occur on a larger scale. Potential adverse impacts to cultural resources from woodlands management decisions under Alternative B would likely be slightly lower than those anticipated for Alternative A because Alternative B imposes greater travel restrictions, imposes requirements for cultural-resource surveys, and would close at least one high site-density area (Cedar Mesa) to harvesting.

Special-designations management decisions under Alternative B would have both direct and indirect long-term impacts on cultural resources within the Monticello PA. As noted with Alternative A, WSAs account for 386,027 acres on land within the PA and overlap with other special designation lands (e.g., ACECs) to a great extent (see Map 82). A total of 230,969 acres in WSAs are lands classified with high cultural resource site-density, and 153,926 acres are classified with medium site-density. All alternatives would include the same acreage for WSAs. WSAs are managed under the IMP, which imposes restrictions on surface-disturbing activities. These restrictions, the same as those described for Alternative A, would have long-term, indirect, beneficial impacts on cultural resources within these areas by reducing opportunities for disturbance.

The following discussion addresses special designation areas other than WSAs. Within these other special designation areas, the different alternatives propose an array of management actions that vary widely in the level of surface disturbance they allow or prohibit. Since high cultural-resource site-density areas pose the greatest concern for potential adverse impacts in special designation areas, this discussion focuses on them. Special designation areas that would be managed under Alternative B include approximately 151,992 acres with high site-density. This represents approximately 15% of all estimated high site-density lands within the PA. Within these special designation areas, management decisions would include a range of prescriptions that would benefit cultural resources by affording them direct and indirection protection from adverse impacts. These prescriptions would include implementing NSO leasing stipulations for mineral development on approximately 44,185 acres, closing areas to mineral development on 17,833 acres, managing approximately 61,736 acres under VRM Class I objectives (with limitations on surface disturbance), eliminating OHV use on approximately 2,904 acres, and prohibiting mineral disposal and geophysical work on 85,141 acres of high site-density lands. Table 4.16 lists the special designation areas where these decisions apply and the acreage of high site-density lands they contain. If a special designation area is not listed in the table, either the decisions do not apply to it, or no estimated acres of high site-density lands occur within it. The

restrictions noted in the table reduce the risk of impact on cultural resource sites by surface-disturbing activities.

Table 4.16. Acres of High Site-Density Lands in Special Designation Areas with Decisions Affecting Cultural Resources, Alternative B

Special Designations (All ACECs)	NSO for Mineral Development	Closed to Mineral Development	Closed to Mineral Disposal	Closed to Geophysical Work	VRM Class I Designation	Closed to OHV Use
Alkali Ridge[1]	2,146	0	2,146	2,146	0	0
Hovenweep	277	0	277	277	0	0
Indian Creek	2,272	0	2,272	0	2,272	2,272
Lavender Mesa	632	0	632	632	0	632
Lockhart Basin	36,623	0	36,623	0	36,623	0
San Juan River	2,235	0	2,235	2,235	5,008	0
Valley of the Gods	0	17,833	17,833	17,833	17,833	0
Totals	44,185	17,833	62,018	23,123	61,736	2,904

[1]Includes the Alkali Ridge National Historic Landmark (2,146 acres)

Within many special designation areas, surface-disturbing activities would still be allowed, but for the most part, management decisions would limit the amount of actual disturbance (e.g., CSU leasing stipulations for mineral development, and requirements for non-mechanized vegetation treatments). Many of these areas would also be managed under VRM Class II objectives, which, while less restrictive than VRM Class I, would still provide a measure of protection to cultural resources by limiting surface-disturbing activities.

4.3.2.3.3. ALTERNATIVE C

Table 4.17 summarizes impacts to cultural resources from various BLM resource program decisions under Alternative C, excluding special designations. Because special designations incorporate an array of individualized management decisions, discussion of their impact on cultural resources follows the Table 4.17 summary.

Table 4.17. Impacts to Cultural Resources under Alternative C

Resource Program	Impact on Cultural Resources
Cultural Resources	As discussed under Alternative B, 98,348 acres of land in high-density site areas would be subject to special management consideration to protect important cultural resource values. Cultural-resource program decisions and impacts under Alternative C would be the same as discussed under Alternative B. The potential impacts related to the management of the Old Spanish National Historic Trail would be identical to those described for Alternative B. Impacts due to recreational use of cultural resources would be the same as for Alternative B, except that there would be a negligible increase in adverse impacts because of larger commercial group sizes allowed in high site-density areas.
Livestock Grazing	Potential adverse and beneficial impacts to cultural resources under Alternative C would be the same as those described for Alternative B because the two alternatives would manage approximately the same areas open, unavailable, or restricted to livestock grazing.
Minerals, Oil, And Gas	Approximately 381 acres of land in high site-density and 329 acres in medium site-density areas would be subject to varying amounts of physical disturbance over the life of the RMP. These equates to approximately 0.05% of the total acres of high site-density and 0.05% of medium site-density lands available for mineral development under Alternative C. Alternative C could have a slightly greater impact on cultural landscapes than Alternative B because the total number of acres subject to disturbance would be somewhat higher, but less than Alternative A.
Minerals, Geophysical	Impacts would be the same but slightly greater in intensity than those described under Alternative A because surface disturbance is estimated to be 903 acres over the life of the RMP. Approximately 489 acres of high site-density and 414 acres of medium site-density lands would be involved. This represents 0.05% of all estimated high site-density and 0.05% of all estimated medium-site density lands within the PA. Alternative C would produce surface disturbance in approximately 17 more acres (10 in high site-density and 7in medium site-density areas) than Alternative A.
Non-WSA Lands with Wilderness Characteristics	Under this alternative, non-WSA lands with wilderness characteristics would not be protected or managed to preserve their wilderness values. Surface disturbances, impacts to cultural resources, and the mitigation applied to reduce impacts would be the same as analyzed and discussed under each resource for Alternative C.
Riparian Resources	The impacts are identical to those discussed for Alternative B.
Special-Status Species	Limited, long-term, beneficial impacts on cultural resources would be expected in areas where spatial buffers against surface disturbance around habitats are created. Alternative C is expected to have greater long-term beneficial impact on cultural resources than Alternatives A and B because of the larger buffer areas.
Travel	The impacts would be the same as those discussed under Alternative A, except the long-term beneficial impacts would increase because of closed areas (234,890 acres [24%] in high site-density areas) and designated routes (an additional 750,153 acres [76%] in high site-density areas). The long-term adverse impacts within designated open OHV areas would be reduced to 2,311 acres (0.2% of the Monticello PA).

Table 4.17. Impacts to Cultural Resources under Alternative C

Resource Program	Impact on Cultural Resources
Visual Resources	Approximately 324,539 acres of high site-density and 242,876 acres of medium site-density lands within the Monticello PA would be managed for VRM Class I or II conditions. This represents 33% of all high site-density and 30% of all medium site-density lands in the PA. The beneficial impacts of Alternative C on cultural resources would be similar but less than with Alternative A because fewer acres would be protected under VRM Class I and Class II designations.
Woodlands	Under Alternative C, 367,319 acres of high cultural-resource site-density and 229,492 acres of medium site-density areas would be available for woodcutting. This represents 37% of all estimated high site-density and 29% of all estimated medium site-density lands within the PA. Off-road travel to gather woodland products would be permitted across a portion of the open areas. Cultural-resource inventories would be required before woodland products could be harvested on lands within the North Comb (Comb Ridge) area north of Highway 95 and the Montezuma watershed. The Cedar Mesa Cultural SRMA, outside of the WSA, would be closed to wood gathering or harvesting. Potential impacts to cultural resources from woodlands management decisions under Alternative C would probably be lower than those anticipated for Alternative A because Alternative C imposes greater travel restrictions and requirements for cultural-resource inventories.

Special-designations management decisions under Alternative C would have both direct and indirect long-term impacts on cultural resources within the Monticello PA. As noted under Alternative A, WSAs account for 384,895 acres of land within the PA and overlap with other special designations (e.g., ACECs) to a great extent (see Map 83). WSAs are managed under the IMP, which implements stringent restrictions on surface-disturbing activities (see the discussion for special designations in Table 4.13 in Section 4.3.2.3.1, Alternative A). A total of 230,969 acres in WSAs are lands classified with high cultural-resource site density. Another 153,926 acres are classified with medium site density. The same acres and management prescriptions would apply to WSAs across all alternatives. Consequently, the potential impacts on cultural resources in WSAs within special designation areas under Alternative C would be identical to those described previously for Alternatives A and B.

Special designation areas that would be managed under Alternative C include approximately 57,267 acres of lands with high cultural-resource site density. This represents approximately 6% of all estimated high site-density lands within the PA. Within these special designation areas, management actions include a range of prescriptions that would benefit cultural resources by affording them direct and indirect protection from adverse impacts. These decisions include implementing NSO leasing stipulations for mineral development on approximately 5,290 acres, closing areas to mineral development on 17,833 acres, managing approximately 22,841 acres under VRM Class I objectives (with strict limitations on surface disturbance), eliminating OHV travel on approximately 632 acres, and prohibiting mineral disposal on 23,123 acres of high site-density lands. Table 4.18 lists the special designation areas where these decisions apply and the acreage of high site-density lands they contain.

Table 4.18. Acres of High Site-Density Lands in Special Designation Areas with Decisions Affecting Cultural Resources, Alternative C

Special Designation (All ACECs)	NSO for Mineral Development	Closed to Mineral Development	Closed to Mineral Disposal	Closed to Geophysical Work	VRM Class I Designation	Closed to OHV Use
Alkali Ridge[1]	2,146	0	2,146	0	0	0
Hovenweep	277	0	277	0	0	0
Lavender Mesa	632	0	632	0	0	632
San Juan River	2,235	0	2,235	0	5,008	0
Valley of the Gods	0	17,833	17,833	0	17,833	0
Totals	**5,290**	**17,833**	**23,123**	**0**	**22,841**	**632**

[1]Includes the Alkali Ridge National Historic Landmark (2,146 acres)

If a special designation area is not listed in the table, either the decisions do not apply to it, or no estimated acres of high site-density lands occur within it. The restrictions noted in the table reduce opportunities for surface-disturbing activities to impact cultural resource sites.

Alternative C provides for approximately twice as many acres covered by NSO leasing stipulations in high site-density special designation areas as Alternative A but 8 times fewer acres than Alternative B. Alternative C would close more acres to mineral development in non-WSA special designation areas than Alternative A and the same number of acres as Alternative B. Alternative C would manage approximately 10 times more high site-density lands under VRM Class I objectives than would Alternative A but approximately 3 times less than Alternative B. Alternative C would close approximately 5 times fewer acres of land in high site-density areas to OHV travel than Alternatives A and B. Alternative C would close approximately 7 times more land in high site-density areas to mineral disposal and geophysical work than Alternative A but approximately 3 times less than Alternative B. In all cases, Alternative C would provide greater benefits to cultural resources in special designation areas than would Alternative D, which implements no special designation regulations.

Surface-disturbing activities would still be allowed, but in general, regulations would limit the level of actual disturbance (e.g., CSU stipulations for mineral development and requirements for non-mechanized vegetation treatments). Many of these areas would also be managed under VRM Class II objectives, which, while less restrictive than VRM Class I objectives, would still provide protection to cultural resources by limiting surface-disturbing activities.

4.3.2.3.4. ALTERNATIVE D

Cultural resource management decisions under Alternative D would produce all of the impacts discussed in Section 4.3.2.1, Impacts Common to All Alternatives. However, as is the case with all the other alternatives, Alternative D proposes additional decisions that would also affect cultural resources within the PA. Table 4.19 summarizes the impacts to cultural resources from resource management decisions under Alternative D, excluding special designations. Because special designations incorporate an array of individualized management actions, discussion of their impact on cultural resources follows the Table 4.19 summary.

Table 4.19. Impacts to Cultural Resources under Alternative D

Resource Program	Impact on Cultural Resources
Cultural Resources	Special management consideration would be given to 38,995 acres of land in high-density site areas to protect important cultural resource values. Alternative D would designate similar, but slightly greater, acreage in high-density site areas for specific management consideration than Alternative A but only approximately one-third the acreage of Alternatives B and C. The Comb Ridge/Butler Wash, the Tank Bench, and Beef Basin areas would not be managed as CSMAs. Because fewer acres of high site-density areas are designated for special management of cultural resources, the opportunities for long-term benefits would be reduced, and the risk that cultural resource sites in these areas could be impacted would increase. This would pose the same potential risks to cultural resources as Alternative A. The McLoyd Canyon-Moon House would be managed under Alternative D, for the most part, the same way as under Alternative C, which is also very similar to Alternative B. Consequently, potential impacts to cultural resources under Alternative D are similar to those described for Alternatives B and C. Compared to Alternative A, this alternative would be more beneficial because restrictions would be applied under this alternative to protect the site that would not be applied under Alternative A. The impact to historic trails would be the same as that of Alternative C. Potential recreation impacts on cultural resources under Alternative D would be similar to those discussed with Alternative C because the same limits are imposed on commercial group size in high site-density areas; however, Alternative D would allow four additional persons per private group. This larger group size would slightly increase the risk of potential impacts to cultural sites. The larger number of visitors per day to McLoyd Canyon-Moon House under Alternative D would intensify the potential impacts on the ruin and surrounding sites because of the "wear and tear" that comes with more foot traffic. Compared to Alternative A, this alternative would be more beneficial for the site for reasons as shown under Cultural Resources above.
Livestock Grazing	The 137,440 acres currently unavailable to grazing would be maintained, and additional acreage would be unavailable to grazing in at least 9 known high site-density areas. Outside of these areas, grazing would be permitted on 1,636,844 acres of land within the PA. These lands are located in both high (887,971 acres) and medium (748,873 acres) site-density areas. Cultural resource sites in these areas would be exposed to potential trampling by livestock as described under Alternative B. Alternative D would manage approximately 9,200 acres more than any other alternative as available to grazing. Approximately 140 less grazing acres would be located in high site-density areas under Alternative D than under Alternative A, but Alternative D would make approximately 5,295 more acres in high site-density areas available to grazing than would Alternatives B and C. Consequently, Alternative D would likely have greater potential adverse impacts on cultural resources than either Alternatives B and C and roughly the same impacts as Alternative A. Alternative D would probably also have lower potential beneficial impacts to cultural resources than Alternatives B and C, where fewer known high site-density areas would be unavailable for grazing. Potential beneficial impacts under Alternative D would be comparable to those under Alternative A.

Table 4.19. Impacts to Cultural Resources under Alternative D

Resource Program	Impact on Cultural Resources
Minerals, Oil, and Gas	Approximately 391 acres of land in high site-density and 330 acres in medium site-density areas would be impacted by varying levels of disturbance from mineral development over the life of the RMP. This surface area would be approximately 0.05% of the total acres of high site-density and 0.05% of medium site-density lands available for mineral development under Alternative D. However, impacts to specific sites are not expected to be any greater under this alternative because the same level of identification of sites and avoidance, minimization, or mitigation of impacts prior to surface disturbance would be required. Alternative D could have a slightly greater impact on cultural landscapes in developed areas than Alternative B because the total number of acres subject to disturbance would be higher. Additionally, potential impacts to cultural landscapes under Alternative D would be greater than those anticipated for Alternative B, but slightly less than Alternative A because fewer acres would be potentially impacted.
Minerals, Geophysical	Temporary surface disturbance that is reclaimed within 10 years would be prescribed under Alternative D. All geophysical work would be subject to the BLM standard policy of resource identification and avoidance, minimization, and/or mitigation of adverse impacts. For this reason, impacts to cultural resources from geophysical activities under this alternative are expected to be minimal. Approximately 924 acres can potentially be disturbed over the life of the RMP. This consists of approximately 501 acres of high site-density and 423 acres of medium site-density lands and represents 0.05% of all estimated high site-density and 0.05% of all estimated medium site-density lands within the PA. Alternative D would produce surface disturbance in approximately 38 more acres (22 in high site-density and 16 in medium site-density areas) than Alternative A. It would also produce surface disturbance in 130 more acres (74 in high site-density and 56 in medium site-density areas) than Alternative B and 21 more acres (12 in high site-density and 9 in medium site-density areas) than Alternative C.
Non-WSA Lands with Wilderness Characteristics	Under this alternative, non-WSA lands with wilderness characteristics would not be protected or managed to preserve their wilderness values. Surface disturbances, impacts to cultural resources, and the mitigation applied to reduce impacts would be the same as analyzed and discussed under each resource for Alternative D.
Riparian Resources	Impact to riparian resources under Alternative D would be the same as Alternative A.
Special-Status Species	Limited, long-term, beneficial impacts on cultural resources would result in areas where spatial buffers are created. Alternative D would likely have a greater long-term beneficial impact on cultural resources than Alternative A, which designates no buffers, but less than Alternatives B and C, which have larger buffers.
Travel	Travel would be limited to designated routes, and more acres would be placed in this category under Alternative D than under any other alternative. However, fewer acres would be closed to OHV use under Alternative D than under any other alternative. Alternative D would specify fewer acres open to unrestricted OHV use than Alternative A, more acres open than Alternative B, and the same number of acres open as Alternative C. Alternative D would have slightly greater long-term beneficial impacts on cultural resources because travel would be restricted on more acreage to designated routes (985,043 acres in high site-density areas) than with Alternative A. There would also be fewer long-term adverse impacts to cultural resources than under Alternative A because the total acreage available for open OHV use (2,311 acres) would be less.

Table 4.19. Impacts to Cultural Resources under Alternative D

Resource Program	Impact on Cultural Resources
Visual Resources	Approximately 237,057 acres of high site-density and 162,201 acres of medium site-density lands within the Monticello PA would be managed under VRM Class I or Class II objectives. This represents 24% of all high site-density and 20% of all medium site-density lands in the PA. Management of these lands, especially under VRM Class I conditions, would limit ground-disturbing activities that have the potential to impact cultural resources. The potentially adverse impacts of Alternative D decisions on cultural resources would be similar to, but less than, Alternative A because a smaller area would be protected under VRM Class I and Class II designations.
Woodlands	The impacts to cultural resources would be the same as under Alternative C, except that fewer restrictions would be placed on OHV travel to gather and transport harvested wood. Consequently, potential adverse impacts under Alternative D would likely be less than with Alternative A, which would have fewer travel restrictions.

Special-designations management decisions under Alternative D would have both direct and indirect long-term impacts on cultural resources within the Monticello PA. Under Alternative D, no ACECs would be designated nor would any Wild and Scenic River (WSR) segments be recommended as eligible for WSR status; however, existing WSAs would continue to be managed under the IMP, with stringent restrictions on surface-disturbing activities. As the same acres and management prescriptions would apply to WSAs across all alternatives, the potential impacts on cultural resources within WSAs under Alternative D would be identical to those described previously for Alternatives A, B, and C. However, Alternative D would implement no other types of special designations with their associated limitations on surface-disturbing activities. Therefore, the beneficial impacts to cultural resources in special designation areas under Alternative D would be less than those anticipated for any other proposed alternative.

4.3.2.3.5. ALTERNATIVE E

Potential impacts to cultural resources under Alternative E would be identical to those described for Alternative B, except that this alternative would proposed management decisions that would provide greater protection for cultural resources. Under Alternative E, 582,357 acres of non-WSA lands with wilderness characteristics would be closed to mineral leasing and disposal of mineral materials, managed under VRM Class I objectives, retained in federal ownership, and closed to firewood gathering, woodland harvesting and OHV use. These areas would also be excluded from rights-of-way (ROWs) permitting. It would also be recommended that these lands be withdrawn from locatable mineral entry. These actions would reduce the potential for direct and indirect adverse impacts on cultural resources by eliminating surface-disturbing activities and motorized access into more remote, generally unmonitored areas that may contain such resources. Table 4.20 summarizes the impacts of Alternative E's resource-program decisions that differ from Alternative B.

Table 4.20. Impacts to Cultural Resources under Alternative E Where They Differ from Alternative B

Resource Program	Impact on Cultural Resources
Minerals, Oil, and Gas	Approximately 327acres of land in high site-density and 192 acres in medium site-density areas would be impacted by varying degrees of disturbance over the life of the RMP. This amounts to approximately 0.03% of the total acres of high site-density and 0.02% of medium site-density lands available for mineral development under Alternative E. The precise number of sites involved in development cannot be predicted; however, impacts to specific sites are not expected to be any greater than under Alternative A because the same level of identification of sites and avoidance, minimization, or mitigation of impacts would be required. Alternative E could have slightly less impact on cultural landscapes in developed areas than Alternatives A and B because the total number of acres subject to disturbance is somewhat lower. Potential impacts to cultural landscapes under Alternative E would also be slightly less than those anticipated for Alternatives C and D. The Monticello PA contains several locations and landscape features that have been deemed culturally and/or spiritually important to Native American tribes with cultural patrimony in the area. Most of these known areas, including Montezuma Canyon, the San Juan River, Comb Ridge, Mancos Jim Mesa, Spanish Mossback Mesa, and Allen Canyon, would be managed under a combination of NSO, CSU, and standard leasing stipulations. Applying NSO and CSU stipulations would reduce opportunities for surface-disturbing and other landscape-altering activities that could decrease the cultural, traditional, and/or spiritual values of these resources.
Non-WSA lands with Wilderness Characteristics	More restrictive, beneficial, management (e.g., no surface-disturbing activities, VRM Class I designation, no OHV use or ROW permitting) would be prescribed for cultural resources within non-WSA lands with wilderness characteristics; this is particularly notable for lands in the CRCSMA and BBCSMA. Non-WSA lands with wilderness characteristics in these CSMAs would include Comb Ridge (13,760 acres), Fish and Owl Creek Canyons (3,580 acres), Road Canyon (530 acres), the San Juan River (640 acres), Dark Canyon (13,280 acres), and Butler Wash (1,180 acres).
Travel	Approximately 474,291 acres in high site-density areas would be closed to OHV use. This encompasses 48% of all estimated high site-density lands within the PA. Travel in an additional 513,062 acres (52%) in high site-density areas would be limited to designated routes. No areas within the Monticello PA would be open to unrestricted, cross-country OHV use. Alternative E would close more acres to OHV use than any other alternative, and approximately 179 miles of OHV routes would be closed in lands with non-WSA wilderness characteristics. Approximately one-third more areas would be restricted to limited use (through designated route restrictions) under Alternative E than under Alternative A. Alternative E would designate fewer acres for limited OHV use (through designated route restrictions) than would Alternatives B, C, and D, though it would close more acres to OHV use than Alternatives C and D. These travel decisions would have potential long-term beneficial impacts to cultural resource sites in high-density areas throughout the Monticello PA, and the beneficial impacts would likely be greater under Alternative E than any other alternative because fewer sites away from designated routes could be impacted by direct and indirect OHV use. Long-term adverse impacts under Alternative E would be expected to be approximately the same as under Alternative B, which has similar acreage distributed among categories of closed and limited OHV use. Alternative E would produce fewer long-term adverse impacts than Alternatives A and D, which close substantially fewer acres to OHV

Table 4.20. Impacts to Cultural Resources under Alternative E Where They Differ from Alternative B

Resource Program	Impact on Cultural Resources
	use.
Visual Resources	Approximately 565,528 acres of high site-density and 544,314 acres of medium site-density lands within the Monticello PA would be managed under VRM Class I or Class II objectives. This represents 57% of all high site-density and 68% of all medium site-density lands in the PA. Managing these lands, especially for VRM Class I objectives, would limit ground-disturbing activities that have the potential to impact cultural resources. Therefore, cultural resources located on these lands would experience a long-term benefit. Alternative E would manage the most acres of land among the alternatives under VRM Class I or Class II designations, and would have more beneficial impacts on cultural resources than Alternative A because greater restrictions would be placed on surface disturbances within the PA.
Woodlands	Alternative E would open 241,712 acres of high site-density and 129,498 acres of medium site-density areas for woodland harvesting, with limited restrictions on OHV travel. This would encompass 24% of all estimated high site-density and 16% of all estimated medium site-density lands in the PA. Alternative E would likely have a lower potential for adverse impacts than Alternatives B, C, and D because they would allow woodland harvesting on more land. It should be noted, however, that Alternatives C and D place greater restrictions on off-road travel to transport woodland products than does Alternative E. These travel restrictions would lower the potential risk of impacts to cultural resource sites.

4.3.2.4. SUMMARY OF IMPACTS

In general, impacts to cultural resources would be long-term, with short-term impacts typically being indirect and temporary, such as visual or auditory intrusions on traditional cultural sites or sacred properties. As the majority of management decisions proposed under the RMP would be for the long term, impacts to cultural resources from program decisions are considered to be long-term.

All alternatives considered in this DEIS have the potential to impact cultural resources within the Monticello PA. The risk of or potential for impact varies depending on the type of management decisions that any given alternative would implement. All alternatives would comply with applicable laws, such as the NHPA, and internal BLM policy. These laws and policies require the BLM to consider cultural resources when implementing management decisions; consider ways to avoid, minimize, or mitigate adverse impacts to important cultural resources; and consult with interested parties, including federally recognized Native American tribes.

In general, Alternative E provides the most potential beneficial impact to cultural resources within the Monticello PA of all the alternatives. This is because Alternative E would enact greater restrictions than any other alternative on surface-disturbing activities such as mineral development, recreational use, and OHV travel and would include more special designation areas and non-WSA lands with wilderness characteristics with their proposed management restrictions on surface disturbance and OHV travel and managing areas under VRM Class I and II objectives. These management decisions would reduce the opportunities for adverse impacts to

cultural resources. Alternatives B and E would focus on proactive management of cultural resources by developing integrated cultural/recreational management plans. Based upon these same decisions, Alternative C would provide the next greatest benefit to cultural resources, followed by Alternative A. Alternative D would provide the least amount of benefit to cultural resources in the Monticello PA of all the alternatives.

4.3.2.5. Mitigation Measures

All decisions and actions described under all the alternatives for the Monticello PA RMP must also comply with cultural resource laws, such as Section 106 of the NHPA, as well as internal agency guidelines. These laws and guidelines require consideration of alternatives to eliminate, reduce, and/or mitigate adverse impacts to cultural resources. Although the preferred treatment of important cultural resources within an area is complete avoidance, this is not always possible. Consequently, mitigation of impacts is an important alternative. While avoidance helps to preserve the physical archaeological record within an area, mitigation could result in the gradual elimination of the physical archaeological record and its conversion into a paper or archival record. Because mitigation of adverse impacts to a cultural resource must be specific to that resource—designating the values that render it eligible for the NRHP or important to a particular culture group, such as a Native American tribe—as well as to the nature of the impact, appropriate mitigation cannot be defined at this programmatic level of analysis. Should specific adverse impacts to individual cultural resources be identified during the site-specific NEPA and project-specific Section 106 processes, the BLM would develop and implement a mitigation plan in consultation with the Utah State Historic Preservation Office (SHPO) and other interested parties (e.g., Native American tribes), as appropriate.

4.3.2.6. Unavoidable Adverse Impacts

Because the location and nature of all cultural resources in the area under consideration are unknown, it is not possible to determine if there would be unavoidable adverse impacts to cultural resources and/or what they might be at this time. There is some potential for unavoidable adverse impacts with nearly any proposed management decision. However, following the applicable law and policy would provide opportunities for prevention and/or mitigation of many of these impacts.

4.3.2.7. Short-term Use Versus Long-term Productivity

Because the location and nature of all cultural resources in the area under consideration are unknown, it is not possible to determine if there would be changes in short-term uses or long-term productivity of these resources. However, it should be noted that adherence to applicable law and policy would prevent any loss in the long-term productivity of this resource due to previously described short-term use.

4.3.2.8. Irreversible and Irretrievable Impacts

Because the location and nature of all cultural resources in the area under consideration are unknown, it is not possible to determine if there would be irreversible and/or irretrievable impacts to cultural resources and/or what they might be. Most of the proposed management decisions include the potential for impact. However, following applicable law and policy would prevent and/or mitigate many potential impacts.

4.3.3. FIRE MANAGEMENT

Impacts to the fire management program within the Monticello PA would result from both fire and non-fire management decisions. The impacts would vary by alternative, depending on specific program prescriptions that could either directly or indirectly reduce or contribute to fuels loading or increase or decrease the risks of wildland fire.

4.3.3.1. IMPACTS COMMON TO ALL ALTERNATIVES

The management decisions common to all alternatives that impact fire management would consist of 1) establishing fire management priorities; 2) establishing fire suppression objectives; 3) using wildland fire for improving natural resources or accomplishing specific resource objectives; 4) reducing fuel loading; 5) preventing and mitigating wildland fire within the Monticello PA, and applying emergency stabilization and rehabilitation treatments to areas to protect human property and/or important natural and cultural resources.

The impacts of these decisions would directly and beneficially impact human safety and in the short-term and long-term by making the protection of human health, safety, and property (in wildland urban interfaces [WUIs] and at-risk communities) the highest priority of fire management, fire suppression, fire use for resource benefit, emergency stabilization and rehabilitation, and wildland fire prevention. Common fire management decisions would have long-term, direct and indirect, beneficial impacts on ecosystem health and watersheds by setting a high priority on the use of wildland fire (through prescribed burning), fire suppression, and emergency stabilization and rehabilitation to protect, maintain, and enhance native vegetation communities, to protect watersheds from soil erosion, and to protect land and aquatic habitat of listed and non-listed species.

Fuels treatments for the Monticello PA (proposed on 5,000 to 10,000 acres/year) would have additional long-term, beneficial impacts on vegetation communities by improving historic fire regimes to encourage native vegetation establishment and to control non-native, invasive species that could otherwise displace native vegetation. The fire management decisions common to all alternatives would directly protect known, sensitive, and valuable cultural resources and cultural landscapes by setting priorities to prevent damage to these irreplaceable resources from wildland fire.

Under all alternatives, lands and realty management actions for filming would limit the use and reduce the risks of wildland fire from pyrotechnics and explosives, as well as limit the numbers of people and vehicles in sensitive areas, thus the adverse impacts to fire management would be minor.

Minerals management decisions under all alternatives would potentially impact fire management through the creation of additional WUI areas, which could increase the likelihood for fire suppression to protect minerals infrastructure and improvements in the event of wildland fire. The potential for wildland fire in minerals development areas would be low because of fire-related mitigation applied during minerals development. Thus, the impacts would be negligible.

The proposed recreation management decisions would have minor impacts on fire management within the Monticello PA. The impacts would be minor because developing and maintaining campgrounds, trails, routes, and other recreation infrastructure would increase the number of

WUI areas, which would require increased fire suppression and would reduce the number of acres available for wildland fire use. There would be indirect, potentially adverse impacts on fire management from the increased risks of human-caused wildland fire from increased recreational use (e.g., campfires, OHV use). However, these indirect impacts would be minor because of recreational restrictions on the use of fire in recreational areas (see Table 2.1 Recreation).

4.3.3.2. ALTERNATIVES IMPACTS

Impacts to fire condition may be indirect, negligible, or non-existent, depending on the resource management decision. Specifically, resource program decisions for health and safety, livestock grazing, paleontology, soils and water resources, special status species, are expected to have little or no direct or indirect impact on fire condition within the Monticello PA. Decisions for these resources do not preclude surface disturbing activities. As such, they will not be considered further in this analysis. All other alternative decisions with the potential to impact cultural resources either beneficially or adversely are discussed below.

4.3.3.2.1. IMPACTS OF AIR QUALITY DECISIONS ON FIRE MANAGEMENT

Under all alternatives, prescribed burns would be consistent with the Utah Division of Environmental Quality (UDEQ) permitting process and timed in conjunction with meteorological conditions so as to minimize smoke impacts. In addition, the BLM would comply with the current Smoke Management Memorandum of Agreement (MOU) between BLM, USFS, and UDAQ. The MOU, in accordance with UAC regulation R301-204, requires reporting size, date of burn, fuel type, and estimated air emissions from each prescribed burn. Additional restrictions on prescribed burns and Wildland Fire Use (WFU) treatments during certain conditions or near Visual Resource Management, Class I areas would also apply. All of these restrictions could impact the size and/or timing of fire management activities such as managed wildland fire and prescribed burns. However, these limitations would not substantially reduce the effectiveness of long-term fire management.

4.3.3.2.2. IMPACTS OF CULTURAL RESOURCE DECISIONS ON FIRE MANAGEMENT

4.3.3.2.2.1. Alternative A

Under Alternative A, Grand Gulch National Historic District, consisting of 37,433 acres, would be subject to conditional fire suppression with motorized suppression methods used only if necessary to protect life or property. Comb Ridge CSMA (38,012 acres), Tank Bench CSMA (2,646 acres), Beef Basin CSMA (20,302 acres), and McLoyd Canyon-Moon House CSMA (1,607 acres) would be available for fuels treatment and fuels management activities outlined in the Moab Fire District Fire Management Plan (BLM 2005k). To reduce hazards and to restore ecosystems, authorized fuels management actions include wildland fire use, prescribed burns, and mechanical, manual, chemical, biological, and seeding treatments. Fuels treatments are focused on the desired wildland fire condition (DWFC) of restoring historic fire regimes to ecosystems when feasible, so that future wildland fire use actions can be more easily implemented. It should be noted that the Moab Fire District's revised FMP would confine virtually all (approximately 99.5%) of the proposed fire management-related vegetation treatments to the pinyon-juniper vegetation type (BLM 2005k). Accordingly, this alternative would contribute to returning approximately 38,888 acres of pinyon-juniper in these CSMAs to

DWFC, but would prevent the opportunity for fire management-associated vegetation treatments on approximately 26,902 acres of pinyon-juniper.

4.3.3.2.2.2. Alternative B

Under Alternative B, the Comb Ridge CSMA (38,012 acres) and the Tank Bench CSMA (2,646 acres) are available for non-surface-disturbing vegetation treatments, and the Beef Basin CSMA (20,302 acres) is available for any type of vegetation treatment. The Grand Gulch National Historic District (37,433 acres) is excluded from vegetation treatments, except non-motorized weed control with no surface disturbance, and the McLoyd Canyon-Moon House CSMA (1,607 acres) has no restrictions impacting decisions on fire management. Accordingly, a full array of fuels treatments would be available to contribute to returning approximately 16,546 acres of pinyon-juniper to DWFC. This represents far less acreage available for all fire management options than Alternative A. Additionally it would restrict surface-disturbing fire management treatments on approximately 49,244 acres of pinyon-juniper. A total of 20,934 acres of pinyon-juniper in these CSMAs would be available for non-surface-disturbing fire management. This would provide some assistance in moving these vegetation types towards DWFC; however, it would not be as effective as the management actions under Alternative A, which allow both surface and non-surface-disturbing treatments in these areas. Accordingly, the long-term impacts of wildland fires would be higher in these areas under this alternative than under Alternative A.

4.3.3.2.2.3. Alternative C

Under Alternative C, the Beef Basin CSMA (20,302 acres) and the McLoyd Canyon-Moon House CSMA (1,607 acres) would be managed the same as under Alternative B. The Tank Bench CSMA (2,646 acres) would be managed the same as under Alternative B except vegetation treatments and surface-disturbing land treatments consistent with DRMP/DEIS management objectives would be allowed in Outlaw Canyon and South Cottonwood Wash areas. Also under Alternative C, the Comb Ridge CSMA (38,012 acres) would be available for vegetation treatments and surface-disturbing land treatments that are consistent with management plan objectives. In the Grand Gulch National Historic District (37,433 acres), non-motorized vegetation treatments, including aerial seeding, hand reseeding, planting seedlings, and control of invasive non-native species are allowed as long as they do not impact cultural resources and are consistent with the IMP. This would represent the same types and amounts of vegetation for all fire management options as described under Alternative A. It would also allow an additional 26,902 acres of pinyon-juniper to be available for treatment with the non-motorized treatments described above. Based on the allowable treatment (approximately 60% more of the area available for treatment than under Alternative A), this alternative would likely allow more opportunities than Alternative A to move these vegetation types to DWFC, with subsequent reductions in long-term fire impacts.

4.3.3.2.2.4. Alternative D

Under Alternative D, the Tank Bench (2,646 acres) would not be managed as a CSMA, it would be managed the same as adjacent areas with no restrictions on fire management. Comb Ridge (38,012 acres) and Beef Basin (20,302 acres) would not be managed as CSMAs, but otherwise they would be managed the same as under Alternative C. The McLoyd Canyon-Moon House CSMA (1,607 acres) and the Grand Gulch National Historic District (37,433 acres) would be

managed the same as under Alternative C. This alternative would have virtually identical impacts on DWFC and long-term fire impacts as Alternative C.

4.3.3.2.2.5. Alternative E

Under Alternative E, the impacts of cultural resources decisions on fire management would be same as under Alternative B, except that the Beef Basin CSMA (20,302 acres) would not be open to vegetation treatments. This would slightly increase the risk of long-term impacts of fire in the area due to increased fuel loading, relative to Alternative B.

4.3.3.2.3. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Fire Management

Lands with wilderness characteristics would be managed to maintain these characteristics only under Alternative E. Under Alternative E, a total of 582,360 acres would be managed to maintain their wilderness characteristics. These areas would be closed to OHV use, which would reduce the risk of human-caused fire starts and virtually eliminate the risk of fire starts from motorized vehicles. Lands with wilderness characteristics would also be closed to mineral leasing and disposals and would prohibit new road construction or ROWs, which would also reduce the risk of human-caused fire starts associated with these activities and associated workers. However, lands with wilderness characteristics would also be closed to woodland harvest, which would potentially increase fuel loading unless other vegetation treatments were used in its place. Fire and fuels treatment response activities would need to be compatible with the goals and objectives of protecting non-WSA lands with wilderness characteristics. This could restrict the method used, equipment type used, and fire operations within the non-WSA lands with wilderness characteristics.

4.3.3.2.4. Impacts of Special Designations Decisions on Fire Management

Special designations affect fire management, and consequently DWFC and long-term fire risk, by restricting vegetation treatments or restricting woodland harvest. Restricting vegetation treatments prevents managers from decreasing fuel loading and moving fire return interval and vegetation composition to levels closer to historic conditions. Restricting woodland harvest reduces the amount of fuels removed from an area, and thus increases fuel loading in the conifer and pinyon-juniper vegetation types where harvest most commonly occurs. Woodland harvest acts as a *de facto* vegetation treatment; therefore, its prohibition increases the risk of large or catastrophic fires if other treatments are not utilized in its place. Special designations vary across alternatives based on size of area and type of restriction. This analysis will determine the acres of these types of restrictions due to special designations and the impacts of those acres on fire management goals and long-term fire risk. It should be noted that some of the proposed special designated areas include prohibitions on OHV use. The overall impacts of OHV restrictions are discussed in Section 4.3.3.3.7, Recreation Decisions.

Special designations in the Monticello PA include ACECs, WSRs, and WSAs. Proposed management prescriptions for WSRs have negligible impact on fire management as they do not restrict vegetation management or woodland harvest more than other management decisions. Additionally, fewer than 10 acres of fire management treatments are planned within riparian vegetation types in the Monticello PA under the Moab FMP; therefore, proposed WSRs are

unlikely to affect or be affected by potential fire management actions. Accordingly, WSR impacts on fire management are not analyzed further.

Under all alternatives, a total of 386,027 acres are WSAs. These acreages would be closed to woodland harvest and surface-disturbing vegetation treatments. Accordingly, this acreage (approximately 22% of the planning area) would have limited means to proactively reduce fuel loading or to move vegetation types to DWFC. However, over the long-term, some vegetation treatments may be allowed if they are non-impairing. These would include reseeding with native species after a fire or pruning. However, stand conversion activities such as mechanical removal of pinyon-juniper encroachment or Douglas fir encroachment on aspen would not be permitted (H-8550-1 - Interim Management Policy For Lands Under Wilderness Review). Fire suppression would be permitted with the understanding that it be conducted with a minimum amount of mechanical and/or motorized resources.

ACECs have various management decisions by alternative for vegetation treatments. All ACECs are considered under Alternatives B and E, no ACECs are considered under Alternative D. See Section 4.3.14, Special Designations, for a list of proposed ACECs by alternative.

4.3.3.2.4.1. Alternative A

Under Alternative A, a total of 488,616 acres of land would be designated as ACECs. These ACECs are shown in Table 4.88. Restrictions on vegetation treatments and woodland harvest within these ACECs could impact fire management. Under this alternative, a total of 385,857 acres of land within these ACECs would not allow surface-disturbing vegetation treatments. This represents approximately 22% of the public lands in the Monticello FO that would have limited means to decrease fuel loading or to move vegetation types to DWFC. Additionally, a total of 114,723 acres (approximately 6% of the FO) would be restricted from either private or commercial woodland harvest. Although woodland harvest is not specifically targeted as a fire management activity, it does provide opportunities to thin dead wood from pinyon-juniper and conifer vegetation types. Thus, woodland harvest acts as a *de facto* vegetation treatment, and its prohibition increases the risk of large or catastrophic fires if other treatments are not utilized in its place.

4.3.3.2.4.2. Alternative B

Alternative B would carry forward the existing ACECs from Alternative A; however, some of them would be of different size or have different restrictions. A total of 521,141 acres of lands would be designated as ACECs under this alternative. Of these lands, a total of 166,611 acres (9% of the planning area) would be restricted from surface-disturbing vegetation treatments. This would provide slightly less opportunities to decrease fuel loading and move vegetation towards DWFC than Alternative A. This alternative would also prohibit private or commercial woodland harvest on 521,171 acres (approximately 29% of the planning area) of ACEC lands. This would result in much more acreage of pinyon-juniper and conifer vegetation that is likely to experience fuel loading or that would require active vegetation treatments to reduce fuel loading than under Alternative A.

Access to designated campsites was correlated with reduced human-caused fire ignitions in the Moab Fire District from 1999 to the present time in spite of increased levels of visitation (BLM 2005k). Under this alternative, a total of 315,371 acres would include restrictions on dispersed

camping, which would continue to slightly lower the risk of human-caused fire ignitions in the Cedar Mesa, Indian Creek, and Shay Canyon ACECs.

4.3.3.2.4.3. Alternative C

Alternative C would have seven designated ACECs. A total of 76,764 acres of lands would be designed as ACECs under this alternative. However, because of ACEC decisions, including management restrictions placed on areas that would no longer be designated as ACECs, a total of 105,532 acres (6% of the planning area) would be restricted from surface-disturbing vegetation treatments. This would result in slightly increased opportunities to decrease fuel loading and move vegetation towards DWFC as under Alternative B, and substantially more opportunities than Alternative A. This alternative would prohibit private or commercial woodland harvest on 106,502 acres (approximately 6% of the planning area) of existing or proposed ACEC lands. This would result in virtually identical impacts to those described under Alternative A; however, it would result in approximately five times more total acres where pinyon-juniper and conifer vegetation would be open for fuel reduction resulting from woodland harvest than Alternative B. Overall, Special Designation decisions under Alternative C would provide more opportunities for fire management than Alternative A or B. Accordingly, Alternative C would likely result in less long-term fire risk to these areas than these alternatives.

Under this alternative, a total of 119 acres would include restrictions on dispersed camping, which would continue to slightly lower the risk of human-caused fire ignitions in the Shay Canyon ACEC.

4.3.3.2.4.4. Alternative D

Alternative D would designate no ACECs. However, it does impose restrictions on ACEC areas proposed under the other alternatives. This includes restrictions on surface-disturbing vegetation treatments on a total of 6,600 acres. This relatively low acreage with restrictions would result in substantially more opportunities to decrease fuel loading and move vegetation towards DWFC than under Alternative A. This alternative would also prohibit private or commercial woodland harvest on 82,594 acres (approximately 5% of the planning area) of ACEC lands. This would result in approximately five times more total acres where pinyon-juniper and conifer vegetation types would be open for fuel reduction resulting from woodland harvest. Overall, Special Designation decisions under Alternative D would provide more opportunities for fire management than Alternatives A, B, or C. Accordingly, Alternative D would likely result in less long-term fire risk to these areas than Alternatives A or B.

4.3.3.2.4.5. Alternative E

In general, Alternative E would have the same impacts as those under Alternative B. This would slightly increase the risk of wildfire in this area.

4.3.3.3. Summary of Impacts

4.3.3.3.1. Air Quality Decisions

Under all alternatives, prescribed burns would be consistent with the UDEQ permitting process and timed in conjunction with meteorological conditions so as to minimize smoke impacts. In addition, the BLM would comply with the current Smoke Management MOU between BLM,

USFS, and UDAQ. This may restrict the use of prescribed fire in terms of timing and size of treatments.

4.3.3.3.2. Cultural Resource Decisions

The majority of cultural resource decisions affecting fire management are associated with restrictions in CSMAs. As stated previously, restrictions on vegetation treatments and woodland harvest can lead to fuel loading, particularly in pinyon-juniper and conifer vegetation types, thereby resulting in increased risk of large catastrophic fires. Table 4.21 below summarizes these proposed restrictions by alternative.

Table 4.21. Acreage of CSMA Restrictions on Fire Management and Fuels Treatment (acres)

Restriction	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
No Surface-disturbing Vegetation Treatments	37,363	83,935	37,363	0	104,237
No Woodland Harvest	37,363	105,033	62,717	60,068	105,033

As shown in this table, Alternative E restricts fire management on the most CSMA lands, followed by Alternatives B, C, A, and D, respectively.

4.3.3.3.3. Fire Management Decisions

Under all alternatives of the Monticello FO RMP, 5,000 to 10,000 acres would be treated annually across the planning area depending on budgetary and time constraints. The majority of these treatments would likely be concentrated in the pinyon-juniper vegetation type, including historical sagebrush/grassland that has been encroached upon by pinyon-juniper (BLM 2005k). Approximately 92% of this vegetation type is in fire regime/condition class (FRCC) 3, which indicates that it suffers high departure (>66% variation) from historical fire return interval and/or vegetation condition/fuel loading. The main reasons the majority of the pinyon-juniper in the planning area falls within this FRCC are 1) loss of native understory of pinyon-juniper stands; 2) cheatgrass invasion of disturbed pinyon-juniper stands; and 3) fuel loading in uncharacteristically thick pinyon-juniper stands (BLM 2005k). The Moab Fire District Fire Management Plan has a long-term goal to treat up to approximately 41,000 acres of pinyon-juniper vegetation in the Monticello PA with prescribed fire (14,600 acres) and non-fire treatments (26,400 acres) over the next 10-year period. These treatments would take place in five Fire Management Units (FMUs) throughout the planning area. These treatment acreages are only approximate long-term goals, but are the best available estimates for the purposes of analysis.

If the Moab Fire District is able to successfully implement fuels treatments over a maximum number of desired acres in a given year, a general transition toward improved FRCC and DWFC in the Monticello FO could eventually be realized. Landscape-level fuel treatments require a long-term commitment of resources to implement, monitor, and maintain; implementation can depend on a myriad of factors such as climate, funding, threats or infestation from invasive species, and other variables; and, acreage goals can be altered or transformed by unexpected factors such as catastrophic wildland fire, drought, or changes in habitat for T&E species. In

consideration of these many aspects, improved FRCC and DWFC as well as other management goals and objectives may take generations for actual accomplishments to be realized.

4.3.3.3.4. Lands and Realty Decisions

Under all alternatives, minimum impact criteria for filming would limit the use of pyrotechnics and explosives, as well the numbers of people and vehicles in sensitive areas. This would provide a slight decrease in the risk of inadvertent fire starts from human causes.

4.3.3.3.5. Minerals Decisions

Minerals decisions impacting fire management are largely associated with potential increased risk of human-caused fires because of mineral development. These impacts are best compared by showing relative difference in acreage of lands open for surface-disturbing minerals development for each alternative (Table 4.22).

Table 4.22. Acreage of Planning Area Lands Open and Closed to Surface-disturbing Mineral Development (% of Planning Area)

Development	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Leasable					
Open (Standard or Special Stipulations)	1,238,230 (69%)	1,241,910 (70%)	1,348,973 (76%)	1,383,283 (77%)	758,930 (43%)
Closed (NSO/ Closed)	546,540 (31%)	541,717 (30%)	434,652 (24%)	401,028 (22%)	1,025,378 (57%)
Locatable					
Open	1,652,743 (93%)	1,521,656 (85%)	1,637,688 (92%)	1,737,999 (97%)	1,489,722 (83%)
Withdrawn	132,380 (7%)	263,467 (15%)	147,435 (8%)	47,124 (3%)	295,401 (16%)
Saleable					
Open/Open Special Conditions	1,389,256 (78%)	1,241,904 (70%)	1,348,968 (76%)	1,383,277 (77%)	758,930 (43%)

In general, Alternative E has the least amount of land available for surface-disturbing mineral extraction, followed by Alternatives B, A, C, and D respectively. However, the alternatives are very similar in the amount of area they make available for mineral development. Additionally, it should be noted that the actual amount of development predicted over the life of the plan is relatively low; therefore, mineral development activities would likely have a relatively low impact on fire management and fire risk in comparison to other human activities such as recreational visitation.

4.3.3.3.6. Non-WSA Lands with Wilderness Characteristics Decisions

Lands with wilderness characteristics would be managed to maintain these characteristics only under Alternative E, under which a total of 582,360 acres would be managed. These areas would

be closed to OHV use, mineral leasing, and mineral disposals, which would reduce the risk of human-caused fire starts. However, lands with wilderness characteristics would also be closed to woodland harvest, which would potentially increase fuel loading unless other vegetation treatments were used in its place.

4.3.3.3.7. Recreation Decisions

Recreation decisions impacting fire management include restrictions on woodland harvest, which could increase fuel loading and thus fire risk as stated previously; and restrictions on permitted visitation, campfires, dispersed camping, and OHV use, which slightly decrease the risk of human-caused wildland fire starts. A summary of these restrictions by alternative is provided in Table 4.23 below.

Table 4.23. Recreation Restrictions Impacting Fire Management and Risk (acres)

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fuels Removal Restrictions					
No Woodland Harvest*	89,271	506,028	129,950	126,456	510,152
Camping Restrictions					
No Campfires	375,734	378,562	0	0	378,562
No Dispersed Camping	385,937	130,294	41,023	10,203	130,294
OHV Use Categories					
Open to Cross-Country Travel	611,310	0	0	0	0
Limited to Existing/Designated Routes	789,170	1,359,417	1,362,142	1,780,807	812,683
Closed	276,430	423,698	418,667	0	970,435

*Acreage overlaps with woodland harvest restrictions in Table 4.21.

Alternatives E and B have the most restrictions on woodland harvest, followed by Alternatives C, D, and A, respectively. Accordingly, recreation decisions under Alternatives B and E would likely have more impacts on fire management and long-term risk of large and/or catastrophic fires than C, D, and A. Conversely, Alternatives B, E, and A restrict campfires and dispersed camping much more than Alternatives C and D. This indicates that these alternatives would have less risk of human-caused wildland fire than Alternatives C and D. Alternative A, in particular, lessens risk due to limitations on dispersed camping on Cedar Mesa.

In terms of travel-related risks of human-caused wildland fire, all of the action alternatives would have much less risk of human-caused fires than Alternative A. This is due to the prohibition on motorized cross-country travel under those alternatives. In terms of the amount of acreage where motorized travel would be limited to existing/designated routes, Alternative D has the most acreage, followed by Alternatives C and B, which have similar acreages, then Alternatives E and A. In terms of areas closed to motorized travel, Alternative E has the greatest acreage, followed

by Alternatives B and C. Alternative A has much less area closed to motorized travel than B or C, and Alternative D has no area closed. In broad terms, Alternatives E, B, and C provide the least amount of travel-related risk to fire management. Alternative D would have some additional risk and Alternative A would have substantially more risk than Alternatives E, B, and C.

4.3.3.3.8. Special Designations Decisions

Overall, designation of proposed ACECs and the subsequent restrictions on these areas would have the greatest impact on fire management activities in the planning area. Table 4.24 below summarizes the restrictions of fire and fuels treatments and woodland harvest in the planning area.

Table 4.24. Acreage of ACEC Restrictions on Fire Management and Fuels Treatment (acres)

Restriction	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
No Surface-disturbing Vegetation Treatments	386,857	166,611	105,532	61,660	187,354
No Woodland Harvest*	114,723	521,171	106,502	82,594	521,171

*Acreage overlaps with woodland harvest restrictions in Table 4.21.

Alternative A restricts the most ACEC area from vegetation treatments, followed by Alternatives E, B, C, and D respectively. Alternatives E and B restrict the most area from woodland harvest, followed by Alternatives A, C, and D. Overall, Alternative A would likely restrict fire management the most, followed by Alternatives E, B, C, and D. Accordingly, Alternative D would likely result in the least amount of fire risk to these areas, followed by Alternatives C, B, E, and A respectively.

4.3.3.4. Mitigation Measures

Management common to all alternatives, described in Chapter 2, would serve to mitigate potential significant adverse impacts to fire management and fire risk. These include fire management treatments and prioritization, and fire suppression activities that would be designed to prevent impacts to people, property, and key ecosystem components.

4.3.3.5. Unavoidable Adverse Impacts

The prohibition of fuels reduction and vegetation treatments in various areas throughout the field office may have unavoidable impacts by increasing the long-term risk of large and/or catastrophic fires. These areas include CSMAs, ACECs, and SRMAs, as described in Chapter 2 and Sections 4.3.3.2.2, 4.3.3.2.3, and 4.3.3.2.6 respectively. If such fires occur, this would have an avoidable adverse impact on the resources, time and money needed to suppress such fires, as well as the potential subsequent loss of property and natural resource values.

4.3.3.6. Short-term Use versus Long-term Productivity

The unavoidable impacts described above would potentially impact the long-term efficiency of fire management in the planning area. However, if non-surface-disturbing vegetation treatments

and fire suppression are effectively implemented, they would not result in a long-term loss of key ecosystem components or the long-term productivity of natural resources in the planning area. There would be no irreversible impacts from fire management.

4.3.3.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

There would be no irreversible or irretrievable impacts to fire management (i.e., fuels treatments, fire suppression, emergency stabilization, prevention and mitigation).

4.3.4. HEALTH AND SAFETY

The sources, handling, and disposal of hazardous materials are subject to the federal and state laws discussed in Section 3.5, Health and Safety. These laws and regulations are designed to safeguard human health and safety and to protect the natural environment, and thus, minimize the short-term and long-term risks associated with the use, storage, and disposal of hazardous materials. Currently, the Monticello PA implements the Compliance Assessment—Safety, Health, and Environment (CASHE) and Environmental Management Systems (EMS) programs to manage hazardous materials.

Management decisions regarding the following resources and uses would have negligible impacts on the use, storage, and disposal of hazardous materials and so are not further analyzed in this section:

- Air Quality
- Cultural and Paleontological Resources
- Fire Management
- Lands and Realty
- Livestock Grazing
- Non-WSA Lands with Wilderness Characteristics
- Recreation and Travel
- Vegetation, including Woodlands, Riparian, Soils, and Water
- Wildlife and Special-Status Species
- Special Designations
- Visual Resources

The above resources would have negligible impacts because maintaining air pollutant concentrations below air quality standard threshold levels; protecting cultural resources and fossils; reducing fuel loads and treating vegetation to reduce the risks of wildland fire; acquiring, exchanging, and/or selling federal lands, and permitting ROWs; and protecting the wilderness values within lands with non-WSA wilderness characteristics would not affect the handling, storage, or disposal of hazardous materials nor affect the remediation of hazardous materials site. Likewise, managing recreational resources and recreational opportunities within SRMAs and the ERMA; maintaining travel access throughout the Monticello PA; providing opportunities for woodland harvesting; protecting riparian areas, sensitive soils and watersheds; protecting wildlife and federally listed species; managing WSAs, WSRs, and ACECs to protect sensitive and valued resources; and protecting scenic quality would also not affect the ability of the

Monticello FO to control or dispose of hazardous materials, or affect FO cleanup of hazardous materials spills, and hazardous waste sites.

4.3.4.1. IMPACTS COMMON TO ALL ALTERNATIVES

Under all of the alternatives, BLM management practices for dealing with hazardous substances would protect environmental resources because the authorized uses of materials that could potentially affect human health and safety would comply with federal and state requirements to reduce or eliminate any potential impacts. State, local agency, and BLM procedures would address accidental spills and releases as well as unauthorized uses. These procedures would minimize the risks of public exposure to and environmental impacts from hazardous materials.

The Monticello PA RFD predictions for oil and gas development indicate that the average number of wells drilled within the life of the RMP would range from 54 wells (less than 4 wells per year) under Alternative E to 75 wells (5 wells per year) under Alternative D. The surface disturbance resulting from constructing a well pad, road, and associated pipelines is estimated to be approximately 9.6 acres. Thus, the total projected surface disturbance for oil and gas drilling would range from 516 acres under Alternative E to 720 acres under Alternative D. Given the small number of predicted wells that would be drilled within the life of the RMP, the health and safety risks due to hazardous materials under all alternatives would be negligible. However, any mineral exploration and development activities would increase the risks in the PA, and impacts from spills or releases would be adverse and long-term. The following are oil- and gas-related development activities that would pose risks from hazardous materials under all the alternatives.

<u>Pipelines</u>

Installing pipelines and support services for them (e.g., compressor stations) would be necessary for oil and gas development. The hazardous materials associated with pipelines include diesel fuel leaks or spills from compressor stations, and benzene and hexane leaks from natural gas condensation. Leaks or ruptures in the pipelines could also pose safety and environmental risks.

The operators installing and operating oil and gas pipelines would be responsible for understanding and complying with the applicable laws and regulations governing hazardous materials. The Monticello FO would be responsible for inspecting and monitoring these operations to ensure operator compliance, which would reduce the risks of pipeline-related leaks and spills.

<u>Power Lines</u>

It may be necessary to install power lines for oil and gas development. The operators that install and maintain these power lines would be responsible for understanding and complying with the applicable laws and regulations to prevent the release of hazardous materials related to power lines and transformers (e.g., PCB leaks from electrical transformers).

<u>Transportation</u>

Mineral-development activities would increase the risks associated with transporting hazardous materials. Transportation (e.g., trucking) companies would be responsible for understanding and abiding by all applicable transportation laws and regulations, which would reduce the risks of spills or releases.

Gas Flow-Line Leakage or Ruptures

The potential would exist for natural gas flow-line leakage or ruptures during extraction and processing (see Section 3.5.2.1, Health and Safety). The U.S. Department of Transportation (DOT) data indicate that an average of one rupture annually should be expected for every 5,000 miles of pipeline, with more than 50% of ruptures resulting from heavy equipment striking the pipeline. Such ruptures could potentially cause a fire or explosion if a spark or open flame ignited the escaping natural gas. Compliance with the applicable DOT regulations discussed in Section 3.5.2.1 would reduce these risks.

Well Fires and Explosions

Even though these risks are low, oil and gas companies typically have a procedure within their emergency contingency plan to call a service company specializing in controlling and extinguishing well fires in the unlikely event of one.

Human-Caused Fires

Well-pad fires and explosions are a potential health and safety hazard, but implementing the Utah Division of Oil, Gas, and Mining (UDOGM) measures for surface fires would reduce the risks of human-caused wildland fires resulting from unsafe well practices. Well sites would be kept free of vegetation and trash to minimize fire fuel in the vicinity, thus reducing the risks to operators from this potential hazard.

Geologic Hazards

The potential risks associated with oil and gas development include geologic hazards. These hazards include hydrogen sulfide releases and abnormally high gas pressures that could result in fires and explosions. Following is a description of these risks and the standard measures required to minimize them.

- Hydrogen Sulfide—hydrogen sulfide releases (a byproduct of drilling, extraction, and processing) would be monitored by special detectors located near drill holes. If hydrogen sulfide gas was detected, then the well operator could implement a hydrogen sulfide emergency contingency plan.
- Abnormal High Pressure—High pressures could be encountered when drilling. Blowout prevention equipment would be used to control any abnormally high pressures safely. Onshore Oil and Gas Order No. 2 established the minimum equipment necessary to drill safely under high-pressure conditions, and all wells on federal mineral leases would be required to comply with this order. Wells drilled on private and state leases would be subject to similar requirements from the UDOGM. Pressure equipment would be site-specifically prescribed during the application for permit to drill (APD) permitting process, and operators would be required to maintain the equipment. The Monticello FO and the UDOGM would conduct inspections during drilling to verify compliance with these requirements, which would reduce the health and safety risks from this geologic hazard.

Abandoned Mine Land (AML)

In conformance with the BLM's long-term strategies and national policies, the Monticello FO recognizes the need to identify and address physical safety and environmental hazards at all AML sites on public lands. To accomplish this long-term goal, criteria from the national policies

would be established under all alternatives to assist in determining priorities for site mitigation and reclamation (see Table 2.1 Summary Table of Alternatives-Health and Safety, for AML program priorities). Under all alternatives, Health and Safety management decisions would prioritize all known AML sites for remediation and closure. The prioritized sites would be remediated, based on the need to protect public health and safety and watersheds, and on funds contributed by other agencies collaborating in site remediation.

Addressing the physical safety concerns and environmental hazards of AML sites would likely have long-term beneficial impacts on health and safety by reducing the risks to the public and improving the quality of natural resources. Remediation of sites would likely improve water and soil quality, therefore improving vegetation and wildlife habitat in the areas adversely impacted by mining operations. With several agencies working collaboratively to address the safety and environmental impacts, remediation would likely have a beneficial impact on BLM management decisions because the reclaimed lands would be considered in future planning for other resource uses, including consideration as potential recreation areas.

4.3.4.2. IMPACTS FROM ALTERNATIVES

Due to the small number of new oil and gas wells predicted within the LOP, and the small difference in predicted drilled wells among the proposed alternatives (54 to 75 wells), the impacts across the range of alternatives would not be broad. The greater the acreage open to oil and gas development, the more oil and gas infrastructure (e.g., pipelines, power lines, transportation routes) would be necessary; therefore, it was assumed that the alternative with more predicted development would have a slightly higher risk from hazardous materials than the alternative with less. For example, the potential health and safety risks and adverse impacts would be slightly higher with Alternative C than Alternative D because more acres would be open to development and thus would likely require more oil and gas infrastructure. The types of hazardous materials possibly resulting from oil and gas development include sodium hydroxide, diesel fuel, methanol, hydrochloric acid, acetic acid, zinc and copper compounds, and propane (see Section 3.5.2.1, Health and Safety, for a list of typical hazardous materials and their uses in oil and gas development).

4.3.4.2.1. ALTERNATIVE A

Under Alternative A, approximately 1,238,230 acres (69% of the PA) would be open to oil and gas exploration and development with standard and special (timing and CSU) lease stipulations. Oil and gas development under this alternative would potentially create health and safety risks from the use, generation, storage, transportation, and/or disposal of hazardous materials used in minerals exploration and development.

4.3.4.2.2. ALTERNATIVE B

Under Alternative B, approximately 1,241,910 acres of BLM-administered lands would be open for oil and gas development with standard and special lease stipulations (70% of the PA). This represents a 1% increase in the total amount of acres available for leasing compared to Alternative A and would present a negligible increase in the potential use, generation, storage, transportation, and/or disposal of hazardous materials.

4.3.4.2.3. ALTERNATIVE C

Under Alternative C, approximately 1,348,973 acres of BLM-administered lands would be open for oil and gas development with standard and special lease stipulations (76% of the PA), a 7% increase in the total area available when compared to Alternative A. Thus, Alternative C would minimally increase the use, generation, storage, transportation, and/or disposal of hazardous materials, with a minimal increase in the potential health and safety risks of these substances when compared to Alternative A.

4.3.4.2.4. ALTERNATIVE D

Under Alternative D, approximately 1,383,283 acres of BLM-administered lands would be open for oil and gas development with standard and special lease stipulations (78% of the PA), a 9% increase in the total amount of acres available under Alternative A. The impacts would be similar to Alternative C because of the relative sizes of the areas.

4.3.4.2.5. ALTERNATIVE E

Under Alternative E, approximately 758,928 acres of BLM-administered lands would be open for oil and gas development with standard and special lease stipulations (43% of the PA). This represents a 26% decrease in the total amount of acres available under Alternative A. Thus, Alternative E would moderately decrease the potential risks to human health and safety from oil and gas-related use, generation, storage, transportation, and/or disposal of hazardous materials.

4.3.4.3. SUMMARY OF IMPACTS

Mineral management decisions would increase the risk of impacts due to hazardous materials. Due to the small amount of predicted wells throughout the life of the RMP, however, the difference in impacts among Alternatives A, B, C, and D would be negligible. Alternative E would moderately reduce risks to health and safety because the area available for mineral leasing under standard and special leasing regulations would be substantially less.

4.3.4.4. MITIGATION MEASURES

Using signs to identify the location of underground pipelines would help reduce the potential for pipeline ruptures by heavy equipment. No additional mitigation would be required to reduce impacts from hazardous materials because it is assumed that users and producers would comply with existing federal and state laws and regulations pertaining to the use, generation, storage, transportation, and disposal of hazardous materials. Compliance with existing regulations would reduce the health and safety risks to a minor or low level.

4.3.4.5. UNAVOIDABLE ADVERSE IMPACTS

The risks from hazardous materials would increase during mineral exploration and development, causing potentially unavoidable adverse impacts including the possible release of hydrogen sulfide (a byproduct of drilling, extracting, and processing), abnormally high pressure during drilling, seismic activity, gas flow-line leakage or rupture, well fires, and explosions. Risks and impacts would increase due to the disruption of mineral operations if these events occurred and the subsequent release of hazardous materials into the environment. It should be noted that the natural release of hydrogen sulfide is not covered under the Comprehensive Environmental

Response Compensation and Liability Act (CERCLA), but it could be a potential hazard according to the Occupational Safety and Health Administration (OSHA). All gases resulting from oil and gas exploration and production streams are CERCLA exempt (EPA 2002).

4.3.4.6. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term mineral development or other resource use in the PA would not result in impacts to long-term productivity or ability to control and manage hazardous materials.

4.3.4.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

There are no irreversible or irretrievable impacts to the control or management of hazardous materials stemming from any of the alternatives.

4.3.5. LANDS AND REALTY

Lands and Realty is a resource use rather than an environmental component. Consequently impacts to lands and realty are determined by the emphasis of other resource programs. The discussion of the effects on lands and realty in each alternative will be limited to the effects on permitted or authorized uses and land tenure adjustments (LTAs).

Impacts to the lands and realty program stem from those resource decisions that limit or hinder permitting rights-of-way (ROWs) or other land use authorizations, or affect the BLM's ability to acquire and dispose of land or make other LTAs. Restrictions to protect wildlife, vegetation, recreation, riparian areas, soils/watersheds, visual resources, special status species, and cultural resources programs can collectively impact the lands and realty program by limiting surface disturbing activities and allowable land use authorizations. As such, potential impacts from these program decisions will be analyzed in this chapter.

ROWs are issued for the placement of roads, powerlines, pipelines, communications sites, and wind and solar energy sites on public lands. Within the RMP, such decisions primarily result from minerals (access routes, pipelines, etc), special designations (WSAs are exclusion areas for ROWs), wilderness characteristics (could be exclusion areas for ROWs), and lands and realty itself (corridors for energy and access, filming authorizations).

The specific program management decisions regarding the following resources and resource uses would have no discernable impacts (short-term and/or long-term, as well as direct and/or indirect) on lands and realty regardless of the alternative chosen: air quality; fire management; hazardous materials management; livestock grazing; paleontological resources; and woodlands. Given the negligible impact of these resource program decisions on lands and realty, they will not be analyzed further in this chapter.

4.3.5.1. IMPACTS COMMON TO ALL ALTERNATIVES

All Wilderness Study Areas (386,027 acres), the Grand Gulch Special Emphasis area of the Cedar Mesa ACEC (49,130 acres), portions of Dark Canyon (61,735 acres), and developed recreation sites (250 acres) would be managed as ROW exclusion areas under all alternatives. Areas closed to oil and gas leasing would also be ROW exclusion areas. NSO areas would be avoidance areas for ROWs.

The impacts of these exclusion/avoidance areas include restricting the placement of ROWs and facilities, limiting future access, delaying or increasing the cost of energy supplies, and creating communications dead zones or delaying the availability of communications services. Limitations on the placement of ROWs could also result in ROWs being located in less desirable or less economically feasible locations. All of these would add to the costs of constructing and time to process ROWs.

Lands and realty program decisions would manage actions proposed for public lands in accordance with standard BLM land policies as related to Recreation and Public Purposes Act leases and other LTAs. ROWs and LTAs would continue to be granted under all of the management alternatives. The granting of ROWs would accommodate the desired placement of facilities, enhance access to facilities and all lands within the Monticello PA, and promote efficient energy supply/transmission and communications. Granting ROWs would also help to minimize the cost of energy and communications developments for the reasons discussed above, and promote trails and recreational use from the additional opportunities created along ROW access routes.

LTAs (disposals, access, easements, transportation and utility corridors, withdrawals, acquisitions) would help to facilitate access within the Monticello PA and adjoining properties, improve the BLM's management ability, reduce conflicts with adjoining landowners and surrounding communities, and accommodate surrounding communities' needs.

Impacts common to all alternatives would occur due to VRM class designation decisions, cultural resource management decisions, and special status species management decisions. All ROW grants would comply with restrictions for cultural resources and special status species and the presence of protected resources. The impact could increase the cost and time required for processing of applications, and could delay or alter the route of proposed ROWs.

Also under all alternatives, wind and solar energy development would be permissible within the Monticello PA. Authorizations for wind and energy uses would incorporate the best management practices contained in the Final Wind Energy Programmatic EIS (BLM 2005f: 2-10 to 2-24) and would be stipulated in ROW grants. Implementation of these measures would provide for the use of Monticello PA lands for alternative energy and communications uses, but utilizing the BMPs could add to the cost to site and construct facilities.

4.3.5.2. Impacts Common to All Action Alternatives

Several lands and realty decisions would have impacts common to all of the action alternatives, (all alternatives other than Alternative A). The Monticello FO would work cooperatively with the State of Utah and with private landowners to identify opportunities for LTAs using the criteria established for disposal and acquisition of lands. LTAs would facilitate BLM efforts to meet management goals and objectives, as set forth in this RMP. The application of minimum-impact filming criteria (Appendix P) would streamline the permit application process and encourage filming companies to use previously approved locations.

A West Wide Energy Corridor (WWEC) EIS for Utility Corridors in 11 Western states, including Utah, is being developed by the Washington Office of the BLM in accordance with the Energy Policy Act of 2005. Under all alternatives, these corridors and all existing utility corridors would be available for utility and other types of ROWs, which could help to minimize

the cost of energy and communications developments and encourage development of energy resources.

Under all alternatives, filming permits would be issued within the Monticello PA on a case-by-case basis. Application of the minimum impact criteria for filming permits would make the filming process more efficient by providing stipulations for mitigating filming impacts, and encourage the filming industry to use already established sites or conduct operations in areas that meet the minimal impact criteria.

Under all action alternatives, a total of 6,440 acres of land has been identified for disposal (see Appendix C). These lands meet the BLM requirements for disposal and are consistent with the LTA policies of the agency.

A summary of the acreages for avoidance, exclusion, withdrawal, and restrictions are listed in Table 4.25, and the impacts are discussed below. Generally, the impacts to lands and realty under each alternative are similar, but vary in the sizes of the affected areas within the Monticello PA.

Table 4.25. Acreage of Avoidance, Exclusion, and Recommended for Withdrawal from Mineral Entry (acres)

Restriction	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Lands Excluded from new ROWs (consistent with Closed)	385,316	416,612	395,329	386,853	974,463
Avoidance Areas for ROWs (consistent with NSO)	161,224	125,105	39,323	14,175	53,915
Lands Available for ROWs with Standard Terms and Conditions	578,604	365,170	629,472	962,283	213,290
Lands Available for ROWs with CSU/TL	659,626	876,739	719,501	421,000	545,641
Lands Recommended for Withdrawal from Mineral Entry**	110,066	257,467	102,258	45,734	769,739
Lands Available for Disposal	5,911*	6,440	6,440	6,440	6,440

*Published acreage from 1991 RMP (BLM 1991a)

** See Maps 5 - 9

4.3.5.3. ALTERNATIVES IMPACTS

4.3.5.3.1. ALTERNATIVE A

A total of 385,316 acres (within WSAs, the Grand Gulch Special Emphasis area of the Cedar Mesa ACEC, Dark Canyon, and developed recreation sites) would be exclusion areas for new ROWs. An additional 161,224 acres are avoidance areas for new ROWs. Exclusion and avoidance areas impact lands and realty by restricting the placement of ROWs and facilities, limiting future access, delaying or increasing the cost of energy supplies, and creating communications dead zones or delaying the availability of communications services. Limitations on the placement of ROWs could also result in ROWs being located in less desirable or less economically feasible locations. Alternative A has the smallest amount of exclusion areas

(though not the smallest avoidance areas), but still results in the fewest limitations on the placement of future ROWs.

Other resource management decisions could also affect or limit the placement of ROWs and facilities on BLM lands due to minerals-related timing or controlled surface use leasing limitations on surface disturbing activities. The size and duration of impacted areas, and limitations on surface disturbing activities would also likely occur because of riparian, soils and watershed, visual resources, special status species, and wildlife management decisions. Limitations on surface disturbing activities from these resource management decisions would preclude or hinder the placement of new ROWs, with potential increases in ROW construction costs, by limiting access to some areas of the Monticello PA or delaying the completion of ROWs (in the case of seasonal limitations).

Alternative A proposes to manage 659,626 acres with timing and controlled surface use leasing stipulations and 578,604 acres with standard stipulations. A total of 113,240 acres in non-WSA lands with wilderness characteristics would continue to be ROW avoidance or exclusion areas.

Minerals and energy development decisions would impact the BLM's workload (and time spent) processing ROW grants (primarily roads and pipelines). A total of 73 wells are projected to be developed under Alternative A. The ROW development associated with 73 wells is similar to that projected for Alternatives C and D, with 74 and 75 wells, respectively. However, the ROW development associated with the 73 wells in Alternative A is 11% greater than the development associated with the 66 wells predicted under Alternative B.

Under Alternative A, approximately 110,066 acres (or 6% of the PA) would be recommended for withdrawal from mineral entry (Map 5). This decision would potentially provide fewer opportunities for mineral resource development on this acreage and less production and supply of mineral resources; however, Alternative A proposes the least restrictions on surface disturbing activities, and thus would have the least impact on the construction of future ROWs.

4.3.5.3.2. Alternatives B through E

The specific acreage affected under these alternatives is shown above in Table 4.25. The impacts avoidance and exclusion areas under these alternatives would include restricting the placement of ROWs and facilities, limiting future access, delaying or increasing the cost of energy supplies, and creating communications dead zones or delaying the availability of communications services. Limitations on the placement of ROWs could also result in ROWs being located in less desirable or less economically feasible locations. All of these would add to the costs and time to process ROWs. As the number of acres of land that are exclusion areas increase, the likelihood for adverse impacts would increase because of the increasing limitations on ROW placement.

4.3.5.4. Mitigation Measures

No mitigation measures are proposed under any of the alternatives.

4.3.5.5. Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts.

4.3.5.6. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

There would be no loss of long-term productivity from short-term uses.

4.3.5.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

All alternatives permit LTAs that may result in the permanent loss of lands from public ownership if they enter State or private land ownership.

There are no irreversible or irretrievable impacts to Lands or Realty for any alternative.

4.3.6. LIVESTOCK GRAZING

Impacts on livestock grazing activities are generally the result of activities that affect forage levels (and are quantified as animal unit months [AUMs]). Management decisions that are likely to have the greatest beneficial impacts on livestock grazing would include vegetation treatments and fire treatments that could increase vegetation productivity and forage (AUMs) available for livestock in the long-term from improvements in vegetation communities. Management decisions that allow and activities that produce surface disturbance and reduce vegetation productivity (e.g., minerals exploration and development, right of way (ROW) construction, recreational area development, cross-country motorized off-highway vehicle [OHV] travel) or resource decisions and activities that limit surface disturbances (e.g., special designation areas, non-WSA lands with wilderness characteristics, soil and water resources, and visual resources) would also impact livestock grazing by affecting forage levels. The analyses of these impacts on livestock grazing are based on the follow assumptions:

- Livestock grazing occurs throughout the Monticello PA, and the acreages used in this analysis represent the grazing allotments on BLM-administered lands.
- Livestock grazing is and would continue to be managed in accordance with the Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah (see Appendix D). If a grazing allotment fails to meet rangeland standards, and where it is determined that livestock grazing management practices would be a substantial factor in this failure, grazing practices would be modified so that progress could be made toward achieving the standard(s). Such modifications could include a change in stocking rate, the kind of livestock, the season of use and/or length of season, or a combination of these. Livestock grazing management modifications could also include making allotments or portions of allotments temporarily unavailable to livestock grazing in order to repair or rehabilitate areas not meeting rangeland health standards. These repair and/or rehabilitation modifications could result in a short-term or long-term loss of livestock grazing acreages and AUMs available for livestock grazing.
- Changes to livestock grazing preferences found necessary through adaptive management and monitoring and inventories acceptable to the BLM Authorized Officer would be made on an allotment-specific determination during the implementation phase of the RMP. The only changes in grazing preference considered in this analysis would be the managment decisions whereby grazing allotments or portions of allotments would be proposed as unavailable for livestock grazing as part of the alternative.
- Data collected from rangeland monitoring studies would be used to assist the BLM Field Manager in determining to what extent changes to livestock grazing would be needed to

maintain or restore rangeland health, meet resource objectives, and assure that livestock use levels are sustainable. When required, temporary suspension of livestock use would be implemented to restore an area so that it could continue to sustainably support livestock grazing and other uses.

- Under all alternatives, specified allotments would undergo season-of-use changes to facilitate grazing management while maintaining rangeland health standards. Changes in season-of-use do not necessarily affect available acreage or forage in AUMs. The season-of-use changes, common to all action alternatives, are shown in Table 4.26 below.

Table 4.26. Season-of-Use Changes, under All Action Alternatives

Allotment	1991 RMP Season-of-Use	2006 RMP Proposed Season-of-Use	Season-of-Use Change
Church Rock	12/1 to 3/31	12/1 to 5/31	Increased spring use 61 days
Indian Rock	11/15 to 3/31	11/15 to 4/15	Increased spring use 15 days
Owens Dugout	11/25 to 3/31	11/25 to 4/30	Increased spring use 30 days
Laws	9/1 to 3/31	4/16 to 11/15	Decreased fall and winter use 136 days, increased spring and summer use 138 days
Bear Trap	7/15 to 11/30	12/1 to 3/15	Decreased summer and fall use 139 days, increased winter use 105 days
Monument Canyon	12/5 to 5/31	12/1 to 5/31	Increased winter use 5 days

New allotments have been established since the approval of the 1991 RMP. These allotments were split from existing allotments so there was no change in acres available for grazing or AUMs. The new areas and their seasons-of-use are shown in Table 4.27.

Table 4.27. New Allotments Created Since the 1991 RMP, Existent under All Alternatives

Allotment	2006 RMP Proposed Season-of-Use	AUMs	Acreage
South Vega	1/6 to 4/30	15	455
Upper Mail Station	11/14 to 2/28	74	1821
Big Westwater	11/25 to 4/30	50	480

While changes in these seasons-of-use are proposed in this revised RMP, they may be modified at a later date along with the seasons-of-use on other allotments as part of general allotment administration at the activity-based decision level. Compliance with existing laws and regulations and appropriate analysis would be conducted prior to any season-of-use change, and an amendment to the forthcoming revised RMP would not be required.

There are 74 grazing allotments in the Monticello PA. These grazing allotments encompass approximately 1,761,351 acres of BLM-administered land, and approximately 78,796 AUMs (active preference) of forage are administered by the Montiecello FO. The main quantitative units for comparison between alternatives are acres and AUMs available (gained or lost) to

livestock grazing use. Length of grazing season will also used when comparing grazing impacts between alternatives.

In order to calculate a loss or gain in AUMs for any area unavailable or available to livestock grazing under this revised RMP, the acreage of the area is divided by the area of the grazing allotment(s) within which it occurs. This percentage is used to calculate the number of AUMs of forage likely to occur within the area of consideration. The exception to this method would be for situations in which an entire allotment or part of an allotment allocated to a permittee separately from the other permittee(s) in the remainder of the allotment is to be unavailable to grazing. In this case, the entire grazing preference of the permittee is affected and that figure is used. It is assumed that the calculated number of AUMs in an allotment as shown in the Monticello FO Analysis of Management Situation (AMS) (BLM 2005c) correctly represents the amount of forage available.

4.3.6.1. IMPACTS COMMON TO ALL ALTERNATIVES

Management decisions common to all alternatives that would affect the livestock grazing resource by directly decreasing or increasing acres and AUMs available to livestock, are as follows:

Under the Fire Management Plan (FMP), wildland fires could be allowed to burn unless they threaten Wildland-Urban Interface (WUI) areas, threatened, endangered, or special status species, high priority sub-basins or watersheds, cultural resources and/or cultural landscapes, or sensitive ecosystems. If wildland fire occurs on rangeland, it may result in a short-term loss of acres and AUMs available to livestock because of 1) vegetation loss, and 2) because of the BLM grazing guidelines that require burned areas that are re-seeded to be rested from livestock use for at least two growing seasons after a fire. Burned areas that are not re-seeded require a minimum rest period of one growing season (BLM 1997, and BLM 1999a).

Under all alternatives, livestock grazing decisions currently do and would continue to make designated areas unavailable for grazing, including (see Table 4.28): Bridger Jack Mesa, the Grand Gulch area of Cedar Mesa, Dark Canyon (partially unavailable), Lavender Mesa, five identified mesa tops (in the White Canyon area), Pearson Canyon, Rogers Exclusion, and developed recreation sites. Note that Lavender Mesa and Bridger Jack Mesa are physically inaccessible to livestock, so the impacts to livestock grazing would be negligible. Unavailability of the Grand Gulch and Dark Canyon would have long-term, adverse impacts on livestock grazing because these areas and their potential AUMs are currently unavailable for livestock grazing and would continue to be unavailable during the life of the RMP.

For all alternatives, health and safety decisions to reduce the risks of hazardous materials spills and improve public safety around abandoned mineland (AML) sites would have negligible impacts on livestock grazing in the short term because livestock grazing acreages and AUMs would not change. In the long term, the reclamation of AML sites could potentially expand livestock grazing acreage and increase AUMs.

Table 4.28. Areas to Remain Unavailable for Grazing, Under All Alternatives

Areas Unavailable for Grazing	Allotment(s)	BLM Acres Remaining Unavailable for Grazing[1]	Justification
Bridger Jack Mesa	Indian Creek	6,260	Inaccessible to livestock, no water, sparce vegetation, protect relict vegetation
Dark Canyon (portions)	Indian Creek, White Canyon	37,690	Protect scenic quality and wildlife habitat, and maintain primitive recreational opportunities
Five mesa tops	Lake Canyon, White Canyon	46,873	No water, sparse vegetation, protect wildlife habitat
Grand Gulch	Lake Canyon, Slickhorn	15,658	Protect cultural resources
Lavender Mesa	Indian Creek	649	Inaccessible to livestock, no water, sparse vegetation, protect relict vegetation
Pearson Canyon Hiking Trail	Little Boulder	1,118	Maintain recreational opportunities
Rogers	Monument	40	Isolated by State and private land ownership, impractical to manage for livestock grazing
Comb Wash (Arch, Fish&Owl, Mule, Road)		16,599	Protect cultural and recreational values
Developed Recreation Sites		467	Protect recreational values
Total Unavailable Acres		**125,356**	

[1] Acreages for particular areas may vary slightly due to the differences in shapefiles for GIS calculations.

Proposed land disposals (6,440 acres), exchanges, and sales under lands and realty for all of the alternatives could potentially reduce acres and AUMs available for livestock grazing in the long-term. Land acquistions would potentially increase livestock grazing acreages and AUMs. Construction of energy or communication sites, or ROWs could result in a short-term loss of acres and AUMs during construction and a permanent loss if the structure or ROW prohibits grazing indefinitely in the area.

Surface disturbing activities due to minerals exploration and development would result in in both short-term losses of AUMs and total acres accessible for livestock grazing during exploration drilling and geophysical exploration, until the disturbed areas are reclaimed. There would be long-term losses of AUMs and livestock grazing acreage from surface disturbances if wells were drilled and developed for production of oil and gas (this would include losses of AUMs and

acreage from related infrastructure and pipelines construction) for the production life of the well, and from the extraction of locatable and saleable minerals. The potential long-term loss of livestock grazing acreage from oil and gas development is predicted to range from 699 acres under Alternative A to 518 acres under Alternative E. Disturbance from any type of construction could indirectly and adversely affect livestock by increasing the numbers of exotic, invasive and/or noxious weed species, many of which are toxic to livestock (Young et al. 1999) or unpalatable and could result in a loss of grazable acres or AUMs. The noise, dust, and human presence associated with certain construction activities (e.g., minerals access road construction, well drilling, and pipeline construction/maintenance) could decrease the acreages or AUMs in the short-term.

Grazing would be unavailable on existing developed recreation sites (presently ecompassing approximately 467 acres) or future developed recreation sites, with permanent losses of livestock grazing acreage and AUMs within the new site developments.

Since livestock grazing can have adverse impacts on riparian ecosystems (Armour et al. 1991), it may be necessary to modify grazing practices when it is determined that a riparian area is identified as "Functioning at Risk" (see Table 3.23) and livestock have been determined to be a causal factor in this condition. Restrictions could be imposed under all alternatives (in compliance with BLM Riparian Policy) within the 28,997 acres of riparian areas, causing a short-term loss of acres and AUMs available to livestock through seasonal restrictions, forage utilization limits, or making affected riparian areas unavailable for livestock grazing.

Generally, highly dispersed livestock grazing has minor impact on soils, but modified management practices may be necessary where soils are found to be sensitive to disturbances by livestock. This could result in a decrease in acres and AUMs available to livestock.

Existing vegetation treatments would be maintained through retreatment of sites, and new treatments would be implemented as needed to meet management objectives. Vegetation treatments would reduce livestock grazing acreages and AUMs in the short-term, but could increase the AUMs available in the long term for livestock from potentially increased vegetation productivity after the site has been rehabilitated.

In general, where livestock grazing could potentially impact the habitats of special status species and species that are listed, or proposed for listing, or candidates for listing under the Endangered Species Act (ESA), changes would be made to grazing management practices to protect species and their habitat. This could decrease AUMs and acreages available to livestock and/or increase management requirements under the terms and conditions of the permit.

Any area available for grazing because of other resource management activities that had previously been unavailable could increase the number of acres and AUMs available to livestock if conditions allow.

If an allotment occurs in bighorn sheep habitat, it would not be possible to change the animal permitted in that allotment from cattle to sheep. Domestic sheep can transmit diseases such as pneumonia to native bighorn sheep, which is thought to have caused high numbers of bighorn sheep fatalities (Foreyt and Jessup 1982, Jessup 1985). Forage and water competition by livestock also creates stress to bighorn sheep, and all such interactions would be avoided (Desert Bighorn Council 1990).

The Comb Wash Allotment (those areas closed by court order and encompassing approximately 16,599 acres and 337 AUMs within Mule Canyon below U-95, and Arch, Fish, Owl, and Road Canyons) would be unavailable to livestock grazing under all alternatives. This would result in a long-term, adverse impact from loss of forage for livestock grazing. The impact would be minor because the unavailable acreages total less than 0.01% of the available livestock acreage within the Monticello PA.

Special designation decisions for all alternatives would make acreages within Bridger Jack Mesa (6,225 acres), Dark Canyon (61,660 acres), and Lavender Mesa (649 acres) unavailable for livestock grazing in order to protect scenic quality, natural values, and relict vegetation. The impacts to livestock grazing would be negligible within Bridger Jack and Lavender Mesas because, as mentioned above, these areas are physically inaccessible to livestock. Managing portions of Dark Canyon as unavailable to livestock grazing would have minor, adverse impacts due to limits on livestock-related water development construction and maintenance, and limits on livestock grazing fencing installation, because much of the area lies within a WSA.

Wildlife and fisherie decisions under all alternatives would manage the five mesa tops as unavailable to livestock grazing in order to protect bighorn sheep habitat. This would have negligible impacts on livestock grazing because available forage is sparse, and no water is available.

For all alternatives the acreages and AUMs unavailable to livestock grazing within the Comb Wash Allotment would leave a total of 1,744,752 acres and 78,459 AUMs available for livestock grazing.

4.3.6.2. Impacts Common to All Action Alternatives

Under all action alternatives, cultural resources decisions in special designation areas would prescribe special conditions to protect at-risk resources from possible damage due to livestock grazing. This could result in fewer acres or AUMs available in the long-term for livestock if it is determined that site closures are necessary in order to protect cultural resources. The impacts would be minor because livestock grazing limitations and/or unavailability would be site-specific within the approximately 62,567 acres encompassing the Comb Ridge, Beef Basin, Tank Bench, and McLoyd Canyon-Moon House Cultural Special Management Areas (CSMAs).

Recreation decisions for all action alternatives would protentially restrict livestock grazing, with a potential loss of acres and AUMs, if it is determined that livestock pose a risk of damaging cultural/recreation resources (e.g., petroglyph or pictograph panels, and interpretive sites).

Recreation-related travel decisions under all of the action alternatives would limit motorized OHV use by reducing the current level of open, cross-country use from 611,310 acres to no acre open under Alternatives B and E, and 2,311 acres under Alternative C and D. This would have 1) long-term, direct, beneficial impacts on livestock grazing from reduced noise and human-activity-related disturbances to livestock, and 2) indirect, beneficial impacts on livestock grazing from potential improvements in forage productivity through reduced surface disturbance impacts to vegetation.

4.3.6.3. ALTERNATIVES IMPACTS

Under all alternatives, there would be negligible impacts to livestock grazing from decisions on air quality, paleontology, non-WSA lands with wilderness characteristics, WSAs and WSRs, visual resources, and woodlands, so these resources will not be discussed and analyzed further. The impacts would be negligible because meeting National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) program air quality standards, allowing scientific study and recreational collection of fossils, protecting wilderness values within WSAs and non-WSA lands with wilderness characteristics, maintaining ORVs along eligible WSR segments, protecting scenic quality, and maintaining sustainable woodland resources for harvesting would not change the size of grazing allotments, improve or degrade forage productivity or utilization levels, or change AUMs for livestock grazing.

4.3.6.3.1. ALTERNATIVE A

4.3.6.3.1.1. Impacts of Cultural Resource Decisions on Livestock Grazing Under Alternative A

Under this alternative, cultural resource management decisions for the Comb Ridge, Beef Basin, and Tank Bench areas would not restrict or impact current livestock grazing activities. Within the Grand Gulch Special Emphasis Area, livestock grazing would be available except for approximately 16,316 acres in Grand Gulch and its tributaries (a decrease of approximately 0.9% of the total area within the Monticello PA available for livestock grazing). However, as discussed above under Impacts Common to All Alternatives, the Grand Gulch Special Emphasis Area is and would remain closed to grazing, with minor impacts to grazing from the relatively small area unavailable for grazing, in order to protect cultural resources.

4.3.6.3.1.2. Impacts of Livestock Grazing Decisions on Livestock Grazing Under Alternative A

Impacts would be the same as those discussed under Impacts Common to All Alternatives.

4.3.6.3.1.3. Impacts of Mineral Decisions on Livestock Grazing Under Alternative A

The predicted RFD surface disturbance due to oil and gas development that would occur under this alternative would be approximately 699 total acres, which would have minor, long-term impacts on livestock grazing from loss of acreages and AUMs through surface disturbances, and wellpad and access road construction. The impacts would be negligible to minor because the size of the affected area would be relatively small (0.04% of available livestock grazing acreage within the PA).

4.3.6.3.1.4. Impacts of Recreation Decisions on Livestock Grazing Under Alternative A

As discussed under Impacts Common to All Alternatives, Pearson Canyon and all developed recreation sites would be unavailable to livestock grazing. The impacts of these management decisions would have negligible to minor impacts on livestock grazing as Pearson Canyon (1,118 acres) and existing recreational facilities (totaling approximately 467 acres) comprise a relatively small area (approximately 0.08% of the total area available for livestock grazing within the

Monticello PA). Under this alternative, livestock grazing would be allowed within the San Juan SRMA and the Cedar Mesa C-SRMA, with beneficial impacts to livestock from maintained grazing acreages and AUMs.

4.3.6.3.1.5. Impacts of Riparian Decisions on Livestock Grazing Under Alternative A

There are no specific management decisions under this alternative that would impact riparian resources. However, as discussed under impacts common to all alternatives, there would be potentially short term and long term impacts to livestock grazing from acres made unavailable to livestock to protect Functioning At Risk riparian resources.

4.3.6.3.1.6. Impacts of Special Designation Decisions on Livestock Grazing Under Alternative A

As discussed under impacts common to all alternatives, livestock grazing would be unavailable in the Bridger Jack ACEC (6,260 acres), canyon bottoms of Dark Canyon ACEC (37,690 acres), and Lavender Mesa ACEC (649 acres), with impacts to livestock grazing as discussed in that subsection. The impacts from management of WSAs and WSRs would be minor because, while no areas are unavailable to livestock grazing, limits on surface disturbances could limit improvements in livestock-water structures, and fencing.

4.3.6.3.1.7. Impacts of Special Status Species Decisions on Livestock Grazing Under Alternative A

Under Alternative A, there are no special status species decisions that restrict or make livestock grazing acreages unavailable. Thus, the impacts to livestock grazing from special status species decisions would be negligible.

4.3.6.3.1.8. Impacts of Travel Decisions on Livestock Grazing Under Alternative A

The continuation of current travel decisions would have long term impacts on livestock grazing from motorized OHV use on 611,310 acres designated as open to cross-country use. The adverse impacts would result from 1) engine noise-related, and human activity and presence-related disturbances to livestock, and 2) surface disturbances to forage productivity.

4.3.6.3.1.9. Impact of Vegetation Decisions on Livestock Grazing Under Alternative A

Under Alternative A, existing vegetation treatments would be maintained and new treatments applied on 232,130 acres that could adversely impact livestock grazing in the short term and/or long term, depending on the type of treatment (BLM 1991b): mechanical treatments could remove shrub and woodland shelter need by livestock for cover, prescribed burning could potentially create conditions for the establishment or spread of toxic, invasive plant species that lack forage value. However, maintaining existing vegetation treatment areas and applying new treatments would also have long-term, beneficial indirect impacts on livestock from potentially improved forage conditions. Protection of relict vegetation within the Lavender Mesa and Bridger Jack Mesa ACECs would have negligible impacts on livestock grazing, as discussed above under Special Designation, because the mesas are and would remain inaccessible to livestock.

4.3.6.3.1.10. Impacts of Wildlife and Fisheries Decisions on Livestock Grazing Under Alternative A

There are no specific management decisions that would impact livestock grazing, except for the five mesa tops discussed above under Impacts Common to All Alternatives.

4.3.6.3.2. ALTERNATIVE B

4.3.6.3.2.1. Impacts of Cultural Management Decisions on Livestock Grazing Under Alternative B

The Comb Ridge, Tank Bench, and Beef Basin Cultural Special Management Areas (CSMAs) would be open to grazing under this alternative, but with stipulations to restrict livestock access if cultural resources become impacted. Compared to Alternative A, the impacts would be the same (negligible) because these areas would remain available for livestock grazing.

4.3.6.3.2.2. Impacts of Livestock Grazing Decisions on Livestock Grazing Under Alternative B

The following areas (shown in Table 4.29 below) would be unavailable for grazing (with a reduction in available AUMs) under this alternative, in addition to those listed for all alternatives in Table 4.28 above. Compared to Alternative A, the reduction in acreages and AUMs would have long-term, adverse impacts on livestock grazing because grazing opportunities would be lost for the life of the proposed RMP.

Table 4.29. Acres and AUMs of Forage Unavailable under Alternative B in Addition to Those Listed under Alternative A (No Action)[1]

Area Unavailable for Livestock Grazing	Allotment(s)	BLM Acres Unavailable for Grazing	Forage Lost (AUMs)
Dodge Canyon	Dodge Canyon	1,598	110
Horsehead Canyon	Montezuma Canyon	571	38
Portions of Butler Wash Canyons	Perkins Brothers, Tank Bench/ Brushy Basin, White Mesa	208	20
Slickhorn Canyon	Perkins Brothers	2,600	210
Rone Bailey Mesa	Upper Mail Station	1,162	68
Mule Canyon (including North and South Forks north of U-95)	Comb Wash, Texas-Muley	3,308	157
Rogers	Rogers	40	No active preference allotted
Subtotal		9,487	603
Alternative A closures		16,599	337
Total		**26,086**	**940**

[1]Acreages are for BLM-administered land only.

These restrictions would allow a total of 1,735,265 acres and 77,856 AUMs available for livestock grazing under this alternative. This would be a 0.5% reduction in livestock grazing acres (and 0.8% fewer AUMs) when compared to Alternative A.

4.3.6.3.2.3. Impacts of Mineral Decisions on Livestock Grazing Under Alternative B

Under Alternative B, it is predicted that 636 acres of land would be disturbed due to oil and gas development during the life of the revised RMP. This is 63 fewer acres than Alternative A, and compared to Alternative A this alternative would have fewer adverse impacts on livestock grazing from the potential reduction in AUMs due to minerals exploration and development.

4.3.6.3.2.4. Impacts of Recreation Management Decisions on Livestock Grazing Under Alternative B

Grazing would be allowed within special recreation management areas (SRMAs), with a timing restriction in the riparian areas within the San Juan River SRMA (affecting the Perkins Brothers, East League, and McCracken Wash Allotments) that confines the grazing season to the period of October 1 through May 31. There would be no change in the season of use as the current seasons of use fall within the prescribed period. Under this alternative, although grazing would be allowed in the Cedar Mesa Cultural SRMA, at-risk cultural resources would be protected against possible damage due to grazing. Thus, grazing areas could potentially become unavailable, resulting in a loss of acres and AUMs, if it is determined that livestock pose a risk of damaging cultural resources. As discussed above, this management prescription would be the same discussed under impacts common to all action alternatives, with negligible impacts on livestock grazing activities and opportunities because of the likelihood that a relatively small area would become unavailable to livestock grazing. The impacts of recreation-related OHV travel decisions would be the same as discussed under Impacts Common to All Action Alternatives. Compared to Alternative A, recreation management decisions under Alternative B would have the same impacts.

4.3.6.3.2.5. Impacts of Riparian Management Decisions on Livestock Grazing Under Alternative B

This alternative would restrict grazing access in the following riparian areas, and would allow trailing only: Moki Canyon, Lake Canyon, Harts Canyon, and Indian Creek from Kelley Ranch vicinity to Forest Service. These decisions would restrict livestock grazing and have long-term, adverse, but minor, impacts on opportunities for livestock grazing in these riparian areas. Compared to Alternative A, the riparian decisions under Alternative B would have the same impacts because the degree of impacts to livestock grazing would be the same.

4.3.6.3.2.6. Impacts of Special Designation Management Decisions on Livestock Grazing Under Alternative B

The proposed Shay Canyon ACEC is the only special designation area that would change its status from open to limited to livestock trailing only under this alternative. The ACEC would be reduced in size, its acreage decreasing from 1,770 acres under Alternative A to 119 acres under Alternative B. So, there would be a loss of grazing acreage under this alternative. Compared to

Alternative A, special designation decisions under this alternative would have the same (negligible) impacts on livestock grazing because the affected area is relatively small.

4.3.6.3.2.7. Impacts of Special Status Species Management Decisions on Livestock Grazing Under Alternative B

Livestock grazing would be prohibited between March 20 and May 15 on allotments within sage grouse habitat. In year-round habitat, grazing would be limited as necessary to maintain and/or improve habitat in areas within six miles of active sage-grouse strutting ground. Allotments subject to these restrictions are Sage Flat, Upper East Canyon, Sage Grouse and Dry Farm. The impacts on grazing would be negligible, as the prohibitions would not make livestock grazing unavailable on the affected allotments, but temporally restricted to protect species habitat. Compared to Alternative A, this alternative would have the same impacts.

4.3.6.3.2.8. Impacts of Travel Decisions on Livestock Grazing Under Alternative B

Travel decisions to reduce acreages of open motorized OHV travel from 611,310 acres to no acres would have long term, beneficial impacts on livestock by reducing noise and human presence disturbances and surface disturbances to livestock forage. Compared to Alternative A, this alternative would be more beneficial to livestock grazing because potential impacts to livestock from motorized OHV travel would be substantially less.

4.3.6.3.2.9. Impacts of Vegetation Management Decisions on Livestock Grazing Under Alternative B

Under this alternative, vegetation treatment on 1,000 acres of existing land treatments would continue and new treatments on 6,600 acres per year would be implemented. During the life of the proposed RMP, this would result in approximately 152,000 acres of vegetation treatments throughout the Monticello PA. Compared to Alternative A, this would be a reduction of approximately 72,530 acres of vegetation treatments or 33% less than the total 232,130 acres of treatments under Alternative A. The treated areas would be unavailable for grazing in the short-term, as discussed above under management common to all alternatives,, but likely improvements to the rangeland conditions would likely result in greater AUMs available or more acres open to grazing if an area is rehabilitated to the point of meeting the Standards for Rangeland Health. Compared to Alternative A, this alternative would have less indirect, beneficial impacts on livestock grazing because fewer acres would be treated to improve vegetation communities and AUMs.

It is important to note that not all of these treated areas would lead to an increase in acres or AUMs available to livestock. At this programmatic level of analysis, no specific areas for these vegetation treatments have been established, and it is not possible to determine whether there would be an increase or decrease in AUMs or acreage without data on treatment site locations or rehabilitation goals.

4.3.6.3.2.10. Impacts of Wildlife Management Decisions on Livestock Grazing Under Alternative B

Spring grazing (April 15 to June 15) would be eliminated on grazing allotments or pastures of the allotments that occur within pronghorn habitat. These allotments, as shown in Table 4.30, are: Hart Draw (partial), Mail Station, Upper Mail Station, Dry Valley/Deer Neck, Lone Cedar, and Tank Draw (see Appendix D).

Table 4.30. Changes to Livestock Season of Use in Certain Allotments under Alternative B as Compared to Alternative A (No Action)

	Total BLM Acres in Allotment or Part of Allotment	Alternative A Season of Use	Alternative B Proposed Season of Use	Change In Number of Days of Access	Percent Change in Season of Use
Mail Station	6,499	11/01 to 4/30	11/01 to 4/15	- 15	- 6%
Upper Mail Station	1,821	11/14 to 2/28	11/14 to 2/28	0	0%
Dry Valley/Deer Neck	4,172	12/01 to 4/30	12/01 to 4/15	- 15	- 7%
Lone Cedar	18,426	12/01 to 4/30	12/01 to 4/15	- 15	- 7%
Tank Draw	9,454	12/01 to 4/30	12/01 to 4/15	- 15	- 7%
Hart Draw (partial)	69,470	10/16 to 6/15	10/16 to 4/15	- 61	- 25%

Since these are seasonal restrictions, there would be no change in acreage or AUMs available for livestock, so the impacts on livestock grazing would be negligible. The impacts of this alternative, when compared to Alternative A would be the same.

4.3.6.3.3. ALTERNATIVE C

Management of cultural, Special Designation (ACEC), recreation, and riparian resources decisions would also the same as discussed under Alternative B, with the same impacts to livestock grazing.

4.3.6.3.3.1. Impacts of Livestock Grazing Decisions on Livestock Grazing Under Alternative C

Table 4.31 lists the areas that would be unavailable to grazing under this alternative, in addition to those listed under Alternative A in Table 4.28.

The same areas would be available for grazing for the life of this plan under Alternative C as in Alternative B, with the exception of Mule Canyon which would be unavailable for grazing below U-95. These restrictions would allow a total of 1,736,589 acres and 77,898 AUMs to be available for livestock grazing under this alternative. This is 0.5% fewer acres and 0.7% fewer AUMs than Alternative A.

Table 4.31. Acres and AUMs of Forage Unavailable under Alternative C in Addition to Those Listed under Alternative A (No Action)[1]

Area Unavailable for Livestock Grazing	Allotment(s)	BLM Acres Unavailable for Grazing	Forage Lost (AUMs)
Dodge Canyon	Dodge Canyon	1,598	110
Horsehead Canyon	Montezuma Canyon	571	38
Portions of Butler Wash Canyons	Perkins Brothers, Tank Bench/ Brushy Basin, White Mesa	208	20
Slickhorn Canyon	Perkins Brothers	2,600	210
Rone Bailey Mesa	Upper Mail Station	1,162	68
Mule Canyon (South of U-95)	Comb Wash, Texas-Muley	1,984	115
Rogers	Rogers	40	No active preference allotted
Subtotal		8,163	561
Alternative A closures		16,599	337
Total		**24,762**	**898**

[1]Acreages are for BLM-administered land only.

4.3.6.3.3.2. Impacts of Mineral Decisions on Livestock Grazing Under Alternative C

Approximately 710 acres are predicted to have minerals-related surface disturbance under this alternative during the life of the revised RMP. This is 11 acres or 1.7% more than Alternative A, so compared to Alternative A, there would likely be a slightly greater long-term, adverse (but minor) reduction in acreages and AUMs from loss of vegetation due to wellpad, access road, infrastructure construction, and from mineral extraction.

4.3.6.3.3.3. Impacts of Special Status Species Management Decisions on Livestock Grazing Under Alternative C

Livestock grazing under Alternative C would be prohibited between March 20 and May 15 on allotments within sage grouse habitat. In year-round habitat, grazing levels would be limited as necessary to maintain and/or improve habitat in areas within six miles of active sage-grouse strutting ground. Allotments subject to these restrictions would be Sageflat, Upper East Canyon, Sage Grouse and Dry Farm. The impacts on grazing would be the same as discussed under Alternative B (negligible), as the prohibitions would not make livestock grazing unavailable on the affected allotments, but temporally restricted to protect species habitat. Compared to Alternative A, this alternative would have the same impacts.

4.3.6.3.3.4. Impacts of Travel Decisions on Livestock Grazing Under Alternative C

The impacts from travel decisions would be the same as discussed under Alternative B because the travel decisions are similar. While approximately 2,311 acres would be managed as open to cross-country OHV use, these areas are relatively small, located in close proximity to each other, and are currently used as OHV play areas. Thus, the impacts to livestock grazing would be negligible.

4.3.6.3.3.5. Impacts of Vegetation Management Decisions on Livestock Grazing Under Alternative C

Vegetation treatments on 1,500 acres of existing land treatments would continue, and new treatment would be annually conducted on 7,800 acres. Grazing on these areas would be temporarily suspended, but in the long-term could possibly result in an increase in AUMs available to livestock.The impacts to livestock grazing would be the same as discussed under Alternative B, but to a slightly greater degree, as more acreage would be treated. Compared to Alternative A, Alternative C impacts on livestock grazing would have more potentially adverse impacts because 9,300 acres would be treated annually to improve rangeland conditions and vegetation communities (approximately 186,000 over the life of the revised RMP), which would be 20% fewer acres throughout the Monticello PA than the proposed acreage treatments under Alternative A.

4.3.6.3.3.6. Impacts of Wildlife Management Decisions on Livestock Grazing Under Alternative C

Current grazing management would continue and, where possible, would be altered to benefit forb production on pronghorn ranges in the following grazing allotments: Mail Station, Upper Mail Station, Dry Valley/Deer Neck, Lone Cedar, Tank Draw and Hart Draw. This could result in fewer AUMs available to livestock than under Alternative A, but there are no specific prescriptions under this alternative, and therefore quantitative analysis is not possible. When compared to Alternative A, this alternative would have the same impacts on livestock grazing.

4.3.6.3.4. ALTERNATIVE D

Management of cultural and recreation resources as they affect livestock grazing would be the same as all other action alternatives as discussed in the Alternative B analysis above. Management of riparian resources as it pertains to grazing would be the same as Alternative A.

4.3.6.3.4.1. Impacts of Livestock Grazing Decisions on Livestock Grazing Under Alternative D

The areas listed in Table 4.32 would be unavailable to grazing for the life of this plan, in addition to those listed under Alternative A in Table 4.28:

Table 4.32. Changes to Livestock Season of Use in Certain Allotments under Alternative D as Compared to Alternative A (No Action)

Area Unavailable for Livestock Grazing	Allotment(s)	BLM Acres Unavailable for Grazing	Forage Lost (AUMs)
Portions of Butler Wash Canyons	Perkins Brothers, Tank Bench/ Brushy Basin, White Mesa	208	20
Slickhorn Canyon	Perkins Brothers	2,600	210
Rone Bailey Mesa	Upper Mail Station	1,162	68
Rogers	Rogers	40	No active preference allotted
Mule Canyon (below U-95)	Comb Wash	1,984	115
Subtotal		5,994	413
Alternative A closures		16,599	337
Total		**22,593**	**750**

[1]Acreages are for BLM-administered land only.

These restrictions would leave a total of 1,738,758 acres and 78,046 AUMs available for livestock grazing under this alternative. This would be 0.3% fewer acres and 0.5% fewer AUMs than Alternative A, with the same impacts as discussed under Alternative A.

4.3.6.3.4.2. Impacts of Mineral Decisions on Livestock Grazing Under Alternative D

Under this alternative, RFD predictions of minerals development indicate that approximately 721 acres would lose the potential for livestock grazing due to surface-disturbing oil and gas exploration and development activities. This is 22 acres or 3.1% more than Alternative A, which, when compared to Alternative A, would have more long-term impacts to livestock grazing from the loss of AUMs.

4.3.6.3.4.3. Impacts of Special Designation Management Decisions on Livestock Grazing Under Alternative D

Under Alternative D, the only addition would be 649 acres on the Lavender Mesa that would not be managed as an ACEC and therefore would be opened to livestock grazing. However, this land is on a mesa top and is physically inaccessible to cattle, and therefore the impacts to grazing would be the same as Alternative A and as discussed in the Impacts Common to All Alternatives subsection.

4.3.6.3.4.4. Impacts of Special Status Species Management Decisions on Livestock Grazing Under Alternative D

Livestock grazing under Alternative D would be prohibited between March 20 and May 15 on allotments within sage grouse habitat. Grazing would be managed to maintain Rangeland Health. Allotments subject to these restrictions are Sageflat, Upper East Canyon, Sage Grouse and Dry

Farm. These management decisions, and their impacts on livestock grazing and AUMs, would be the same as discussed under Alternative B.

4.3.6.3.4.5. Impacts of Travel Decisions on Livestock Grazing Under Alternative D

The impacts from travel decisions would be the same as discussed under Alternative B because the travel decisions are similar, except that the impacts of open OHV use would be the negligible, as discussed above under Alternative C.

4.3.6.3.4.6. Impacts of Vegetation Management Decisions on Livestock Grazing Under Alternative D

Approximately 9,300 acres/year of new vegetation treatments would be conducted and 2,000 acres of existing treatments would be maintained per year of to improve vegetation communities within the Monticello PA. Over the life of the revised RMP, a potential total of 226,000 acres would be treated, with short-term and long-term impacts as discussed under Impacts Common to All Alternatives above. Compared to Alternative A, this alternative would have the same short-term and long-term impacts on livestock grazing because Alternative D would treat over 97% of the acreage proposed for treatment under Alternative A.

4.3.6.3.4.7. Impacts of Wildlife Management Decisions on Livestock Grazing Under Alternative D

Current grazing management would continue, and where possible, would be altered to favor forb production on pronghorn ranges in the same grazing allotments and with the same impacts as discussed under Alternative C. As also discussed under alternative C, it is not possible to analyze the management changes in a quantitative sense, but it should be noted that this management decision could decrease AUMs available to livestock to some degree within these allotments, when compared to Alternative A.

4.3.6.3.5. ALTERNATIVE E

The analysis and impacts from cultural, special designation, recreation, riparian, special status species, visual, vegetation, and wildlife resources management decisions as they pertain to livestock grazing management would be the same as discussed under Alternative B because the management decisions would be the same.

4.3.6.3.5.1. Impacts of Livestock Grazing Decisions on Livestock Grazing Under Alternative E

The following areas would be unavailable for grazing under this alternative (Table 4.33), in addition to those listed under Alternative A in Table 4.28.

These restrictions would allow a total of 1,735,265 acres and 77,377 AUMs to be available for livestock grazing under this alternative. This is 0.5% fewer acres and 0.8% fewer AUMs than Alternative A.

Table 4.33. Acres and AUMs of Forage Unavailable under Alternative E in Addition to Those Listed under Alternative A (No Action)[1]

Area Unavailable for Livestock Grazing	Allotment(s)	BLM Acres Unavailable for Grazing	Forage Lost (AUMs)
Dodge Canyon	Dodge Canyon	1,598	110
Horsehead Canyon	Montezuma Canyon	571	38
Portions of Butler Wash Canyons	Perkins Brothers, Tank Bench/ Brushy Basin, White Mesa	208	20
Slickhorn Canyon	Perkins Brothers	2,600	210
Rone Bailey Mesa	Upper Mail Station	1,162	68
Mule Canyon (including North and South Forks north of U-95)	Comb Wash	3,308	157
Rogers	Rogers	40	No active preference allotted
Subtotal		9,487	603
Alternative A closures		16,599	337
Total		**26,086**	**940**

[1]Acreages are for BLM-administered land only.

4.3.6.3.5.2. Impacts of Mineral Decisions on Livestock Grazing Under Alternative E

Under Alternative E, it is predicted that 518 acres of land would be disturbed due to minerals exploration and development. This is 181 fewer acres than proposed under Alternative A, or 25.9% less, but the impacts to grazing would be the same as discussed under Alternative A, but to a lesser degree, because fewer acres available for grazing and fewer AUMs would be lost in the long-term from minerals-related surface disturbances.

4.3.6.3.5.3. Impacts of Non-WSA Lands with Wilderness Characteristics on Livestock Grazing Under Alternative E

Potential beneficial impacts to livestock grazing could occur due to the 582,357 acres of non-WSA lands with wilderness characteristics not being available for surface disturbing activities or recreational OHV travel. Forage would not be reduced due to surface disturbing activities (road construction, oil and gas facilities, ROWs, etc). In addition, conflicts with motorized recreational users (livestock harassment, noise, gates left open, etc.) would be eliminated in non-WSA lands with wilderness characteristics. Compared to Alternative A, this alternative would be more beneficial because there would be a reduced potential for forage reductions from surface disturbance activities.

4.3.6.4. SUMMARY OF IMPACTS

Grazing restrictions due to resource management decisions would cause the following losses to acres and AUMs under each alternative (Table 4.34):

Table 4.34. BLM Acres Unavailable for Grazing and AUMs Lost to Livestock Grazing Under Each Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Acres	16,599	26,086	24,762	22,593	26,086
AUMs	337	940	898	750	940

When subtracted from the 1991 RMP totals of 1,760,584 BLM acres and 78,796 AUMs, proposed livestock grazing restrictions would leave the following total acreages available for grazing (Table 4.35):

Table 4.35. Total Acres Available to Livestock under Each Alternative and Comparisons Between Alternatives

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Acres available	**1,744,752**	**1,735,265**	**1,736,589**	**1,738,758**	**1,735,265**
Compared to A	--	0.5% less	0.5% less	0.3% less	0.5% less
Compared to B	0.4% more	--	0.1% more	0.2% more	same
Compared to C	0.5% more	0.1% less	--	0.1% more	0.1% less
Compared to D	0.3% more	0.2% less	0.1% less	--	0.2% less
Compared to E	0.4% more	same	0.1% more	0.2% more	--

Total AUMs available under each alternative are listed in Table 4.36:

Table 4.36. Total AUMs Available under Each Alternative and Comparisons Between Alternatives

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
AUMs available	**78,459**	**77,856**	**77,898**	**78,046**	**77,856**
Compared to A	--	0.8% less	0.7% less	0.5% less	0.8% less
Compared to B	0.8% more	--	0.1% more	0.3% more	same
Compared to C	0.7% more	0.1% less	--	0.2% more	0.1% less
Compared to D	0.5% more	0.3% less	0.2% less	--	0.3% less
Compared to E	0.8% more	same	0.1% more	0.3% more	--

As shown in the above table, there is very little difference between the numbers or acres and AUMs available when analyzed within the context of the area available for livestock grazing within the PA.

Disturbance caused by minerals extraction would have the following impacts in terms of annual acres under each alternative (Table 4.37):

Table 4.37. Annual Acres of Disturbance Due to Minerals Extraction Activities Under All Alternatives

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Acres of disturbance	**699**	**636**	**710**	**721**	**518**
Compared to A	--	9.0% less	1.5% more	3.0% more	25.9% less
Compared to B	9.9% more	--	11.6% more	13.4% more	18.5% less
Compared to C	1.5% less	10.4% less	--	1.5% more	27.0% less
Compared to D	3.0% less	11.8% less	1.5% less	--	28.2% less
Compared to E	34.9% more	22.7% more	37.1% more	39.2% more	--

As shown, Alternative D would have the highest degree of surface disturbance and Alternative E would have the least.

4.3.6.5. Mitigation Measures

All mitigation measures to minimize or avoid impacts have been addressed in the management common to all subsections found in Chapter 2 and in livestock grazing practices described in Appendices A, I, and O.

4.3.6.6. Unavoidable Adverse Impacts

The loss due to other management decisions that cause permanent surface disturbances (e.g., trail construction, facility construction, wellpad access roads) of acres or AUMs that would otherwise be available for livestock use would be unavoidable. Unavoidable adverse impacts would also include invasive weed species that become established and spread as a result of soil and vegetation disturbances (including those disturbances caused by livestock). Impacts adjacent to livestock management facilities such as water troughs and handling facilities would be unavoidable. Some conflicts with recreational activities would be unavoidable.

4.3.6.7. Short-term Use versus Long-term Productivity

Management decisions for some resources would cause short-term, adverse impacts to livestock grazing but would eventually be a benefit to the resource and contribute to long-term productivity. Vegetation treatments, fire management treatments, and woodland harvesting would cause short-term loss of acres and AUMs available to livestock from vegetation and surface disturbances, but would potentially contribute to a greater area and amount of forage in the long-term by improving the productivity of vegetation and reducing woodlands.

4.3.6.8. Irreversible and Irretrievable Impacts

Irretrievable impacts to the livestock grazing resource would include the establishment and spread of weedy, exotic, and/or noxious native-vegetation-displacing plant species that could occur as a result of surface disturbances from minerals development; vegetation and fire

treatments, woodland harvesting, and improper livestock management. Irreversible impacts to acres and AUMs available to livestock would occur anywhere a permanent structure is constructed, which would eliminate vegetation productivity for use as livestock forage.

4.3.7. MINERALS

This section presents the environmental consequences of resource management decisions proposed under each of the alternatives described in Chapter 2 on mineral resource development. Existing conditions concerning minerals are described in Chapter 3.

Negligible impacts to mineral resource development would result from from air quality, fire, health and safety, livestock grazing, paleontology, travel, or woodlands management decisions. The impacts would be negligible because maintaining air quality within NAAQS thresholds through appropriate mitigation; identifying and reducing wildland fire risks; reducing the risks of hazardous spills; maintaining safety around AML sites; establishing utilization levels and applying grazing standards and guidelines; designating recreational OHV access within the planning area; and permitting woodland harvesting would not reduce the opportunities for minerals leasing or for the exploration and development of mineral resources. Therefore, the impacts of management actions for these resources or programs on mineral resource development will not be analyzed further in this section. No impacts to mineral resource development would result from "casual use" activities.

For the Monticello PA and the expected number of wells (76 wells over the life of the plan) and other mineral development air quality does reach a level that precludes or impairs mineral resource development. In full field development scenarios, or if production was substantially higher than predicted, air quality could become more impacted and would be analyzed in future environmental documentation. Further discussion of air quality can be found in Chapters 2 and 3.

In accordance with BLM policy and its recognition of the National Energy Policy and Conservation Act of 2000 (EPCA), as discussed in Chapters 2 and 3, mineral resource development would be allowed throughout the Monticello PA subject to standard terms and conditions unless precluded by other program prescriptions, as specified in this Draft RMP.

Stipulations would be developed in the plan where necessary to mitigate the impacts of oil and gas and other mineral activity (see Appendix A). The stipulations would apply to all surface disturbing activities, aside from the exception, modification, and waiver situations as determined by an Authorized Officer and guided by the criteria in Appendix A. The area specific restrictions on surface disturbing activities listed in Table A.1 vary by alternative and detail limits on timing, surface use, and occupancy, as well as closures throughout the Monticello FO.

As described in Chapter 3, mineral resources are categorized into three mineral program types: leasable, locatable, and saleable. Leasable minerals are subject to disposal by lease under the authority of the Minerals Leasing Act of 1920, as amended, and include oil, natural gas, coal, potash, and tar sands.

Locatable minerals are usually the base and precious metal ores, ferrous metal ores, and certain classes of industrial minerals for which acquisition is made by staking a mining claim (location) over the deposit and then acquiring the necessary permits to explore or mine. For purposes of this planning effort these include uranium and vandium, placer gold, and limestone.

Saleable minerals are defined as mineral commodities sold by sales contract from the federal government. Saleable minerals are generally common varieties of construction materials and aggregates, such as sand, gravel, and roadbed and ballast material. For purposes of this planning effort these include sand and gravel, building stone, and clay.

The BLM allocates land as available or unavailable for use for the three mineral programs, and stipulates conditions of use. *Leasing* uses Standard Lease Terms, Special Conditions (Timing Limitations and/or Controlled Surface Use, TL/CSU), No Surface Occupancy, and closed. Lands classified for *locatable* minerals are identified as open to mineral entry or recommended for withdrawal from mineral entry. Lands recommended for withdrawal will be managed as prescribed in the RMP until such time as they are actually withdrawn by Congress. Lands identified for *saleable* minerals are identified as open with standard terms and conditions, open with special conditions, or closed.

Summaries of the RFD scenario for leaseable, locatable, and saleable minerals as well as predicted geophysical exploration activity levels are summarized below and discussed in detail in the Mineral Potential Report and RFD.

4.3.7.1. SUMMARY OF LEASEABLE RFD

The RFD prepared for this DRMP utilizes data on past and current development to predict future development for all lands in the Monticello PA, both BLM lands and non-BLM lands (BLM 2005b, 2005d). The RFD estimates the average acreage of disturbance per well (including the well pad, roads, and pipelines) to be 9.6 acres; the total number of existing oil and gas wells to be 1,615; and the existing surface disturbance as 15,504 acres.

The BLM administers 38.2% of the lands in the Monticello PA (see Table 4.1). Assuming the RFD applies uniformly across all lands in the Monticello PA, any calculations made, in conjunction with the disturbance per well number (9.6 acres) and the alternatives matrix in Chapter 2, can be used to estimate potential mineral resource development impacts (measured in number of wells and resulting acres of surface disturbance) on BLM lands for each alternative.

For the purposes of this analysis, it was assumed that the number of wells likely to be drilled under each alternative would be proportional to the acreage of land open for mineral resource development under that alternative. For example, if an alternative had 90% of BLM lands in the Monticello FO open for development, it would be assumed that 90% of the RFD on BLM lands would be drilled under that alternative. Table 4.38 shows the acreages of and predicted number of wells on BLM lands over the life of the RMP within the three RFD areas, which are to be the focus of this analysis and of future oil and gas development within the Monticello FO.

Table 4.38. Baseline/RFD Acreages of Lands and Predicted Number of Wells in the Three RFD Areas over the Life of the RMP

RFD Area	Acreage		BLM% of Total	Wells	
	Total	BLM		Total	BLM
Paradox Fold and Fault Belt	531,671	257,412	48	53	25
Blanding Sub-basin	1,173,537	405,664	35	120	42
Monument Upwarp	1,950,562	734,523	38	23	9
TOTAL	**3,655,770**	**1,397,599**		**196**	**76**

4.3.7.2. Summary of Geophysical RFD

Calculations can be made regarding impacts of geophysical exploration on BLM lands for each alternative in conjunction with the disturbance associated with linear miles of source line within the Monticello FO (disturbance of 2,236 acres caused by 1,230 linear miles of source line; BLM 2005d) and the alternatives matrix in Chapter 2. It is assumed that the linear miles of source line likely to be used under a given alternative would be proportional to the acreage of land open for mineral resource development under that alternative.

4.3.7.3. Summary of Locatable RFD and Saleable RFD

The same procedure can be applied to calculations regarding impacts of locatable and saleable mineral resource development on BLM lands for each alternative, in conjunction with the acres of disturbance within the Monticello FO (disturbance of 360 acres caused by locatable mineral resource development and of 491 acres caused by saleable mineral resource development; BLM 2005b) and the alternatives matrix in Chapter 2. It is assumed that the acreage likely to be developed for locatable and saleable mineral resources under a given alternative would be proportional to the acreage of land open for these types of development under that alternative.

As mentioned in the introduction to Chapter 4, short-term impacts are those that would last for up to 5 years, and long-term impacts are those that would be longer than 5 years and/or would last for the life of the RMP or beyond. Because the impact indicators for this resource were number of wells and the number of acres available for mineral resource development over the life of the RMP, short-term impacts were not distinguished from long-term impacts.

4.3.7.4. Impacts Common to All Alternatives

During the life of this RMP, 27 dry holes, 20 abandoned wells, and all 480 currently abandoned wells would be successfully reclaimed. This would result in 5,059 acres reclaimed over the life of this RMP. This will result in the surface being reclaimed, the restoration of vegetation and soils, and the wells being rehabilitated back to proper functioning condition.

Additionally, during the life of the Plan, approximately 559 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted on BLM lands and would result in approximately 886 acres of surface disturbance, which would be reclaimed within 10 years. This exploration would beneficially impact mineral resource development and production in that it would improve the data available for making prudent mineral resource development decisions

(BLM 2005d). Geophysical exploration can increase the probability of drilling a successful well and reduce the amount of unnecesseary exploratory drilling (such as step-out drilling) which could reduce operational costs and make mineral development more profitable. This is a beneficial impact.

Under all alternatives, standard conditions (e.g., standard lease terms, best management practices [BMPs], conditions of approval (COAs), and standard operating procedures [SOPs]) are applied to all mineral development activities on a site specific basis. These standard conditions include compliance with non-discretionary laws (e.g., threatened and endangered species and cultural laws) and are intended to mitigate impacts to other resources (e.g., VRM, cultural, wildlife, soils, vegetation, recreation). The standard conditions add to operation costs and often result delays in processing applications and operations.

4.3.7.4.1. Impacts of Cultural Resource Decisions on Mineral Resource Development

Under all of the alternatives, the development of specific restrictions in new Cultural Resource Management Plans (CRMPs) for culturally sensitive areas such as Cedar Mesa could slow the processing of proposed mineral resource development for these areas. Generally, more rigorous protection or mitigation measures would be applied in culturally sensitive areas. Such plans may specify monitoring systems, protective measures, equipment used, the development of research designs, and/or treatment. These restrictions and mitigations could add to the cost (in time, labor, or materials) of gaining cultural resource clearances for a given mineral resource development project.

Grand Gulch National Historic District (37,388 acres) is closed to oil and gas leasing, closed to mineral disposal, and open to geophysical exploration, except for the Special Emphasis area. There would be an adverse impact on the development of 37,388 acres as these resources would not be available for development and production and royalties would be reduced. The Old Spanish Trial and Hole-in-the-Rock trail would be managed for historic values. The prescriptions would generally be impairments to mineral development; but are not expected to be prohibitive.

4.3.7.4.2. Impacts of Lands and Realty Decisions on Mineral Resource Development

Under all alternatives, including the No Action, the disposal out of federal ownership of up to 6,440 acres of BLM lands within the Monticello FO (see Appendix C and Chapter 2) would result in fewer opportunities for mineral resource development on those parcels and less production and supply of mineral resources. This is somewhat mitigated because lands are evaluated for mineral potential as part of the disposal process. High potential lands may not be disposed of because it would not be in the public interest.

WSAa are exclusion areas for ROWs but are still available to locatable minerals. Exclusion of ROWs in WSAs would have a negative impact on mineral resource development because it would be more costly and timely to develop and mitigate impacts. These impacts are also discussed under special designations because the reason for the exclusion is protection of wilderness (WSAa); however, the mechanism of exclusion of ROWs is a realty action.

4.3.7.4.3. IMPACTS OF RECREATION DECISIONS ON MINERAL RESOURCE DEVELOPMENT

Under all alternatives, including the No Action, developed recreation sites—existing and future—would be subject to NSO, recommended for withdrawal from mineral entry, and closed to mineral materials disposal. Oil and gas developers who wish to lease resources underlying developed recreation sites would be required to conduct directional drilling, which adds costs and logistical challenges to individual projects. Removing these sites from mineral entry and disposal would result in fewer options for developers of locatable and saleable resources, and potentially would lower the yield and commercial supply of these resources. It is likely that, during the life of the RMP, mineral resource development would be thus limited on more than 460 acres because they become developed recreation sites (see Section 4.3.10, Recreation) and would be a minor impact to mineral resource development.

4.3.7.4.4. IMPACTS OF RIPARIAN RESOURCE DECISIONS ON MINERAL RESOURCE DEVELOPMENT

Under all alternatives riparian areas (approximately 20,435 acres) and lands within active floodplains or within 100 meters of riparian areas would be subject to NSO. The impacts to mineral resource development resulting from protection of riparian resources on 20,435 acres would be increased costs. Producing oil and gas on lands subject to NSO is higher than it is on lands subject to standard and special stipulations due to the necessity of drilling directionally from adjacent locations where surface occupancy is allowed.

Under all alternatives minor, beneficial impacts to mineral resource development could result from allowing non-surface disturbing geophysical work within floodplains and riparian/aquatic areas. Geophysical exploration can increase the probability of drilling a successful well and reduce the amount of unnecesseary exploratory drilling. Surface disturbing exploration techniques (such as step-out drilling) could be reduced, thereby making mineral development more profitable by reducing operational costs.

Under all alternatives, oil and gas developers would be required to follow the Guidance for Pipeline Crossings (see Appendix F), including conducting hydraulic analysis during the design phase to eliminate potential environmental degradation. This may result in minor to negligible, adverse impacts to oil and gas development because it would potentially increase the up front cost of specific development projects.

Minor, beneficial impacts to mineral resource development could result from allowing mineral entry and disposal of mineral materials with an approved plan of operation within floodplains and riparian/aquatic areas. Direct beneficial impacts occur by having more acreage (20,435 acres) available for mineral resource development. Small, indirect, benefical impacts (less operating cost) occur by having sand and gravel available in locations near other mineral development operations.

4.3.7.4.5. IMPACTS OF MINERALS DECISIONS ON MINERAL RESOURCE DEVELOPMENT

Under all alternatives including the No Action alternative mineral decisions could impact development of minerals by creating restrictions between incompatiable developments. Generally, prohibitive conflicts would occur between two leasable minerals (such as oil and gas versus potash) where large acres of land would exclude other resource development. However,

potash and coal were determined to be low potential for development so this potential conflict will not be analyzed in detail for the Monticello PA.

A more likely conflict would be between Leasable and Locatable/Saleable mineral development, where placement of one facility prohibits placement of another. Small surface disturbances (e.g., gravel pits, mine locations) could impact oil and gas development. Usually, small locatable/saleable operations do not prohibit oil and gas development; they only restrict placement. Adverse impacts (e.g., increased costs due to directional drilling) may occur where placement of an oil and gas facility is required to be moved away from an existing mine/pit. For reasons stated in the MPR, development potential is low for coal, tar sand, and salt and potash resources in the Monticello FO during the foreseeable future. Thus, mineral resource development decisions would result in neglible impacts to the development of these resources under all alternatives, and these mineral resources are not discussed further in this section.

Because of rights granted to claimants under the mining laws, the BLM may impose only those surface use restrictions that are necessary to prevent undue or unnecessary degradation. Therefore, based on the RFD scenario, locatable mineral development (primarily uranium and vanadium) would likely continue during the life of the RMP, regardless of the alternative implemented. This would result in beneficial impacts to the mineral resource industry by increasing the domestic supply of uranium and vanadium. On the other hand, increased extraction of these resources would also, over time, reduce the quantities of finite uranium-vanadium resources in the Monticello FO.

4.3.7.4.6. Impacts of Soils and Watershed Decisions on Mineral Resource Development

Under all alternatives, including the No Action, any mineral resource development occurring in sensitive soils (see Chapter 2 and Section 3.14.4.3, Sensitive Soils) would require BMPs and applicable mitigation measures (Appendix A and I) to minimize impacts. Moderately and highly wind erodible soils (986,765 acres and 65 acres, respectively) would require a project proponent to comply with BMPs and mitigation measures, which could result in increased costs and time required to implement a mineral resource exploration or development project in sensitive soils. The same impact would occur for highly water erodible soils on 206,451 acres.

4.3.7.4.7. Impacts of Special Designations on Mineral Resource Development

The Monticello FO has 13 existing WSAs or ISA complexes. WSAs are areas that must be managed in a manner that does not impair their suitability for congressional designation as Wilderness (BLM 1991c; Table 4.39).

These WSA designations would continue to apply across all alternatives, including the No Action, and 386,027 acres (or 21.6%) of BLM lands would remain closed to leasing. These closures are non-discretionary. Adding to or removing acreage from these WSAs is beyond the scope of this DEIS. Maintaining the WSAs would have negative impacts upon mineral resource extraction and development because they would exclude lands from mineral resource development and lower the number of locations where potential wells could be drilled (BLM 1990; see Table 4.39). The lower number of locations could lead to a lower production and supply of oil and natural gas and fewer royalties paid to the federal government and/or the State of Utah. The finite, non-renewable resource found beneath the WSAs would not be depleted.

Table 4.39. Acres of WSAs within Each RFD Area

RFD Area	RFD Acres within WSAs	Total RFD Acres*	% of RFD within WSA
Paradox Fold and Fault Belt	10,893	268,305	4.1
Blanding Sub-basin	15,582	421,246	3.7
Monument Upwarp	359,552	1,094,076	32.9
TOTAL	**386,027**	**1,783,627**	**21.6**

* The administrative definition of RFD areas precludes WSAs, and WSAs were *not* included in the calculations and projections of the RFD (BLM 2005d). However, this number represents the total physical, geographic acreage (rather than the administrative acreage) and includes WSA acreages to depict how much of each geographic area is lost to mineral resource exploration and development due to being WSAs (i.e., closed to leasing). Note that the vast majority of RFD acres within WSAs—both in area and percentage—occur in the Monument Upwarp RFD Area.

4.3.7.4.8. Impacts of Special Status Species on Mineral Resource Development

All alternatives, including the No Action, require some degree of spatial or temporal limitation on surface disturbing activities to protect special status species and wildlife populations and their important habitats. In the case of mineral and energy resource development, specific conditions of approval or lease terms are often required to mitigate the adverse affects of development activities on special status species. Measures needed to comply with non-discretionary laws (e.g., Section 7 consultation with the U.S. Fish and Wildlife Service [USFWS]) are provided for in the Standard Lease Terms and lease notices. Under all alternatives, there is continued application of lease notices for federally listed plant and animal species as determined by Section 7 consultation between the BLM and USFWS and for any non-listed special status plant or animal species that occurs or has potential to occur in proposed lease areas.

Spatial and temporal limitations (hereafter referred to as controlled surface use and timing limitations, respectively) would have an adverse impact on mineral resource development by increasing exploration costs, time, and effort. However, the degree and magnitude of such increases depend on many factors, including the options for project siting, the locale of the lease, and the drilling window. Operators may experience adverse economic impacts if drilling operations are curtailed during special status species protection periods or if drilling operations must be moved to another area on the lease. Impacts to mineral resource development resulting from the following species and general wildlife protection measures would apply under all alternatives.

4.3.7.4.8.1. Bald Eagle

All alternatives, including the No Action, would implement controlled surface use and timing limitations near bald eagle nesting or winter roost habitat or during the nesting or roosting season. Table 4.40 summarizes the seasonal restrictions on mineral resource development by species that occur in the Monticello FO, including the bald eagle. Restrictions occur for eight months of the year. Potential adverse impacts to mineral resource development could be more time and costs for requirements such as nest monitoring or surveys, the exclusion of certain areas, avoidance of certain areas for up to eight months, and scheduling extra time for processing applications and drilling. Operators can have difficulty in scheduling a rig due to a timing limitation or may incur additional costs having a rig on stand-by.

Table 4.40. Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under All Alternatives

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Burrowing owl – Nesting (0.25 mile)	3/1 – 8/31					■	■	■	■	■	■	■	■	■	■	■	■								
Cooper's hawk – Nesting (0.5 mile)	3/15 – 8/31						■	■	■	■	■	■	■	■	■	■	■								
Ferruginous hawk – Nesting (0.5 mile)	3/1 - 8/1					■	■	■	■	■	■	■	■	■	■										
Golden eagle – Nesting (0.5 mile)	1/1 - 8/31	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Northern goshawk – Nesting (0.5 mile)	3/1 – 8/15					■	■	■	■	■	■	■	■	■	■	■									
Peregrine falcon – Nesting (1.0 mile)	2/1 - 8/31			■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Prairie falcon – Nesting (0.25 mile)	4/1 – 8/31							■	■	■	■	■	■	■	■	■	■								
Red-tailed hawk – Nesting (0.5 mile)	3/15 – 8/15						■	■	■	■	■	■	■	■	■	■									
Short-eared owl – Nesting (0.25 mile)	3/1 – 8/1					■	■	■	■	■	■	■	■	■	■										
Swainson's hawk – Nesting (0.5 mile)	3/1 – 8/31					■	■	■	■	■	■	■	■	■	■	■	■								
Bald eagle – Nesting (1.0 mile)	1/1 – 8/31	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Bald eagle – Roosting (0.5 mile)	11/1 – 3/31	■	■	■	■	■	■															■	■	■	■
Mexican spotted owl – Breeding (0.5 mile)	3/1 – 8/31					■	■	■	■	■	■	■	■	■	■	■	■								
SWW flycatcher – Breeding (0.25 mile)	5/1 – 9/30									■	■	■	■	■	■	■	■	■	■						
Yellow-billed cuckoo – Breed. (0.25 mile)	5/1 – 8/31									■	■	■	■	■	■	■	■								
California condor – Known nest (1.0 mile)	3/1 – 8/31					■	■	■	■	■	■	■	■	■	■	■	■								
Migratory birds – Known priority habitat	5/1 – 7/31									■	■	■	■	■	■										

Source: Romin and Muck 2002.

4.3.7.4.8.2. Mexican Spotted Owl (MSO)

Surveys for nesting and foraging habitat suitability and individual owls are common components of the preservation of the MSO and its habitat in the Monticello FO (see Table 4.40 for seasonal restrictions). Under all alternatives, including the No Action, two-year surveys for MSO are required in the case of permanent structures (e.g., new producing oil and gas wells), as is the occasional noise analysis if noise generating facilities are sited in or near habitat. Spatial buffers of 0.5 mile around nests or habitat are typically adequate. The full avoidance and minimization measures specified in the alternatives matrix in Chapter 2 would result in FO-wide impacts on mineral resource development similar to those described for the bald eagle (above).

4.3.7.4.8.3. Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

Under all alternatives, including the No Action, the protection of riparian habitat within the range of these two species may include surveys or monitoring, timing limitations during the nesting season (see Table 4.40), and spatial and noise buffers around suitable habitat, particularly if permanent facilities are developed nearby. A 300-foot buffer around suitable riparian habitat is required year-round to prevent surface disturbing activities. This particular species management decision would have a negative, minor impact on individual mineral resource development projects sited near riparian areas. Costs, time, and effort may increase if surveys are conducted to find out if the habitat is suitable, and if it is suitable, costs, time, and effort may increase again in the re-routing and re-siting of facilities and/or directional drilling. The full avoidance and minimization measures specified in the alternatives matrix in Chapter 2 would result in impacts on mineral resource development similar to those described for the bald eagle (above).

4.3.7.4.8.4. Endangered Colorado River Fishes

Within the Monticello FO, mineral resource development may encroach on riparian habitat in the 100-year floodplain of designated critical habitat for the bonytail, humpback chub, Colorado pikeminnow, and razorback sucker. Under all alternatives, including the No Action, restrictions on development in and around riparian habitat would have impacts on mineral resource development similar to those described for the riparian habitat of the southwestern willow flycatcher and the western yellow-billed cuckoo (above). Additionally, any water depletion affecting the Colorado River system requires consultation with the USFWS and would likely result in operators paying water depletion fees if they are using surfacewater to supply drilling operations. This would likely increase both development time and costs.

4.3.7.4.8.5. California Condor

Under all alternatives, including the No Action, mineral resource development in the Monticello FO would be timed and sited to avoid the nesting season (see Table 4.40) and locales of California condor. The protection of nesting habitat for this species may involve measures similar to those described for the southwestern willow flycatcher and the western yellow-billed cuckoo (above). No permanent structures or roads, including new producing oil and gas wells and access roads, would be allowed within 1.0 mile of known condor nest sites. This particular species management decision would have a negative, minor impact on individual mineral resource development projects sited near known nest sites. Costs, time, and effort may increase if surveys are conducted to find out if nests are nearby, and if nests are nearby, costs, time, and

effort may increase again in the re-routing and re-siting of facilities. The full avoidance and minimization measures specified in the alternatives matrix in Chapter 2 would result in impacts on mineral resource development similar to those described for the bald eagle (above).

4.3.7.4.8.6. Migratory Birds and Raptors

Under all alternatives, including the No Action, occupied, migratory bird habitat would require mineral resource developers to avoid surface disturbing activities during nesting season. This in turn would result in impacts on mineral resource development similar to those described for the bald eagle (above).

4.3.7.4.8.7. Summary of Impacts Common to All Special Status Species Decisions on Mineral Resource Development

Exact acreages of habitat to be restricted would depend on the results of field surveys associated with specific projects within the Monticello FO and cannot be quantified at this time. However, some general conclusions can be drawn regarding the timing limitations. As is evident from Table 4.40, developers would be able to conduct mineral resource exploration, development, and production without timing limitations for only one month out of the year (i.e., October). The fall and winter months (i.e., September through February) would have the fewest timing limitations on mineral resource development, while the spring and summer months (i.e., March through August) would have the most. The most restrictive months of the year would be May through July; nearly all timing limitations would be in effect during that period. Together, these decisions would result in relatively minor impacts to mineral resource development at the FO-wide level.

4.3.7.4.9. Impacts of Visual Resource Decisions on Mineral Resource Development

Mineral resource development would be subject to the VRM class objectives of the area within which development would occur. VRM management on areas designated as VRM Class III and IV imposes minimal restrictions on mineral resource development. Designation of an area as VRM Class I essentially closes the area to mineral resource activity. Management of areas as VRM Class II allows alteration of line, form, color and texture that characterize the existing landscape, although the resulting contrast should not attract the attention of the casual observer. Meeting VRM Class II objectives imposes additional costs on mineral resource developers.

Under all action alternatives, areas managed as VRM Classes II, III, and IV would typically be available to leasing with either standard lease terms or controlled surface use stipulations. This visual resource decision would generally have a beneficial effect on mineral resource development because more areas would be available under standard lease terms or controlled surface use stipulations, rather than being restricted with NSO. The beneficial impact would be that mineral exploration and development could still occur.

Under all action alternatives, direct, adverse impacts to mineral resource development resulting from VRM class I designations would include the exclusion of lands available for mineral resource development, a lower number of locations where potential wells could be drilled, a lower yield and commercial supply of oil and natural gas, and fewer royalties. All WSAs (386,027 acres) are managed as VRM Class I for all alternatives.

4.3.7.4.10. Impacts of Wildlife and Fisheries Decisions on Mineral Resource Development

Under all alternatives, including the No Action, surface disturbing activities resulting in long-term loss of habitat (see Section 4.3.7.4, Impacts Common to All Alternatives) would be prohibited on 56,740 acres on five mesa tops to give priority to bighorn sheep habitat improvement. This restriction would account for a 3.2% decrease in lands available for mineral resource development, which would result in less yield and commercial supply of the resource and fewer royalties paid to the federal government or the State of Utah.

On-site mitigation would be required for projects that disturb or remove the forage/browse species of bighorn sheep. This would result in adverse impacts to individual mineral resource development projects but generally does not preclude development. If a given project disturbs bighorn sheep forage in this fashion, it would be required to increase its costs, effort, and time to prepare and implement a forage-rehabilitation mitigation plan.

4.3.7.4.11. Impacts of Other Lands Managed by BLM on Mineral Resource Development

Under all alternatives, the BLM manages federal leases on certain lands not administered by the BLM, including:

- 101,720 acres within the Glen Canyon National Recreation Area (NRA),
- 366,850 acres within the Manti-LaSal National Forest, Monticello Ranger District,
- 51,610 acres within the Navajo Indian Reservation,
- 1,080 acres within Indian Trust Lands, and
- 55,390 acres on private, split-estate lands.

The impacts of permitting leasing on these non-BLM lands within the Monticello FO—a total of 576,650 acres—would have beneficial and long-term impacts upon mineral resource development, especially oil and gas. Leasing of these non-BLM lands would result in the permitting of additional wells, which in turn would result in an increase in the domestic supply of oil and gas and increased royalties to the federal government or the State of Utah. The Navajo Nation would also receive economic benefits from the leasing of their lands, including fees from the use of surface permits and ROWs. However, continued oil and gas extraction would, over time, reduce the quantities of finite fossil fuel resources in the Monticello FO.

4.3.7.5. Alternatives Impacts

4.3.7.5.1. Alternative A

4.3.7.5.1.1. Impacts of Cultural Resource Decisions on Mineral Resource Development Under Alternative A

Various CSMAs, historic districts, and historic trails have been designated throughout the Monticello FO. Some cultural designations are located within recreational designations or special designations.

- The Cedar Mesa CSRMA and its impacts on mineral resource development are discussed in full in Section 4.3.7.4.3, Impacts of Recreation Decisions on Mineral Resource Development.
- McLoyd Canyon-Moon House and the Grand Gulch Historic District are within WSAs that are managed under the IMP. This section assesses impacts of the cultural resource decisions associated with each of these entities. The impacts of other decisions regarding these entities are discussed in Section 4.3.7.4.7, Impacts of Special Designations Decisions on Mineral Resource Development.

Under the No Action Alternative cultural resource decisions regarding the 37,433-acre Grand Gulch Historic District (already within a WSA) and the 4,240-acre special emphasis area (within the historic district) would result in the entire historic district being closed to disposal of mineral materials (Table 4.41) and the special emphasis area being closed to leasing and geophysical work.

These cultural resource decisions for the Grand Gulch Historic District would have negative, minor impacts on mineral resource development, particularly mineral materials. These decisions would account for a 2.1% decrease in BLM lands available for mineral materials disposal and a 0.2% decrease in BLM lands available for leasing and geophysical work, which in turn would result in less oil and gas productivity and geophysical exploration within the historic district. Ultimately, direct impacts would be manifest as a slightly lower yield of oil and gas; less sand, gravel, building stone, and clay available for public consumption; and poorer data on the mineral resource reserves underlying the historic district. Indirect impacts would include increased time and cost of individual mineral resource development projects within this historic district because of the likelihood of needing to re-route pipelines, access roads, and well pads to avoid cultural resource sites.

4.3.7.5.1.2. Impacts of Lands and Realty Decisions on Mineral Resource Development Under Alternative A

Under the No Action Alternative, the existing transportation and utility ROW corridors would have a beneficial impact on mineral resource exploration and development because additional travel corridors would allow easier access to mineral resource development facilities, sites, and well pads within the Monticello FO.

Under Alternative A, approximately 110,066 acres would be recommended for withdrawal from mineral entry. This decision has the potential to result in fewer opportunities for mineral resource development on this acreage and less production and supply of mineral resources.

Table 4.41. Acres of BLM Lands Available for Mineral Resource Development under Each Alternative

Resource	Alternative A – No Action*	Alternative B	Alternative C	Alternative D	Alternative E
LEASABLE MINERAL RESOURCE DEVELOPMENT, INCLUDING OIL AND GAS					
Standard Lease Terms	578,604 (584,270)	365,170	629,472	962,283	213,290
Special Conditions	659,626 (815,690)				
Timing Limitations (TL)		786,489	569,657	418,242	511,649
Controlled Surface Use (CSU)		67,288	51,419	2,758	25,428
TL and CST		22,963	98,425	0	8,564
Subtotal of Open Lands	*1,238,230 (1,399,960)*	*1,241,910*	*1,348,973*	*1,383,283*	*758,929*
No Surface Occupancy	161,224 (268,080)	125,105	39,323	14,175	53,915
Closed to Leasing**	385,316 (111,170)	416,612	395,329	386,853	974,463
Due to WSAs	*386,027 (111,170)*	*386,027*	*386,027*	*386,027*	*386,027*
Due to non WSA w/ WCs	***	*0*	*0*	*0*	*582,357*
Due to ACECs	***	*26,380*	*3,895*	*0*	*9,454*
Due to WSRs	***	*7,984*	*3,968*	*0*	*0*
Due to Cultural	***	*0*	*9*	*9*	*0*
LOCATABLE MINERAL RESOURCE DEVELOPMENT (MINERAL ENTRY)					
Open	1,675,057	1,527,656	1,682,865	1,739,389	1,015,384
Withdrawn	110,066	257,467	102,258	45,734	769,739
SALEABLE MINERAL RESOURCE DEVELOPMENT (MINERAL MATERIAL DISPOSAL)****					
Standard Terms and Conditions	578,604 (584,270)	365,168	624,734	962,279	213,290
Special Conditions	810,652 (821,070)	876,736	724,234	420,998	545,641
Subtotal of Open Lands	*1,389,256 (1,405,340)*	*1,241,904*	*1,348,968*	*1,383,277*	*758,931*
Closed	395,514 (373,850)	542,402	435,338	401,026	1,025,378

*The acreages currently managed (the first acreage listed) differ from the 1991 RMP acreages (the second acreage listed in parenthesis) because of WSAs (closed to leasing under IMP after the 1991 RMP was signed), which were not taken into account at the time of the 1991 RMP. Most of these WSAs were ACECs and available for leasing subject to special conditions.

** Approximately 386,027 of these acres are closed due to WSA designation, across all alternatives (BLM 1990; see the IMP; see also Section 4.3.7.4.7 and Table 2.1, Summary of Impacts, for an itemized list of all closures and their acreages). WSA closures are non-discretionary and, thus, are beyond the scope of this EIS analysis. Due to improvements in GIS technology since the 1991 RMP and differences in datasets and methods of calculation, the Closed sub-categories (e.g., WSAs, ACECs) *do not add up to the total Closed acreage* (e.g., 385,316 under the No Action).

*** WSA designations account for all closures under the No Action.

**** See Maps 18 – 22 for mineral material disposals under each alternative.

4.3.7.5.1.3. Impacts of Mineral Decisions on Mineral Resource Development Under Alternative A

Oil and Gas Resources

In total, approximately 1,238,230 acres of BLM lands within the Monticello FO would remain administratively open for oil and gas leasing under Standard and Special lease stipulations within the three RFD development areas (see Table 4.41). Based on the proportion of BLM lands open for leasing and the RFD (BLM 2005d), it is estimated that 73 predicted oil and gas wells would be drilled over the life of the RMP (Table 4.42; Map 23). The socioeconomic analysis in this chapter (Section 4.3.12, Socioeconomic Resources) estimates the yield of oil and gas—in terms of barrels and thousand cubic feet (Mcf), respectively—that would result from implementation of the No Action Alternative.

Under this alternative, approximately 47% of all open BLM lands would be available under standard stipulations, and approximately 53% of all open BLM lands would be available under special stipulations. Oil and gas development would occur in all three RFD areas. Although the largest acreage available for development is in the Monument Upwarp RFD Area, it is worth noting that this area would likely see the least amount of development in terms of wells (i.e., 7). Among all RFD areas, it also is the one with the greatest proportion and amount of its lands subject to special stipulations from management prescriptions used to protect ACECs, WSAs, and VRM Class I or II. Most wells (i.e., 41) would be drilled in the Blanding Sub-basin RFD Area.

Under this alternative, the federal government and/or the State of Utah would continue to receive royalties from the production and sale of oil and gas (see Section 4.3.12, Socioeconomic Resources). Continued oil and gas extraction would also, over time, reduce the quantities of finite fossil fuel resources found in the Monticello FO, though it is difficult to quantify the proportional impact on these reserves.

Geophysical Exploration

Under the No Action Alternative, approximately 559 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted over the life of the RMP and would result in approximately 886 acres of surface disturbance. This exploration would beneficially impact mineral resource development and production because it would refresh or increase the data available for making prudent mineral resource development decisions (BLM 2005d). More costly and surface disturbing exploration techniques (e.g., step-out drilling) would be reduced, making mineral development more profitable. Geophysical exploration would occur in all three RFD areas, as detailed in Table 4.42.

Table 4.42. Predicted Oil and Gas Wells and Geophysical Exploration on BLM Lands within RFD Areas under Alternative A–No Action, Average over the Life of the Plan (LOP) and Maximum per Year (MPY)

RFD Area	Acres of BLM Lands Available			% of BLM Lands Available	Predicted Wells*	Geophysical Exploration	
	Standard	Special	Total			Linear Miles of Source Line	Acres
AVERAGE OVER THE LIFE OF THE PLAN (LOP)							
Paradox Fold and Fault Belt	163,953	89,121	253,074	98	25	271	495
Blanding Sub-basin	270,410	127,657	398,067	98	41	205	271
Monument Upwarp	144,241	442,848	587,089	80	7	83	120
LOP TOTAL	**578,604**	**659,626**	**1,238,230**		**73**	**559**	**886**
MAXIMUM PER YEAR (MPY)**							
Paradox Fold and Fault Belt	***	***	***	***	3	25	45
Blanding Sub-basin	***	***	***	***	4	14	25
Monument Upwarp	***	***	***	***	1	6	11
MPY TOTAL	*****	*****	*****		**8**	**45**	**81**

Note: Calculations based on BLM lands only.

*Oil and natural gas wells are considered together.

**Based on the RFD (BLM 2005d), MPY reflects the maximum development that *could* occur in *any given year* of the life of the Plan. During most Plan years, development per year will be less than this maximum. To find the *average* development per year, take the value of interest in the first part of the table, Average over the Life of the Plan (LOP), and divide the value by 15, which is the number of years the Plan is expected to be in effect.

*** Same as corresponding value under Average Over the Life of the Plan (LOP).

Other Leasable Resources

Although 1,238,230 acres of BLM land are administratively open for the leasing of potash and salt and tar sands development, potential (and thus impacts) are low. The Cane Creek and Lisbon Valley Known Potash Leasing Areas (KPLAs) (less than 9,000 acres), and the White Canyon Designated Tar Sand Area (DTSA) (approximately 10,000 acres) are considered low development potential as discussed in the Mineral Potential Report for the Monticello PA (BLM 2005b, pages 34-35). Based on the low potential and infrequent development/interest in potash and salt and tar sands leasing because of mineral resource development decisions, impacts would be negligible under the No Action Alternative.

Locatable Resources

In total, approximately 1,675,057 acres of BLM land would remain open to development of uranium-vanadium, copper, gold, and limestone under the No Action Alternative. Oil and gas development has a high potential to co-occur with uranium-vanadium development and some potential to co-occur with limestone development (in the south-central and southeastern Monticello FO). However, uranium-vanadium and limestone mining operations are typically small enough to preclude conflict or adverse impacts with oil and gas development (BLM 2005d). This is evident in the Lisbon Valley area, historically a well established uranium mining district and a prolific producer of oil and gas. The impacts of any future development of locatable resources would be analyzed through site specific NEPA when and if the project(s) are proposed.

Saleable Resources

In total, approximately 1,389,256 acres of BLM land would remain open to development of sand and gravel, building stone, and clay (Map 18), and there is high potential for continued development of known deposits at existing levels throughout the life of the RMP, regardless of the alternative chosen. Although unexplored areas of high development potential are dispersed throughout the Monticello PA, and although development of these resources may be co-located with oil and gas and other mineral resource development, particularly in the northeastern portion of the Monticello PA, mineral material disposal operations are typically discrete sites, small enough to avoid conflicts with the development of other mineral resources. Negligible impacts to saleable resources from development of other mineral resources would be anticipated. Based on increased aceages available for oil and gas leasing or other mineral development, an indirect impact could be the increased need for sand and gravel for road maintenance and construction.

4.3.7.5.1.4. Impacts of Management of Non-WSA Lands with Wilderness Characteristics on Mineral Resource Development Under Alternative A

Under the No Action Alternative, no BLM lands would be managed as non-WSA lands with wilderness characteristics and therefore there would be no impacts on mineral resource development.

4.3.7.5.1.5. Impacts of Recreation Decisions upon Mineral Resource Development Under Alternative A

Under the No Action Alternative, mineral resource development in the 10,203-acre San Juan River SRMA would be subject to NSO within the 100-m riparian area and to standard or special stipulations outside that area. No impacts on mineral resource development in this SRMA would result from recreation decisions under the No Action Alternative.

Under the No Action Alternative, leasing and other mineral resource development activities would be subject to standard or special stipulations for the portions of the 375,734-acre Cedar Mesa Cultural SRMA that are outside a WSA. Therefore, no impacts on mineral resource development in these areas would result from recreation decisions under this alternative.

4.3.7.5.1.6. Impacts of Riparian Resource Decisions on Mineral Resource Development Under Alternative A

The impacts of riparian resource decisions on mineral resource development are the same for all alternatives and are discussed above under Section 4.3.7.4, Impacts Common to All Alternatives.

4.3.7.5.1.7. Impacts of Soils and Watershed Decisions on Mineral Resource Development Under Alternative A

Under the No Action Alternative, a minimum of 1,063,019 acres of BLM lands open to surface-disturbing mineral resource development (i.e., leasing under Standard or Special Stipulations, and lands that are subject to No Surface Occupancy but are Open to minerals entry, or 76.5% of open BLM lands) are overlain by sensitive soils with medium and high limitations (Table 4.43). Stipulations required to protect sensitive soils would require a project proponent to comply with BMPs and mitigation measures, which could result in increased costs and time required to implement a mineral resource exploration or development project in sensitive soils.

Table 4.43. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface Disturbing Mineral Resource Development, by RFD Area, under Alternative A–No Action

RFD Area	Leasing Category	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Blanding Sub-basin	Standard	270,410	Alkalinity	223,674	82.7
	Special	127,657	Alkalinity	107,629	84.3
	NSO, Open to ME[1]	4,078	Alkalinity	2,971	72.9
	Subtotals	**402,145**		**334,274**	**83.1**
Monument Upwarp	Standard	144,241	Alkalinity	95,694	66.3
	Special	442,848	Alkalinity	323,125	73.0
	NSO, Open to ME[1]	142,032	Alkalinity	111,175	78.3
	Subtotals	**729,121**		**529,994**	**72.7**

Table 4.43. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface Disturbing Mineral Resource Development, by RFD Area, under Alternative A–No Action

RFD Area	Leasing Category	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Paradox Fold and Fault Belt	Standard	163,953	Alkalinity	125,069	76.3
	Special	89,121	Rooting Depth	69,434	77.9
	NSO, Open to ME[1]	4,916	Rooting Depth	4,248	86.4
	Subtotals	**257,990**		**198,751**	**77.0**
TOTALS		**1,389,256**		**1,063,019**	**76.5**

1. NSO, Open to ME = No Surface Occupancy but Open to Mineral Entry.
2. Possible limiting factors are water erosion, wind erosion, droughty soils, excess salt, excess sodium, rooting depth, and alkalinity.

4.3.7.5.1.8. Impacts of Special Designations Decisions on Mineral Resource Development Under Alternative A

Impacts from ACECs on Mineral Resource Development

Protection of the relevant and important values indentified for ACECs generally result in "special management attention" which is usually greater restrictions on mineral resource development and other surface disturbing activities. These restrictions are often implemented with a shift away from Standard Terms and Conditions to CSU, NSO, or Closure.

Under the No Action Alternative 488,616 acres of BLM lands occur in ACECs, of which 387,535 are subject to NSO or closed to leasing. Of the 387,535 acres there are 268,138 acres closed to leasing because they are also located in WSAs. The remaining 119,397 acres have been limited as a direct result of designation of the ACECs. Closure of 6.7% of all BLM lands (119,397 acres) due to ACEC designation (Table 4.44) would have a negative impact on mineral resource extraction and development. These areas would be excluded from mineral resource development and lower the number of locations where potential wells could be drilled. The lower number of locations could indirectly lead to a lower production and supply of oil and natural gas and fewer royalties paid to the federal government and/or the State of Utah. The finite non-renewable resource found beneath these lands would not be depleted.

The exact acreage of each ACEC varies by alternative. Across all alternatives, the following existing and proposed ACECs are entirely or partially within one or more WSAs: Bridger Jack Mesa, Butler Wash North, Cedar Mesa, and Dark Canyon. For each of these ACECs, the portion(s) that overlap with a WSA would be managed as WSAs and would be impacted the same as described above for WSAs (Map 81).

Table 4.44. Acreages of Existing and Potential ACECs that are Available to Mineral Resource Development, if Designated under Alternative A – No Action

ACEC	Acres			VRM Outside WSA[2]	Acres in Each Lease Category				Other Activities Outside WSAs		
	Total	Within WSA[1]	Outside WSA		Standard	Special	NSO	Closed	Mineral Entry	Mineral Disposal	Geophysical Exploration
EXISTING											
Alkali Ridge	39,202	--	39,202	III	473	38,729	0	0	yes	yes	yes
(Alkali Ridge NHL)	(2,340)	--	(2,340)	III	(0)	(2,340)	(0)	(0)	yes	yes	yes
Bridger Jack Mesa	6,260	6,260	0	NA	13	0	0	6,247	yes	no	yes
Butler Wash North	17,464	17,464	0	I (Var.)	536	122	1,213	15,592	yes	no	yes
Cedar Mesa[4]	295,336	184,015	111,321	Var.	1,521	75,892	23,387	194,537	yes	yes	yes
(Grand Gulch SEA)	(4,240)	(4,240)	--	I	(0)	(0)	(0)	(4,240)	no	no	no
(Valley of the Gods SEA)	(31,387)	--	(31,387)	I	--	--	--	--	yes	yes	yes
(Scenic Highway Corridor)	(SEE POTENTIAL)										
Dark Canyon	61,660	61,660	0	I	114	168	0	61,377	no	no	no
Hovenweep	1,798	--	1,798	III	170	913	713	0	yes	no	yes
Indian Creek/Lockhart Basin	8,510	--	8,510	I	5	461	3,443	4,602	yes	no	yes
(Indian Creek)	(8,510)	--	(8,510)	I	(5)	(461)	(3,443)	(4,602)	yes	no	yes
(Lockhart Basin)	(SEE POTENTIAL)										
Lavender Mesa	649	--	649	NA	50	2	597	0	yes	no	yes
POTENTIAL											
(Lockhart Basin)	(0)	--	(0)	NA	(0)	(0)	(0)	(0)	--	--	--
San Juan River[3]	15,100	--	15,100	NA	0	0	0	0	--	--	--
Shay Canyon	5,448	--	5,448	III	392	3,169	0	0	yes	yes	yes
(Valley of the Gods SEA)	(SEE EXISTING)										
Scenic Highway Corridor	57,737	9,930	47,807	I (Var.)	303	2,879	65,893	9,934	--	yes	--

"NA" and "–" both mean Not Applicable. Items in parenthesis are subsets of the first number above that is *not* in parenthesis.

1. Always VRM I and Closed to leasing.
2. According to Alternatives Matrix in Chapter 2, if specified.
3. To be managed as SRMA in this alternative.
4. Portions of Cedar Mesa ACEC lie within eight WSAs.

Impacts from WSRs on Mineral Resource Development

The number of miles of recommended WSRs varies by alternative. Impacts on mineral resource development resulting from WSR decisions include prescriptions for mineral resource development in riparian and floodplain areas; these are discussed in detail above, in Section 4.3.7.4.4, Impacts of Riparian Resources Decisions on Mineral Resource Development. Many WSR recommendations prescribe NSO in riparian areas as a condition of designation. However, as NSO leasing would occur in riparian areas regardless of the WSR recommendations of these segments, designation of the following recommended segments would result in no additional impacts to mineral resource development under No Action:

- Arch Canyon (2,208 acres, BLM river miles, 6.9)
- Colorado River Segment #1 (352 acres, BLM river miles, 2.2)
- Indian Creek (1,536 acres, BLM river miles, 4.8)
- San Juan River Segment #1 (1,360 acres, BLM river miles, 8.5)
- Dark Canyon (2,048 acres, BLM river miles, 6.4)
- Fable Valley (2,176 acres, BLM river miles, 6.8)

Under the No Action Alternative, Colorado River Segments #2 and #3 and San Juan River Segments #2 through #5 have been determined to be eligible for WSR designation. Therefore, adverse impacts resulting from WSR decisions, in the form of limited mineral resource development (e.g., NSO leases and other strict limitations) would occur on 7,168 acres. This acreage accounts for a 0.4% decrease in BLM lands available for optimal mineral resource development; therefore, the impacts, although adverse, are negligible.

4.3.7.5.1.9. Impact of Special Status Species and Other Wildlife and Fisheries Decisions on Mineral Resource Development Under Alternative A

Bighorn Sheep Lambing and Rutting

Under the No Action Alternative, oil and gas exploration, development, and geophysical work would be prohibited on 329,750 acres of bighorn sheep crucial habitat (or 18.4% of all BLM lands) during the lambing season (106 days) and rutting season (92 days; Table 4.45). Other mineral resource development may continue with a plan of operation. These management decisions would result in negative, minor impacts to mineral resource development, in the form of slowed production from mineral resource development facilities in this area due to timing limitations.

Pronghorn Fawning Area

Under the No Action Alternative, oil and gas exploration, development, and/or production and geophysical work would be prohibited on the 12,960-acre pronghorn crucial habitat area (or 0.7% of all BLM lands) during the fawning season (31 days; see Table 4.45). Other mineral resource development may continue with a plan of operation. These management decisions would result in impacts similar in type to those that would occur in bighorn lambing and rutting habitat, though at slightly less magnitude.

Table 4.45. Additional Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under Alternative A

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Bighorn – Lambing (329,750 acres)	4/1 – 7/15							■	■	■	■	■	■	■											
Bighorn – Rutting (329,750 acres)	10/15 – 12/31																				■	■	■	■	■
Pronghorn – Fawning (12,960 acres)	5/15 – 6/15										■	■													
Deer – Winter use (197,550 acres)	12/15 – 4/30	■	■	■	■	■	■	■	■																■

Deer Winter Range

Under the No Action Alternative, oil and gas exploration, development, and/or production and geophysical work would be prohibited on the 197,550-acre deer crucial winter range (or 11.1% of all BLM lands) during the period of critical winter use (151 days; see Table 4.45). Other mineral resource development may continue with a plan of operation. These management decisions would result in impacts similar in type to those that would occur in bighorn lambing and rutting habitat, though at slightly less magnitude.

In all, wildlife decisions necessitating special stipulations would impact various acreages at various times of the year. Under the No Action Alternative, no wildlife related timing limitations would be enforced on any acreage from July 15 through October 15 (92 days). However, the most limitations would occur from December 15–31 and for the month of April, at which times wildlife related restrictions on up to 527,300 acres (or 29.5% of all BLM lands, if habitats do not overlap) would be enforced.

4.3.7.5.1.10. Impacts of Vegetation Management Decisions on Mineral Resource Development Under Alternative A

Under the No Action Alternative, maintenance of existing vegetation treatments and the implementation of new treatments on approximately 232,130 acres of lands in the Monticello PA would have minimal impacts on exploration, development, and production of mineral resources.

Under this alternative, however Bridger Jack Mesa (5,290 acres) and Lavender Mesa (649 acres) ACECs are protected for near relict and relict vegetation. The management prescriptions include open to oil and gas leasing, but NSO. This will have an adverse impact, as the cost to directionally drill is higher than conventional vertical drilling.

The ACECs are also closed to mineral materials, which removes the acreage and minerals available. However, the mineral materials in this area are lower grade and access would be very difficult and costly.

The ACECs are available for locatable minerals with an approved plan of operation. Access would likely be along escarpments and not on the mesa tops. However, surface disturbance for ventilation shafts might be limited or more costly and be an adverse impact.

Generally, the impacts of vegetation management on mineral resource development are minor because the acreage is small and access is difficult. Additionally, most of the area is protected by the IMP as it falls within a WSA (see Section 4.3.14, Special Designations).

4.3.7.5.1.11. Impacts of Visual Resource Management Decisions on Mineral Resource Development Under Alternative A

Mineral resource development would be subject to the VRM Class objectives of the area within which development would occur. Areas managed as VRM III and VRM IV are allowed a wider range of impacts on visual resources and generally would have negligible impacts on mineral resource development in the Monticello PA. Areas managed as VRM I and VRM II result in more limitations to mineral resource development in the Monticello PA since fewer changes to the line, form, color and texture that characterize the existing landscape would be allowed. Table

4.46 quantifies the acreages of land within each VRM Class, which dictate the level of surface disturbance allowed.

Table 4.46. Acreages of Each VRM Class by Alternative

VRM Class	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
I	371,575	497,668	425,179	390,424	998,370
II	355,112	250,641	132,001	8,838	111,478
III	416,806	426,350	531,920	692,741	264,369
IV	637,875	608,463	693,995	691,119	407,459
TOTALS	**1,781,368**	**1,783,122**	**1,783,095**	**1,783,122**	**1,781,676**

Note that these acreages include WSAs, which are managed as VRM I. Table 4.39 and other tables discussing the impacts of mineral resource development decisions on mineral resource development exclude WSAs, and thus reflect different acreages.

Under the No Action Alternative, approximately 371,575 acres (or 20.9% of BLM lands) would fall into the VRM I class, and in these areas, mineral resource development would be subject to NSO or closed to leasing due to the restrictions on surface disturbance in this VRM class. Most of the lands managed as VRM Class I are also WSAs (see discussion for Impacts Common to all and Special Designations). These lands would be closed to oil and gas leasing. Lands managed as VRM Class I would have little if any surface disturbing activities, as it is difficult to accomplish oil or gas activities of any kind (directional or otherwise) and yet achieve the VRM objectives in a VRM I area. Accordingly, it is likely that such areas, including NSO areas, could have adverse impacts on mineral resource development, thus resulting in a lower number of locations where potential wells could be drilled, a lower yield and commercial supply of oil and natural gas, and fewer royalties.

Areas that inventory as VRM II but are in areas that are available to leasing subject to standard or special stipulations would be managed as VRM III, unless otherwise specified in the special management prescriptions found in the 1991 RMP. These visual resource decisions would have a beneficial, minor impact on mineral resource development because areas normally subject to NSO could be available under standard or special stipulations. The beneficial impact would take the form of simplified exploration and production, with corresponding lower costs.

4.3.7.5.2. ALTERNATIVE B

4.3.7.5.2.1. Impacts of Cultural Resource Decisions on Mineral Resource Development Under Alternative B

The Comb Ridge CSMA (38,012 acres) and the Tank Bench CSMA (2,646) would be closed to locatable mineral entry, mineral material disposal, and geophysical exploration. Oil and gas leasing and development would be subject to NSO. These cultural resource decisions would account for a 2.3% decrease in BLM lands available for mineral entry and mineral material disposal, though leasing could continue subject to NSO. The No Action Alternative does not specify restrictions on development in these CSMAs.

Impacts on mineral resource development in the historic district would be the same as impacts under the No Action Alternative, except that closing the entire historic district to geophysical

exploration under Alternative B is more restrictive than the No Action Alternative (accounting for 2.1% of all BLM lands). Because no gathering of geophysical data would occur in the historic district under Alternative B, no new data or knowledge of the mineral resource reserves underlying the historic district would be collected.

4.3.7.5.2.2. Impacts of Lands and Realty Decisions for Alternative B on Mineral Resource Development Under Alternative B

Under Alternative B, approximately 263,467 acres (or 15.0% of all BLM lands) would be recommended for withdrawal from mineral entry. This decision has the potential to result in adverse impacts of the same type as the No Action Alternative, but at a greater magnitude. Alternative B, along with Alternative E, represents the greatest acreage recommended for withdrawal.

4.3.7.5.2.3. Impacts of Mineral Decisions on Mineral Resource Development Under Alternative B

Oil and Gas Resources

Approximately 1,241,910 acres of BLM lands within the Monticello FO would be administratively open for oil and gas leasing under standard and special lease stipulations, within the three RFD development areas (see Table 4.41). Based on the proportion of BLM lands open for leasing and the RFD (BLM 2005d), it is estimated that 66 predicted oil and gas wells would be drilled over the life of the RMP (Table 4.47; Map 24; BLM 2005c). This alternative would result in an increase of approximately 3,680 acres available for development (or 0.3%) but a decrease of 7 predicted oil and gas wells (or 9.6%) compared to the No Action Alternative. See the socioeconomic analysis in this chapter (Section 4.3.12, Socioeconomic Resources) for the projected yield of oil and gas for Alternative B.

Alternative B has a slightly larger (0.3%) acreage open to leasing while but has more stipulations for protection of resources. Alternative B has less development (as measured in wells), compared to Alternative A. The increase in BLM lands administratively open to leasing compared to Alternative A is negligible.

The decrease of wells compared to the No Action Alternative could be due to the smaller acreages of BLM lands available under standard stipulations (the most open stipulations). Under Alternative B, approximately 29% of all BLM lands available for leasing would be subject to standard stipulations, and approximately 71% of all open BLM lands would be subject to special stipulations. Considerably more land is subject to special stipulations. The adverse impacts of more stipulations include increased costs for development, increased time for processing of applictions, and fewer months each year that surface disturbing activities could be conducted.

Table 4.47. Predicted Oil and Gas Wells and Geophysical Exploration on BLM Lands within RFD Areas under Alternative B, Average over the Life of the Plan (LOP) and Maximum per Year (MPY)

RFD Area	Acres of BLM Lands Available			% of BLM Lands Available	Predicted Wells*	Geophysical Exploration	
	Standard	Special	Total			Linear Miles of Source Line	Acres
AVERAGE OVER THE LIFE OF THE PLAN (LOP)							
Paradox Fold and Fault Belt	24,359	182,875	207,234	81	20	224	408
Blanding Sub-basin	148,521	217,919	366,440	90	38	188	249
Monument Upwarp	192,290	475,946	668,236	91	8	95	137
LOP TOTAL	**365,170**	**876,740**	**1,241,910**		**66**	**507**	**794**
MAXIMUM PER YEAR (MPY)**							
Paradox Fold and Fault Belt	***	***	***	***	2	21	37
Blanding Sub-basin	***	***	***	***	4	13	23
Monument Upwarp	***	***	***	***	1	7	13
MPY TOTAL	*****	*****	*****		**7**	**41**	**73**

Note: Calculations based on BLM lands only.

*Oil and natural gas wells are considered together.

**Based on the RFD (BLM 2005d), MPY reflects the maximum development that *could* occur in *any given year* of the life of the Plan. During most Plan years, development per year will be less than this maximum. To find the *average* development per year, take the value of interest in the first part of the table, Average over the Life of the Plan (LOP), and divide the value by 15, which is the number of years the Plan is expected to be in effect.

*** Same as corresponding value under Average Over the Life of the Plan (LOP).

Oil and gas development would occur in all three RFD areas. Similar to the No Action Alternative, the Monument Upwarp RFD Area would see the least amount of development in terms of wells (i.e., 8), despite having the most lands administratively open to development. Also similar to the No Action Alternative, most wells (i.e., 38) would be drilled in the Blanding Sub-basin RFD Area. In looking at the individual RFD areas, other possible factors for the notable decrease in wells under Alternative B become apparent. First, approximately 81,100 acres of open BLM lands have shifted from the Blanding Sub-basin and Paradox Fold and Fault Belt RFD Areas (the areas of more active development) to the Monument Upwarp RFD Area (the area of least development) under Alternative B. The loss of projected wells from the active areas (a loss of 8 wells, compared to the No Action Alternative) is not compensated with the gain of wells in the less active area (a gain of 1 well, compared to the No Action Alternative). Second, of the acres of BLM lands open to leasing, the Blanding Sub-basin and Paradox Fold and Fault Belt RFD areas both have more lands subject to special stipulations than standard stipulations. In the Blanding Sub-basin RFD area, 2.5 times more open lands are subject to special stipulations under Alternative B than under the No Action Alternative. In the Paradox Fold and Fault Belt RFD Area, 1.9 times more open lands are subject to special stipulations under Alternative B than under the No Action Alternative.

Ultimately, under Alternative B, the direct impacts of mineral resource development decisions on oil and gas production would be somewhat adverse compared to the No Action Alternative. A small decrease in the potential number of oil and gas wells under Alternative B (a 9.6% decrease) would lead to a small decrease in the available supply of oil and/or natural gas. The federal government and/or the State of Utah would continue to receive royalties from the production and sale of oil and gas, though at somewhat lower rates than under the No Action Alternative (see Section 4.3.12, Socioeconomic Resources). However, the decreased number of predicted wells would also decrease the rate at which finite reserves of fossil fuel resources in the Monticello FO are extracted and consumed (compared to the No Action Alternative), which would have a beneficial impact on the long-term viability and availability of these resources.

Geophysical Exploration

Under Alternative B, approximately 507 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted over the life of the RMP for the purposes outlined in Section 4.3.7.1, Summary of Leasable RFD, and would result in approximately 794 acres of surface disturbance over the life of the RMP. This exploration would result in beneficial impacts to mineral resource development of the same type and quality described in Section 4.3.7.1 and for the same reasons (BLM 2005d). However, less exploration would happen under Alternative B than under the No Action Alternative; 52 fewer miles of source line (a decrease of 9.3%) would be used under Alternative B compared to the No Action Alternative. Geophysical exploration would occur in all three RFD areas, as detailed in Table 4.47.

Other Leasable Resources

Although 1,241,910 acres of BLM land would be administratively open under Alternative B for the leasing of potash and salt and tar sands (an increase of approximately 3,700 acres, or 0.3% acres, compared to the No Action Alternative); because the level of development expected is low, impacts to potash and salt and tar sands leasing due to mineral resource development decisions would be negliable; the same as impacts under the No Action Alternative.

Locatable Resources

Approximately 1,527,656 acres of BLM land would be open under Alternative B to mineral entry of uranium-vanadium, copper, gold, and limestone: a decrease of approximately 147,401 acres compared to the No Action Alternative. Impacts of locatable resource decisions under this alternative would be essentially the same as those described for the No Action Alternative, except that there would be slightly less acreage and mineral available for development. The surface disturbance and occupation associated with mining operations for uranium-vanadium, copper, gold, and limestone are usually small enough that they do not prohibit leasable mineral development and therefore the impact is neglible. Small, beneficial impacts could occur to leaseable minerals as more roads are maintained or developed for access to locatable minerals.

Saleable Resources

Approximately 1,241,904 acres of BLM land would be open to development of sand and gravel, building stone, and clay under Alternative B (Map 19). This represents a decrease of approximately 147,350 acres (11%) compared to the No Action Alternative. Impacts of saleable resource decisions under this alternative would be essentially the same as those described for the No Action Alternative, except that there would be slightly less acreage and minerals available for development. The surface disturbance and occupation associated with mining operations for sand and gravel, building stone, and clay are usually small enough that they do not prohibit leasable mineral development, and therefore the impact is neglible. Small, beneficial impacts could occur to leaseable minerals as more roads are maintained or developed for access to locatable minerals.

4.3.7.5.2.4. Impacts of Management of Non-WSA Lands with Wilderness Characteristics on Mineral Resource Development under Alternative B

Impacts under Alternative B would be the same as under Alternative A, for the same reasons.

4.3.7.5.2.5. Impacts of Recreation Resource Decisions on Mineral Resource Development Under Alternative B

Under Alternative B, in the 10,203-acre San Juan River SRMA, surface disturbance from mineral resource development on existing claims would be minimized without curtailing valid existing rights. Leasing in the SRMA would be subject to NSO. The SRMA would be closed to and recommended for withdrawal from mineral entry. Finally, the SRMA would be closed to mineral materials disposal except for the area above the rim in the vicinity of the Bluff Airport lease. These recreation decisions would account for a 0.6% decrease in BLM lands available for leasing-related surface disturbance, mineral entry, and mineral materials disposal compared to the No Action Alternative. Thus they would have generally negative but negligible impacts upon mineral resource development compared to the No Action Alternative, which does not specify restrictions on mineral resource development in this SRMA.

Under Alternative B, portions of the 375,734-acre Cedar Mesa Cultural SRMA that are outside a WSA would be leased under standard or special stipulations. As this same area presently includes some amount of land subject to NSO (and would continue this categorization under the No Action Alternative), Alternative B represents a negligible, beneficial impact to mineral resource development in comparison to the No Action Alternative. Standard and special

stipulations are the less restrictive leasing stipulations, and if more lands are available under these stipulations, a larger yield and commercial supply of oil and gas would potentially result.

4.3.7.5.2.6. Impacts of Soils and Watershed Decisions on Mineral Resource Development Under Alternative B

Under Alternative B, a minimum of 1,049,158 acres of BLM lands open to surface disturbing mineral resource development (or 76.7% of open BLM lands) are overlain by sensitive soils with medium and high limitations (Table 4.48). The particular requirements and limitations on such mineral resource development and the resulting impacts on mineral resource development would be the same as those under the No Action Alternative.

Table 4.48. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface Disturbing Mineral Resource Development, by RFD Area, under Alternative B

RFD Area	Leasing Stipulation	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Blanding Sub-basin	Standard	148,521	Alkalinity	127,525	85.9
	Special	217,919	Alkalinity	182,212	83.6
	NSO, Open to ME[1]	39,805	Alkalinity	29,888	75.1
	Subtotals	**406,245**		**339,625**	**83.6**
Monument Upwarp	Standard	192,290	Alkalinity	133,552	69.5
	Special	475,946	Alkalinity	354,952	74.6
	NSO, Open to ME[1]	35,826	Rooting Depth	24,142	67.4
	Subtotals	**704,062**		**512,646**	**72.8**
Paradox Fold and Fault Belt	Standard	24,359	Alkalinity	19,544	80.2
	Special	182,875	Rooting Depth	142,307	77.8
	NSO, Open to ME[1]	49,473	Rooting Depth	35,036	70.8
	Subtotals	**256,707**		**196,887**	**76.7**
TOTALS		**1,241,910**		**1,049,158**	**76.7**

1. NSO, Open to ME = No Surface Occupancy but Open to Mineral Entry.
2. Possible limiting factors are water erosion, wind erosion, droughty soils, excess salt, excess sodium, rooting depth, and alkalinity.

Under Alternative B, in addition to the Gold Book Standards (BLM and FS 2005), a plan (and BLM approval) would be required for surface disturbance occurring on slopes between 21 and 40%, and no surface disturbance would be allowed on slopes over 40%. These soils and watershed management decisions would have minor, negative impacts on surface disturbing mineral resource development in several ways. For a given mineral resource development project occurring on slopes of 21–40%, costs, time, and effort for mineral resource development would increase due to the necessity of preparing and implementing an erosion control plan. For a given mineral resource development project on lands including slopes over 40%, mineral resource development facilities such as pads and pipelines would need to be re-sited or re-routed which, in addition to increasing costs, time, and effort for the project, would have the potential to be less than optimal in design, according to the specific goals of the project proponent.

4.3.7.5.2.7. Impacts of Special Designations Decisions for Alternative B on Mineral Resource Development Under Alternative B

ACECs

All ACECs are considered for management in Alternative B. ACECs are designated when special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natual systems or processes, or to protect life and safey from natural hazards.

In Alternative B, there are 521,141 acres of ACEC that require special management protection. Generally, the impacts to mineral development are increased costs to implement mitigation, delayed times for processing applications, decreased areas available for development and exploration, and limitations of the types of equipment, processes, and time available for development. All of these would be considered impediments to development and exploration for leaseable, locatable, and saleable minerals.

Under Alternative B, 521,058 acres of BLM lands would occur in ACECs (Table 4.49).

In all, 373,349 of these acres are subject to NSO or closed to leasing. If 285,782 acres (out of 373,349 acres) are closed to leasing because they are located in WSAs, the remaining 87,567 acres are limited to mineral resource development as a direct result of designation of the ACECs (see Table 4.49). Therefore, for the purposes of this analysis, implementation of Alternative B represents a closure of 4.9% of all BLM lands (87,567 acres) due to ACEC designation. ACEC designation under Alternative B has slightly less negative impact upon mineral resource development (about 1.8% less) than it does under the No Action Alternative.

WSAs

Impacts would be the same as Alternative A and were presented in Impacts Common to All.

WSRs

Under Alternative B, all WSR segments are recommended suitable.

- A total of 7,984 acres—comprising Colorado River Segment #3, Dark Canyon, and San Juan River Segments #3 and #5—are recommended with prescriptions of VRM I, closure to oil and gas development, and recommendations for withdrawal from mineral entry.

A total of 3,056 acres—comprising Colorado River Segment #2 and Fable Valley—are recommended with prescriptions of VRM II and NSO restrictions on leasing.

- A total of 2,272 acres—comprising San Juan River Segments #2 and #4—are recommended with prescriptions of VRM III and standard stipulations for leasing except in riparian areas.

Therefore, under Alternative B, a total of 11,040 acres is effectively unavailable for leasing due to WSR recommendation decisions. This unavailable acreage accounts for 2.6% of all BLM lands and amounts to a minor to negligible, adverse impact, in comparison to the No Action Alternative.

Table 4.49. Acreages of Existing and Potential ACECs that are Available to Mineral Resource Development, if Designated under Alternative B

ACEC	Acres			VRM Outside WSA[2]	Lease Stipulation (Acres)				Other Activities Outside WSAs		
	Total	Within WSA[1]	Outside WSA		Standard	Special	NSO	Closed	Entry?	Disposal?	Geophysical?
EXISTING											
Alkali Ridge	39,196	--	39,196	IV	0	37,050	2,146	0	--	--	--
(Alkali Ridge NHL)	(2,146)	--	(2,146)	NA	(0)	(0)	(2,146)	(0)	no	no	no
Bridger Jack Mesa	6,225	6,225	0	II	0	7	0	6,212	yes	no	yes
Butler Wash North	17,365	17,365	0	I	4	209	0	17,152	no	no	--
Cedar Mesa[4]	306,743	247,954	58,789	III	40,170	65,473	6,270	194,830	--	--	--
(Grand Gulch SEA)	(4,240)	(4,240)	--	NA	(0)	(0)	(0)	(4,240)	--	--	--
(Valley of the Gods SEA)	… SEE POTENTIAL …										
(Scenic Highway Corridor)	… NOT SPECIFIED …										
Dark Canyon	61,660	61,660	0	I	0	85	0	61,574	no	no	no
Hovenweep	2,439	--	2,439	III	2,412	0	0	0	yes	no	yes
Indian Creek/Lockhart Basin	56,293	6,842	49,,431	I	0	1	48,704	7,588	no	no	yes
(Indian Creek)	(8,510)	(6,842)	(1,668)	I	(0)	(1)	(3,907)	(4,602)	no	no	yes
(Lockhart Basin)	(47,783)	(0)	(47,783)	I	(0)	(0)	(44,797)	(2,986)	no	no	yes
Lavender Mesa	649	--	649	II	0	0	649	0	yes	no	yes
POTENTIAL											
(Lockhart Basin)	… SEE EXISTING …										
San Juan River[3]	7,590	--	7,590	I, II, III (Var.)	2,298	0	4,810	432	no	no	--
Shay Canyon	119	--	119	II	0	0	119	0	yes	no	yes
Valley of the Gods	22,863	--	22,863	I	0	0	0	22,863	no	no	--

"NA" and "–" both mean Not Applicable. Items in parenthesis are subsets of the first number above that is *not* in parenthesis.

1. Always VRM I, or closed to leasing.
2. According to Alternatives Matrix in Chapter 2, if specified.
3. To be managed as SRMA in this alternative.
4. Portions of Cedar Mesa ACEC lie within eight WSAs.

4.3.7.5.2.8. Impacts of Special Status Species and Other Wildlife and Fisheries Decisions on Mineral Resource Development Under Alternative B

Gunnison Sage-grouse

Under Alternative B, management decisions regarding Gunnison sage-grouse would include reserving 4,524 acres of BLM lands (or 0.2% of all BLM lands) for crucial year-round habitat.

In lek habitat on these lands (within 2.0 miles of active strutting grounds), the species management decisions detailed in the Alternatives Matrix in Chapter 2 would result in negligible, adverse impacts to mineral resource development, primarily from leasing limitations on surface use near active strutting grounds, including reduced opportunities for geophysical work and limitations on activities from March 20 through May 15 of each season. These surface and timing limitations would not prohibit or deter mineral resource development; they would merely slow down development and/or production of the resource.

Oil and gas exploration and development subject to standard stipulations would be allowed in year-round habitat on these lands (within 6.0 miles of active strutting grounds), though mineral resource developers would follow the Suggested Management Practices in the Gunnison Sage-grouse Rangewide Conservation Plan (BLM 2005l), which in some cases may necessitate more rigorous conservation practices during standard leasing. Nonetheless, adverse impacts to mineral resource development from implementation of the Gunnison Sage-grouse Rangewide Conservation Plan would be negligible.

Alternative B would result in the most restrictions on mineral resource development due to Gunnison sage-grouse management decisions.

Bighorn Sheep Lambing and Rutting

Under Alternative B, on the 453,388-acre bighorn crucial habitat area (or 25.4% of all BLM lands), the special conditions described in Chapter 2 would be enforced for the duration of the lambing season and rutting season (Table 4.50; see also the No Action Alternative for the duration). These management decisions would result in the same timing related impacts as the No Action Alternative. However, because this crucial habitat area is 123,638 acres (37.9%) larger than it is under the No Action Alternative, the net impact to mineral resource development under Alternative B would be somewhat negative compared to the No Action Alternative.

Pronghorn Fawning Area

Under Alternative B, on the 29,365-acre pronghorn crucial habitat area (or 1.6% of all BLM lands) the special conditions described in Chapter 2 would be enforced for the duration of the fawning season (46 days; see Table 4.50). These management decisions would result in minor impacts on mineral resource development, in the form of slightly slowed production from mineral resource development facilities in this area because of timing limitations, though more so than under the No Action Alternative.

Table 4.50. Additional Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under Alternative B

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Gunnison sage-grouse leks (2.0 miles)																									
Non-disturbing geophysical work	3/20 – 5/15						■	■	■	■															
All permitted activities (nighttime)	3/20 – 5/15						■	■	■	■															
Bighorn – Lambing (453,388 acres)	4/1 – 7/15							■	■	■	■	■	■	■											
Bighorn – Rutting (453,388 acres)	10/15 – 12/31																				■	■	■	■	■
Pronghorn – Fawning (29,365 acres)	5/1 – 6/15									■	■	■													
Deer – Winter use (785,921 acres)	11/1 – 5/15	■	■	■	■	■	■	■	■	■												■	■	■	■
Elk – Winter use (191,173 acres)	11/1 – 5/15	■	■	■	■	■	■	■	■	■												■	■	■	■

Because this crucial habitat area is 16,405 acres (129%) larger and the fawning season is 15 days (32.6%) longer than under the No Action Alternative, impacts on mineral resource development from this wildlife decision would occur over more than twice the area and for a longer period of time under Alternative B compared to the No Action Alternative. However, considering the low acreage of BLM lands devoted to this habitat under Alternative B, even though the difference between this alternative and the No Action Alternative is dramatic, the overall impact on the FO-wide mineral resource development program remains very minor to negligible.

Deer Winter Range

Under Alternative B, on the 785,921-acre deer crucial winter range (or 44.1% of all BLM lands), the special conditions described in Chapter 2 would be enforced for 196 days of critical winter use (i.e., more than half the year; see Table 4.50). This crucial habitat area is 588,371 acres (297.8%) larger and the duration of enforcement is 45 days (29.8%) longer than under the No Action Alternative. These management decisions would result in major impacts on mineral resource development compared to the No Action Alternative, both in terms of the large area restricted as winter range and the duration of enforcement of the restrictions. Major impacts would include delays in permitting for production of mineral resources and restrictions on the period of surface disturbance.

Elk

Under Alternative B, on the 191,173-acre elk crucial winter range (or 10.7% of all BLM lands), the special conditions described in Chapter 2 would be enforced during the period of winter use (196 days, or more than half the year; see Table 4.50). These management decisions would result in impacts on mineral resource development compared to the No Action Alternative, similar to those described above for deer winter range, though over a much smaller area.

In all, wildlife decisions necessitating special stipulations would impact various acreages at various times of the year. Under Alternative B, as under the No Action Alternative, no wildlife related timing limitations would be enforced on any acreage from July 15 through October 15 (92 days). At the other end of the spectrum, restrictions from May 1 through 15 would be enforced on up to 876,736 acres (or 49% of all BLM lands, assuming overlap; see Table 4.41) under Alternative B which, throughout this analysis, is the single largest restriction of mineral resource development (in area) because of preservation of other resources.

4.3.7.5.2.9. Impacts of Vegetation Management Decisions on Mineral Resource Development Under Alternative B

Impacts to mineral resource development under Alternative B would be essentially the same as under the No Action Alternative, except that fewer acres of vegetation would be treated (1,000 acres/year), and because the same acreages of vegetation in ACECs would be protected from surface disturbance.

Impacts of Visual Resource Decisions on Mineral Resource Development Under Alternative B

Under Alternative B, approximately 497,668 acres (or 27.9% of BLM lands) would fall into the VRM I class, and in these areas, mineral resource development would be subject to NSO or closed to leasing because of the restrictions on surface disturbance in this VRM class. Adverse impacts under Alternative B would be of the same type as in the No Action Alternative, for the same reasons, but at a greater magnitude (7.0%).

4.3.7.5.3. ALTERNATIVE C

4.3.7.5.3.1. Impacts of Cultural Resource Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, cultural resource decisions regarding the 38,012-acre Comb Ridge CSMA and the 37,388-acre Grand Gulch National Historic District would result in the same impacts to mineral resource development as occur under Alternative B.

Under Alternative C, the 2,646-acre Tank Bench CSMA would be open to mineral entry, mineral materials disposal, geophysical exploration, and oil and gas leasing and development with standard stipulations. The No Action Alternative does not specify cultural resource decisions affecting mineral resource development for the Tank Bench CSMA; therefore, Alternative C would result in negligible, beneficial impacts to mineral resource development in the Tank Bench CSMA, compared to the No Action Alternative. Direct impacts would include a very slight increase in oil and gas productivity and productivity of locatable and saleable minerals, as well as improved data on the mineral resource reserves underlying the CSMA.

4.3.7.5.3.2. Impacts of Lands and Realty Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, approximately 147,435 acres (or 8.2% of all BLM lands) would be recommended for withdrawal from mineral entry. This decision has the potential to result in adverse impacts of the same type as the No Action Alternative, but at a much lower magnitude.

4.3.7.5.3.3. Impacts of Mineral Decisions on Mineral Resource Development Under Alternative C

<u>Oil and Gas Resources</u>

In total, approximately 1,348,973 acres of BLM lands within the Monticello FO would be administratively open for oil and gas leasing under standard and special lease stipulations within the three RFD development areas (see Table 4.41). Based on the proportion of BLM lands open for leasing and the RFD (BLM 2005d), it is estimated that 74 predicted oil and gas wells would be drilled over the life of the RMP (Table 4.51; Map 25; BLM 2005c). This alternative would result in an increase of approximately 110,743 acres available for development (or 8.9%) and an increase of 1 predicted oil and gas well (or 1.4%) compared to the No Action Alternative. See the socioeconomic analysis in this chapter (Section 4.3.12, Socioeconomic Resources) for the projected yield of oil and gas for Alternative C.

Under this alternative, approximately 47% of all open BLM lands would be available under standard stipulations, and approximately 53% of all open BLM lands would be available under special stipulations. Although the overall acreage administratively open to leasing is greater under this alternative than under the No Action Alternative, Alternative C's standard stipulations/special stipulations ratio is very similar to that of the No Action Alternative.

Oil and gas development would occur in all three RFD areas. Similar to the No Action Alternative, the Monument Upwarp RFD area would see the least amount of development in terms of wells (i.e., 9), despite having the most lands administratively open to development.

Table 4.51. Predicted Oil and Gas Wells and Geophysical Exploration on BLM Lands within RFD Areas under Alternative C, Average over the Life of the Plan (LOP) and Maximum per Year (MPY)

RFD Area	Acres of BLM Lands Available			% of BLM Lands Available	Predicted Wells*	Geophysical Exploration	
	Standard	Special	Total			Linear Miles of Source Line	Acres
AVERAGE OVER THE LIFE OF THE PLAN (LOP)							
Paradox Fold and Fault Belt	81,564	169,204	250,768	97	24	269	489
Blanding Sub-basin	254,706	142,314	397,020	98	41	205	271
Monument Upwarp	293,201	407,984	701,185	95	9	99	143
LOP TOTAL	**629,471**	**719,502**	**1,348,973**		**74**	**573**	**903**
MAXIMUM PER YEAR (MPY)**							
Paradox Fold and Fault Belt	***	***	***	***	3	25	45
Blanding Sub-basin	***	***	***	***	4	14	25
Monument Upwarp	***	***	***	***	1	7	13
MPY TOTAL	*****	*****	*****		**8**	**46**	**83**

Note: Calculations based on BLM lands only.

*Oil and natural gas wells are considered together.

**Based on the RFD (BLM 2005d), MPY reflects the maximum development that *could* occur in *any given year* of the life of the Plan. During most Plan years, development per year will be less than this maximum. To find the *average* development per year, take the value of interest in the first part of the table, Average over the Life of the Plan (LOP), and divide the value by 15, which is the number of years the Plan is expected to be in effect.

*** Same as corresponding value under Average Over the Life of the Plan (LOP).

Also similar to the No Action Alternative, most wells (i.e., 41) would be drilled in the Blanding Sub-basin RFD Area. Some notable differences in the RFD areas' leasing stipulations can be seen between Alternative C and the No Action Alternative. In the Paradox Fold and Fault Belt RFD area, under Alternative C, more than two-thirds of available lands are subject to special stipulations, whereas under the No Action Alternative, nearly two-thirds of available lands are available under standard stipulations. In the Monument Upwarp RFD area, more than twice as much land is subject to standard stipulations under Alternative C compared to the No Action Alternative, while the land subject to special stipulations decreases by only about 7.9% under Alternative C.

Ultimately under Alternative C the direct impacts of mineral resource development decisions on oil and gas production would be beneficial, but negligible, compared to the No Action Alternative. A very small increase in the potential number of oil and gas wells under Alternative C (a 1.4% increase) would lead to a very small increase in the available supply of oil and/or natural gas and in royalties (see Section 4.3.12, Socioeconomic Resources).

Geophysical Exploration

Under Alternative C, approximately 573 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted over the life of the RMP for the purposes outlined in Section 4.3.7.2, Summary of Geophysical RFD and would result in approximately 903 acres of surface disturbance over the life of the RMP. This exploration would result in beneficial impacts to mineral resource development of the same type and quality described in Section 4.3.7.2 and for the same reasons (BLM 2005d), to a greater degree than the No Action Alternative. Fourteen more miles of source line (an increase of 2.5%) would be used under Alternative C compared to the No Action Alternative. Geophysical exploration would occur in all three RFD areas, as detailed in Table 4.51.

Other Leasable Resources

Although 1,348,973 acres of BLM land would be administratively open under Alternative C for the leasing of potash and salt and tar sands (an increase of approximately 110,743 acres, or 8.9%, compared to the No Action Alternative), because the level of development expected is so low, impacts to potash and salt and tar sands leasing because of mineral resource development decisions would be nearly identical to those described under the No Action Alternative.

Locatable Resources

Approximately 1,682,865 acres of BLM land would be open under Alternative C to mineral entry of uranium-vanadium, copper, gold, and limestone, a decrease of approximately 7,808 acres, or less than 1%, compared to the No Action Alternative. The types and forms of impacts under Alternative C would be the same as those described for the No Action Alternative.

Saleable Resources

Approximately 1,358,968 acres of BLM land would be open to development of sand and gravel, building stone, and clay under Alternative C (Map 20). This represents a decrease of approximately 40,288 acres compared to the No Action Alternative. Impacts under Alternative C would be essentially the same as those described for the No Action Alternative.

4.3.7.5.3.4. Impacts of Management of Non-WSA Lands with Wilderness Characteristics on Mineral Resource Development Under Alternative C

Impacts under Alternative C would be the same as under Alternative A, for the same reasons.

4.3.7.5.3.5. Impacts of Recreation Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, in the 10,203-acre San Juan River SRMA, recreation decisions that pertain to mineral resource development would be the same as Alternative B, except that the entire SRMA, including the Bluff Airport vicinity, would be closed to mineral materials disposal. These recreation decisions would result in essentially the same impacts as Alternative B.

Under Alternative C, recreation decisions regarding the 375,734-acre Cedar Mesa Cultural SRMA would result in the same impacts that would occur under Alternative B.

4.3.7.5.3.6. Impacts of Soils and Watershed Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, a minimum of 1,063,652 acres of BLM lands open to surface disturbing mineral resource development (or 76.6% of available BLM lands) are overlain by sensitive soils with medium and high limitations (Table 4.52). The particular requirements and limitations on such mineral resource development and the resulting impacts on mineral resource development would be the same as those under the No Action Alternative.

Table 4.52. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface Disturbing Mineral Resource Development, by RFD Area, under Alternative C

RFD Area	Leasing Stipulation	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Blanding Sub-basin	Standard	254,706	Alkalinity	214,035	84.0
	Special	142,314	Alkalinity	117,263	82.4
	NSO, Open to ME[1]	8,213	Alkalinity	7,316	89.1
	Subtotals	**405,233**		**338,614**	**83.6**
Monument Upwarp	Standard	293,201	Alkalinity	207,717	70.8
	Special	407,984	Alkalinity	298,098	73.1
	NSO, Open to ME[1]	25,171	Alkalinity	24,069	95.6
	Subtotals	**726,356**		**529,884**	**73.0**
Paradox Fold and Fault Belt	Standard	81,564	Rooting Depth	64,994	79.7
	Special	169,204	Rooting Depth	124,877	73.8
	NSO, Open to ME[1]	5,939	Rooting Depth	5,283	89.0
	Subtotals	**256,707**		**195,154**	**76.0**
TOTALS		**1,388,296**		**1,063,652**	**76.6**

1. NSO, Open to ME = No Surface Occupancy but Open to Mineral Entry.
2. Possible limiting factors are water erosion, wind erosion, droughty soils, excess salt, excess sodium, rooting depth, and alkalinity.

Under Alternative C, the impacts of requiring a plan for slopes between 21% and 40% and implementing the Gold Book Standards (BLM and FS 2005) would be the same as Alternative B. Implementing surface disturbing mineral resource development on slopes over 40% is still generally disallowed under Alternative C, but if re-siting would cause "undue or unnecessary degradation" it may be allowed. Therefore, the negative, minor impacts of Alternative C on mineral resource development on slopes above 40% are similar in type to Alternative B but somewhat less in magnitude.

4.3.7.5.3.7. Impacts of Special Designations Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, 76,764 acres of BLM lands would occur in ACECs (Table 4.53). In all, 41,876 of these acres are subject to NSO or closed to leasing. If 4,602 acres (out of 41,876 acres) are automatically closed to leasing because they are located in WSAs, we assume that the remainder—37,274 acres—has been limited to mineral resource development as a direct result of designation of the ACECs (see Table 4.53). Therefore, for the purposes of this analysis, implementation of Alternative C represents a closure of 2.1% of all BLM lands (37,274 acres) due to ACEC designation. ACEC designation under Alternative C has less of a negative impact on mineral resource development than it does under the No Action Alternative (about 4.6% less) or under Alternative B (about 2.8% less).

Under Alternative C, Colorado River Segments #2 and #3 and the Dark Canyon segment, a total of 3,968 acres, are recommended suitable for WSR designation. As the suitable segments would be managed as VRM I and II, these recommendations would effectively make these areas unavailable for leasing. This acreage accounts for a 0.2% decrease in BLM lands available for optimal mineral resource development in comparison with the No Action Alternative. Accordingly, this would result in essentially the same potential mineral resource development as the No Action Alternative.

4.3.7.5.3.8. Impacts of Special Status Species and Other Wildlife and Fisheries Decisions on Mineral Resource Development Under Alternative C

<u>Gunnison Sage-grouse</u>

Impacts to mineral resource development under Alternative C would be of the same type and quality as under Alternative B, except that the lek habitat buffer zone would be slightly smaller (i.e., a 0.6-mile buffer around lek habitat under Alternative C, compared with a 2.0-mile buffer in Alternative B), in favor of mineral resource exploration and development.

Table 4.53. Acreages of Existing and Potential ACECs that are Available to Mineral Resource Development, if Designated under Alternative C

ACEC	Acres			VRM Outside WSA[2]	Lease Stipulation (Acres)				Other Activities Outside WSAs		
	Total	Within WSA[1]	Outside WSA		Standard	Special	NSO	Closed	Entry?	Disposal?	Geophysical?
EXISTING											
Alkali Ridge	39,196	--	39,196	IV	6,032	31,018	2,146	0	yes	yes	yes
(Alkali Ridge NHL)	(2,146)	--	(2,146)	NA	(0)	(0)	(2,146)	(0)	no	no	yes
Bridger Jack Mesa	0	NA	NA	NA	13	0	0	6,212	… NOT DESIGNATED ACEC …		
Butler Wash North	0	NA	NA	NA	179	35	0	17,152	… NOT DESIGNATED ACEC …		
Cedar Mesa C-SRMA[4]	0	NA	NA	NA	77,889	32,489	15	196,349	… DESIGNATED C-SRMA …		
(Grand Gulch SEA)	(4,240)	(4,240)	--	NA	(0)	(0)	(0)	(4,240)	--	--	--
(Valley of the Gods SEA)	22,863										
(Scenic Highway Corridor)	0										
Dark Canyon	0	NA	NA	NA	0	85	0	61,574	… NOT DESIGNATED ACEC …		
Hovenweep	2,439	--	2,439	III	2,412	0	0	0	yes	no	yes
Indian Creek/Lockhart Basin	56,293	6,423	49,870	NA	5,590	37,945	5,170	7,588	--	--	--
(Indian Creek)	(3,905)	(0)	(3,905)	I	(0)	(1)	(3,907)	(4,602)	no	no	yes
(Lockhart Basin)	(0)	NA	NA	III	(5,590)	(37,944)	(1,263)	(2,986)	… NOT DESIGNATED ACEC …		
Lavender Mesa	649	--	649	II	0	0	649	0	yes	--	yes
POTENTIAL											
(Lockhart Basin)	… SEE EXISTING …										
San Juan River[3]	7,590	--	7,590	I, II, III (Var.)	0	0	4,860	2,730	no	no	--
Shay Canyon	119	--	119	II	0	0	119	0	yes	no	yes
Valley of the Gods	22,863	--	22,863	I	0	0	22,863	0	--	no	--

"NA" and "–" both mean Not Applicable. Items in parenthesis are subsets of the first number above that is *not* in parenthesis.

1. Always VRM I, or closed to leasing.
2. According to Alternatives Matrix in Chapter 2, if specified.
3. To be managed as SRMA in this alternative.
4. Portions of Cedar Mesa ACEC lie within eight WSAs.

Bighorn Sheep Lambing and Rutting

The bighorn lambing and rutting seasons are shorter under Alternative C than they are under the No Action Alternative and Alternative B (30 days shorter for lambing and 16 days shorter for rutting; Table 4.54). Under Alternative C, the lambing timing restrictions would occur on 415,395 acres of crucial lambing habitat (or 23.3% of all BLM lands). This area is larger than that designated under the No Action Alternative (by 85,645 acres, or 26.0%), but smaller than that designated under Alternative B (by 37,993 acres, or 8.4%). Because Alternative C's lambing timing limitations are less than the No Action Alternative while the crucial habitat is greater, it cannot be determined whether the net, negative impacts on mineral resource development from Alternative C are more or less than the No Action Alternative. However, the impacts on mineral resource development from Alternative C are definitively less in magnitude than Alternative B, due to the smaller acreage of habitat and the shortened duration of the timing limitations.

Under Alternative C, the rutting timing restrictions would occur across a habitat area that is essentially the same size as under Alternative B. Because Alternative C's rutting timing limitations are less than the No Action Alternative while its crucial habitat acreage is greater, it cannot be determined whether the net, negative impacts on mineral resource development from Alternative C are more or less than the No ActionAlternative. However, the impacts on mineral resource development from Alternative C are definitively less than Alternative B, due to the shortened duration of the timing limitations under Alternative C.

Pronghorn Fawning Area

Under Alternative C, impacts on mineral resource development due to pronghorn decisions would be the same as under Alternative B.

Deer Winter Range

Under Alternative C, on the 266,406-acre deer crucial winter range (or 14.9% of all BLM lands), the special conditions described in Chapter 2 would be enforced for 181 days of critical winter use (see Table 4.54). These management decisions would result the same type and quality of impacts to mineral resource development as are described under the No Action Alternative, but to a greater degree. Alternative C results in greater impacts both in terms of the larger area being restricted as winter range (larger by 68,856 acres, or 34.9% compared to the No Action Alternative) and the longer duration of enforcement of the restrictions (longer by 30 days, or 16.6% compared to the No Action Alternative).

Elk

Under Alternative C, on the 97,471-acre elk crucial winter range (or 5.5% of all BLM lands), the special conditions described in Chapter 2 would be enforced for 181 days of critical winter use (see Table 4.54). These management decisions would result in the same type and quality of impacts to mineral resource development as are described under Alternative B, but to a lesser degree. Alternative C results in fewer impacts both in terms of the smaller area being restricted as winter range (smaller by 93,702 acres, or 49.0% compared to Alternative B) and the shorter duration of enforcement of the restrictions (shorter by 15 days, or 7.7% compared to Alternative B).

Table 4.54. Additional Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under Alternative C

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Gunnison sage-grouse leks (0.6 miles)																									
Non-disturbing geophysical work	3/20 – 5/15						■	■	■	■															
All permitted activities (dawn hours)	3/20 – 5/15						■	■	■	■															
Bighorn – Lambing (415,395 acres)	4/1 – 6/15							■	■	■	■	■													
Bighorn – Rutting (453,390 acres)	10/15 – 12/15																				■	■	■	■	
Pronghorn – Fawning (29,365 acres)	5/1 – 6/15									■	■	■													
Deer – Winter use (266,406 acres)	11/15 – 4/15	■	■	■	■	■	■	■															■	■	■
Elk – Winter use (97,471 acres)	11/15 – 4/15	■	■	■	■	■	■	■															■	■	■

In all, wildlife decisions necessitating special stipulations would impact various acreages at various times of the year. Under Alternative C, no wildlife related timing limitations would be enforced on any acreage from June 15 through October 15 (122 days). This amounts to less restriction to mineral resource development compared to Alternative B and the No Action Alternative, in the form of an additional month of mineral resource development without wildlife related timing limitations. At the other end of the spectrum, restrictions from November 15 through December 15 would be enforced on up to 729,567 acres (or 41% of all BLM lands, assuming overlap; see Table 4.41) under Alternative C[1]. This maximum is less restrictive than Alternative B but more restrictive than Alternative D.

4.3.7.5.3.9. Impacts of Vegetation Management Decisions on Mineral Resource Development Under Alternative C

Impacts on mineral resource development under Alternative C would be essentially the same as under the No Action Alternative, except that fewer acres of vegetation would be treated (1,500 acres/year). Although only the vegetation of the Lavender Mesa ACEC would be protected, the area of the Bridger Jack Mesa ACEC—in which surface disturbance would be allowed—is such a small proportion of the total planning area that the impacts at the PA-wide level would be essentially the same at approximately 0.03%

4.3.7.5.3.10. Impacts of Visual Resource Decisions on Mineral Resource Development Under Alternative C

Under Alternative C, approximately 425,179 acres (or 23.8% of BLM lands) would fall into the VRM I class, and in these areas, mineral resource development would be subject to NSO or closed to leasing because of the restrictions on surface disturbance in this VRM class.

Adverse impacts under Alternative C would be of the same type as the No Action Alternative, for the same reasons. The magnitude of these impacts would be greater than Alternative A (by 2.9%) but less than Alternative B.

4.3.7.5.4. ALTERNATIVE D

4.3.7.5.4.1. Impacts of Cultural Resource Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, Comb Ridge would not be managed as a CSMA and no cultural resource decisions affecting mineral resource development are specified. Therefore, impacts on the mineral resource development of Comb Ridge under Alternative D would be the same as impacts under the No Action Alternative. Under Alternative D, Tank Bench would not be managed as a CSMA; however, the impacts on mineral resource development would be the same as under Alternative C. Under Alternative D, impacts to development of mineral resources underlying the Grand Gulch Historic District would be the same as Alternative B, except that "casual use"

[1] The maximum of 729,567 acres was derived from the acres subject to special stipulations in Table 4.41, rather than the maximum acreage in Table 4.54 (which would have been 817,267 acres, assuming no overlap). As 817,267 acres is greater than the acreage subject to special stipulations in Table 4.41 (729,567 acres), it is evident that there is considerable overlap among the various habitats. Therefore, at the most limited time of November 15–December 15, the maximum acreage that can be assumed is the one in Table 4.41.

geophysical exploration (as defined under 43 CFR § 3150; see Chapter 2) would be allowed, resulting in negligible but beneficial impacts in the form of improvements in the accuracy and amount of data and knowledge on the mineral resource reserves underlying the historic district.

4.3.7.5.4.2. Impacts of Lands and Realty Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, approximately 47,124 acres (or 2.6% of all BLM lands) would be recommended for withdrawal from mineral entry. This decision would result in a very low level of adverse impacts to mineral resource development (see Alternative A for impact types and forms), similar to Alternative C.

4.3.7.5.4.3. Impacts of Mineral Decisions on Mineral Resource Development Under Alternative D

Oil and Gas Resources

In total, approximately 1,383,283 acres of BLM lands within the Monticello FO would be administratively open for oil and gas leasing under standard and special lease stipulations, within the three RFD development areas (see Table 4.41). Based on the proportion of BLM lands open for leasing and the RFD (BLM 2005d), it is estimated that 75 predicted oil and gas wells would be drilled over the life of the RMP (Table 4.55; Map 26; BLM 2005c). This alternative would result in an increase of approximately 145,053 acres available for development (or 11.7%) and an increase of 2 predicted oil and gas wells (or 2.7%) compared to the No Action Alternative. See the socioeconomic analysis in this chapter (Section 4.3.12, Socioeconomic Resources) for the projected yield of oil and gas for Alternative D.

Of all the alternatives, Alternative D represents the largest amount of land open for mineral resource development, under the least restrictive terms; Alternative D has the most land available under standard stipulations (at approximately 962,300 acres, or 69.6% of available lands) and represents a substantial increase in lands available under standard stipulations over the No Action Alternative—an increase of nearly 383,700 acres, or 66.3%. The shift toward standard stipulations under Alternative D also requires lowering the proportion of available lands subject to special stipulations from 53.3% of available lands under the No Action Alternative to 30.4% of available lands under Alternative D (see Table 4.55).

Oil and gas development would occur in all three RFD areas. Similar to the No Action Alternative, the Monument Upwarp RFD area would see the least amount of development in terms of wells (i.e., 9), despite having the most lands administratively open to development. Also similar to the No Action Alternative, most wells (i.e., 41) would be drilled in the Blanding Sub-basin RFD area. Between the No Action Alternative and Alternative D, leasing stipulations appear to have shifted out of special stipulations and into standard stipulations, particularly in the Monument Upwarp and Blanding Sub-basin RFD areas. It also appears that the acreage difference between the No Action Alternative and Alternative D can be found almost entirely within the Monument Upwarp RFD area: there is a difference of almost 141,000 acres between the No Action Alternative and Alternative D in the Monument Upwarp RFD area, while the other two RFD areas stay about the same size.

Table 4.55. Predicted Oil and Gas Wells and Geophysical Exploration on BLM Lands within RFD Areas under Alternative D, Average over the Life of the Plan (LOP) and Maximum per Year (MPY)

RFD Area	Acres of BLM Lands Available			% of BLM Lands Available	Predicted Wells*	Geophysical Exploration	
	Standard	Special	Total			Linear Miles of Source Line	Acres
AVERAGE OVER THE LIFE OF THE PLAN (LOP)							
Paradox Fold and Fault Belt	153,496	104,374	257,870	100	25	277	504
Blanding Sub-basin	303,258	94,233	397,491	98	41	205	271
Monument Upwarp	505,529	222,393	727,922	99	9	103	149
LOP TOTAL	**962,283**	**421,000**	**1,383,283**		**75**	**585**	**924**
MAXIMUM PER YEAR (MPY)**							
Paradox Fold and Fault Belt	***	***	***	***	3	25	46
Blanding Sub-basin	***	***	***	***	4	14	25
Monument Upwarp	***	***	***	***	1	8	14
MPY TOTAL	*****	*****	*****		**8**	**47**	**85**

Note: Calculations based on BLM lands only.

*Oil and natural gas wells are considered together.

**Based on the RFD (BLM 2005d), MPY reflects the maximum development that *could* occur in *any given year* of the life of the Plan. During most Plan years, development per year will be less than this maximum. To find the *average* development per year, take the value of interest in the first part of the table, Average over the Life of the Plan (LOP), and divide the value by 15, which is the number of years the Plan is expected to be in effect.

*** Same as corresponding value under Average Over the Life of the Plan (LOP).

Ultimately, under Alternative D, the direct impacts of mineral resource development decisions on oil and gas production would be beneficial, but negligible, compared to the No Action Alternative. A very small increase in the potential number of oil and gas wells under Alternative D (a 2.7% increase) would lead to a very small increase in the available supply of oil and/or natural gas and in royalties (see Section 4.3.12, Socioeconomic Resources).

Geophysical Exploration

Under Alternative D, approximately 585 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted over the life of the RMP for the purposes outlined in Section 4.3.7.2, Summary of Geophysical RFD and would result in approximately 924 acres of surface disturbance over the life of the RMP. This exploration would result in beneficial impacts to mineral resource development of the same type and quality described in Section 4.3.7.2, for the same reasons (BLM 2005d), to a greater degree than the No Action Alternative. Under Alternative D, 26 more miles of source line (an increase of 4.7%) would be used compared to the No Action Alternative. Geophysical exploration would occur in all three RFD areas, as detailed in Table 4.55.

Other Leasable Resources

Although 1,348,973 acres of BLM land would be administratively open under Alternative D for the leasing of potash and salt and tar sands (an increase of approximately 110,743 acres, or compared to the No Action Alternative), because the level of development expected is so low, impacts on potash and salt and tar sands leasing because of mineral resource development decisions would be nearly identical to those described under the No Action Alternative.

Locatable Resources

Approximately 1,739,389 acres of BLM land would be open under Alternative D to mineral entry of uranium-vanadium, copper, gold, and limestone, an increase of nearly 64,332 acres, or 3.8% compared to the No Action Alternative. Impacts on locatable resources would be beneficial compared to the No Action Alternative, due to the increased acreage available for the development of these resources.

Saleable Resources

Approximately 1,383,277 acres of BLM land would be open to development of sand and gravel, building stone, and clay under Alternative D (Map 21). This represents a decrease of nearly 6,000 acres (0.4%) compared to the No Action Alternative. Impacts under Alternative D would be essentially the same as those described for the No Action Alternative.

4.3.7.5.4.4. Impacts of Management of Non-WSA Lands with Wilderness Characteristics on Mineral Resource Development Under Alternative D

Impacts under Alternative D would be the same as under Alternative A, for the same reasons.

4.3.7.5.4.5. Impacts of Recreation Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, recreation decisions regarding the 10,203-acre San Juan River SRMA and the 375,734-acre Cedar Mesa Cultural SRMA would result in essentially the same impacts that would occur under Alternative B.

4.3.7.5.4.6. Impacts of Soils and Watershed Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, a minimum of 1,069,495 acres of BLM lands open to surface disturbing mineral resource development (or 76.5% of available BLM lands) are overlain by sensitive soils with medium and high limitations (Table 4.56). The particular requirements and limitations on such mineral resource development and the resulting impacts on mineral resource development would be the same as those under the No Action Alternative.

Table 4.56. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface Disturbing Mineral Resource Development, by RFD Area, under Alternative D

RFD Area	Leasing Stipulation	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Blanding Sub-basin	Standard	303,258	Alkalinity	249,443	82.3
	Special	94,233	Alkalinity	82,372	87.4
	NSO, Open to ME[1]	8,936	Alkalinity	7,291	81.6
	Subtotals	**406,427**		**339,106**	**83.4**
Monument Upwarp	Standard	505,529	Alkalinity	357,781	70.8
	Special	222,393	Alkalinity	171,730	77.2
	NSO, Open to ME[1]	5,240	Alkalinity	4,755	90.7
	Subtotals	**733,162**		**534,266**	**72.9**
Paradox Fold and Fault Belt	Standard	153,496	Rooting Depth	122,329	79.7
	Special	104,374	Rooting Depth	73,794	70.7
	NSO, Open to ME[1]	0	—	0	—
	Subtotals	**257,870**		**196,123**	**76.1**
TOTALS		**1,397,459**		**1,069,495**	**76.5**

1. NSO, Open to ME = No Surface Occupancy but Open to Mineral Entry.
2. Possible limiting factors are water erosion, wind erosion, droughty soils, excess salt, excess sodium, rooting depth, and alkalinity.

Under Alternative D, the impacts of requiring a plan only for slopes greater than 40% would be the same as Alternatives B and C in type. However, the impacts under Alternative D would be much less than Alternatives B and C in magnitude.

4.3.7.5.4.7. Impacts of Special Designations Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, zero acres of BLM lands would be designated as ACECs (Table 4.57). Though management prescriptions are made for these parcels of land (e.g., leasing and VRM categories, whether to allow minerals entry, disposal, or geophysical work) none of these prescriptions are associated with an ACEC designation. Therefore, under Alternative D, special designation decisions regarding ACECs would have no impacts on mineral resource development.

Under Alternative D, none of the river segments recommended for WSR designation in other alternatives are recommended suitable. Therefore, under Alternative D, WSR decisions would cause no impacts on mineral resource development.

4.3.7.5.4.8. Impacts of Special Status Species and Other Wildlife and Fisheries Decisions on Mineral Resource Development Under Alternative D

Gunnison Sage-grouse

Impacts to mineral resource development under Alternative D would be of the same type and quality as under Alternative B, except that the reserved year-round habitat would be slightly smaller (at 2,877 acres, which is a decrease of 1,647 acres, or 36.4%, compared to Alternative B) and that the lek habitat buffer zone would be slightly smaller (i.e., 0.25-mile buffer around lek habitat under Alternative D, compared with the 2.0-mile buffer in Alternative B). Of all the action alternatives, Alternative D represents the fewest Gunnison sage-grouse related restrictions on mineral resource exploration, development, and production.

Bighorn Sheep Lambing and Rutting

The bighorn lambing and rutting seasons under Alternative D are identical to those under Alternative C (i.e., shorter than under the No Action Alternative and Alternative B; Table 4.58). Under Alternative D, the lambing and rutting timing restrictions would occur on 299,009 acres of crucial habitat (or 16.8% of all BLM lands). This area is smaller than that designated under the No Action Alternative (by 30,741 acres, or 9.3%), smaller than that designated under Alternative B (by 154,379 acres, or 34.1%), and smaller than that designated under Alternative C (by at least 116,386 acres, or 28.0%), making Alternative D by far the least restrictive to mineral resource exploration, development and production in terms of wildlife decisions of both timing limitations and habitat acreage restrictions. Nonetheless, impacts from these wildlife decisions would be of the type and quality described under the No Action Alternative.

Pronghorn Fawning Area

Under Alternative D, impacts on mineral resource development from pronghorn decisions would be the same in type and quality as under Alternative B, except they would occur over a smaller area: 13,961 acres (or 1.0% of all BLM lands; see Table 4.58). This crucial habitat area is approximately 1,000 acres (7.7%) larger than it is under the No Action Alternative but approximately 15,400 acres (52.5%) smaller than under Alternatives B and C. Ultimately, impacts would be greater than under the No Action Alternative but less than under Alternatives B and C.

Table 4.57. Acreages of Existing and Potential ACECs that are Available to Mineral Resource Development, if Designated under Alternative D

ACEC	Acres			VRM Outside WSA[2]	Leasing Stipulation				Other Activities Outside WSAs		
	Total	Within WSA[1]	Outside WSA		Standard	Special	NSO	Closed	Entry?	Disposal?	Geophysical?
EXISTING											
Alkali Ridge	0	NA	NA	NA	12,951	24,098	2,146	0	… NOT DESIGNATED ACEC …		
(Alkali Ridge NHL)	0	NA	NA	NA	(0)	(0)	(2,146)	(0)	no	no	yes
Bridger Jack Mesa	0	NA	NA	NA	0	0	0	6,212	… NOT DESIGNATED ACEC …		
Butler Wash North	0	NA	NA	NA	183	30	0	17,152	… NOT DESIGNATED ACEC …		
Cedar Mesa C-SRMA[4]	0	NA	NA	NA	107,355	3,038	0	196,349	… DESIGNATED C-SRMA …		
(Grand Gulch SEA)	0	NA	NA	NA	(0)	(0)	(0)	(4,240)	--	--	--
(Valley of the Gods SEA)				NA							
(Scenic Highway Corridor)				NA							
Dark Canyon	0	NA	NA	NA	232	101		61,326	… NOT DESIGNATED ACEC …		
Hovenweep				NA	2,412	0	0	0	yes	yes	yes
Indian Creek/Lockhart Basin	0	NA	NA	NA	--	--	--	--	--	--	--
(Indian Creek)	0	NA	NA	NA	107	3,802	0	4,602	… NOT DESIGNATED ACEC …		
(Lockhart Basin)	0	NA	NA	NA	5,938	40,024	0	1,821	… NOT DESIGNATED ACEC …		
Lavender Mesa	0	NA	NA	NA	649	0	0	0	… NOT DESIGNATED ACEC …		
POTENTIAL											
(Lockhart Basin)	… SEE EXISTING …										
San Juan River[3]	… NOT DESIGNATED ACEC …			II	0	0	7,590	0	--	no	--
Shay Canyon	0	--	119	III	119	0	0	0	… NOT DESIGNATED ACEC …		
Valley of the Gods	0	--	22,863	III	22,863	0	0	0	… NOT DESIGNATED ACEC …		

"NA" and "–" both mean Not Applicable. Items in parenthesis are subsets of the first number above that is *not* in parenthesis.

1. Always VRM I, or closed to leasing.
2. According to Alternatives Matrix in Chapter 2, if specified.
3. To be managed as SRMA in this alternative.
4. Portions of Cedar Mesa ACEC lie within eight WSAs.

Table 4.58. Additional Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under Alternative D

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Gunnison sage-grouse leks (0.25 miles)																									
Non-disturbing geophysical work	3/20 – 5/15						■	■	■	■															
Minerals Ops activities (dawn hours)	3/20 – 5/15						■	■	■	■															
Bighorn – Lambing (299,009 acres)	4/1 – 6/15							■	■	■	■	■													
Bighorn – Rutting (299,009 acres)	10/15 – 12/15																				■	■	■	■	
Pronghorn – Fawning (13,961 acres)	5/1 – 6/15									■	■	■													
Deer – Winter use (182,315 acres)	12/1 – 4/15	■	■	■	■	■	■	■																■	■
Elk – Winter use (62,484 acres)	12/1 – 4/15	■	■	■	■	■	■	■																■	■

Deer Winter Range

Under Alternative D, on the 182,315-acre deer crucial winter range (or 10.2% of all BLM lands), the special conditions described in Chapter 2 would be enforced for 136 days of critical winter use (see Table 4.58). These management decisions would result the same type and quality of impacts on mineral resource development as are described under the No Action Alternative, but to a lesser degree. Alternative D results in fewer impacts both in terms of the smaller area being restricted as winter range (smaller by 15,235 acres, or 7.7% compared to the No Action Alternative) and the shorter duration of enforcement of the restrictions (shorter by 15 days, or 9.9%, compared to the No Action Alternative). Therefore, of all the alternatives, Alternative D represents the least amount of restriction to mineral resource development due to deer winter range decisions.

Elk

Under Alternative D, on the 62,484-acre elk crucial winter range (or 3.5% of all BLM lands), the special conditions described in Chapter 2 would be enforced for 136 days of critical winter use (see Table 4.58). These management decisions would result the same type and quality of impacts on mineral resource development as are described under Alternative B, but to a much lesser degree. Alternative D would result in fewer impacts to mineral resource development both in terms of the smaller area being restricted as winter range (smaller by 128,689 acres, or 67.3%, compared to Alternative B) and the shorter duration of enforcement of the restrictions (shorter by 60 days, or 30.6%, compared to Alternative B). Elk management decisions under Alternative E would result in the least impacts on mineral resource development of all the alternatives.

In all, wildlife decisions necessitating special stipulations would impact various acreages at various times of the year. Under Alternative D, no wildlife related timing limitations would be enforced on any acreage from June 15 through October 15—identical to Alternative C (122 days). At the other end of the spectrum, restrictions from April 1–15 and from December 1–15 would be enforced on up to 420,998 acres (or 23.6% of all BLM lands, assuming overlap; see Table 4.41) under Alternative D.[2] This acreage represents the least restriction of mineral resource development of all the alternatives.

4.3.7.5.4.9. Impacts of Vegetation Management Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, no relict or near relict vegetation would be protected. Therefore, no impacts on mineral resource development would result from vegetation management decisions.

[2] The maximum of 420,998 acres was derived from the acres subject to special stipulations in Table 4.41, rather than the maximum acreage in Table 4.55 (which would have been 543,808 acres, assuming no overlap). As 543,808 acres is greater than the acreage subject to special stipulations in Table 4.41 (420,998 acres), it is evident that there is considerable overlap among the various habitats. Therefore, at the most limited times of April 1–15 and December 1–15, the maximum acreage that can be assumed is the one in Table 4.41.

4.3.7.5.4.10. Impacts of Visual Resource Decisions on Mineral Resource Development Under Alternative D

Under Alternative D, approximately 390,424 acres (or 21.9% of BLM lands) would fall into the VRM I class, and in these areas, mineral resource development would be subject to NSO or closed to leasing because of the restrictions on surface disturbance in this VRM class.

Of the action alternatives, Alternative D most closely resembles the No Action Alternative. Adverse impacts under Alternative D would be of the same type as the No Action Alternative, for the same reasons. The magnitude of these impacts would be greater than Alternative A (by 1.0%) but less than Alternatives B and C.

4.3.7.5.5. ALTERNATIVE E

4.3.7.5.5.1. Impacts of Cultural Resource Decisions on Mineral Resource Development Under Alternative E

Impacts under Alternative E would be the same as under Alternative B, except that the 38,012-acre Comb Ridge CSMA would be closed to mineral resource development instead of subject to NSO. This additional restriction on mineral resource development from cultural resource decisions would be a more adverse impact on mineral resource development than Alternative B, as not even directional drilling would be allowed in this CSMA.

4.3.7.5.5.2. Impacts of Lands and Realty Decisions on Mineral Resource Development Under Alternative E

Under Alternative E, approximately 582,357 acres of non-WSA lands with wilderness characteristics would be managed as exclusion areas for ROWs. This would limit mineral production and access for exploration. Existing production could be limited by not allowing needed ROWs. Non-WSA lands with wilderness characteristics would also be recommended for withdrawal from mineral entry, prohibiting development of uranium-vanadium, copper, gold, and limestone on 582,357 acres.

4.3.7.5.5.3. Impacts of Mineral Decisions on Mineral Resource Development Under Alternative E

<u>Oil and Gas Resources</u>

In total, approximately 758,931 acres of BLM lands within the Monticello FO would be administratively open for oil and gas leasing under standard and special lease stipulations, within the three RFD development areas (see Table 4.41). Based on the proportion of BLM lands open for leasing and the RFD (BLM 2005d), it is estimated that 54 predicted oil and gas wells would be drilled over the life of the RMP (Table 4.59; Map 27; BLM 2005c). This alternative would result in a decrease of approximately 479,300 acres available for development (or 38.7%) and a decrease of 19 predicted oil and gas wells (or 26.0%) compared to the No Action Alternative. See the socioeconomic analysis in this chapter (Section 4.3.12, Socioeconomic Resources) for the projected yield of oil and gas for Alternative E.

Table 4.59. Predicted Oil and Gas Wells and Geophysical Exploration on BLM Lands within RFD Areas under Alternative E, Average over the Life of the Plan (LOP) and Maximum per Year (MPY)

RFD Area	Acres of BLM Lands Available			% of BLM Lands Available	Predicted Wells*	Geophysical Exploration	
	Standard	Special	Total			Linear Miles of Source Line	Acres
AVERAGE OVER THE LIFE OF THE PLAN (LOP)							
Paradox Fold and Fault Belt	21,584	132,087	153,671	60	15	165	301
Blanding Sub-basin	130,253	217,905	348,158	86	36	179	237
Monument Upwarp	61,451	195,648	257,099	35	3	36	53
LOP TOTAL	**213,288**	**545,640**	**758,928**		**54**	**380**	**591**
MAXIMUM PER YEAR (MPY)**							
Paradox Fold and Fault Belt	***	***	***	***	2	15	28
Blanding Sub-basin	***	***	***	***	4	12	22
Monument Upwarp	***	***	***	***	1	3	5
MPY TOTAL	*****	*****	*****		**7**	**30**	**55**

Note: Calculations based on BLM lands only.

*Oil and natural gas wells are considered together.

**Based on the RFD (BLM 2005d), MPY reflects the maximum development that *could* occur in *any given year* of the life of the Plan. During most Plan years, development per year will be less than this maximum. To find the *average* development per year, take the value of interest in the first part of the table, Average over the Life of the Plan (LOP), and divide the value by 15, which is the number of years the Plan is expected to be in effect.

*** Same as corresponding value under Average Over the Life of the Plan (LOP).

By far, Alternative E would result in the most adverse impacts on mineral resource development, compared to the No Action Alternative. One contributing factor in the decrease of acres available and wells (compared to the No Action Alternative) is that Alternative E has the smallest acreage of BLM lands available under standard stipulations (the most open stipulations), of all the alternatives. Under this alternative, approximately 28% of all open BLM lands would be available under standard stipulations, and approximately 72% of all open BLM lands would be subject to specials. However, the greatest contributing factor in the decrease of acres available and wells is the closure of lands with wilderness characteristics (LWCs) under Alternative E.

Oil and gas development likely would occur in all three RFD areas, but most years, the Monument Upwarp RFD area would see no development in terms of wells (see Table 4.59). Alternative E is the only alternative in which the Monument Upwarp RFD area has fewer lands open to leasing than another RFD area—specifically, the Blanding Sub-basin RFD area. Indeed, the Blanding Sub-basin RFD area is the area that changes least in terms of acres available under Alternative E compared to the No Action Alternative; the Blanding Sub-basin RFD area is only 49,909 acres smaller under Alternative E. Similar to the No Action Alternative, most wells (36) would be drilled in the Blanding Sub-basin RFD area. In a comparison between Alternative E and the No Action Alternative, the notable difference between percentage of lands available and percentage of wells drilled over the life of the plan can be explained by the fact that many of the non-WSA lands with wilderness characteristics in the Monument Upwarp RFD Area, which already has a lower development potential than the other 2 RFD areas.

Ultimately, a decrease in the potential number of oil and gas wells under Alternative E (a 26% decrease) would lead to a decrease in the available supply of oil and/or natural gas. The federal government and/or the State of Utah would continue to receive royalties from the production and sale of oil and gas, though at lower rates than under the No Action Alternative (see Section 4.3.12, Socioeconomic Resources). However, the decreased number of predicted wells would also decrease the rate at which finite reserves of fossil fuel resources in the Monticello FO are extracted and consumed (compared to the No Action Alternative), which would have a beneficial impact on the long-term viability and availability of these resources.

Geophysical Exploration

Under Alternative E, approximately 380 linear miles of source line for 2-D and 3-D geophysical exploration would be conducted over the life of the RMP for the purposes outlined in Section 4.3.7.2, Summary of Geophysical RFD, and would result in approximately 591 acres of surface disturbance over the life of the RMP. This exploration would result in beneficial impacts to mineral resource development of the same type and quality described in Section 4.3.7.2, for the same reasons (BLM 2005d). However, less exploration would happen under Alternative E than under the No Action Alternative: 179 fewer miles of source line (a decrease of 32.0%) would be used under Alternative E compared to the No Action Alternative. Geophysical exploration would occur in all three RFD areas, as detailed in Table 4.59.

Other Leasable Resources

Although 758,929 acres of BLM land would be administratively open under Alternative E for the leasing of potash and salt and tar sands (a decrease of approximately 479,301 acres, or 39%, compared to the No Action Alternative), because the level of development expected is so low,

impacts on potash and salt and tar sands leasing from mineral resource development decisions would be the same as impacts under the No Action Alternative.

Locatable Resources

Approximately 1,015,384 acres of BLM land would be open under Alternative E to mineral entry of uranium-vanadium, copper, gold, and limestone, a decrease of approximately 659,673 acres, compared to the No Action Alternative. Impacts of locatable resource decisions under this alternative would be essentially the same as those described for the No Action Alternative, except that there would be slightly less acreage available for the development of these resources.

Saleable Resources

Approximately 758,931 acres of BLM land would be open to development of sand and gravel, building stone, and clay under Alternative E (Map 22). This represents a decrease of approximately 630,324 acres compared to the No Action Alternative. Impacts of saleable resource decisions under this alternative would be essentially of the same form and type as those described for the No Action Alternative, except that they would be more adverse under Alternative E.

4.3.7.5.5.4. Impacts of Management of Non-WSA Lands with Wilderness Characteristics on Mineral Resource Development Under Alternative E

Under Alternative E, approximately 582,357 acres of non-WSA lands with wilderness characteristics (or 32.6%) would be managed managed as closed to mineral leasing, proposed for withdrawal from mineral entry, ROW exclusion area, closed to disposal of mineral materials, and managed as VRM I.

These management decisions would have an adverse impact on mineral resource development. Fewer lands would be available for oil and gas leasing and subsequent mineral resource development; this would result in fewer wells drilled over the life of the RMP. Adverse impacts on mineral entry could occur because 32.6% fewer acres would be available for development of locatable minerals, resulting in less mining activity and less production of uranium-vanadium, copper, and placer gold.

4.3.7.5.5.5. Impacts of Recreation Resource Decisions on Mineral Resource Development Under Alternative E

Impacts from recreation decisions under Alternative E would be the same as under Alternative B. Impacts of recreation decisions under Alternative E would result in an adverse impact compared to the No Action Alternative, of essentially the same magnitude as Alternative B. Non-WSA lands with wilderness characteristics which would be closed to leasing, occur within many SRMAs, but these closures are not a result of recreation decisions.

4.3.7.5.5.6. Impacts of Soils and Watershed Decisions on Mineral Resource Development Under Alternative E

Under Alternative E, a minimum of 659,170 acres of BLM lands open to surface disturbing mineral resource development (or 81.1% of open BLM lands) are overlain by sensitive soils with medium and high limitations (Table 4.60). The particular requirements and limitations on such

mineral resource development and the resulting impacts on mineral resource development would be the same as those under the No Action Alternative; however, Alternative E is unique because, while it reflects the lowest minimum acreage, it also reflects the highest percentage of open BLM lands overlain by sensitive soils.

Table 4.60. Minimum Acreages of High- and Medium-risk Sensitive Soils within Lands Open to Surface-disturbing Mineral Resource Development, by RFD Area, under Alternative E

RFD Area	Leasing Category	Total Acreage	Largest Single Limiting Factor[2]	Acreage	% Total Acreage
Blanding Sub-basin	Standard	130,253	Alkalinity	110,367	84.7
	Special	217,905	Alkalinity	182,198	83.6
	NSO, Open to ME[1]	21,427	Alkalinity	19,319	90.2
	Subtotals	**369,585**		**311,884**	**84.4**
Monument Upwarp	Standard	61,451	Alkalinity	42,971	69.9
	Special	195,648	Alkalinity	153,274	78.3
	NSO, Open to ME[1]	7,960	Droughty	7,678	96.5
	Subtotals	**265,059**		**203,923**	**76.9**
Paradox Fold and Fault Belt	Standard	21,584	Alkalinity	17,702	82.0
	Special	132,087	Rooting Depth	103,840	78.6
	NSO, Open to ME[1]	24,528	Droughty	21,821	89.0
	Subtotals	**178,199**		**143,363**	**80.5**
TOTALS		**812,843**		**659,170**	**81.1**

1. NSO, Open to ME = No Surface Occupancy but Open to Mineral Entry.
2. Possible limiting factors are water erosion, wind erosion, droughty soils, excess salt, excess sodium, rooting depth, and alkalinity.

Under Alternative E, impacts on areas of over 20% slope would be the same as under Alternative B, for the same reasons.

4.3.7.5.5.7. Impacts of Special Designations Decisions on Mineral Resource Development Under Alternative E

Under Alternative E, 521,141 acres of BLM lands would occur in ACECs (Table 4.61). In all, 432,145 of these acres are subject to NSO or closed to leasing. If 393,477 acres (out of 432,145 acres) are automatically closed to leasing because they are located in WSAs or are non-WSA lands with wilderness characteristics, we assume that the remainder—38,668 acres—has been limited to mineral resource development as a direct result of designation of the ACECs (see Table 4.61). Therefore, for the purposes of this analysis, implementation of Alternative E represents a limitation of 2.2% of all BLM lands (38,668 acres) due to ACEC designation. ACEC designation under Alternative E has less of a negative impact on mineral resource development than it does under the No Action Alternative (about 4.5% less) or Alternative B (about 2.7% less). Alternative E is most like Alternative C in terms of impacts to mineral resource development from ACEC designation.

Table 4.61. Acreages of Existing and Potential ACECs that are Available to Mineral Resource Development, if Designated under Alternative E

ACEC	Acres			VRM Outside WSA and LWC[2]	Lease Stipulations (Acres)				Other Activities Outside WSAs		
	Total	Within WSA and LWC[1]	Outside WSA and LWC		Standard	Special	NSO	Closed	Entry?	Disposal?	Geophysical?
EXISTING											
Alkali Ridge	39,196	--	39,196	IV	0	37,050	2,146	0	--	--	--
(Alkali Ridge NHL)	… NOT SPECIFIED …										
Bridger Jack Mesa	6,225	6,214	11	I	0	5	0	6,220	yes	no	--
Butler Wash North	17,365	15,524	1,841	I	4	172	0	17,188	no	no	--
Cedar Mesa[3]	**306,743**	**254,879**	**51,864**	**III**	**21,524**	**27,779**	**2,560**	**254,879**	**--**	**--**	**--**
(Grand Gulch SEA)	(4,240)	(4,240)	--	NA	(0)	(0)	(0)	(4,240)	--	--	--
(Valley of the Gods SEA)	… SEE POTENTIAL …										
(Scenic Highway Corridor)	… NOT SPECIFIED …										
Dark Canyon	61,660	61,606	54	I	0	22	0	61,638	no	no	no
Hovenweep	2,439	--	2,439	III	2,412	0	0	0	yes	no	yes
Indian Crk/Lockhart Basin	56,293	31,608	24,685	I	0	0	24,508	31,785	no	no	--
(Indian Creek)	(8,510)	(8,489)	(21)	I	(0)	(0)	(21)	(8,489)	no	no	--
(Lockhart Basin)	(47,783)	(23,119)	(24,664)	I	(0)	(0)	(24,487)	(23,296)	no	no	--
Lavender Mesa	649	649	0	I	0	0	0	649	no	--	--
POTENTIAL											
(Lockhart Basin)	… SEE EXISTING …										
San Juan River[4]	7,590	2,155	5,435	I, II, III	0	0	3,567	4,023	no	no	--
Shay Canyon	119	99	20	I	0	0	20	99	no	no	no
Valley of the Gods	22,863	20,743	2,120	I	0	0	0	22,863	no	no	--

"NA" and "–" both mean Not Applicable. Items in parenthesis are subsets of the first number above that is *not* in parenthesis.

LWC = Lands with Wilderness Characteristics; bolded ACECs indicate those with LWCs.

1. Always VRM I, or closed to leasing.
2. According to Alternatives Matrix in Chapter 2, if specified.
3. Portions of Cedar Mesa ACEC lie within eight WSAs.
4. To be managed as SRMA in this alternative.

Impacts due to WSR recommendations under Alternative E would be the same in type and form as under Alternative B.

4.3.7.5.5.8. Impacts of Special Status Species and Other Wildlife and Fisheries Decisions on Mineral Resource Development Under Alternative E

Gunnison Sage-grouse

Under Alternative E, management decisions regarding Gunnison sage-grouse would be the same as under Alternative B, as would the impacts on mineral resource development from these management decisions.

Bighorn Sheep Lambing and Rutting

Under Alternative E, on the 453,386-acre bighorn crucial habitat area (or 25.4% of all BLM lands), the special conditions described in Chapter 2 would be enforced for the duration of the lambing season and rutting season (Table 4.62; see also the No Action Alternative for the duration). These management decisions would result in the same impacts as Alternative B.

Pronghorn Fawning Area

Impacts under Alternative E would be the same as under Alternative B, for the same reasons.

Deer Winter Range

Impacts under Alternative E would be the same as under Alternative B, for the same reasons.

Elk

Impacts under Alternative E would be the same as under Alternative B, for the same reasons.

4.3.7.5.5.9. Impacts of Vegetation Management Decisions on Mineral Resource Development Under Alternative E

Impacts on mineral resource development under Alternative E would be essentially the same as under Alternative B, except that fewer acres of vegetation would be treated (2,000 acres/year), and because the same acreages of vegetation would be protected from surface disturbance.

4.3.7.5.5.10. Impacts of Visual Resource Decisions on Mineral Resource Development Under Alternative E

Under Alternative E, approximately 998,370 acres (or 56.0% of BLM lands) would fall into the VRM I class, and in these areas, mineral resource development would be subject to NSO or closed to leasing because of the restrictions on surface disturbance in this VRM class. Adverse impacts under Alternative E would be of the same type as under the No Action Alternative, for the same reasons, but at a greater magnitude (35.1%). Alternative E proposes the greatest VRM related limits to mineral resource development.

4.3.7.6. Summary of Impacts

The summary of impacts on mineral resource development can be found in Table 2.2.

Table 4.62. Additional Seasonal Restrictions within Established Buffer Zones Applied to Mineral Resource Development under Alternative E

Species	Dates	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Gunnison sage-grouse leks (2.0 miles)																									
• Non-disturbing geophysical work	3/20 – 5/15						■	■	■	■															
• All permitted activities (nighttime)	3/20 – 5/15						■	■	■	■															
Bighorn – Lambing (453,388 acres)	4/1 – 7/15							■	■	■	■	■	■	■											
Bighorn – Rutting (453,388 acres)	10/15 – 12/31																				■	■	■	■	■
Pronghorn – Fawning (29,365 acres)	5/1 – 6/15									■	■	■													
Deer – Winter use (785,921 acres)	11/1 – 5/15	■	■	■	■	■	■	■	■	■												■	■	■	■
Elk – Winter use (191,173 acres)	11/1 – 5/15	■	■	■	■	■	■	■	■	■												■	■	■	■

4.3.7.7. MITIGATION MEASURES

None of the alternatives would result in impacts that would necessitate mitigation of mineral resource development other than those found in standard operating procedures (Appendix A and I, and O). Furthermore, the various leasing stipulations and policies (see Appendix A) serve as a framework for best management practices for mineral resource development in the Monticello FO.

4.3.7.8. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable, adverse impacts for mineral resource development include the slow, steady depletion of finite mineral resources under the surface of the Monticello FO, including oil, natural gas, potash, salt, tar sands, uranium-vanadium, copper, gold, limestone, sand, gravel, building stone, and clay. To a lesser extent, unavoidable, adverse impacts also include the relatively small, project-sized alterations to the geological surfaces and topography of the Monticello FO because of mineral resource extraction practices.

4.3.7.9. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term uses of mineral resources at the predicted rate (RFD) are unlikely to affect the long-term productivity of the resource over the life of the plan.

4.3.7.10. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

The extraction and development of mineral resources from the Monticello FO would result in both an irreversible and irretrievable loss of those mineral resources because of the finite nature of the resource. The impacts would be irretrievable and irreversible because once extracted, the mineral resource cannot be used again, nor can it be replaced in the foreseeable future.

4.3.8. NON-WSA LANDS WITH WILDERNESS CHARACTERISTICS

Non-WSA lands with wilderness characteristics are areas of 5,000 acres or more, with landscapes generally in a natural or undisturbed condition. These areas also provide outstanding opportunities for solitude or primitive forms of recreation (non-motorized and non-mechanized activities in undeveloped settings). All of the alternatives would impact the values of non-WSA lands with wilderness characteristics to some degree. Generally, actions that create surface disturbance impact the natural character of these areas, and the setting for experiences of solitude and primitive recreational activities. Motorized uses in these areas detract from opportunities for both solitude and primitive forms of recreation.

Resources or uses determined to have negligible impacts on non-WSA lands with wilderness characteristics include air quality and health and safety. This is because 1) maintaining air quality within threshold levels for constituent pollutants would not affect wilderness values within the non-WSA wilderness areas, and 2) there are no abandoned mine lands, unauthorized dumping sites, or hazardous materials spills that have been identified in non-WSA lands with wilderness characteristics; therefore, it is not an issue or resource for further analysis.

4.3.8.1. Impacts of Cultural Resources Decisions on Non-WSA Lands with Wilderness Characteristics

Under all alternatives, the BLM would provide for legitimate field research by qualified scientists and institutions. These activities could create temporary surface-disturbing activities by digging and excavation. If conducted in non-WSA lands with wilderness characteristics, it would create a loss of naturalness and temporarily disturb opportunities for solitude and primitive recreation in the immediate area of research due to excavation activities. In the long-term, however, knowing more about the cultural resources of an area, interpreting the resource in an appropriate fashion, and viewing cultural resource sites in the non-WSA lands with wilderness characteristics all add to the enjoyment of these areas for primitive recreational purposes.

Protection of historic and prehistoric resources in non-WSA lands with wilderness characteristics would enhance opportunities for primitive forms of recreation. Knowing more about the cultural resources of an area, interpreting the resource in an appropriate fashion, and viewing cultural resource sites in the non-WSA lands with wilderness characteristics all add to the enjoyment of these areas for primitive recreational purposes. And, protection of cultural resources adds to the character of the setting that supports these recreational opportunities.

4.3.8.1.1. Alternative A

Alternative A would not designate any cultural special management areas, thus there would be no impacts from this decision on non-WSA lands with wilderness characteristics. Because there would be no special management prescriptions for protecting cultural resources in portions of the Butler Wash, Dark Canyon, Comb Ridge, Fish and Owl Creeks, Road Canyon, and San Juan River non-WSA lands with wilderness characteristics, archeological site integrity may be endangered by OHV use and other surface-disturbing activities that are currently allowed under the existing land use plan.

4.3.8.1.2. Alternative B

Under Alternative B, Comb Ridge would be managed as a 38,012-acre Cultural Special Management Area (CSMA). This includes all 13,760 acres of Comb Ridge, 3,580 acres of Fish and Owl Creeks, 530 acres of Road Canyon, and 640 acres of the San Juan River non-WSA lands with wilderness characteristics. Under management prescriptions for this CSMA, the area would be closed to geophysical work, closed to disposal of mineral materials, open to oil and gas leasing subject to an NSO stipulation, and closed to private and commercial firewood cutting. Vegetation treatments would be allowed by non-surface-disturbing methods only, OHV use would be limited to designated routes, the area would be closed to dispersed camping, and group sizes would be limited. Improvements for range, wildlife habitat, and watershed would be allowed. In addition, the Beef Basin would be managed as a 20,302-acre CSMA. This would include 13,280 acres of the Dark Canyon and 1,180 acres of the Butler Wash non-WSA lands with wilderness characteristics. Management would include closing the CSMA to private and commercial firewood cutting, limiting OHV use to designated routes, closing the area to dispersed camping, and limiting group size. Improvements for range, wildlife habitat, watershed, and vegetation treatments would be allowed, and primitive car camping areas would be designated in Ruin Park, Middle Park, House Park, and along the Beef Basin Loop Road within the Dark Canyon non-WSA lands with wilderness characteristics.

In both of these CSMAs, the majority of management prescriptions would protect the naturalness of the areas and continue to provide opportunities for solitude and primitive recreation. Improvements for range, wildlife habitat and watershed could diminish the naturalness of the areas, depending on the methods used in both CSMAs. In the Beef Basin CSMA, vegetation treatments could be by mechanical, biological, chemical, or fire. If mechanical treatments are used within the non-WSA lands with wilderness characteristics, the naturalness of the area would be compromised within the treatment area because it would leave an apparent imprint of human work on the land that would degrade the natural character of the non-WSA lands with wilderness characteristics. During the time of the treatments, opportunities for solitude and primitive recreation would be foregone in and around the areas being treated due to noise and human activity associated with the vegetation manipulations.

OHV use on designated routes in both CSMAs would temporarily detract from the opportunities for solitude and primitive recreation when vehicles (and associated motorized noise) are in the areas. In addition, developing a car campground in Ruin Park and designating car camping sites in Dark Canyon non-WSA lands with wilderness characteristics would detract from the naturalness of these areas and reduce opportunities for solitude and primitive recreation in the immediate areas where car camping is designated.

4.3.8.1.3. ALTERNATIVE C

Management proposed for the Comb Wash CSMA would be different from Alternative B in that the area would be open to private and commercial firewood cutting and available for vegetation treatments and surface-disturbing land treatments. These types of activities, if done within the non-WSA lands with wilderness characteristics, would have long-term impacts to the natural character of the landscape by leaving chain-sawed stumps from firewood cutting and allowing for other types of mechanical surface disturbance that do not appear natural. During the time of the activities, opportunities for solitude and primitive recreation would be interrupted by chain saw noise and other mechanical equipment as well as by the human working presence.

Management proposed for the Beef Basin CSMA would generally be the same as in Alternative B, thus the same impacts to non-WSA lands with wilderness characteristics would ensue.

4.3.8.1.4. ALTERNATIVE D

Neither Comb Ridge nor Beef Basin would be managed as a CSMA. The cultural resources in the Comb Ridge area would be managed with the same prescriptions as the surrounding lands. The cultural resources in the Beef Basin area would be managed by closing the area to private or commercial use of woodland products, and allowing for a commercial campground in the Ruin Park area. Closing the area to firewood cutting would continue to protect the wilderness characteristics within the Dark Canyon and Butler Wash non-WSA lands with wilderness characteristics. However, developing a commercial campground within the Ruin Park area would negate the naturalness of the immediate developed area and the opportunity for a primitive recreation experience would be lost within a small portion of the Dark Canyon non-WSA lands with wilderness characteristics where it would be developed.

4.3.8.1.6. ALTERNATIVE E

Management of the Comb Ridge and Beef Basin CSMAs would be similar to Alternative B, except that they would have more restrictive management placed within them. They would be closed to oil and gas leasing, closed to OHV use in those areas within the non-WSA lands with wilderness characteristics, closed to dispersed vehicle camping, and no new range improvements would be allowed. All of these management actions would fully protect the wilderness characteristics of the 13,760 acres of Comb Ridge, 3,580 acres of Fish and Owl Creeks, 530 acres of Road Canyon, 640 acres of San Juan River, 13,280 acres of the Dark Canyon, and 1,180 acres of the Butler Wash non-WSA lands with wilderness characteristics that fall within these CSMAs, as no surface-disturbing activities would be allowed.

4.3.8.1.7. CONCLUSION

Cultural resources decisions affect non-WSA lands with wilderness characteristics. Restrictive decisions to protect cultural resources also tend to protect wilderness characteristics values. Under Alternatives B, C, and E, CSMAs are established with restrictive management actions to protect cultural resources. Alternative E is the most restrictive, and fully protects the wilderness characteristics of all or portions of the five non-WSA land areas that fall within two of the CSMAs. Alternative B is very similar to Alternative E, but allows for some surface-disturbing activities associated with watershed, wildlife, range and vegetation treatments, which could affect the naturalness of portions of the non-WSA lands, if implemented. Alternative C, the Preferred Alternative, establishes the CSMAs and proposed management that would allow for more surface-disturbing activities, including private and commercial wood-cutting activities. Alternatives A and D propose no CSMAs and apply the same management as the surrounding areas. Many of those decisions would allow for surface-disturbing actions that would degrade the wilderness characteristics of the non-WSA lands.

4.3.8.2. IMPACTS OF FIRE MANAGEMENT DECISIONS ON NON-WSA LANDS WITH WILDERNESS CHARACTERISTICS

Under all alternatives, the BLM would attempt to restore natural fire regimes in fire-dependent and adapted ecosystems through the use of prescribed or managed wildland fire. The Monticello FO would base its priorities for all aspects of fire management decisions based on five categories (see Chapter 2, Table 2.1 Fire Management) to determine where fire is desired and where it is not. Further, following any wildland fire event, emergency stabilization and restoration (ESR) actions would be developed and implemented, as appropriate. Fuels treatment and management activities would be consistent with the resource goals and objectives in the RMP and may include mechanical treatments, manual treatments, prescribed fire, chemical spraying, or biological treatments and seeding.

Restoration of fire to fire-dependent and adapted ecosystems would restore a more natural vegetation community (in both species and composition) and watershed conditions and wildlife populations dependent on those communities. In the short-term, a burned landscape may reduce opportunities for primitive recreation. In the long-term, however, a more natural landscape would benefit the natural character of non-WSA lands with wilderness characteristics and enhance the setting and opportunities for primitive forms of recreation, including hiking, backpacking, hunting, wildlife viewing, and nature study. This would enhance the natural conditions of these areas.

Setting fire objectives through fire management categories would identify where fire is desired on the land, leading to the same benefits to natural conditions as restoring fire to fire-dependent and adapted ecosystems. When it is necessary to suppress fire in non-WSA lands with wilderness characteristics, development and implementation of the ESR plan would restore fire suppression disturbances to the land and vegetation (e.g., fire line construction), resulting in the restoration of the natural character of the non-WSA lands. Fuels treatments in non-WSA lands with wilderness characteristics would aid in restoration of a more natural fire regime in these lands. The use of fire to accomplish this reduction would be compatible with the natural character of these areas. The use of mechanical treatments would leave an apparent imprint of human work on the land that would degrade the natural character of the non-WSA lands with wilderness characteristics.

In the short-term, fire operations (aircraft over-flights, fire line construction, etc.) would degrade the natural landscape and character of the non-WSA lands with wilderness characteristics. The noise and presence of the people, equipment, and operations would also diminish opportunities for solitude and primitive forms of recreation. In the long-term, however, surface disturbance associated with the fire treatment would be restored, with little to no net impact on naturalness. The impacts of fire operations on opportunities for solitude and primitive recreation would cease, restoring those opportunities.

4.3.8.3. Impacts of Lands and Realty Management Decisions on Non- WSA Lands with Wilderness Characteristics

4.3.8.3.1. Impacts Common to All Alternatives

An existing utility corridor overlies slivers of Comb Ridge, Road Canyon, and San Juan River non-WSA lands with wilderness characteristics along Highway 163. Although none are currently proposed, placement of future utility ROWs within these portions of the corridors would diminish the wilderness characteristics of these areas by causing surface-disturbing activities (and possible placing surface facilities) that would no longer maintain the wilderness characteristics values in those slivers of non-WSA lands along the highway.

4.3.8.3.2. Alternative A

Four areas of non-WSA lands with wilderness characteristics, totaling 8,880 acres, intersect with proposed mineral withdrawals under Alternative A:

- 280 acres of the Dark Canyon non-WSA lands with wilderness characteristics
- 390 acres of the Gooseneck non-WSA lands with wilderness characteristics
- 3,890 acres of the Indian Creek non-WSA lands with wilderness characteristics
- 4,320 acres of the San Juan River non-WSA lands with wilderness characteristics

The proposed mineral withdrawals would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

A total of 113,240 acres in all or portions of 19 non-WSA lands with wilderness characteristics would continue to be ROW avoidance or exclusion areas (Table 4.63).

Table 4.63. Acres of Avoidance or Exclusion for ROWs in Non-WSA Lands with Wilderness Characteristics (all acreage not under exclusion or avoidance remain open for ROWs)

Name of Non-WSA Land with Wilderness Characteristics	Total Acres	Alternative A	Alternative B	Alternative C	Alternative. D	Alternative E (all exclusion)
Arch Canyon	50	50	0	0	0	50
Bridger Jack Mesa	23,050	1,220	670	690	0	23,050
Butler Wash	1,660	40	0	0	0	1,660
Cheesebox Canyon	13,240	2,630	0	0	0	13,240
Comb Ridge	13,760	520	13,760	0	0	13,760
Cross Canyon	1,350	0	0	0	0	1,350
Dark Canyon	66,330	0	3,310	3,350	0	66,330
Fish and Owl Creeks	24,650	2,110	3,590	0	0	24,650
Fort Knocker Canyon	12,410	5,710	0	0	0	12,410
Gooseneck	3,570	0	3,570	970	0	3,570
Grand Gulch	55,240	17,810	100	70	0	55,240
Gravel and Long	36,890	6,020	0	0	0	36,890
Hammond Canyon	4,700	0	0	0	0	4,700
Harmony Flat	9,660	2,900	0	0	0	9,660
Harts Point	24,740	0	170	0	0	24,740
Hatch Lockhart Hart	1,760	0	1,760	0	0	1,760
Indian Creek	23,280	3,680	19,760	4,140	0	23,280
Lime Creek	5,560	5,530	5,560	5,560	0	5,560
Mancos Mesa	61,570	27,490	12,760	250	0	61,570
Nokai Dome	94,270	15,200	12,600	420	0	94,270
Red Rock Plateau	17,010	0	0	0	0	17,010
Road Canyon	11,320	2,220	2,080	1,540	0	11,320
San Juan River	14,340	5,110	4,820	4,180	0	14,340
Shay Mountain	6,710	0	100	100	0	6,710
Sheep Canyon	4,000	0	0	0	0	4,000
Squaw and Papoose Canyons	3,570	0	0	0	0	3,570

Table 4.63. Acres of Avoidance or Exclusion for ROWs in Non-WSA Lands with Wilderness Characteristics (all acreage not under exclusion or avoidance remain open for ROWs)

Name of Non-WSA Land with Wilderness Characteristics	Total Acres	Alternative A	Alternative B	Alternative C	Alternative. D	Alternative E (all exclusion)
Upper Red Canyon	24,920	1,500	0	0	0	24,920
Valley of the Gods	13,670	13,450	13,670	13,670	0	13,670
White Canyon	9,080	50	0	0	0	9,080
Total Acres	**582,360**	**113,240 (19%)**	**98,280 (17%)**	**34,940 (6%)**	**0 (0%)**	**582,360 (100%)**

The majority of lands within the Lime Creek and Valley of the Gods non-WSA lands with wilderness characteristics would be within ROW avoidance areas. Only the 5,110 acres in the San Juan River non-WSA would be an exclusion area, the rest would be avoidance areas. These areas are to be avoided but may be available for location of ROWs with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. There are no ROW proposals for these areas at this time, and it is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas. However, the rest of the non-WSA lands with wilderness characteristics (469,120 acres) would remain available for the placement of ROWs. More permanent, long-term impacts would occur if the ROW is for an overhead powerline than for a buried pipeline. However, any surface-disturbing activity and/or placement of permanent visual facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

4.3.8.3.3. ALTERNATIVE B

Nine non-WSA lands with wilderness characteristics areas, totaling 49,835 acres, intersect with proposed mineral withdrawals under Alternative B:

- 40 acres of the Butler Wash non-WSA
- 280 acres of the Dark Canyon non-WSA
- 3,570 acres of the Gooseneck non-WSA
- 155 acres of the Harts Point non-WSA
- 18,870 acres of the Indian Creek non-WSA
- 5,560 acres of the Lime Creek non-WSA
- 1,530 acres of the Road Canyon non-WSA
- 6,160 acres of the San Juan River non-WSA
- 13,670 acres of the Valley of the Gods non-WSA

The proposed mineral withdrawals would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in all of the Lime Creek and Valley of the Gods non-

WSAs and portions of the other seven non-WSAs by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

A total of 98,280 acres in all or portions of 16 non-WSA lands with wilderness characteristics would continue to be ROW avoidance or exclusion areas (see Table 4.63). All of the lands within the Comb Ridge, Gooseneck, Hatch/Lockhart/Hart, Lime Creek and Valley of the Gods non-WSA lands with wilderness characteristics would be within ROW avoidance areas. Only the 4,820 acres in the San Juan River non-WSA area would be an exclusion area, the rest would be avoidance areas. These areas are to be avoided but may be available for location of ROWs with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. There are no ROW proposals for these areas at this time, and it is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas. However, the rest of the non-WSA lands with wilderness characteristics (484,080 acres) would remain available for the placement of ROWs. More permanent, long-term impacts would occur if the ROW is for an overhead powerline than for a buried pipeline. However, any surface-disturbing activity and/or placement of permanent visual facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

4.3.8.3.4. ALTERNATIVE C

Three non-WSA lands with wilderness characteristics areas, totaling 10,230 acres, intersect with proposed mineral withdrawals under Alternative C:

- 390 acres of the Gooseneck non-WSA
- 3,890 acres of the Indian Creek non-WSA
- 5,950 acres of the San Juan River non-WSA

The proposed mineral withdrawals would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

A total of 34,940 acres in all or portions of 12 non-WSA lands with wilderness characteristics would continue to be ROW avoidance or exclusion areas (see Table 4.63). All of the lands within the Lime Creek and Valley of the Gods non-WSA lands with wilderness characteristics would be within ROW avoidance areas. Only the 4,180 acres in the San Juan River non-WSA would be an exclusion area, the rest would be avoidance areas. These areas are to be avoided but may be available for location of ROWs with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. There are no ROW proposals for these areas at this time, and it is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas. However, the rest of the non-WSA lands with wilderness characteristics (547,420 acres) would remain available for the placement of ROWs. More permanent, long-term impacts would occur if the ROW is for an overhead powerline than for a buried pipeline. However, any surface-disturbing activity and/or placement of permanent visual facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

4.3.8.3.5. ALTERNATIVE D

One non-WSA land with wilderness characteristics area, totaling 1,960 acres, intersects with proposed mineral withdrawals under Alternative D:

- 1,960 acres of the San Juan River non-WSA

This proposed mineral withdrawal would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

All 582,360 acres would be open for placement of ROWs (see Table 4.63). No specific ROWs are proposed at this time, but if implemented, more permanent, long-term impacts would occur if the ROW is for an overhead powerline than for a buried pipeline. However, any surface-disturbing activity and/or placement of permanent visual facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

4.3.8.3.6. ALTERNATIVE E

All 29 areas of non-WSA lands with wilderness characteristics, totaling 582,360 acres would be proposed for mineral withdrawal. This proposed mineral withdrawal would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining. Existing mining claims in these areas are valid existing rights, however, and if surface-disturbing activities occur in association with existing mining claims, wilderness characteristics would be compromised and naturalness would be lost in the immediate area of the mining activities. Opportunities for solitude and primitive recreation would also be forgone in those areas and would be regained as the recreationist moved farther away from the mining activity.

Under this alternative, all 29 areas of non-WSA lands with wilderness characteristics would be managed as ROW exclusion areas (see Table 4.63). Exclusion from future ROW development for pipelines and powerlines, corridor designation, or other ROWs would protect the natural character in all these lands. Protection of the natural landscape would also preserve the setting needed to support primitive forms of recreation and experiences of solitude.

In summary, Alternative E would protect all 582,360 acres of the non-WSA lands with wilderness characteristics by precluding surface-disturbing activities associated with mining and ROWs by proposing mineral withdrawals and managing them as ROW exclusion areas. In contrast, Alternative D would not manage any of the non-WSA lands as ROW avoidance or exclusion areas and only proposes a portion of one non-WSA (1,960 acres) for mineral withdrawal. This would leave the majority of all 582,360 acres of non-WSA lands vulnerable to surface-disturbing activities that would allow them to lose their wilderness characteristics values. The other three alternatives provide descending protections from ROW avoidance or exclusion areas. Alternative A protects 19% of the lands with wilderness characteristics by managing them as avoidance or exclusion areas, Alternative B protects 17%, and Alternative C protects 6%. Proposed mineral withdrawals under Alternative A protect the wilderness characteristics on portions of four non-WSAs totaling 8,880 acres, Alternative B protects all or portions of nine

non-WSAs totaling 50,190 acres, and Alternative C protects a portion of three non-WSAs totaling 10,230 acres.

4.3.8.4. Impacts of Livestock Grazing on Non- WSA Lands with Wilderness Characteristics

Livestock grazing is guided by livestock objectives set in the Standards for Rangeland Health and Guidelines for Grazing Management. Proper levels of livestock use are guided by these objectives, thus, it is not anticipated that livestock grazing would have impacts on non-WSA lands with wilderness characteristics under any alternatives because meeting these objectives would not permit degradation of the lands. When livestock use is properly managed, it would not affect the appearance of naturalness. Grazing assessments completed by Monticello FO staff and any subsequent actions taken to remedy impending issues would enhance the natural character of non-WSA lands with wilderness characteristics. Further, improved natural condition would sustain the setting needed to support opportunities for primitive and unconfined recreation and the experience of solitude that visitors seek.

While there could be some visual evidence of livestock use in the areas (presence of livestock, feces, trampling of soil, fences, and consumption of vegetation), rangeland health and riparian conditions would be maintained through proper management under the Standard and Guidelines assessments, and the appearance of a natural condition of these areas would be maintained. For some visitors, the presence of livestock would be an adverse impact on the desired experience (connection with the natural world and experiences of solitude). However, this impact would be seasonal. At other times of the year, livestock would not be present, soils would recover, and vegetation would re-grow, reducing the impact on the visitor.

Under all alternatives, some allotments that overlie portions of non-WSA lands with wilderness characteristics would be unavailable for grazing. When some visitors encounter an area with little or no evidence of livestock use, their experience of solitude and primitive recreation may be enhanced.

4.3.8.5. Impacts of Mineral Decisions on Non- WSA Lands with Wilderness Characteristics

4.3.8.5.1. Oil and Gas

The mineral assumptions for analysis and the RFD scenarios presented in the beginning of this chapter were used in the analysis of impacts to non-WSA lands with wilderness characteristics. These RFD scenarios for oil and gas development were derived from the MPR for the Monticello FO (BLM 2005b). Three development areas, each with its own RFD, have been identified in the Monticello PA: the Paradox Fold and Fault Belt, the Monument Upwarp, and the Blanding Sub-basin. Non-WSA lands with wilderness characteristics lie within all three of them.

The Paradox Fold and Fault Belt area totals 259,390 acres of public lands outside of WSAs. It encompasses all of four and portions of two areas of non-WSA lands with wilderness characteristics which total 79,750 acres, or about 31% of the public land within this minerals development area (Table 4.64). About 70 acres within two of the non-WSA lands with wilderness characteristics are currently leased for oil and gas development or have pending leases.

Table 4.64. Paradox Fold and Fault Belt Development Area and Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Lands with Wilderness Characteristics	Acres and (% of Non-WSA within Public Lands in Paradox Fold and Fault Belt Area)		Acres of Non-WSA with Existing Leases and (% of Lease Total of Non-WSA)	
Bridger Jack Mesa	19,900	(8%)	0	
Gooseneck	3,570	(1%)	0	
Harts Point	24,740	(10%)	60	(< 1%)
Hatch/Lockhart/Hart	1,760	(<1%)	0	
Indian Creek	23,280	(9%)	10	(<1%)
Shay Mountain	6,500	(3%)	0	

The Monument Upwarp area has a total of 739,640 acres of public lands outside of WSAs. It includes all of 16 and portions of seven non-WSA lands with wilderness characteristics, which total 465,000 acres, or about 63% of the public land area (Table 4.65). About 3,340 acres within six non-WSA lands with wilderness characteristics are currently leased for oil and gas development or have pending leases.

Table 4.65. Monument Upwarp Area and Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Lands with Wilderness Characteristics	Acres and (% of Non-WSA within Public Lands in Monument Upwarp Area)		Acres of Non-WSA with Existing Leases and (% of Lease Total of Non-WSA)	
Arch Canyon	50	(<1%)	0	
Bridger Jack Mesa	3,150	(<1%)	0	
Butler Wash	1,660	(<1%)	0	
Cheesebox Canyon	13,240	(2%)	0	
Comb Ridge	1,080	(<1%)	0	
Dark Canyon	66,330	(9%)	0	
Fish and Owl Creeks	18,800	(3%)	210	(1%)
Fort Knocker Canyon	12,410	(2%)	0	
Grand Gulch	55,240	(7%)	1,600	(3%)
Gravel and Long Canyon	36,890	(5%)	0	
Hammond Canyon	4,700	(<1%)	380	(8%)
Harmony Flat	9,660	(1%)	660	(7%)
Lime Creek	5,200	(<1%)	290	(6%)
Mancos Mesa	61,570	(8%)	0	
Nokai Dome	94,270	(13%)	0	
Red Rock Plateau	17,010	(2%)	0	
Road Canyon	3,360	(<1%)	0	

Table 4.65. Monument Upwarp Area and Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Lands with Wilderness Characteristics	Acres and (% of Non-WSA within Public Lands in Monument Upwarp Area)		Acres of Non-WSA with Existing Leases and (% of Lease Total of Non-WSA)	
San Juan River	7,570	(1%)	0	
Shay Mountain	220	(<1%)	0	
Sheep Canyon	4,000	(<1%)	0	
Upper Red Canyon	24,920	(3%)	0	
Valley of the Gods	13,670	(2%)	200	(1%)
White Canyon	9,080	(1%)	0	

The Blanding Sub-basin area has a total of 406,770 acres of public lands outside of WSAs. It includes all of two and portions of five non-WSA lands with wilderness characteristics, which total 38,540 acres, or about 9% of the public land area (Table 4.66). About 1,030 acres within two non-WSA lands with wilderness characteristics are currently leased for oil and gas development or have pending leases.

Table 4.66. Blanding Sub-basin Area and Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Lands with Wilderness Characteristics	Acres and (% of Non-WSA within Public Lands in Blanding Sub-Basin Area)		Acres of Non-WSA with Existing Leases and (% of Lease Total of Non-WSA)	
Comb Ridge	12,680	(3%)	0	
Cross Canyon	1,350	(<1%)	740	(55%)
Fish and Owl Creeks	5,850	(1%)	0	
Lime Creek	360	(<1%)	0	
Road Canyon	7,960	(2%)	0	
San Juan River	6,770	(2%)	0	
Squaw and Papoose Canyon	3,570	(1%)	290	(8%)

Each of the three development areas has differing RFD projections for oil and gas development by alternative. Table 4.4 in Section 4.1.2, Assumptions and Methodology for Mineral Development, portrays those projections. Table 4.67 below summarizes that information.

Table 4.67. Development Areas with RFD Projected Number of Wells/Year Over the Life of the Plan

Development Areas	Alternative A Projected Wells Per Year/LOP	Alternative B Projected Wells Per Year/LOP	Alternative C Projected Wells Per Year/LOP	Alternative D Projected Wells Per Year/LOP	Alternative E Projected Wells Per Year/LOP
Paradox Fold and Fault Belt	~2/ 25	~1/ 20	~2/24	~2/25	~1/18
Monument Upwarp	~1 / 7	~1 /8	~1 / 9	~1 / 9	~1/ 7
Blanding Sub-Basin	~3 / 41	~3 / 38	~3/ 41	~3 / 41	~3/ 38

It is assumed that 9.6 acres would be disturbed for every well drilled. The assumed disturbance for the RFD by well is inclusive of well pads, road access, associated infrastructure, pipelines, gas plants, and for water disposal facilities, among other things.

4.3.8.5.1.1. Impacts Associated with Oil and Gas Leasing/Development under All Alternatives

A number of variables would determine the degree of impact to non-WSA lands with wilderness characteristics, including where surface-disturbing activities occur, land form or topography, vegetation type, sequence of development, and reclamation time. Soil types and climate would affect the time it takes to reclaim disturbances. Successful reclamation would take about 10 years.

Construction and operation of oil and gas wells and associated support facilities, including roads, surface and buried pipelines, power lines, and compressor stations would create soil and vegetation disturbance and the presence of permanent structures (for the life of the oil/gas field) that would degrade the natural characteristics of non-WSA lands with wilderness characteristics. In addition to site-specific surface disturbance, the cumulative number of wells would change the appearance of naturalness.

Noise from construction and operation of producing wells, including the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and conflict with primitive recreational opportunities in proximity to industrial development. As recreational visitors move away from the sources of development, the sights and sounds of development would diminish. However, it can be expected that sights and sounds from development would reduce opportunities for solitude and primitive and unconfined recreation up to one-half mile beyond the direct loss of natural character.

Table 4.68 displays the oil and gas leasing stipulations, by alternative, for each of the non-WSA lands with wilderness characteristics.

Table 4.68. Oil and Gas Leasing Stipulations for Non-WSA Lands with Wilderness Characteristics

Name	Total Acres	Currently Leased	Stipulation[1]	Alt A	Alt B	Alt C	Alt D	Alt E
Arch Canyon	50	0	Standard	0	0	50	50	0
		0	CSU/TL	0	50	0	0	0
		0	NSO	50	0	0	0	0
		0	Closed	0	0	0	0	50
Bridger Jack Mesa	23,050	0	Standard	15,040	1,490	4,590	22,780	0
		0	CSU/TL	6,790	20,890	17,770	270	0
		0	NSO	1,220	670	690	0	0
		0	Closed	0	0	0	0	23,050
Butler Wash	1,660	0	Standard	90	0	350	360	0
		0	CSU/TL	1,530	1,660	1,310	1,300	0
		0	NSO	40	0	0	0	0
		0	Closed	0	0	0	0	1,660
Cheesebox Canyon	13,240	0	Standard	4,140	0	4,940	8,350	0
		0	CSU/TL	6,470	13,240	8,300	4,890	0
		0	NSO	2,630	0	0	0	0
		0	Closed	0	0	0	0	13,240
Comb Ridge	13,760	0	Standard	5,320	0	12,630	13,760	0
		0	CSU/TL	7,920	0	1,130	0	0
		0	NSO	500	13,760	0	0	0
		0	Closed	20	0	0	0	13,760
Cross Canyon	1,350	710	Standard	1,350	1,350	1,350	1,350	0
		30	CSU/TL	0	0	0	0	0
		0	NSO	0	0	0	0	0
		0	Closed	0	0	0	0	1,350
Dark Canyon	66,330	0	Standard	43,720	3,290	10,400	44,570	0
		0	CSU/TL	22,610	59,730	52,580	21,760	0
		0	NSO	0	0	0	0	0
		0	Closed	0	3,310	3,350	0	66,330

Table 4.68. Oil and Gas Leasing Stipulations for Non-WSA Lands with Wilderness Characteristics

Name	Total Acres	Currently Leased	Stipulation[1]	Alt A	Alt B	Alt C	Alt D	Alt E
Fish and Owl Creeks	24,650	210	Standard	1,190	3,360	16,490	24,650	0
		0	CSU/TL	21,350	17,700	8,160	0	0
		0	NSO	2,110	3,590	0	0	0
		0	Closed	0	0	0	0	24,650
Fort Knocker Canyon	12,410	0	Standard	170	0	0	11,600	0
		0	CSU/TL	6,530	12,410	12,410	810	0
		0	NSO	5,710	0	0	0	0
		0	Closed	0	0	0	0	12,410
Gooseneck	3,570	0	Standard	1,650	0	0	0	0
		0	CSU/TL	1,920	0	2,600	3,570	0
		0	NSO	0	2,580	80	0	0
		0	Closed	0	990	890	0	3,570
Grand Gulch	55,240	1,600	Standard	3,710	36,550	46,240	52,070	0
		0	CSU/TL	34,350	18,590	8,930	3,170	0
		0	NSO	17,180	100	70	0	0
		0	Closed	0	0	0	0	55,240
Gravel and Long	36,890	0	Standard	20	0	1,350	460	0
		0	CSU/TL	30,850	36,890	35,540	36,430	0
		0	NSO	6,020	0	0	0	0
		0	Closed	0	0	0	0	36,890
Hammond Canyon	4,700	380	Standard	2,600	0	4,700	4,700	0
		0	CSU/TL	2,100	4,700	0	0	0
		0	NSO	0	0	0	0	0
		0	Closed	0	0	0	0	4,700
Harmony Flat	9,660	660	Standard	0	0	0	7,740	0
		0	CSU/TL	6,760	9,660	9,660	1,920	0
		0	NSO	2,900	0	0	0	0
		0	Closed	0	0	0	0	9,660

Table 4.68. Oil and Gas Leasing Stipulations for Non-WSA Lands with Wilderness Characteristics

Name	Total Acres	Currently Leased	Stipulation[1]	Alt A	Alt B	Alt C	Alt D	Alt E
Harts Point	24,740	60	Standard	9,860	1,400	6,320	12,890	0
		0	CSU/TL	14,880	23,170	18,420	11,530	0
		0	NSO	0	170	0	0	0
		0	Closed	0	0	0	0	24,740
Hatch Lockhart Hart	1,760	0	Standard	1,760	0	0	0	0
		0	CSU/TL	0	0	1,760	1,760	0
		0	NSO	0	1,760	0	0	0
		0	Closed	0	0	0	0	1,760
Indian Creek	23,280	10	Standard	12,240	0	3,000	6,940	0
		0	CSU/TL	7,360	3,520	16,140	16,340	0
		0	NSO	3,680	19,760	4,140	0	0
		0	Closed	0	0	0	0	23,280
Lime Creek	5,560	285	Standard	30	0	0	5,560	0
		0	CSU/TL	0	0	0	0	0
		0	NSO	5,530	0	5,560	0	0
		0	Closed	0	5,560	0	0	5,560
Mancos Mesa	61,570	0	Standard	4,720	22,070	22,070	40,940	0
		0	CSU/TL	29,360	26,740	39,250	20,630	0
		0	NSO	27,490	12,760	250	0	0
		0	Closed	0	0	0	0	61,570
Nokai Dome	94,270	0	Standard	0	40,250	40,250	94,270	0
		0	CSU/TL	79,070	41,420	53,600	0	0
		0	NSO	15,200	12,600	420	0	0
		0	Closed	0	0	0	0	94,270
Red Rock Plateau	17,010	0	Standard	0	0	0	0	0
		0	CSU/TL	17,010	17,010	17,010	17,010	0
		0	NSO	0	0	0	0	0
		0	Closed	0	0	0	0	17,010

Table 4.68. Oil and Gas Leasing Stipulations for Non-WSA Lands with Wilderness Characteristics

Name	Total Acres	Currently Leased	Stipulation[1]	Alt A	Alt B	Alt C	Alt D	Alt E
Road Canyon	11,320	0	Standard	220	7,970	9,390	11,320	0
		0	CSU/TL	8,880	1,270	390	0	0
		0	NSO	2,220	550	1,540	0	0
		0	Closed	0	1,530	0	0	11,320
San Juan River	14,340	0	Standard	9,230	9,520	10,160	14,340	0
		0	CSU/TL	0	0	0	0	0
		0	NSO	5,110	3,660	3,060	0	0
		0	Closed	0	1,160	1,120	0	14,340
Shay Mountain	6,710	0	Standard	2,730	6,610	910	6,710	0
		0	CSU/TL	3,980	0	5,700	0	0
		0	NSO	0	100	100	0	0
		0	Closed	0	0	0	0	6,710
Sheep Canyon	4,000	0	Standard	800	0	0	4,000	0
		0	CSU/TL	3,200	4,000	4,000	0	0
		0	NSO	0	0	0	0	0
		0	Closed	0	0	0	0	4,000
Squaw and Papoose Canyons	3,570	110	Standard	3,570	3,570	3,570	3,570	0
		180	CSU/TL	0	0	0	0	0
		0	NSO	0	0	0	0	0
		0	Closed	0	0	0	0	3,570
Upper Red Canyon	24,920	0	Standard	4,330	21,200	21,220	12,570	0
		0	CSU/TL	19,090	3,720	3,700	12,350	0
		0	NSO	1,500	0	0	0	0
		0	Closed	0	0	0	0	24,920
Valley of the Gods	13,670	200	Standard	130	0	0	13,670	0
		0	CSU/TL		0	0	0	0
		0	NSO	13,540	0	13,670	0	0
		0	Closed	0	13,670	0	0	13,670

Table 4.68. Oil and Gas Leasing Stipulations for Non-WSA Lands with Wilderness Characteristics

Name	Total Acres	Currently Leased	Stipulation[1]	Alt A	Alt B	Alt C	Alt D	Alt E
White Canyon	9,080	0	Standard	4,250	380	1,810	5,930	0
		0	CSU/TL	4,780	8,700	7,270	3,150	0
		0	NSO	50	0	0	0	0
		0	Closed	0	0	0	0	9,080

[1]CSU/TL = Controlled Surface Use/Timing Limitations
NSO = No surface occupancy

4.3.8.5.1.2. Alternative A

All or portions of 28 of the 29 non-WSA lands with wilderness characteristics, comprising 468,550 acres, would remain open to leasing and development under standard oil and gas stipulations or under CSU or TL stipulations (see Table 4.68). This comprises over 80% of these non-WSA wilderness lands. Twenty percent of the non-WSA lands with wilderness characteristics (all of one and portions of 18 non-WSAs) would be either closed to leasing or have an NSO stipulation on the leases.

In the Paradox Fold area, all or portions of the six non-WSA lands with wilderness characteristics, comprising 74,850 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This is about 29% of the public lands within the development area. Approximately 4,900 acres (1,220 acres in Bridger Jack Mesa and 3,680 acres in Indian Creek non-WSAs) would have an NSO stipulation applied to the lease, or about 2% of the development area. Based on the percentage of non-WSA lands with wilderness characteristics and the existing or pending leases within those six areas, the highest potential for leasing and/or development would be in Harts Point, Indian Creek or Bridger Jack Mesa non-WSAs. Given that the projection for drilling for oil and gas is about two wells per year for the public lands within the Paradox Fold area, and that 31% of the development area encompasses non-WSA lands with wilderness characteristics, up to one well per year – or up to 15 wells over a 15-year period – could be drilled within these areas. This could disturb up to 9.6 acres per year, or approximately 144 acres over the LOP within the non-WSA wilderness characteristics lands. Leasing and development within these non-WSA lands with wilderness characteristics would cause that portion to lose their natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 144 acres of direct surface-disturbing activities, and could impact these values for up`to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the number of projected wells in this development area over the life of the RMP.

In the Monument Upwarp area, 22 of the 23 non-WSA lands with wilderness characteristics would remain all or partially open to leasing under standard stipulations or under CSU or TL stipulations (357,200 acres, or 48% of the development area). Approximately 107,800 acres in

17 non-WSA lands with wilderness characteristics would be under an NSO stipulation or closed to leasing, which is about 15% of the public land within the development area. This includes 50 acres in Arch Canyon (100% of this non-WSA land with wilderness characteristics); 40 acres in Butler Wash (2%); 2,630 acres in Cheesebox Canyon (20%); 520 acres in Comb Ridge (4%); 2,110 acres in Fish and Owl Creeks (9%); 5,710 acres in Fort Knocker Canyon (5%); 17,180 in Grand Gulch (31%); 6,020 acres in Gravel and Long Canyon (16%); 2,900 acres in Harmony Flat (30%); 5,530 acres in Lime Creek (99%); 27,490 acres in Mancos Mesa (45%); 15,200 acres in Nokai Dome (16%); 2,220 in Road Canyon (20%); 5,110 acres in San Juan River (36%); 1,500 acres in Upper Red Canyon (6%); 13,540 acres in Valley of the Gods (99%); and 50 acres in White Canyon (1%). Based on the percentage of non-WSA lands with wilderness characteristics and the existing and pending leases within those areas, the highest potential for leasing and/or development would be in Nokai Dome, Dark Canyon, Mancos Mesa, and Grand Gulch non-WSA lands with wilderness characteristics. Given that the projection for drilling for oil and gas is less than one well per year for all of the public lands in the Monument Upwarp area, and that 63% of the development area encompasses non-WSA lands with wilderness characteristics, that projected one well per year – or up to seven wells over a 15-year period – could be drilled within the non-WSA wilderness characteristics lands. This could disturb up to 9.6 acres per year, or approximately 67 acres over the LOP. Leasing and development within these non-WSA lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 67 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

In the Blanding Sub-basin area, all seven non-WSA lands with wilderness characteristics, totaling 38,540 acres (or 9% of the development area), would remain open to leasing under standard stipulations or under CSU or TL stipulations. None of the lands would be under an NSO stipulation or closed to leasing. Based on the percentage of non-WSA lands with wilderness characteristics and/or the existing and pending leases within those areas, the highest potential for leasing and/or development would be in Cross Canyon, Squaw and Papoose Canyon, and the east side of Comb Ridge non-WSA lands with wilderness characteristics. Given that the projection for drilling for oil and gas is three wells per year for all of the public lands within the Monument Upwarp area, and that 9% of the development area encompasses non-WSA lands with wilderness characteristics open to leasing under standard stipulations, CSU, or TL, up to one well per year – or up to 15 wells over a 15-year period – could be drilled within the non-WSA lands. This could disturb up to 9.6 acres per year, or up to 144 acres over the LOP. Leasing and development within these non-WSA lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 144 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

Geophysical exploration activities would be authorized for all non-WSA lands with wilderness characteristics, subject to the oil and gas leasing stipulations and the exceptions to those activities that are non-surface disturbing as defined in Appendix A. Geophysical activities would have short-term, minimal impacts on naturalness due to crushed vegetation, tire tracks, and small drill holes and their cuttings. Solitude and primitive recreation opportunities would be impacted in the short-term by the presence of equipment, people, noise, and work associated with geophysical exploration activities. When the geophysical activity ceases, solitude and primitive recreation opportunities would resume and disturbances to the naturalness would be restored in the short-term.

In summary, up to 37 wells over the 15-year RFD scenario, disturbing up to 355 acres could occur in non-WSA lands with wilderness characteristics under this alternative. Nine of the 29 areas have a higher potential for these wells to be drilled based on existing leases and/or percentages of non-WSA lands within the development areas. All of Arch Canyon and the majority (99%) of Lime Creek and Valley of the Gods non-WSA lands with wilderness characteristics would be protected from surface-disturbing activities associated with oil and gas leasing due to an NSO stipulation or closed to leasing.

4.3.8.5.1.3. Alternative B

All or portions of 25 of the 29 non-WSA lands with wilderness characteristics, comprising 482,980 acres, would remain open to leasing and development under standard oil and gas stipulations or under CSU or TL stipulations (see Table 4.68). This comprises nearly 83% of these non-WSA lands. Seventeen percent of the non-WSA lands with wilderness characteristics (all of five and portions of 11 non-WSAs) would be either closed to leasing or have an NSO stipulation on the leases. It is assumed that the various waivers, exceptions, and modifications under the NSO stipulation would not be granted because they would not be in concert with other resource goals and objectives in these areas.

In the Paradox Fold area, portions of four of the six non-WSA lands with wilderness characteristics, comprising 53,720 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This is about 21% of the public lands within the development area. Approximately 26,030 acres, which includes 670 acres in Bridger Jack Mesa (3% of the non-WSA); 3,570 acres in Gooseneck (100%), 170 acres in Harts Point (1%); 1,760 acres in Hatch/Lockhart/Hart (100%); 19,760 acres in Indian Creek (85%); and 100 acres in Shay Mountain (1%), would have an NSO stipulation applied to the lease or be closed to leasing. This comprises about 10% of the development area. Based on the percentage of non-WSA lands with wilderness characteristics and the existing or pending leases within those six areas, the highest potential for leasing and/or development would be in Harts Point or Bridger Jack Mesa non-WSAs wilderness characteristics areas. Given that the projection for drilling for oil and gas is about one well per year for all of the public lands within the Paradox Fold area, and that 30% of the development area encompasses non-WSA lands with wilderness characteristics open for leasing, up to one well per year – or up to 15 wells over a 15-year period – could be drilled within these areas. This could disturb up to 9.6 acres per year, or approximately 144 acres over the LOP within the non-WSA lands. No surface disturbance associated with oil and gas activities would occur in Gooseneck or Hatch/Harts/Lockhart non-WSA lands with wilderness characteristics or on over 85% of the Indian Creek non-WSA wilderness lands. Leasing and development within the Bridger Jack Mesa, Harts Point, Indian Creek, or Shay Mountain non-

WSA wilderness lands would cause that portion to lose its natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the number of projected wells in this development area over the life of the RMP.

In the Monument Upwarp area, all of 14 and portions of six non-WSA lands with wilderness characteristics, comprising 407,870 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This is about 55% of the public lands within the development area. Approximately 57,130 acres, or about 8% of the lands in the development area, in all or portions of nine non-WSA lands with wilderness characteristics would be under an NSO stipulation or closed to leasing. This includes 1,080 acres in Comb Ridge (100% of this non-WSA); 3,310 acres in Dark Canyon (5%); 3,590 acres in Fish and Owl Creeks (15%); 100 acres in Grand Gulch (<1%); 5,200 acres in Lime Creek (100%); 12,760 acres in Mancos Mesa (21%); 12,600 acres in Nokai Dome (13%); 4,820 acres in San Juan River (63%); and 13,670 acres in Valley of the Gods (100%). Based on the percentage of non-WSA lands with wilderness characteristics and the existing and pending leases within those areas, the highest potential for leasing and/or development would be the same as in Alternative A: Nokai Dome, Dark Canyon, Mancos Mesa, and Grand Gulch non-WSA lands with wilderness characteristics. However, all of Comb Ridge, Lime Creek and Valley of the Gods non-WSAs would be protected from surface-disturbing oil- and gas-related activities, thus protecting their wilderness characteristics. Given that the projection for drilling for oil and gas is less than one well per year for all of the public land within the Monument Upwarp area, and that 63% of the development area encompasses non-WSA lands with wilderness characteristics, the projected one well per year – or up to eight wells over a 15-year period – could be drilled within the non-WSA lands. This could disturb up to 9.6 acres per year, or approximately 77 acres over the LOP. Leasing and development within these non-WSA wilderness characteristics lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 77 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

In the Blanding Sub-basin area, all of four and a portion of one non-WSA land with wilderness characteristics, totaling 23,420 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This comprises over 5% of the public lands in the development area. Approximately 15,120 acres in three non-WSA lands with wilderness characteristics would be under an NSO stipulation or closed to leasing, which is about 4% of the public land development area. This includes 12,680 acres in Comb Ridge (100% of this non-WSA with wilderness characteristics); 360 acres in Lime Creek (100%); and 2,080 acres in Road Canyon (26%). Based on the percentage of non-WSA lands with wilderness characteristics and/or the existing and pending leases within those areas, the highest potential for leasing and/or development would be in Cross Canyon and Squaw and Papoose Canyon. Given that the projection for drilling for oil and gas is three wells per year for the all of the public land in the Blanding Sub-basin area, and that just over 5% of the development area encompasses non-WSA lands with wilderness characteristics open to leasing under standard, CSU, or TL stipulations, it

is still anticipated that up to one well per year could be drilled in the non-WSA lands because the Blanding Sub-basin area contains oil and gas fields and the majority of existing wells within the whole Monticello FO. This could disturb up to 9.6 acres per year, or up to 144 acres over the LOP; however, none of the surface-disturbing activities would be within Comb Ridge or Lime Creek non-WSA lands with wilderness characteristics, thus protecting those values. Leasing and development within these non-WSAs wilderness areas could cause that portion to lose its natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

Impacts from geophysical activities would be the same as Alternative A.

In summary, up to 38 wells over the 15-year RFD scenario, disturbing up 365 acres could occur in non-WSA lands with wilderness characteristics under this alternative. Eight of the 29 areas have a higher potential for these wells to be drilled based on existing leases and/or percentages of non-WSA lands within the development areas. All of Gooseneck, Hatch/Lockhart/Hart, Lime Creek, Valley of the Gods, Comb Ridge, and 85% of Indian Creek non-WSA lands with wilderness characteristics would be protected from surface-disturbing activities associated with oil and gas leasing due to an NSO stipulation or closed to leasing.

4.3.8.5.1.4. Alternative C

All or portions of 27 of the 29 non-WSA lands with wilderness characteristics, comprising 547,420 acres, would remain open to leasing and development under standard oil and gas stipulations or under CSU or TL stipulations (see Table 4.68). This comprises nearly 94% of these non-WSA lands. Six percent of the non-WSA lands with wilderness characteristics totaling 34,940 acres (all of two and portions of 10 non-WSAs wilderness areas) would be either closed to leasing or have an NSO stipulation on the leases. It is assumed that the various waivers, exceptions, and modifications under the NSO stipulation would not be granted because they would not be in concert with other resource goals and objectives in these areas.

In the Paradox Fold area, all or portions of the six non-WSA lands with wilderness characteristics, comprising 73,850 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This is about 29% of the public lands within the development area. Approximately 5,900 acres, which includes 690 acres in Bridger Jack Mesa (3% of the non-WSA); 970 acres in Gooseneck (27%), 4,140 acres in Indian Creek (18%), and 100 acres in Shay Mountain (2%) non-WSA lands with wilderness characteristics would have an NSO stipulation applied to the lease or be closed to leasing. This comprises about 2% of the development area. Based on the percentage of non-WSA lands with wilderness characteristics and the existing or pending leases within those six areas, the highest potential for leasing and/or development would be in Bridger Jack Mesa, Harts Point, or Indian Creek non-WSAs. Given that the projection for drilling for oil and gas is about two wells per year for all of the public lands in the Paradox Fold area, and that 31% of the development area encompasses non-WSA lands with wilderness characteristics open for leasing, up to one well per year – or up to 15 wells over a 15-year period – could be drilled within these areas. This could disturb up to 9.6 acres per year, or up to 144 acres over the LOP within the non-WSA wilderness lands. Leasing and development within the seven non-WSAs wilderness characteristics areas would cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to

exploration for and development of oil and gas resources would be broader than just for the 144 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the number of projected wells in this development area over the life of the RMP.

In the Monument Upwarp area, all of 15 and portions of six non-WSA lands with wilderness characteristics, comprising 437,860 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This is about 59% of the public lands within the development area. Approximately 27,140 acres, or about 4% of the lands in the development area, in all of two and portions of six non-WSA lands with wilderness characteristics would be under an NSO stipulation or closed to leasing. This includes 3,350 acres in Dark Canyon (5% of this non-WSA); 70 acres in Grand Gulch (<1%); 5,200 acres in Lime Creek (100%); 250 acres in Mancos Mesa (<1%); 420 acres in Nokai Dome (<1%); 4,180 acres in San Juan River (55%); and 13,670 acres in Valley of the Gods (100%). Based on the percentage of non-WSA lands with wilderness characteristics and the existing and pending leases within those areas, the highest potential for leasing and/or development would be the same as in Alternative A: in Nokai Dome, Dark Canyon, Mancos Mesa, and Grand Gulch non-WSA lands with wilderness characteristics. However, all of Lime Creek and Valley of the Gods non-WSAs would be protected from surface-disturbing oil- and gas-related activities, thus protecting their wilderness characteristics. Given that the projection for drilling for oil and gas is less than one well per year for the public lands within the Monument Upwarp area, and that 63% of the development area encompasses non-WSA lands with wilderness characteristics, the projected one well per year – or up to nine wells over a 15-year period – could be drilled within the non-WSA lands. This could disturb up to 9.6 acres per year, or approximately 86 acres over the LOP. Leasing and development within these non-WSA lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 86 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

In the Blanding Sub-basin area, all of five and a portion of one non-WSA lands with wilderness characteristics, totaling 36,640 acres, would remain open to leasing under standard stipulations or under CSU or TL stipulations. This comprises over 9% of the public lands in the development area. Approximately 1,900 acres in two non-WSA lands with wilderness characteristics would be under an NSO stipulation or closed to leasing, which is less than 1% of the public lands within this development area. This includes 360 acres in Lime Creek (100% of the non-WSA) and 1,540 acres in Road Canyon (24%). Based on the percentage of non-WSA lands with wilderness characteristics and/or the existing and pending leases within those areas, the highest potential for leasing and/or development would be in Comb Ridge, Cross Canyon, and Squaw and Papoose Canyon. Given that the projection for drilling for oil and gas is three wells per year for the all of the public lands within the Blanding Sub-basin area, and that just over 9% of the development area encompasses non-WSA lands with wilderness characteristics open to leasing under standard stipulations, CSU, or TL stipulations, it is still anticipated that up to one well per year could be drilled in the non-WSA lands because the Blanding Sub-basin area contains oil and gas fields

and the majority of existing wells within the Monticello PA. This could disturb up to 9.6 acres per year, or approximately 144 acres over the LOP, however, none of the surface-disturbing activities would be within Lime Creek non-WSA lands with wilderness characteristics, thus protecting those values. Leasing and development within these non-WSA wilderness lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 144 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the life of the RMP.

Impacts from geophysical activities would be the same as Alternative A.

In summary, up to 39 wells over the 15-year RFD scenario, disturbing up to 374 acres could occur in non-WSA lands with wilderness characteristics under this alternative. Ten of the 29 areas have a higher potential for these wells to be drilled based on existing leases and/or percentages of non-WSA wilderness lands within the development areas. However, all of Lime Creek and Valley of the Gods non-WSA lands with wilderness characteristics would be protected from surface-disturbing activities associated with oil and gas leasing due to an NSO stipulation.

4.3.8.5.1.5. Alternative D

All of the 29 non-WSA lands with wilderness characteristics would remain open to leasing and development under standard oil and gas stipulations or under CSU or TL stipulations under this alternative.

In the Paradox Fold area, all six non-WSA lands with wilderness characteristics would remain open to leasing under standard stipulations or under CSU or TL stipulations (79,750 acres). This is 31% of all of the public lands within this development area. Based on the percentage of non-WSA lands with wilderness characteristics and the existing leases within those areas, the highest potential for leasing and/or development would be in Bridger Jack Mesa, Indian Creek, and Harts Point. Because well projections under this alternative are similar to Alternative A, and generally the same percentage of lands in the development area encompass non-WSA lands with wilderness characteristics, the same analysis portraying development of one well in this area would be applied.

In the Monument Upwarp area, all 23 non-WSA lands with wilderness characteristics would remain open to leasing under standard stipulations or under CSU or TL stipulations (465,000 acres). This is 63% of the public lands in the whole development area. Based on the percentage of non-WSA lands with wilderness characteristics and the existing leases within those areas, the highest potential for leasing and/or development would be in Dark Canyon, Grand Gulch, Mancos Mesa, and Nokai Dome. Because well projections under this alternative are generally the same as in Alternative C, and generally the same percentage of lands in this development area encompass non-WSA lands with wilderness characteristics, the same analysis portraying development of one well would be applied.

In the Blanding Sub-basin area, all seven non-WSA lands with wilderness characteristics, totaling 38,540 acres (or 9% of the public lands in the development area), would remain open to leasing under standard stipulations or under CSU or TL stipulations. Based on the percentage of

non-WSA lands with wilderness characteristics and/or the existing and pending leases within those areas, the highest potential for leasing and/or development would be in Cross Canyon, Squaw and Papoose Canyon, and the east side of Comb Ridge non-WSA lands with wilderness characteristics. Given that the projection for drilling for oil and gas is generally the same as Alternative A and the same acreage is available for leasing, the same assumptions and analysis would apply.

Impacts from geophysical activities would be the same as Alternative A.

In summary, up to 39 wells over the 15-year RFD scenario, disturbing up to 374 acres could occur in non-WSA lands with wilderness characteristics under this alternative. All areas would remain available for leasing and development. Ten of the 29 non-WSAs have a higher potential for these wells to be drilled based on their large acreage and existing leases within the development areas.

4.3.8.5.1.6. Alternative E

Under Alternative E, all lands within the non-WSA lands with wilderness characteristics would be closed to leasing. However, existing leases still remain in six of the 29 non-WSA lands with wilderness characteristics. Development of these leases could compromise wilderness characteristics values in these areas. Below is a breakdown of how or where that may occur based on the development areas and the predicted surface disturbance for oil and gas activity under this alternative. Those non-WSA lands with wilderness characteristics that are not currently leased would be fully protected under the leasing closure under this alternative. This would preserve the naturalness of the areas and maintain the outstanding opportunities for primitive recreation and solitude.

In the Paradox Fold and Fault Belt area, all non-WSA lands with wilderness characteristics would be closed to future leasing. However, portions of two non-WSA lands with wilderness characteristics are under existing leases comprising 70 acres. Based on the size of the leases in the non-WSA lands with wilderness characteristics, the highest potential for development could be in Harts Point and Indian Creek non-WSA wilderness areas. The projection for drilling for oil and gas is two wells per year for the all of the public lands within the development area under this alternative. The leased lands comprise far less than 1% of the public lands within the development area. It is not expected that these leases would be developed based on this low RFD and the amount of other public lands available for leasing and development. However, if they are developed – and one well would, on average, cause surface disturbance on up to 9.6 acres – far less than 1% of each of the non-WSAs wilderness lands would be impacted. Development of these small, leased areas within the non-WSA wilderness lands could cause that portion to lose its natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources.

In the Monument Upwarp area, all non-WSA lands with wilderness characteristics would be closed to future leasing. However, portions of six of the 23 non-WSA lands with wilderness characteristics are under existing leases comprising 3,340 acres. Based on the size of the leases within the non-WSA lands with wilderness characteristics, the highest potential for development of those leases could be in Grand Gulch or Harmony Flat. The RFD projection for drilling for oil and gas is less than one well per year (or seven wells over the next 15 years) for all of the public lands in this development area under this alternative. The leased lands comprise far less than 1%

of the public lands within the development area. However, because of the amount of public land that would be closed to leasing under this alternative in this development area, it is assumed that the leases within any of the six areas could be developed. If they are developed – and one well would, on average, cause surface disturbance on up to 9.6 acres – far less than 1% of each of the non-WSA wilderness areas would be impacted. Even if all of the projected seven wells over the next 15 years are developed in the 1,600 acres leased in Grand Gulch, the total disturbance would be 67 acres within this 55,240-acre area (far less than 1%). Development of any of these small leased areas within the non-WSA wilderness characteristics lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources would be broader than just for the 67 acres of direct surface-disturbing activities, and could impact these values for up to one-half mile from the ongoing activity. However, the majority of the areas would maintain their wilderness characteristics integrity.

In the Blanding Sub-basin area, all non-WSA lands with wilderness characteristics would be closed to future lease. However, portions of two of the seven non-WSA lands with wilderness characteristics are under existing leases comprising 1,030 acres. Both of these non-WSAs, Cross Canyon and Squaw and Papoose Canyon, are vulnerable to development of the existing leases since they are near an existing oil and gas field and they lie within an area of the Monticello FO that has had the most oil and gas activity. The leases within the development area, however, comprise far less than 1% of the public lands within this development area. Given that the projection for drilling for oil and gas is three wells per year for the whole 406,770 acres of public land within the Blanding Sub-basin area, and only 1,030 acres is available for development within the non-WSA wilderness areas, it not anticipated that any wells would be drilled in the non-WSA wilderness characteristics lands. If developed, however, it could cause these non-WSA wilderness areas to lose a small portion of their natural character and opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources. However, it is not anticipated that any of the areas would lose their wilderness characteristics in totality because of the small amount of acreage projected to be disturbed and the few projected wells in this development area over the 15-year scenario.

Geophysical operations would be considered if they are not surface disturbing (i.e., heliportable drilling, walked lines, etc.) See Appendix A for a definition of surface-disturbing activities. Impacts to wilderness characteristics would be negligible except for the actual time of operations. Noise and movement associated with the activities could temporarily disrupt the opportunities for solitude and primitive recreation.

In summary, existing leases within nine non-WSA lands would allow for development on those leases; however, it is not anticipated that development would occur in any of the areas except possibly within the Monument Upwarp area due to the limited amount of land that would remain available for leasing. All other non-WSA lands with wilderness characteristics would be protected from oil and gas leasing and developments activities by closing the areas to future leasing.

4.3.8.5.1.7. Conclusion

Under each alternative, the following percentage of non-WSA lands with wilderness characteristics would remain open to leasing and development under standard oil and gas stipulations or under CSU or TL stipulations:

- Alternative A, 80% of all non-WSA lands (468,550 acres)
- Alternative B, 83% of all non-WSA lands (482,980 acres)
- Alternative C, 94% of all non-WSA lands (547,420 acres
- Alternative D, 100% of the non-WSA lands (582,360 acres)
- Alternative E, 0% of the 29 non-WSA land (0 acres)

Based on the low RFDs for the Monticello PA, up to three wells could be drilled per year in the non-WSA wilderness characteristics lands that are open to leasing and development under Alternatives A, B, C, and D. It is assumed that 9.6 acres of surface disturbance would be associated with each well drilled. Under all four alternatives, the maximum amount of surface disturbance would be between 355 acres and 374 acres over the 15-year RFD scenario. Although oil and gas well development would cause surface-disturbing activities that may result in loss of wilderness characteristics in some areas, it is not expected under any alternative that the amount of disturbance based on well projections and the scattered nature of the wells would be substantial. Although small acreages may be lost in some of the non-WSA lands with wilderness characteristics, it is not predicted that any of the areas would lose their wilderness characteristics value in whole.

4.3.8.5.2. SALABLE MINERALS

4.3.8.5.2.1. Impacts Common to All Alternatives

Salable minerals are under the same restrictions as oil and gas resources. The same non-WSA lands with wilderness characteristics that are open under standard stipulations or minor constraints would be available for salable mineral disposal, just as those non-WSA lands either closed to leasing or under NSO stipulations would be unavailable for salable mineral disposal (see Table 4.68). The non-WSA lands with wilderness characteristics with the highest potential for sand and gravel occurrence within 3 miles of a road overlie portions of the Comb Ridge, Harts Point, Valley of the Gods, Mancos Mesa, Nokai Dome, Upper Red Canyon, Fort Knocker Canyon, and Gravel and Long Canyon areas. Currently there is only one sand and gravel pit contiguous to the northernmost end of Comb Ridge. All or portions of 26 non-WSA lands with wilderness characteristics have high potential for building stone occurrence. None of the non-WSA lands with wilderness characteristics are currently near a building stone quarry. Those non-WSAs that do not intersect with the building stone resource are Grand Gulch, Lime Creek and Valley of the Gods. The San Juan River non-WSA land with wilderness characteristics has a high potential for limestone occurrence, and there is a limestone quarry near the wilderness characteristic area.

4.3.8.5.2.2. Alternative A

All or portions of 28 of the 29 non-WSA lands with wilderness characteristics, comprising 468,550 acres, would remain open to salable mineral disposal. This comprises over 80% of these non-WSA lands. The Comb Ridge non-WSA would remain open to sand and gravel disposal and the San Juan River non-WSA would be open to limestone disposal. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone. If the gravel pits or building rock quarries have associated support facilities, including roads and powerlines, soil and vegetation disturbance, the presence of permanent structures

would degrade the natural characteristics of non-WSA lands with wilderness characteristics. Noise from the operation of sand and gravel pits or rock quarries, including the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and conflict with primitive recreational opportunities in proximity to industrial development. As recreational visitors move away from the sources of development, the sights and sounds of development would diminish. However, it can be expected that sights and sounds from development would reduce opportunities for solitude and primitive and unconfined recreation up to one-half mile beyond the direct loss of natural character, depending on topography.

Twenty percent of the non-WSA lands with wilderness characteristics totaling 113,810 acres (all of one and portions of 18 non-WSAs) would be closed to salable mineral disposal; thus, the wilderness characteristics of those areas would be maintained.

4.3.8.5.2.3. Alternative B

All or portions of 25 of the 29 non-WSA lands with wilderness characteristics areas, comprising 482,980 acres, would remain open to salable mineral disposal. This comprises nearly 83% of these non-WSA lands. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone. The same impacts to wilderness values as described under Alternative A would ensue. Seventeen percent of the non-WSA lands with wilderness characteristics totaling 99,380 acres (all of five and portions of 11 non-WSAs) would be closed to salable mineral disposal, thus, the wilderness characteristics of those areas would be maintained. The Comb Ridge non-WSA would be closed to sand and gravel disposal and the San Juan River non-WSA would be closed to limestone disposal.

4.3.8.5.2.4. Alternative C

All or portions of 27 of the 29 non-WSA lands with wilderness characteristics, comprising 547,420 acres, would remain open to salable mineral disposal. This comprises nearly 94% of these non-WSA lands. The Comb Ridge non-WSA would remain open to sand and gravel disposal. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone. The same impacts to wilderness values as described under Alternative A would ensue. Six percent of the non-WSA lands with wilderness characteristics totaling 34,940 acres (all of two and portions of 10 non-WSAs) would be closed to salable mineral disposal, thus the wilderness characteristics of those areas would be maintained. The San Juan River non-WSA would be closed to limestone disposal.

4.3.8.5.2.5. Alternative D

All of the 29 non-WSA in the 582,360 acres of non-WSA lands with wilderness characteristics would remain open to disposal of salable minerals under standard conditions or minor constraints. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be adversely affected, with the same impacts to wilderness values as described under Alternative A.

4.3.8.5.2.6. Alternative E

Under Alternative E, all lands within the non-WSA lands with wilderness characteristics would be closed to salable mineral disposal. These areas would be fully protected under the salable

mineral closure under this alternative. This would preserve the naturalness of the areas and maintain the outstanding opportunities for primitive recreation and solitude.

4.3.8.5.3. LOCATABLE MINERALS

4.3.8.5.3.1. Impacts Common to All Alternatives

Portions of 17 non-WSA lands with wilderness characteristics are located within moderate to high potential areas for uranium/vanadium and are within historic mining districts: Bridger Jack Mesa (8,670 acres within the non-WSA), Butler Wash (80 acres), Cheesebox Canyon (12,440 acres), Comb Ridge (470 acres), Fort Knocker Canyon (1,180 acres), Gooseneck (3,330 acres), Gravel and Long Canyon (19,270 acres), Hammond Canyon (340 acres), Harmony Flat (180 acres), Harts Point (18,860 acres), Hatch/Lockhart/Hart (1,520 acres), Indian Creek (10,020 acres), Red Rock Plateau (15,480 acres), Shay Mountain (5,380 acres), Squaw and Papoose Canyon (3,570 acres), Upper Red Canyon (9,550 acres), and White Canyon (1,170 acres). In all, 111,510 acres within non-WSA lands with wilderness characteristics, or 19% of the non-WSA lands are within moderate to high potential areas for uranium/vanadium occurrence.

Future development of this resource is expected to occur within the historic mining districts, and currently there are over 7,000 mining claims for this resource, many within the non-WSA lands with wilderness characteristics within the Monticello FO. If new mining development occurs within these areas, direct loss of wilderness characteristics would be unavoidable due to major surface-disturbing activities. To date, there has been no new activity associated with the existing claims within the non-WSA lands. New mining claims are filed continually, however, and changes could occur that would impact lands with wilderness characteristics by denuding vegetation, moving soils, and disrupting the naturalness of the area. It would also create loss of primitive recreation activities and solitude for those areas where new mining activities may occur. For purposes of analysis, it is assumed that development for uranium/vanadium mining could occur anywhere within the moderate to high development potential areas in the historic mining districts.

4.3.8.5.3.2. Alternative A

There are two non-WSA lands with wilderness characteristics within historic mining districts for uranium/vanadium, totaling 4,280 acres, which intersect with proposed mineral withdrawals:

- 390 acres of the Gooseneck non-WSA wilderness characteristics area
- 3,890 acres of the Indian Creek non-WSA wilderness characteristics area

The proposed mineral withdrawals would preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of these areas by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining in those areas. However, if mining claims currently exist in these areas, wilderness characteristics could be at risk of development for uranium/vanadium mining as described in Section 4.3.8.5.3.1, Locatable Minerals - Impacts Common To All Alternatives.

4.3.8.5.3.3. Alternative B

Three non-WSA lands with wilderness characteristics areas within historic mining districts for uranium/vanadium, totaling 13,505 acres, intersect with proposed mineral withdrawals:

- 3,330 acres of the Gooseneck non-WSA wilderness characteristics area
- 155 acres of the Harts Point non-WSA wilderness characteristics area
- 10,020 acres of the Indian Creek non-WSA wilderness characteristics area

The proposed mineral withdrawals would preserve the naturalness and opportunities for both solitude and primitive forms of recreation by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining in those areas. However, if mining claims currently exist in these areas, wilderness characteristics could be at risk of development for uranium/vanadium mining as described in Section 4.3.8.5.3.1, Impacts Common To All Alternatives.

4.3.8.5.3.4. Alternative C

Same impacts as Alternative A because management decisions are the same.

4.3.8.5.3.5. Alternative D

None of the proposed withdrawals under this alternative would intersect with non-WSA lands with wilderness characteristics within the historic mining districts for uranium/vanadium. All non-WSA lands within the historic mining areas could be claimed and mined. If new mining development occurs within these areas, direct loss of wilderness characteristics would be unavoidable due to major surface-disturbing activities.

4.3.8.5.3.6. Alternative E

All non-WSA lands with wilderness characteristics would be proposed for mineral withdrawal under this alternative. However, uranium/vanadium mining claims currently exist in the majority of the historic mining districts and are valid existing rights. If new mining development occurs within these areas, direct loss of wilderness characteristics would be unavoidable due to major surface-disturbing activities.

4.3.8.6. Impacts of Non- WSA Lands with Wilderness Characteristics Decisions on Non-WSA Lands with Wilderness Characteristics

There are 29 areas, outside of existing WSAs, totaling 582,360 acres, in the Monticello PA that were inventoried and found to have wilderness characteristics. See Table 3.19 for a list of areas by name and acreage with non-WSA wilderness characteristics and Map 28 for locations and names of non-WSA wilderness characteristics lands.

4.3.8.6.1. Alternatives A, B, C, and D

Under these alternatives, there are no specific actions prescribed to directly protect or enhance the naturalness and opportunities for solitude or primitive recreation in the non-WSA wilderness characteristics lands. Thus, there are no specific management decisions for non-WSA lands to protect the natural character, wilderness values, or opportunities for solitude or primitive recreation of the non-WSA lands with wilderness characteristics.

4.3.8.6.2. ALTERNATIVE E

Under Alternative E, all non-WSA lands with wilderness characteristics would be managed by the following decisions:

- VRM Class I objectives
- Closed to commercial or personal woodland harvest
- Closed to OHV use
- Retain lands in public ownership
- ROW exclusion areas
- Proposed for withdrawal from locateable mineral entry
- Closed to mineral leasing
- Closed to disposal of mineral materials

These decisions would prevent surface disturbances that would degrade the natural character of the non-WSA wilderness lands, prevent surface disturbances and uses that would be incompatible with primitive recreation activities, and protect the setting needed to support the experience of solitude. These management decisions would protect the natural character of all of the non-WSA wilderness lands, and maintain the opportunities for solitude or primitive recreation that exists within these areas.

4.3.8.7. IMPACTS OF PALEONTOLOGICAL RESOURCE DECISIONS ON NON- WSA LANDS WITH WILDERNESS CHARACTERISTICS

Paleontology decisions common to all alternatives provide for mitigation of impacts to fossils resulting from BLM-authorized activities, interpretation of fossils, collection of common invertebrate and plant fossils, and protection of significant vertebrate and invertebrate fossils. As with cultural resources, knowing more about the paleontological resources of the area, interpreting the resource in an appropriate fashion, viewing fossil sites in the non-WSA lands with wilderness characteristics, and protecting significant fossils from collection or damage would add to the enjoyment of these areas for primitive recreational purposes. Protection of fossils would add to the character of the setting that supports these recreational opportunities. However, collection of even common invertebrate fossils, while providing a primitive recreational experience, would remove an element of the natural landscape.

4.3.8.8. IMPACTS OF RECREATION DECISIONS ON WSA LANDS WITH WILDERNESS CHARACTERISTICS

4.3.8.8.1. SPECIAL RECREATION MANAGEMENT AREAS (SRMAS)

4.3.8.8.1.1. Alternative A

Three existing SRMAs overlie all or portions of 13 non-WSA lands with wilderness characteristics. All other non-WSA wilderness lands would be managed as an Extensive Recreation Management Area (ERMA).

San Juan River SRMA: A portion (4,240 acres) of the San Juan River non-WSA land with wilderness characteristics lies within the San Juan River SRMA. The SRMA is more than double

the size of the non-WSA, and the primary objective for management of this scenic area is for outstanding recreational opportunities and visitor experience for back-country river running, camping, and cultural appreciation. Management under this alternative allows for motorized boating, 40,000 user days per year, restricted camping areas along the river, and vehicle camping in the uplands. Portions of the SRMA would be open to leasing under standard stipulations and under NSO, and a portion would be recommended for locatable mineral withdrawal. The area would be a mixture of open, closed, and limited OHV use. The SRMA would remain closed to woodland product harvest. The SRMA management would partially protect the natural landscape and opportunities for solitude and primitive forms of recreation in that portion of the San Juan non-WSA that overlies the SRMA, but would disrupt the opportunity for solitude and primitive recreation along the river due to motorized boat noise and the number of user days per year allowed on the river. Motorized vehicle activity, especially cross-county driving, would reduce the naturalness of the area and allow for disruption of the opportunities for solitude and primitive recreation when vehicles are in the vicinity. Some areas would remain open for surface disturbance associated with leasing activity which, if leased and developed, could cause loss of naturalness within the non-WSA land.

Canyon Basin SRMA: This 214,390-acre SRMA envelopes portions of the Bridger Jack Mesa (22,380 acres), Butler Wash (1,530 acres), Dark Canyon (52,290 acres), Harts Point (14,070 acres), Indian Creek (14,750 acres), and Shay Mountain (6,450 acres) non-WSA lands with wilderness characteristics. The purpose of this large SRMA is to provide outstanding recreational opportunities and experiences. Management allows for creating designated parking areas for rock climbers and firewood cutting. There are no group limits or group size limits and the majority of the area is open to dispersed camping and vehicle use, including dispersed camping in many areas along the Indian Creek Corridor. Detailed management for this SRMA is not proposed that would protect or enhance the wilderness characteristics of these areas. In fact, allowing for no group size limits or group limits and allowing dispersed vehicle camping throughout the SRMA would detract from the solitude and primitive recreation experiences of the non-WSA lands. Surface-disturbing activities such as development of new parking areas or cutting firewood would eliminate or detract from the naturalness of the area.

Cedar Mesa SRMA: There are 109,700 acres in six non-WSA lands with wilderness characteristics that overlie the Cedar Mesa SRMA (in the other RMP alternatives the name is changed to the Grand Gulch SRMA). This includes 640 acres in Comb Ridge, 23,560 acres in Fish and Owl Creeks, 54,970 acres in Grand Gulch, 5,560 acres in Lime Creek, 11,290 acres in Road Canyon, and 13,670 acres in Valley of the Gods non-WSA lands with wilderness characteristics. This is all of the acreage in Lime Creek and Valley of the Gods and almost all acreage in Fish and Owl Creeks, Grand Gulch and Road Canyon non-WSAs. The objective for management of this SRMA is to provide outstanding recreational opportunities and visitor experience to engage in back-country, front-country and rural cultural appreciation recreation. Management includes restrictions on numbers of visitors, commercial uses and numbers, and equestrian use in certain areas of the SRMA, as well as restrictions on camping and limits of days and people. There are numerous implementation-level decisions included in the management prescriptions for this SRMA, the most salient, and the ones most affecting wilderness characteristics being:

- Open to commercial and/or private firewood cutting
- No limits on recreation day-use permits

- Mesa Top Day Use, no group size limits
- On Mesa Top Overnight Camping, open to dispersed camping with no group size limit
- In Canyons for Day Use, private and commercial group size limit of 12, including stock trips
- In Canyon for Day Use, no limit on numbers of parties for private or commercial use per day per trailhead
- In Canyons Overnight Camping, group size limit of 12
- In Canyons Overnight Camping, commercial trips limited to one per day per trailhead
- Trailhead allocations range from 22 -26 overnight visitors per day

These prescriptions would affect the non-WSA lands with wilderness characteristics primarily due to the numbers of people, group size limits, and commercial activities allowed to occur in this SRMA under this alternative. The opportunities for solitude and primitive recreation would be diminished because a person seeking that experience would, inevitably, meet other people, groups, and commercial outfitting and stock activities. In addition, allowing private and commercial woodcutting within these areas would deter from the naturalness of the area by leaving cross-county vehicle tracks, tree stumps and litter from cutting limbs. The noise associated with chain saws and vehicles would, temporarily impact the opportunities for solitude, as well.

None of the other non-WSA lands with wilderness characteristics are within SRMAs under this alternative, therefore, there would be no recreation management objectives or focus within those areas. Because these lands are not within a managed SRMA with specific recreation objectives, they would be vulnerable to surface-disturbing uses including commercial permitting activities, special recreation permits, new road construction, and other activities that could impact the natural values and primitive recreational opportunities and solitude that currently exist in those areas.

4.3.8.8.1.2. Alternative B

Five SRMAs would be designated that overlie all or portions of 16 non-WSA lands with wilderness characteristics. All other non-WSA lands would be managed as an ERMA.

San Juan River SRMA: A portion (4,120 acres) of the San Juan River non-WSA land with wilderness characteristics lies within the 10,203-acre San Juan River SRMA. The primary objective for management of this scenic area is for outstanding recreational opportunities and visitor experience for back-country river running, camping, and cultural appreciation. Management under this alternative allows for no motorized boating, 30,000 user days per year, restricted camping areas along the river, restricted vehicle camping in the uplands, leasing subject to NSO stipulations. The area is closed to mineral disposal and recommended for locatable mineral withdrawal. The SRMA would be closed to OHV use in some areas and limited to designated routes in others. The area would remain closed to woodland product harvest. The SRMA management would protect the natural landscape and opportunities for solitude and primitive forms of recreation in that portion of the San Juan non-WSA that overlies the SRMA. Compared to Alternative A, motorized boating would be prohibited and user days would be reduced by 10,000. This would allow for greater opportunities to experience solitude and primitive recreation. Vehicle use on designated routes would disrupt the opportunities for solitude and primitive recreation when vehicles are in the vicinity, but opportunities would return

when the vehicle noise has subsided. Surface-disturbing activities associated with minerals would not be allowed, thereby protecting and enhancing the wilderness characteristics of the area.

Indian Creek SRMA: This 89,271-acre SRMA (formerly a portion of the Canyon Basins SRMA in Alternative A) encompasses portions of four non-WSA lands with wilderness characteristics totaling 47,390 acres: Bridger Jack Mesa (22,780 acres), Harts Point (8,970 acres), Indian Creek (12,980 acres), and Shay Mountain (960 acres). Management prescriptions provide for the SRMA to be closed to commercial and private firewood cutting and only allows vehicle camping in designated sites only. The majority of use within this SRMA is outside of the non-WSA lands with wilderness characteristics, although some rock climbing does occur. Closing the area to private or commercial firewood cutting would protect the naturalness of the area and would not allow for noise and activities associated with this action. Allowing camping only in designated sites would focus vehicle camping to specific areas where disturbance has already occurred and not allow for new surface disturbance, thereby protecting the naturalness of the non-WSA lands.

Dark Canyon SRMA: This 30,820-acre SRMA (formerly a portion of the Canyon Basins SRMA) encompasses small portions of the Dark Canyon (1,563 acres) and Gravel and Long Canyon (220 acres) non-WSA lands with wilderness characteristics. Group size limits include 10 people in a private party and 12 people in a commercial party. Only one commercial trip per week is allowed and no more that 15 private users per day would be allowed. Camping would only be allowed in designated sites. The SRMA is closed to private or commercial firewood cutting which would protect the naturalness of the non-WSA lands. Because the topography is rough with numerous canyons bisecting the SRMA, and the limits on private and commercial use is low, the potential to experience solitude and a primitive recreation experience is high. Closing the area to firewood cutting would protect its naturalness. In addition, designating camping areas would also protect the SRMA from additional surface-disturbing activity, thereby protecting the naturalness of the non-WSA lands.

Grand Gulch Plateau SRMA: There are 109,700 acres in six non-WSA lands with wilderness characteristics that overlie the Grand Gulch Plateau SRMA (formerly the Cedar Mesa SRMA). This includes 640 acres in Comb Ridge, 23,560 acres in Fish and Owl Creeks, 54,980 acres in Grand Gulch, 5,560 acres in Lime Creek, 11,290 acres in Road Canyon, and 13,670 acres in Valley of the Gods non-WSA lands with wilderness characteristics. This is all of the acreage in Lime Creek and Valley of the Gods and almost all acreage in Fish and Owl Creeks, Grand Gulch and Road Canyon non-WSAs. The objective for management of this SRMA is to provide outstanding recreational opportunities and visitor experience to engage in back-country, front-country and rural cultural appreciation recreation. Management includes restrictions on numbers of visitors, commercial uses and numbers, and equestrian use in certain areas of the SRMA, as well as restrictions on camping and limits of days and people. There are numerous planning- and implementation-level decisions included in the management prescriptions for this SRMA, the most salient, and the ones most affecting wilderness characteristics being:

- Closed to commercial and/or private firewood cutting
- Available for watershed, range, and wildlife improvements and vegetation treatments
- 25 person limit on recreation day-use permits
- Mesa Top Day Use, 10 person group size limits

- On Mesa Top Overnight Camping, designated primitive campsites, with group size limit of 12
- In Canyons for Day Use, private and commercial group size limit of 10, one commercial group allowed every other day, no stock trips allowed in canyon
- In Canyons Overnight Camping, group size limits of 6 for private and 10 for commercial; commercial trips limited to one per day per trailhead
- Trailhead allocations are all 16 overnight visitors per day

These prescriptions would affect the non-WSA lands with wilderness characteristics primarily due to the numbers of people, group size limits, and commercial activities allowed to occur in this SRMA under this alternative. Compared to Alternative A, the opportunities for solitude and primitive recreation would be augmented because a person seeking that experience would meet fewer people, groups, and commercial outfitting and stock activities. Closing the area to woodcutting activities would maintain the naturalness of the non-WSAs. Impacts to naturalness could occur, however, depending on the types of watershed, range, wildlife or vegetation treatments that would be implemented in these areas. If by biological, chemical, or fire methods, the area would have temporary visual impacts, but surface disturbance would be limited and the treatments would have a natural appearance. If by mechanical methods, surface disturbance would be evident and visual imprints of man would be apparent. During the time of the activities, the opportunities for solitude and primitive recreation would be temporarily affected due to noise and human activities in the area.

White Canyon SRMA: This 2,828-acre SRMA encompasses small portions of four non-WSA lands with wilderness characteristics: 400 acres in Cheesebox Canyon, 1,258 acres in Fort Knocker Canyon, 430 acres in Gravel and Long Canyon, and 960 acres in Sheep Canyon. Management would exclude the area from private or commercial firewood cutting, which would protect its naturalness values. Primitive campgrounds would be developed at Soldier and Gravel Crossings and implementation-level actions such as packing out human waste and requiring fire pans would be enacted. Developing primitive campgrounds would reduce the naturalness of those areas.

None of the other non-WSA lands with wilderness characteristics are within SRMAs under this alternative, therefore, there would be no recreation management objectives or focus within those areas. Because these lands are not within a managed SRMA with specific recreation objectives, they would be vulnerable to surface-disturbing uses including commercial and special recreation permit activities, new road construction, and other uses that could impact the natural values and primitive recreational opportunities and solitude that currently exist in those areas.

4.3.8.8.1.3. Alternative C

Five SRMAs would be designated that overlie all or portions of 16 non-WSA lands with wilderness characteristics. All other non-WSA lands would be managed as an ERMA.

San Juan River SRMA: A portion (3,810 acres) of the San Juan River non-WSA land with wilderness characteristics lies within the 9,859-acre San Juan River SRMA. The primary objective for management of this scenic area is for outstanding recreational opportunities and visitor experience for back-country river running, camping, and cultural appreciation. Management under this alternative allows for motorized boating, 40,000 user days per year,

restricted camping areas along the river, restricted vehicle camping in the uplands and leasing subject to NSO stipulations. The area is closed to mineral disposal and recommended for locatable mineral withdrawal. The SRMA would be closed to OHV use in some areas and limited to designated routes in others. The area would remain closed to woodland product harvest. The SRMA management would partially protect the natural landscape and opportunities for solitude and primitive forms of recreation in that portion of the San Juan non-WSA that overlies the SRMA. Like Alternative A, motorized boating would be allowed on the river, and 40,000 user days would be permitted. This could impact the opportunity for solitude and primitive recreation by having so much human activity on the river, as well as noise from motorized boat engines. Like Alternative B, surface-disturbing activities associated with minerals would be precluded, protecting the natural values of this area. In addition, fewer non-WSA lands would be protected because the SRMA would be smaller than Alternative B and the non-WSA acreage overlying it would be reduced by 310 acres.

Dark Canyon SRMA: This 30,820-acre SRMA (formerly a portion of the Canyon Basins SRMA) encompasses small portions of the Dark Canyon (1,563 acres) and Gravel and Long Canyon (220 acres) non-WSA lands with wilderness characteristics. Group size limits include 15 people in a private party and 15 people in a commercial party. Three commercial trips per week are allowed and no more than 20 private users per day would be allowed. Camping would only be allowed in designated sites. The SRMA is closed to private or commercial firewood cutting which would protect the naturalness of the non-WSA lands. Although an increased level of human use would be allowed in this area from Alternative B, because the topography is rough with numerous canyons bisecting the SRMA the potential to experience solitude and a primitive recreation experience is high, even with the increased level of human use. In addition, designating camping areas would also protect the SRMA from additional surface-disturbing activity, thereby protecting the naturalness of the non-WSA lands.

Indian Creek SRMA: This 89,271-acre SRMA (formerly a portion of the Canyon Basins SRMA in Alternative A) encompasses portions of four non-WSA lands with wilderness characteristics totaling 47,390 acres: Bridger Jack Mesa (22,780 acres), Harts Point (8,970 acres), Indian Creek (12,980 acres), and Shay Mountain (960 acres). Management prescriptions would be the same as in Alternative B except that some dispersed vehicle camping would be allowed in some areas along the Indian Creek corridor and designated to specific sites in other areas. Dispersed vehicle camping allows for new surface disturbance as vehicles pull off routes and establish new camp sites. This would detract from the naturalness of the non-WSA lands if the dispersed camping happened within them. Otherwise, the analysis would be the same as Alternative B.

Grand Gulch Plateau SRMA: There are 109,700 acres in six non-WSA lands with wilderness characteristics that overlie the Grand Gulch Plateau SRMA (formerly the Cedar Mesa SRMA). This includes 640 acres in Comb Ridge, 23,560 acres in Fish and Owl Creeks, 54,980 acres in Grand Gulch, 5,560 acres in Lime Creek, 11,290 acres in Road Canyon, and 13,670 acres in Valley of the Gods non-WSA lands with wilderness characteristics. This is all of the acreage in Lime Creek and Valley of the Gods and almost all acreage in Fish and Owl Creeks, Grand Gulch and Road Canyon non-WSAs. The objective for management of this SRMA is to provide outstanding recreational opportunities and visitor experience to engage in back-country, front-country and rural cultural appreciation recreation. Management includes restrictions on numbers of visitors, commercial uses and numbers, and equestrian use in certain areas of the SRMA, as

well as restrictions on camping and limits of days and people. There are numerous planning and implementation-level decisions included in the management prescriptions for this SRMA, the most salient, and the ones most affecting wilderness characteristics being:

- Open to commercial and/or private firewood cutting
- Available for watershed, range, and wildlife improvements and vegetation treatments
- 25 person limit on recreation day-use permits
- Mesa Top Day Use, 12 person group size limits
- On Mesa Top Overnight Camping, designated primitive campsites, with group size limit of 24
- In Canyons for Day Use, private and commercial group size limit of 12, one commercial group allowed each day, no stock trips in canyons, elsewhere stock limited to 8 animals
- In Canyons Overnight Camping, group size limits of 8 for private and 12 for commercial; commercial trips limited to one per day per trailhead
- Trailhead allocations are all 20 overnight visitors per day

Similar to Alternative A, these prescriptions would affect the non-WSA lands with wilderness characteristics primarily due to the numbers of people, group size limits, and commercial activities allowed to occur in this SRMA under this alternative. The opportunities for solitude and primitive recreation would be diminished because a person seeking that experience would, inevitably, meet other people, groups, and commercial outfitting and stock activities. In addition, allowing private and commercial woodcutting within these areas would deter from the naturalness of the area by leaving cross-county vehicle tracks, tree stumps and litter from cutting limbs. The noise associated with chain saws and vehicles would temporarily impact the opportunities for solitude, as well. Impacts to naturalness could also occur depending on the types of watershed, range, wildlife or vegetation treatments that would be implemented in the non-WSA lands. If by biological, chemical, or fire methods, the area would have temporary visual impacts, but surface disturbance would be limited and the treatments would have more of a natural appearance. If by mechanical methods, surface disturbance would be evident and visual imprints of humans would be apparent. During the time of the activities, the opportunities for solitude and primitive recreation would be temporarily affected due to noise and human activities in the area.

White Canyon SRMA: Generally the same impacts as Alternative B.

None of the other non-WSA lands with wilderness characteristics are within SRMAs under this alternative, therefore, there would be no recreation management objectives or focus within those areas. Because these lands are not within a managed SRMA with specific recreation objectives, they would be vulnerable to surface-disturbing uses including commercial and special recreation permit activities, new road construction, and other uses that could impact the natural values and primitive recreational opportunities and solitude that currently exist in those areas.

4.3.8.8.1.4. Alternative D

Five SRMAs would be designated that overlie all or portions of 16 non-WSA lands with wilderness characteristics. All other non-WSA lands would be managed as an ERMA.

San Juan River SRMA: A portion (1,960 acres) of the San Juan River non-WSA land with wilderness characteristics lies within the 3,365-acre San Juan River SRMA. The primary objective for management of this scenic area is for outstanding recreational opportunities and visitor experience for back-country river running, camping, and cultural appreciation. Management under this alternative allows for motorized boating, 45,000 user days per year, some restricted camping areas along the river, some restricted vehicle camping in the uplands, and leasing subject to NSO stipulations. The area is closed to mineral disposal and recommended for locatable mineral withdrawal. The SRMA would be closed to OHV use in some areas and limited to designated routes in others. The area would remain closed to woodland product harvest. Impacts of this SRMA alternative on the San Juan River non-WSA lands would be the same as Alternative C except that even more visitor days would be permitted on the river, further detracting from the opportunities of solitude and primitive recreation. In addition, fewer non-WSA lands would be protected because the SRMA would be smaller than Alternative B and the non-WSA acreage overlying it would be reduced by 2,160 acres.

Dark Canyon SRMA: This 30,820-acre SRMA (formerly a portion of the Canyon Basins SRMA) encompasses small portions of the Dark Canyon (1,563 acres) and Gravel and Long Canyon (220 acres) non-WSA lands with wilderness characteristics. Group size limits include 15 people in a private party and 15 people in a commercial party. Seven commercial trips per week would be allowed and there would be no limits on private users per day. Dispersed camping would be allowed within the canyons and mesa tops. The SRMA is closed to private or commercial firewood cutting, which would protect the naturalness of the non-WSA lands. This alternative provides for the most amount of human use. This increased use could impact the opportunity for solitude and primitive recreation due to interaction with other uses – either private or commercial. In addition, allowing for dispersed camping throughout the area could impact the naturalness of the area by creating new surface disturbances, including from campfire rings and crushed vegetation.

Indian Creek SRMA: This 89,271-acre SRMA (formerly a portion of the Canyon Basins SRMA in Alternative A) encompasses portions of four non-WSA lands with wilderness characteristics totaling 47,390 acres: Bridger Jack Mesa (22,780 acres), Harts Point (8,970 acres), Indian Creek (12,980 acres), and Shay Mountain (960 acres). Management prescriptions would be the same as in Alternative B except that some dispersed vehicle camping would be allowed throughout the Indian Creek corridor. Dispersed vehicle camping allows for new surface disturbance as vehicles pull off routes and establish new camp sites. This would detract from the naturalness of the non-WSA lands if the dispersed camping happened within them. Otherwise, the analysis would be the same as Alternative B.

Grand Gulch Plateau SRMA: There are 109,700 acres in six non-WSA lands with wilderness characteristics that overlie the Grand Gulch Plateau SRMA (formerly the Cedar Mesa SRMA). This includes 640 acres in Comb Ridge, 23,560 acres in Fish and Owl Creeks, 54,980 acres in Grand Gulch, 5,560 acres in Lime Creek, 11,290 acres in Road Canyon, and 13,670 acres in Valley of the Gods non-WSA lands with wilderness characteristics. This is all of the acreage in Lime Creek and Valley of the Gods and almost all acreage in Fish and Owl Creeks, Grand Gulch and Road Canyon non-WSAs. The objective for management of this SRMA is to provide outstanding recreational opportunities and visitor experience to engage in back-country, front country and rural cultural appreciation recreation. Management includes restrictions on numbers of visitors, commercial uses and numbers, and equestrian use in certain areas of the SRMA, as

well as restrictions on camping and limits of days and people. There are numerous planning- and implementation-level decisions included in the management prescriptions for this SRMA, the most salient, and the ones most affecting wilderness characteristics being:

- Open to commercial and/or private firewood cutting
- Available for watershed, range, and wildlife improvements and vegetation treatments
- 25 person limit on recreation day-use permits
- Mesa Top Day Use, 12 and 25 person group size limits
- On Mesa Top Overnight Camping, no designated campsites for groups less than 24, no group size limit, campsite facility development allowed
- In Canyons for Day Use, private and commercial group size limit of 12, two commercial groups allowed each day, no stock trips in canyons, elsewhere no stock limits on numbers of animals
- In Canyons Overnight Camping, group size limits of 12 for private and 12 for commercial; commercial trips limited to one per day per trailhead
- Trailhead allocations are all 24 overnight visitors per day.

This alternative provides for the greatest amount of human and stock use of all alternatives within this SRMA and would have the largest impact on solitude and primitive recreation opportunities due to the numbers of people, group size limits, and commercial activities allowed. This alternative provides for the greatest probability of encountering other humans, stock animals, and evidence of human activity. Large group size and commercial activities, along with potential campsite facility development; private and commercial firewood cutting; and watershed, range, wildlife, and vegetation improvement/treatments could all affect the naturalness and opportunities for solitude and primitive recreation. This is because of human encounters and surface-disturbing activities. A person seeking solitude would, inevitably, encounter other people, groups, and commercial outfitting and stock activities. In addition, allowing private and commercial woodcutting within these areas would deter from the naturalness of the area by leaving cross-county vehicle tracks, tree stumps and litter from cutting limbs. The noise associated with chain saws and vehicles would temporarily impact the opportunities for solitude, as well. Impacts to naturalness could also occur depending on the types of watershed, range, wildlife or vegetation treatments that would be implemented in the non-WSA lands. If by biological, chemical, or fire methods, the area would have temporary visual impacts, but surface disturbance would be limited and the treatments would have more of a natural appearance. If by mechanical methods, surface disturbance would be evident and visual imprints of humans would be apparent. During the time of the activities, the opportunities for solitude and primitive recreation would be temporarily affected due to noise and human activities in the area.

White Canyon SRMA: Generally the same impacts as Alternative B.

None of the other non-WSA lands with wilderness characteristics are within SRMAs under this alternative, therefore, there would be no recreation management objectives or focus within those areas. Because these lands are not within a managed SRMA with specific recreation objectives, they would be vulnerable to surface-disturbing uses including commercial and special recreation permit activities, new road construction, and other uses that could impact the natural values and primitive recreational opportunities and solitude that currently exist in those areas.

4.3.8.8.1.5. Alternative E

Five SRMAs would be designated that overlie all or portions of 16 non-WSA lands with wilderness characteristics. All other non-WSA lands would be managed as an ERMA.

San Juan River SRMA: A portion (4,120 acres) of the San Juan River non-WSA land with wilderness characteristics lies within the 10,203-acre San Juan River SRMA. The primary objective for management of this scenic area is for outstanding recreational opportunities and visitor experience for back-country river running, camping, and cultural appreciation. Management under this alternative would be the same as in Alternative B except that non-WSA lands would be closed to OHV use. The analysis would be the same as in Alternative B except that opportunities for solitude and primitive recreation would be enhanced because the presence and noise of OHVs would be precluded.

Indian Creek SRMA: The analysis would be the same as in Alternative B, except that vehicle camping would not be allowed within the non-WSA lands and opportunities for solitude and primitive recreation would be enhanced because the presence and noise of OHVs would be precluded.

Dark Canyon SRMA: Same impacts as Alternative B.

Grand Gulch Plateau SRMA: There are 109,700 acres in six non-WSA lands with wilderness characteristics that overlie the Grand Gulch Plateau SRMA (formerly the Cedar Mesa SRMA). This includes 640 acres in Comb Ridge, 23,560 acres in Fish and Owl Creeks, 54,980 acres in Grand Gulch, 5,560 acres in Lime Creek, 11,290 acres in Road Canyon, and 13,670 acres in Valley of the Gods non-WSA lands with wilderness characteristics. This is all of the acreage in Lime Creek and Valley of the Gods and almost all acreage in Fish and Owl Creeks, Grand Gulch and Road Canyon non-WSAs. The objective for management of this SRMA is to provide outstanding recreational opportunities and visitor experience to engage in back-country, front country and rural cultural appreciation recreation. Management includes restrictions on numbers of visitors, commercial uses and numbers, and equestrian use in certain areas of the SRMA, as well as restrictions on camping and limits of days and people. There are numerous planning- and implementation-level decisions included in the management prescriptions for this SRMA, the most salient, and the ones most affecting wilderness characteristics being:

- Closed to commercial and/or private firewood cutting
- Allows for maintenance of existing range improvements, but no new improvements would be constucted
- 25 person limit on recreation day-use permits
- Mesa Top Day Use, 10 person group size limits
- On Mesa Top Overnight Camping, designated primitive campsites, with group size limit of 12
- In Canyons for Day Use, private and commercial group size limit of 10, one commercial group allowed every other day, no stock trips allowed in canyon
- In Canyons Overnight Camping, group size limits of 6 for private and 10 for commercial; commercial trips limited to one per day per trailhead
- Trailhead allocations are all 16 overnight visitors per day

The analysis would be the same as for Alternative B except that further protection to the wilderness characteristics would be provided by precluding watershed, range and wildlife improvements and vegetation treatments on non-WSA lands with wilderness characteristics. Surface disturbance associated with such activities would be prohibited, thereby protecting the naturalness of the areas.

White Canyon SRMA: Same impacts as Alternative B.

None of the other non-WSA lands with wilderness characteristics are within SRMAs under this alternative, therefore, there would be no recreation management objectives or focus within those areas. Because these lands are not within a managed SRMA with specific recreation objectives, they would be vulnerable to surface-disturbing uses including commercial and special recreation permit activities, new road construction, and other uses that could impact the natural values and primitive recreational opportunities and solitude that currently exist in those areas.

4.3.8.8.2. Extensive Recreation Management Areas (ERMAs)

4.3.8.8.2.1. Alternative A

Dispersed camping would be allowed throughout the Monticello PA under this alternative and vehicle pull-offs to existing dispersed sites or to new dispersed sites would have no specified distance of disturbance off of routes. This would impact all non-WSA lands with existing routes, because new vehicle disturbances could ensue and the naturalness of the areas would be affected by new routes, crushed vegetation, compacted soil areas, fire rings, and other human disturbances.

Special Recreation Permits (SRPs) would only be required for commercial uses. There are no established criteria or numbers of people or group size limits for private parties. SRPs would be considered for off-route commercial events. All non-WSA lands are open for SRP consideration subject to site-specific NEPA analysis. SRPs could be considered throughout the non-WSA lands within the ERMA. Impacts to naturalness from off-road OHV events and other unregulated recreational activities, as well as impacts to opportunities for solitude and primitive recreation could be affected due to noise from vehicles and large groups throughout these areas. New routes could be created in the OHV open areas that would further degrade the wilderness characteristics of the non-WSA lands.

4.3.8.8.2.2. Alternative B

Dispersed camping would be allowed only in previously disturbed areas off designated routes under this alternative. This would protect the naturalness of the non-WSA lands with wilderness characteristics by not allowing for any new surface disturbance associated with vehicle camping.

SRPs would be required for groups of more than 25 people for day use and for groups of more than 15 people for overnight groups. SRPs would also be required for OHV groups of more than 15 motorized vehicles, camping groups with more than 10 vehicles or more than 50 people. All permitted use would be on designated routes. Commercial camping would be in designated areas and commercial motorized events would be limited to two groups of 12 vehicles per route per day. Special OHV events would be limited to 350 vehicles. Providing SRPs for numbers of people, vehicles, and events at set limitations allows the BLM to maintain control of activities on public lands and also allows the BLM to guide large groups and events to areas where there is

the least amount of conflict with or impacts to natural resources. Still, any SRPs provided in non-WSA lands have the potential to impact naturalness due to group camping activities and to affect opportunities for solitude and primitive recreation, depending on where the SRP has been issued or where an event is taking place. Most of these impacts would be short-term, however, and when the event is over, or the group leaves the area, the opportunities for solitude and primitive recreation would be present. Only allowing SRP events on designated routes provides for protection of the natural character of the non-WSA lands because new surface-disturbing vehicle activities would not be permitted.

4.3.8.8.2.3. Alternative C

Under this alternative, dispersed camping would be allowed throughout the Monticello FO within 150 feet of centerline off designated routes. This would impact all non-WSA lands with existing routes, because new vehicle disturbances could ensue and the naturalness of the areas would be affected by new routes, crushed vegetation, compacted soil areas, fire rings, and other human disturbances. However, limiting the disturbance to 150 feet concentrates use near an already disturbed linear intrusion (the route) and protects the naturalness of the non-WSA lands outside of the 150-foot corridor (300 feet wide total).

SRPs would be required for groups of more than 50 people for day use and for groups of more than 25 people for overnight groups. SRPs would also be required for OHV groups of more than 25 motorized vehicles, and camping groups with more than 15 vehicles or more than 50 people. All permitted use would be on designated routes. There would be no group or size limits on commercial use SRPs. Like Alternative B, providing SRPs for numbers of people, vehicles, and events at set limitations allows the BLM to maintain control of activities on public lands and also allows the BLM to guide large groups and events to areas where there is the least amount of conflict with or impacts to natural resources. However, number limits would be considerably higher under this alternative than under Alternative B, and therefore, there could be additional impacts from more people causing more surface disturbance. Any SRPs provided in non-WSA lands have the potential to impact naturalness due to group camping activities and to affect opportunities for solitude and primitive recreation, depending on where the SRP has been issued or where an event is taking place. Most of these impacts would be short-term, however, and when the event is over, or the group leaves the area, the opportunities for solitude and primitive recreation would be present. Only allowing SRP events on designated routes provides for protection of the natural character of the non-WSA lands because new surface-disturbing vehicle activities would not be permitted.

4.3.8.8.2.4. Alternative D

Under this alternative, dispersed camping would be allowed throughout the Monticello FO within 300 feet of centerline off designated routes. This would impact all non-WSA lands with existing routes, because new vehicle disturbances could ensue and the naturalness of the areas would be affected by new routes, crushed vegetation, compacted soil areas, fire rings, and other human disturbances. This alternative allows for the most potential disturbance from vehicle camping due to the width of the corridor allowing for off-road use and disturbance. However, limiting the disturbance to 300 feet concentrates use near an already-disturbed linear intrusion (the route), and protects the naturalness of the non-WSA lands outside of the 300-foot corridor (600 feet wide total).

SRPs would be required for groups of more than 75 people for day use and for groups of more than 50 people for overnight groups. SRPs would not be required for motorized vehicles (any numbers) on designed routes. Car camping groups of more than 20 vehicles or more than 50 people would require an SRP. Special OHV events would be limited to 350 vehicles. All permitted use would be on designated routes. There would be no group or size limits on commercial use SRPs. Providing SRPs for numbers of people, vehicles, and events at set limitations allows the BLM to maintain control of activities on public lands and also allows the BLM to guide large groups and events to areas where there is the least amount of conflict with or impacts to natural resources. This alternative, however, allows for the highest number limits for people, groups, and commercial activities before requiring an SRP. As a result, there could be additional impacts to wilderness characteristics lands from more people causing more surface disturbance. Any SRPs provided in non-WSA lands have the potential to impact naturalness due to group camping activities and to affect opportunities for solitude and primitive recreation, depending on where the SRP has been issued or where an event is taking place. Most of these impacts would be short-term, however, and when the event is over, or the group leaves the area, the opportunities for solitude and primitive recreation would be present. Only allowing SRP events on designated routes provides for protection of the natural character of the non-WSA lands because new surface-disturbing vehicle activities would not be permitted.

4.3.8.8.2.5. Alternative E

All routes in non-WSA lands with wilderness characteristics would be closed to vehicle use under this alternative; therefore, there would be no off-road vehicle travel for camping purposes into the non-WSA lands. This would protect the naturalness of the lands because no new surface-disturbing activities would be allowed, and existing disturbance would be provided an opportunity to rehabilitate.

SRPs would be required for groups and commercial activities at the same numbers as that of Alternative B. However, there would be no competitive mechanized or motorized events permitted in non-WSA lands with wilderness characteristics. All motorized activities would be precluded within non-WSA lands, thus, adverse impacts to solitude and primitive recreation from the noise and their presence would be eliminated. Other non-motorized, non-commercial activities may still be permitted within the non-WSA lands, however. They may temporarily impact opportunities for solitude and primitive recreation, but would be short-term. When the event is over, or the group leaves the area, the opportunities for solitude and primitive recreation would be present.

4.3.8.9. Impacts of Travel Management Decisions on Non- WSA Lands with Wilderness Characteristics

4.3.8.9.1. Off-Highway Vehicle (OHV) Travel Management

Table 4.69 portrays all of the non-WSA lands with wilderness characteristics and displays how OHV management would be applied under each alternative.

Table 4.69. OHV Management in non-WSA Lands with Wilderness Characteristics

Name	Total Acres	OHV Category	ALT A	ALT B	ALT C	ALT D	ALT E
Arch Canyon	50	open	50	0	0	0	0
		limited to designated	0	50	50	50	0
		closed	0	0	0	0	50
Bridger Jack Mesa	23,050	open	14,550	0	0	0	0
		limited to designated	6,790	22,380	22,360	23,050	0
		closed	1710	670	690	0	23,050
Butler Wash	1,660	open	90	0	0	0	0
		limited to designated	900	1,660	1,660	1,660	0
		closed	670	0	0	0	1,660
Cheesebox Canyon	13,240	open	4,840	0	0	0	0
		limited to designated	8,400	13,240	13,240	13,240	0
		closed	0	0	0	0	13,240
Comb Ridge	13,760	open	12,940	0	0	0	0
		limited to designated	820	13,760	13,760	13,760	13,760
		closed	0	0	0	0	0
Cross Canyon	1,350	open	1,350	0	0	0	0
		limited to designated	0	1,350	1,350	1,350	0
		closed	0	0	0	0	1,350
Dark Canyon	66,330	open	43,720	0	0	0	0
		limited to designated	21,660	66,330	66,330	66,330	0
		closed	950	0	0	0	66,330
Fish and Owl Creeks	24,650	open	550	0	0	0	0
		limited to designated	24,100	24,650	24,650	24,650	0
		closed	0	0	0	0	24,650
Fort Knocker Canyon	12,410	open	170	0	0	0	0
		limited to designated	12,240	12,410	12,410	12,410	0
		closed	0	0	0	0	12,410
Gooseneck	3,570	open	1,650	0	0	0	0
		limited to designated	1,920	3,570	3,570	3,570	0
		closed	0	0	0	0	3,570

Table 4.69. OHV Management in non-WSA Lands with Wilderness Characteristics

Name	Total Acres	OHV Category	ALT A	ALT B	ALT C	ALT D	ALT E
Grand Gulch	55,240	open	3,640	0	0	0	0
		limited to designated	43,110	55,210	55,210	55,240	0
		closed	8,490	0	30	0	55,240
Gravel and Long	36,890	open	0	0	0	0	0
		limited to designated	36,890	36,890	36,890	36,890	0
		closed	0	0	0	0	36,890
Hammond Canyon	4,700	open	2,590	0	0	0	0
		limited to designated	2,110	4,700	4,700	4,700	0
		closed	0	0	0	0	4,700
Harmony Flat	9,660	open	0	0	0	0	0
		limited to designated	9,660	9,660	9,660	9,660	0
		closed	0	0	0	0	9,660
Harts Point	24,740	open	10,410	0	0	0	0
		limited to designated	14,330	24,740	24,740	24,740	0
		closed	0	0	0	0	24,740
Hatch Lockhart Hart	1,760	open	1,760	0	0	0	0
		limited to designated	0	1,760	1,760	1,760	0
		closed	0	0	0	0	1,760
Indian Creek	23,280	open	12,250		20	20	0
		limited to designated	7,350	19,390	23,260	23,260	0
		closed	3,680	3,890	0	0	23,280
Lime Creek	5,560	open	30	0	0	0	0
		limited to designated	5,530	5,560	5,560	5,560	0
		closed	0	0	0	0	5,560
Mancos Mesa	61,570	open	4,760	0	0	0	0
		limited to designated	35,720	48,420	49,060	61,570	0
		closed	21,090	13,150	12,510	0	61,570
Nokai Dome	94,270	open	0	0	0	0	0
		limited to designated	82,730	81,670	81,890	94,270	0
		closed	11,540	12,600	12,380	0	94,270

Table 4.69. OHV Management in non-WSA Lands with Wilderness Characteristics

Name	Total Acres	OHV Category	ALT A	ALT B	ALT C	ALT D	ALT E
Red Rock Plateau	17,010	open	0	0	0	0	0
		limited to designated	17,010	17,010	17,010	17,010	0
		closed	0	0	0	0	17,010
Road Canyon	11,320	open	50	0	0	0	0
		limited to designated	11,050	11,320	11,320	11,320	0
		closed	220	0	0	0	11,320
San Juan River	14,340	open	9,230	0	0	0	0
		limited to designated	0	10,270	10,550	14,340	0
		closed	5,110	4,070	3,790	0	14,340
Shay Mountain	6,710	open	2,730	0	0	0	0
		limited to designated	3,980	6,710	6,710	6,710	0
		closed	0	0	0	0	6,710
Sheep Canyon	4,000	open	800	0	0	0	0
		limited to designated	3,200	4,000	4,000	4,000	0
		closed	0	0	0	0	4,000
Squaw and Papoose Canyons	3,570	open	3,570	0	0	0	0
		limited to designated	0	3,570	3,570	3,570	0
		closed	0	0	0	0	3,570
Upper Red Canyon	24,920	open	4,320	0	0	0	0
		limited to designated	20,600	24,920	24,920	24,920	0
		closed	0	0	0	0	24,920
Valley of the Gods	13,670	open	130	0	0	0	0
		limited to designated	13,540	13,670	13,670	13,670	0
		closed	0	0	0	0	13,670
White Canyon	9,080	open	4,420	0	0	0	0
		limited to designated	4,660	9,080	9,080	9,080	0
		closed	0	0	0	0	9,080

4.3.8.9.1.1. Alternative A

Under present management, cross-country motorized use is allowed for game retrieval and antler collection in areas open for motorized travel. The Monticello FO also has the discretion to authorize cross-country travel for any commercial or organized group events. These actions would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing new surface-disturbing activity from motorized vehicles, as well as conflict with solitude and primitive recreation experiences from the sights and sounds of vehicle travel.

Current management practices designate 140,600 acres in all or portions of 25 of the 29 non-WSA lands with wilderness characteristics as open to cross-country travel (see Table 4.69). Cross-country motorized travel in these non-WSA lands would result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities. Under this alternative, OHV use would be limited to designated routes on 388,390 acres within portions of 24 non-WSA lands with wilderness characteristics.

Current route inventories in the non-WSA lands have found approximately 410 miles of existing routes in 27 of the 29 non-WSAs:

- Bridger Jack Mesa – 27.97 miles
- Butler Wash – 2.60 miles
- Cheesebox Canyon – 2.28 miles
- Comb Ridge – 5.28 miles
- Cross Canyon – 1.78 miles
- Dark Canyon – 56.55 miles
- Fish and Owl Creeks – 26.53 miles
- Fort Knocker Canyon – 2.44 miles
- Gooseneck – 2.20 miles
- Grand Gulch – 60.49 miles
- Gravel and Long Canyon – 13.73 miles
- Harmony Flat – 1.88 miles
- Harts Point – 19.08 miles
- Hatch/Lockhart/Hart – 2.99 miles
- Indian Creek – 21.20 miles
- Lime Creek – 2.52 miles
- Mancos Mesa – 27.80 miles
- Nokai Dome – 55.98 miles
- Red Rock Plateau – 8.39 miles
- Road Canyon – 11.26 miles
- San Juan River – 10.65 miles
- Shay Mountain – 2.60 miles

- Sheep Canyon – 0.10 miles
- Squaw and Papoose Canyon – 10.17 miles
- Upper Red Canyon – 18.04 miles
- Valley of the Gods – 5.42 miles
- White Canyon – 10.01 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to existing routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity for visitors to find solitude in the non-WSA lands, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA lands.

Currently, there are no routes within the 4,700-acre Hammond Canyon or the 50-acre Arch Canyon non-WSA lands with wilderness characteristics. Because no routes would be designated in these areas, surface disturbance caused by motorized travel, and the resultant impacts to the natural character of the non-WSA lands, would not be evidenced. Further, because there would be no OHV use in these areas, the opportunities for solitude or conflict with primitive forms of recreation in these areas could not be reduced. The natural character and opportunities for solitude and primitive recreation of these non-WSA lands would be unaffected by OHV travel. While these two non-WSAs currently have no routes within them, Arch Canyon and over half of Hammond Canyon remain open to cross-country OHV travel and impacts to wilderness characteristics could occur if OHV users choose to engage in cross-country use.

There are also 53,370 acres in portions of nine non-WSA wilderness characteristics areas that are closed to OHV use. The naturalness of these areas and the opportunities for solitude and primitive recreation would be preserved because no surface disturbance from vehicle tracks or noise from this use within the closed non-WSA lands would ensue.

4.3.8.9.1.2. Impacts Common to Alternatives B, C, and D

Under Alternatives B, C, and D, vehicles must stay on designated routes. Game retrieval and antler collection must be done on foot and vehicles cannot go off designated roads for such activities. The Monticello FO would not authorize cross-country travel for any commercial or organized group events. All motorized routes not designated as open would be signed as closed. These actions would continue to preserve the natural character of the non-WSA lands with wilderness characteristics because no new surface-disturbing activity would be allowed from motorized vehicles.

4.3.8.9.1.3. Alternative B

Under this alternative, all non-WSA lands with wilderness characteristics would be limited to designated routes or closed (see Table 4.69). There would be approximately 258 miles of routes designated in the following non-WSA lands:

- Bridger Jack Mesa – 13.57 miles
- Butler Wash – 0.24 miles
- Cheesebox Canyon – 0.29 miles

- Comb Ridge – 1.66 miles
- Cross Canyon – 1.78 miles
- Dark Canyon – 38.60 miles
- Fish and Owl Creeks – 13.85 miles
- Fort Knocker Canyon – 0.92 miles
- Gooseneck – 2.20 miles
- Grand Gulch – 48.47 miles
- Gravel and Long Canyon – 8.20 miles
- Harmony Flat – 1.83 miles
- Harts Point – 8.61 miles
- Hatch/Lockhart/Hart – 2.99 miles
- Indian Creek – 12.81 miles
- Lime Creek – 2.13 miles
- Mancos Mesa – 11.62 miles
- Nokai Dome – 29.34 miles
- Road Canyon – 7.93 miles
- San Juan River – 6.67 miles
- Shay Mountain – 2.60 miles
- Sheep Canyon – 0.10 miles
- Squaw and Papoose Canyon – 10.17 miles
- Upper Red Canyon – 16.68 miles
- Valley of the Gods – 5.42 miles
- White Canyon – 9.23 miles

Reducing the miles of designated routes by 152 miles in 21 non-WSA lands from the inventoried routes (Alternative A) would help to reduce the impacts to solitude and primitive recreations by limiting motorized noise within these areas. Limiting OHV use to existing routes would confine soil and vegetation disturbance caused by motor vehicles to existing routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity for visitors to find solitude in the non-WSA lands, especially in proximity to the routes. And, motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA lands.

The most notable areas where there would be a substantial decrease in miles of routes would be in Bridger Jack Mesa, Dark Canyon, Fish and Owl Creeks, Grand Gulch, Harts Point, Indian Creek, Mancos Mesa, and Nokai Dome non-WSA lands with wilderness characteristics. In addition, two areas that would have designated routes under Alternative A would have none under Alternative B: Red Rock Plateau and Sheep Canyon non-WSAs. Because no routes would be designated in these areas, any new surface disturbance caused by motorized travel, and the resultant impacts to the natural character of the non-WSA lands, would not be evidenced. Further, because there would be no OHV use in these areas, the opportunities for solitude or conflict with primitive forms of recreation would be reduced and unaffected by OHV travel.

There are also 35,070 acres in portions of five non-WSAs that are closed to OHV use. The naturalness of these areas and the opportunities for solitude and primitive recreation would be preserved because no new surface disturbance from vehicle tracks or noise from this use within those portions of the closed non-WSA lands would ensue.

4.3.8.9.1.4. Alternative C

Under this alternative, all non-WSA lands with wilderness characteristics would be limited to designated routes or closed (see Table 4.69). In these areas, 348 miles of routes would be designated in the following non-WSA lands:

- Bridger Jack Mesa – 24.69 miles
- Butler Wash – 1.29 miles
- Cheesebox Canyon – 2.28 miles
- Comb Ridge – 1.92 miles
- Cross Canyon – 1.78 miles
- Dark Canyon – 43.92 miles
- Fish and Owl Creeks – 20.57 miles
- Fort Knocker Canyon – 1.23 miles
- Gooseneck – 2.20 miles
- Grand Gulch – 50.09 miles
- Gravel and Long Canyon – 8.30 miles
- Harmony Flat – 1.88 miles
- Harts Point – 11.38 miles
- Hatch/Lockhart/Hart – 2.99 miles
- Indian Creek – 19.72 miles
- Lime Creek – 2.13 miles
- Mancos Mesa – 26.83 miles
- Nokai Dome – 54.10 miles
- Red Rock Plateau – 7.87 miles
- Road Canyon – 7.93 miles
- San Juan River – 9.52 miles
- Shay Mountain – 2.60 miles
- Sheep Canyon – 0.10 miles
- Squaw and Papoose Canyon – 10.17 miles
- Upper Red Canyon – 17.2 miles
- Valley of the Gods – 5.42 miles
- White Canyon – 10.07 miles

Reducing the miles of designated routes by 62 miles in 19 non-WSA lands from the inventoried routes (Alternative A) would help to reduce the impacts to solitude and primitive recreation by limiting motorized noise within these areas. The most notable areas where there would be a substantial decrease in miles of routes are in Dark Canyon, Grand Gulch, and Harts Point non-

WSA lands with wilderness characteristics. Limiting OHV use to existing routes would confine soil and vegetation disturbance caused by motor vehicles to existing routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity for visitors to find solitude in the non-WSA lands, especially in proximity to the routes. And, motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA lands.

There are also 29,400 acres in portions of five non-WSAs that are closed to OHV use. The naturalness of these areas and the opportunities for solitude and primitive recreation would be preserved because no surface disturbance from vehicle tracks or noise from this use within those closed portions of the non-WSA lands would ensue.

Twenty acres in Indian Creek non-WSA lands with wilderness characteristics would remain open to cross-country vehicle use, as part of an open OHV play area designation. Cross-country motorized travel in this non-WSA would result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of this 20-acre area of non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities.

4.3.8.9.1.5. Alternative D

Under this alternative, OHV use would be limited to designated routes on all 582,360 acres within the 29 non-WSA lands with wilderness characteristics, except for 20 acres in the Indian Creek non-WSA, which would remain open to cross-country travel as part of an OHV play area (see Table 4.69).

All inventoried routes from Alternative A would be designated open for OHV use, resulting in 410 miles of designated routes in 27 of the 29 non-WSAs:

- Bridger Jack Mesa – 27.97 miles
- Butler Wash – 2.60 miles
- Cheesebox Canyon – 2.28 miles
- Comb Ridge – 5.28 miles
- Cross Canyon – 1.78 miles
- Dark Canyon – 56.55 miles
- Fish and Owl Creeks – 26.53 miles
- Fort Knocker Canyon – 2.44 miles
- Gooseneck – 2.20 miles
- Grand Gulch – 60.49 miles
- Gravel and Long Canyon – 13.73 miles
- Harmony Flat – 1.88 miles
- Harts Point – 19.08 miles
- Hatch/Lockhart/Hart – 2.99 miles
- Indian Creek – 21.20 miles
- Lime Creek – 2.52 miles

- Mancos Mesa – 27.80 miles
- Nokai Dome – 55.98 miles
- Red Rock Plateau – 8.39 miles
- Road Canyon – 11.26 miles
- San Juan River – 10.65 miles
- Shay Mountain – 2.60 miles
- Sheep Canyon – 0.10 miles
- Squaw and Papoose Canyon – 10.17 miles
- Upper Red Canyon – 18.04 miles
- Valley of the Gods – 5.42 miles
- White Canyon – 10.01 miles

Limiting OHV use would confine soil and vegetation disturbance caused by motor vehicles to existing routes, and result in no additional change to the natural character of the non-WSA lands. The presence and noise of vehicles using these routes, however, would reduce the opportunity for visitors to find solitude in the non-WSA lands, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA lands. There are two non-WSAs that have no routes in them: the 50-acre Arch Canyon and the 4,700-acre Hammond Canyon areas. Because no routes would be designated in these areas, surface disturbance caused by motorized travel, and the resultant impacts to the natural character of the non-WSA lands, would not be evidenced. Further, because there would be no OHV use in these areas, the opportunities for solitude or conflict with primitive forms of recreation in these areas would be protected.

Twenty acres in Indian Creek non-WSA lands with wilderness characteristics would remain open to cross-country vehicle use, as part of an open OHV play area designation. Cross-country motorized travel in this non-WSA would result in surface disturbance to soils and vegetation that would alter the landscape and diminish the natural character of this 20-acre area of non-WSA lands. Further, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and conflict with opportunities for primitive and unconfined recreation activities.

4.3.8.9.1.6. Alternative E

This alternative would designate all 582,360 acres of the 29 non-WSA lands with wilderness characteristic areas as closed to OHV use. Because these acres would be closed, no routes would be designated and surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA lands would not be evidenced. Further, because there would be no OHV use in these areas, there would be no conflicts with opportunities for solitude or primitive forms of recreation in these areas because noise and disturbance associated with OHV would be eliminated. The natural character and opportunities for solitude and primitive recreation of these non-WSA lands would be unaffected by OHV travel.

In summary, Alternative E would provide the most protection to the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics by closing all these lands to OHV travel, followed by Alternative B. In

Alternative B there would be no non-WSA lands with wilderness characteristics designated as open to cross-country OHV use. Non-WSA lands would be protected by restricting OHV use to designated routes (258 miles) on 94% of the non-WSA lands and closing the remainder to OHV use. Under Alternative C, 20 acres of non-WSA lands with wilderness characteristics would be designated as open to cross-country OHV use. The rest of the non-WSA lands would be protected by restricting OHV use to designated routes (348 miles) on 95% of the non-WSA lands and closing the remainder to OHV use. Alternative D also allows for cross-country OHV use on 20 acres of non-WSA lands and designates all inventoried routes as open for OHV use (410 miles). No areas would be closed to OHV use. Alternative A would continue to allow for cross-country OHV use on 25% of the non-WSA lands, limit use to designated or existing roués on 66% of the non-WSA lands, and close 9% to OHV use. Alternative A and D would provide the lowest level of protection. Although Alternative A provides some protection within closed OHV areas, it contains the most acres of open OHV use. Alternative D contains no closed OHV areas and would continue to allow open OHV use on 20 acres of the non-WSA lands with wilderness characteristics.

4.3.8.9.2. MECHANIZED RECREATIONAL TRAVEL (MOUNTAIN BIKES)

4.3.8.9.2.1. Alternative A

Areas currently open to motorized cross-country travel would continue to be open for cross-country mountain bike use. In non-WSA lands with wilderness characteristics, this would be the same as described under Alternative A under Section 4.3.8.9.1, Off-Highway Vehicle (OHV) Travel Management. Any new development of trails for mountain bikes in non-WSA lands would be in conflict with the primitive forms of trail use. If there were substantial levels of use on the trails (by foot, horse, and/or bike) in the non-WSA lands, the visitor's ability to find and experience solitude would be reduced.

4.3.8.9.2.2. Impacts Common to Alternatives B, C, and D

Under these action alternatives, mountain bikes would only be allowed on routes designated open for motorized use. Under all of the alternatives there are varying miles of projected routes that would be designated. If there were substantial levels of use on the trails (by OHV, foot, horse, and/or bike) in the non-WSA lands, the visitor's ability to find and experience solitude would be reduced. The change to the natural landscape, however, is expected to be minimal, however, because the routes are already established and no new surface disturbance is expected.

4.3.8.9.2.3. Alternative E

Non-WSA lands with wilderness characteristics would be closed to mountain bike use because no OHV routes would be designated for such use. This would protect and enhance the solitude and primitive recreation opportunities afforded in these non-WSA lands because fewer forms of recreation use would be allowed, and access to the non-WSA lands would be limited to non-mechanized users on foot or on horseback. This would potentially reduce the number of people experiencing the wilderness characteristic opportunities in these areas.

4.3.8.10. Impacts of Riparian Decisions on Non- WSA Lands with Wilderness Characteristics

All non-WSA lands with wilderness characteristics contain riparian ecosystems. The objective of riparian management is to manage riparian areas for properly functioning condition and to avoid or minimize loss or degradation of riparian areas, wetlands, and associated floodplains so as to preserve and enhance natural and beneficial values and provide for fish, wildlife and special status species habitats. Decisions to implement any of these objectives would improve the natural vegetation condition of non-WSA lands with wilderness characteristics, and thus its natural values. Improved riparian and wetland condition would enhance wildlife habitat, and thus, the natural values of non-WSA lands. Further, improved wildlife habitat would lead to increases in riparian-obligate wildlife species populations and opportunities for wildlife viewing. And, improved riparian and wetland condition would improve the setting for other primitive recreational opportunities, including hiking, camping, and nature study.

Under all alternatives, no surface disturbance would be permitted within active floodplains or within 100 meters of riparian areas. This protection would prevent soil and vegetation disturbances and placement of structures that would degrade the naturalness of non-WSA lands with wilderness characteristics. Protection of naturalness would preserve the setting needed to support opportunities for primitive forms of recreation and experiences of solitude.

Inventory of riparian areas not functioning or functioning at risk would result in the identification and implementation of measures to restore these areas to proper functioning condition, which would enhance the natural condition of the riparian portions of non-WSA lands with wilderness characteristics. Riparian zones are critical to the life cycles of many wildlife species (fish, amphibians, mammals, and birds). They are typically scenic and desired recreation settings. Maintenance and restoration of riparian zones would maintain and enhance opportunities for primitive recreation, including hiking, wildlife viewing, camping, nature study, fishing, and other activities dependent upon water courses and riparian ecosystems.

Closing unnecessary multiple social trails in the riparian area of Fish Creek within the Fish and Owl Creeks non-WSA lands would help protect the naturalness values of the wilderness characteristics lands by preventing additional surface disturbance.

4.3.8.11. Impacts of Soils/Watershed Decisions on Non- WSA Lands with Wilderness Characteristics

4.3.8.11.1. Alternative A

Under the No Action Alternative, where surface-disturbing actions are allowed in sensitive soil areas, there are no specific requirements for an erosion control strategy, approved survey and design, or slope restrictions for surface-disturbing activities on slopes between 21 and 40%. Depending on the type of surface-disturbing activities or the level of development or disturbance in these areas, naturalness values in non-WSA lands with wilderness characteristics could be impacted due to watershed issues associated with erosion problems.

4.3.8.11.2. Alternatives B, C, and D

Where surface-disturbing actions are allowed in sensitive soil areas, specific requirements for an erosion control strategy, approved survey and design, or slope restrictions for surface-disturbing

activities on steep slopes would be mandatory. Applying these requirements would help maintain natural values within these areas by mitigating potential erosion problems that could be created from permitted activities in these areas.

4.3.8.11.3. ALTERNATIVE E

No surface-disturbing activities on sensitive soils would be permitted within non-WSA lands with wilderness characteristics, thereby maintaining the natural values in these areas.

4.3.8.12. IMPACTS OF SPECIAL DESIGNATION DECISIONS ON NON- WSA LANDS WITH WILDERNESS CHARACTERISTICS

For the purposes of this section of the analysis, "special designations" include ACECs established under each alternative, rivers recommended eligible in Alternative A and suitable for inclusion in the National Wild and Scenic Rivers System under the four action alternatives, and wilderness study areas (WSAs) being managed to protect their wilderness characteristics under each alternative.

4.3.8.12.1. ALTERNATIVE A

4.3.8.12.1.1. Areas of Critical Environmental Concern (ACECs)

Of the 10 ACECs that would continue to be designated under this alternative to protect a variety of relevant and important values, seven ACECs would overlie portions of non-WSA lands with wilderness characteristics. Those ACECs are the Scenic Highway Corridor, Indian Creek, Butler Wash, Dark Canyon, Shay Canyon, Lavender Mesa and Cedar Mesa. The management prescriptions for these ACECs would generally provide protection to the naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands.

The Scenic Highway Corridor ACEC overlies portions of 13 non-WSA lands with wilderness characteristics totaling 38,580 acres: White Canyon (30 acres), Grand Gulch (7,935 acres), Comb Ridge (590 acres), Upper Red Canyon (915 acres), Harmony Flat (2,545 acres), Cheesebox Canyon (2,630 acres), Nokai Dome (3,140 acres), Mancos Mesa (5,260 acres), Fort Knocker Canyon (5,390 acres), Gravel and Long Canyon (6,350 acres), Road Canyon (420 acres), Fish and Owl Creeks (2,175 acres), and Valley of the God (1,200 acres) non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) reseeding with native vegetation; 2) NSO stipulation for oil and gas leasing; 3) retaining lands in public ownership; 4) managing to a VRM Class I objective; and 5) OHV use on designated roads and trails. All of these measures would help to protect and enhance the naturalness values by eliminating new surface-disturbing activities. OHV use on designated routes could temporarily interfere with opportunities for solitude and primitive recreation when OHVs are in the area. Although the ACEC would remain available for mineral materials disposal, this is a discretionary action that must meet VRM objectives, and thus is unlikely to occur within this area. The ACEC would also remain open to firewood cutting in specified areas which could detract from the naturalness of the non-WSA lands. It would also detract from the opportunities for solitude and primitive recreation when wood cutters are in the area due to chain saw noise, vehicle tracks, and evidence of surface disturbance. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred along these highway stretches, it could be at risk of

new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

Indian Creek ACEC overlies 3,900 acres of the Indian Creek non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) reseeding with native vegetation; 2) NSO stipulation for oil and gas leasing; 3) retaining lands in public ownership; 4) managing to a VRM Class I objective; and 5) closed to OHV use; 6) closed to mineral materials disposal; and 7) closed to commercial and personal firewood cutting. All of these measures would help to protect and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

Butler Wash ACEC overlies 40 acres of the Butler Wash non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) reseeding with native vegetation; 2) NSO stipulation for oil and gas leasing; 3) retaining lands in public ownership; 4) managing to a VRM Class I objective; and 5) closed to OHV use; 6) closed to mineral materials disposal; and 7) closed to commercial and personal firewood cutting. All of these measures would help to protect and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

Dark Canyon ACEC overlies 280 acres of the Dark Canyon non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) reseeding with native vegetation; 2) unavailable for oil and gas leasing; 3) retaining lands in public ownership; 4) managing to a VRM Class I objective; and 5) closed to OHV use; 6) closed to mineral materials disposal; 7) proposed for mineral withdrawal; and 8) closed to commercial and personal firewood cutting. All of these measures would help to protect and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities.

The Shay Canyon ACEC overlies 515 acres of the Harts Point and 1,022 of the Shay Mountain non-WSA lands with wilderness characteristics. This ACEC is open for mineral leasing under standard stipulations, available for disposal of mineral materials, and open to mineral entry. Any of these activities, if approved within the non-WSA lands could cause that portion to lose its natural character. Opportunities for solitude and primitive recreation due to exploration for and development of oil and gas resources, mineral material pit development, or mining would be forgone in those areas, and could impact these values for up to one-half mile from the ongoing activity. However, the ACEC is also protected with a VRM Class I objective, closed to private and commercial wood cutting, and would allow OHV activity on designated routes only. Any new development would need to meet the VRM management objective, thereby mandating extensive mitigation to any such activities. Closing the area to wood cutting would help protect the natural values as well as solitude by excluding the noise, tire tracks and other human

activities associated with wood cutting. The occasional presence and noise of OHV use would reduce opportunities for solitude and conflict with primitive forms of recreation when vehicles were traveling the designated routes.

The Lavender Mesa ACEC overlies 650 acres of the Bridger Jack Mesa non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) reseeding with native vegetation; 2) NSO stipulation for oil and gas leasing; 3) retaining lands in public ownership; 4) managing to a VRM Class I objective; and 5) closed to OHV use; 6) closing the area to mineral materials disposal; 7) excluded from surface-disturbing activities; 8) excluded from land treatments or habitat improvements; and 9) excluding commercial and personal firewood cutting. All of these measures would protect, preserve, and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

The Cedar Mesa ACEC overlies all or portions of six non-WSA lands with wilderness characteristics totaling 62,640 acres: all of Lime Creek (5,560 acres), the majority of Road Canyon (10,830 acres), Valley of the Gods (12,450 acres), Fish and Owl Creeks (21,870),and portions of Grand Gulch (11,680 acres), and Comb Ridge (250 acres) non-WSA lands with wilderness characteristics. Lime Creek, Road Canyon, and Valley of the Gods non-WSAs lie within a special emphasis area of the ACEC and have more restrictions than the other three non-WSA lands. The special emphasis area management includes: 1) NSO stipulation for oil and gas leasing; 2) retaining lands in public ownership; 3) managing to a VRM Class I objective; and 4) designating routes for OHV use; 5) opening the area to mineral materials disposal; 6) allowing commercial and personal firewood cutting in designated areas, and 7) leaving the lands open to mineral entry. Many of these measures would protect the naturalness values associated with wilderness characteristics, as well as the opportunities for solitude and primitive recreation, by eliminating many surface-disturbing activities. OHV use on designated routes could temporarily interfere with opportunities for solitude and primitive recreation when OHVs are in the area. Although the ACEC would remain available for mineral materials disposal, this is a discretionary action that must meet VRM objectives, and thus is unlikely to occur within this area. The ACEC would also remain open to firewood cutting in specified areas which could detract from the naturalness of the non-WSA lands. It would also detract from the opportunities for solitude and primitive recreation when wood cutters are in the area due to chain saw noise, vehicle tracks, and evidence of surface disturbance. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

Those portions of Fish and Owl Creeks, Grand Gulch, and Comb Ridge non-WSA lands with wilderness characteristics that fall within the less restrictive part of the Cedar Mesa ACEC allow for: 1) leasing and development under standard stipulations; 2) disposal of mineral materials; 3) land treatments and range improvements; 4) commercial and private wood cutting; 5) OHV use on designated routes; and 6) open to mineral entry. These management decisions allow for surface-disturbing activities that could create the loss of wilderness characteristics by placement of oil and gas wells and associated facilities, mechanical land/vegetation treatments, and wood-

cutting activities, among other things. Limiting OHV activity to designated routes would help protect the naturalness of the area by not allowing cross-country travel and new surface disturbance. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

4.3.8.12.1.2. Wild and Scenic Rivers (WSRs)

Under this alternative, three of the 29 non-WSA land areas intersect with eligible WSR segments, totaling 15.3 miles in those three areas. There are 5 miles of the eligible river segment of the Colorado River that intersect with the Gooseneck non-WSA lands with wilderness characteristics. There are 9.7 miles of the eligible river segment of the San Juan River that intersect with the San Juan River non-WSA lands with wilderness characteristics. And, there are 0.6 miles of the eligible portion of Indian Creek that intersects with the Shay Mountain non-WSA lands with wilderness characteristics. Protection of river values (pending future suitability studies) would prevent uses and surface disturbances that would detract from the natural character of the three areas with wilderness characteristics within the half-mile river corridor (a quarter mile on each side of the river segment). The presence and noise of motor boat use along the San Juan River non-WSA lands would reduce opportunities for solitude and conflict with primitive recreation in these river segments. The impacts would last while motorized boats were present.

4.3.8.12.1.3. Wilderness

Because Alternative A does not propose specific management to protect non-WSA lands with wilderness characteristics, contiguous WSAs and National Park Service lands would not have expanded opportunities for solitude and primitive forms of recreation afforded to them from these decisions.

4.3.8.12.2. ALTERNATIVE B

4.3.8.12.2.1. Areas of Critical Environmental Concern (ACECs)

Under this alternative there would be 12 ACECs designated to protect a variety of relevant and important values, of which 10 ACECs would overlie portions of non-WSA lands with wilderness characteristics. Those ACECs are the Indian Creek, Butler Wash, Dark Canyon, Shay Canyon, Lavender Mesa, Cedar Mesa, Lockhart Basin, San Juan River, and Valley of the Gods. The management prescriptions for these ACECs would generally provide protection to the naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands.

The potential Indian Creek ACEC overlies 3,900 acres of the Indian Creek non-WSA lands with wilderness characteristics. Prescriptions for managing the ACEC are the same as described in Alternative A, thus the analysis would be the same.

The potential Butler Wash ACEC overlies 40 acres of the Butler Wash non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) NSO stipulation for oil and gas leasing; 2) retaining lands in public ownership; 3) managing to a VRM Class I objective; 4) OHV use limited to designated routes; 5) closed to mineral materials disposal; 6) closed to commercial and personal firewood cutting; and 7) proposed for mineral

withdrawal. All of these measures would help to protect and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities. The occasional presence and noise of OHV use would reduce opportunities for solitude and conflict with primitive forms of recreation when vehicles were traveling the designated routes.

The potential Dark Canyon ACEC overlies 280 acres of the Dark Canyon non-WSA lands with wilderness characteristics. Prescriptions for managing the ACEC are the same as described in Alternative A, thus the analysis would be the same.

The potential Shay Canyon ACEC overlies 100 acres of the Shay Mountain non-WSA lands with wilderness characteristics. The prescriptions for managing this potential ACEC include: 1) NSO for oil and gas leasing; 2) limited to designated routes for OHV use; 3) no surface-disturbing vegetation/wildlife/watershed treatment/improvements; 4) hiking only on designated trials; 5) open to mineral entry; 6) closed to disposal of mineral materials; 7) closed to private or commercial wood cutting; and 8) managed to VRM Class II objectives. This is much more restrictive than Alternative A and would protect wilderness characteristics values from surface-disturbing activities. The occasional presence and noise of OHV use would reduce opportunities for solitude and conflict with primitive forms of recreation when vehicles were traveling the designated routes. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

The potential Lavender Mesa ACEC overlies 650 acres of the Bridger Jack Mesa non-WSA lands with wilderness characteristics. Special conditions for managing the ACEC include: 1) NSO stipulation for oil and gas leasing; 2) retaining lands in public ownership; 3) managing to a VRM Class II objective; 4) closed to OHV use; 5) closing the area to mineral materials disposal; 6) excluded from surface-disturbing activities; 7) excluded from surface-disturbing land treatments or habitat improvements; and 8) excluding commercial and personal firewood cutting. Like Alternative A, all of these measures would protect, preserve, and enhance the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating new surface-disturbing activities. Although the ACEC is not proposed for mineral withdrawal, and no recent mining activity has occurred, it could be at risk of new development for uranium/vanadium extraction in the old mining districts (see Section 4.3.8.5.3, Locatable Minerals).

The potential Cedar Mesa ACEC overlies portions of four non-WSA lands with wilderness characteristics totaling 60,055 acres: Fish and Owl Creeks (24,010 acres), Grand Gulch (26,635 acres), Road Canyon (9,160 acres) and Comb Ridge (250 acres). Management prescriptions for this ACEC include 1) open to leasing and development under standard stipulations, CSU, NSO, and unavailable for leasing; 2) available for watershed, vegetation and range projects; 3) VRM Class III objectives; 4) closed to commercial and private wood cutting; and 5) OHV use on designated routes, among others. These management decisions allow for surface-disturbing activities that could create the loss of wilderness characteristics by potential placement of oil and gas wells and associated facilities and mechanical land/vegetation treatments, among other things. Limiting OHV activity to designated routes would help protect the naturalness of the area by not allowing cross-country travel and new surface disturbance, and closing the ACEC to

wood cutting would prevent impacts associated with that activity on the naturalness and opportunities for solitude and primitive recreation.

The potential Lockhart Basin ACEC overlies portions of four non-WSA lands with wilderness characteristics totaling 21,305 acres and includes: Indian Creek (15,820 acres), all of Gooseneck (3,570 acres), Hatch/Lockhart/Hart (1,765 acres), and Harts Point (150 acres). The management prescriptions for this potential ACEC are as follows: 1) NSO for oil and gas leasing; 2) closed to disposal of mineral materials; 3) VRM Class I objectives; 4) prohibits surface-disturbing activities; 5) retained in public ownership; 6) proposed for mineral withdrawal; and 7) closed to commercial or private firewood cutting. All management within this ACEC would protect, enhance, and preserve the wilderness characteristics values by maintaining naturalness and providing opportunities for solitude and primitive recreation.

The potential San Juan River ACEC overlies 2,155 acres of the San Juan River non-WSA lands with wilderness characteristics. Management prescriptions include: 1) OHV use limited to designated routes; 2) closed to private and commercial firewood cutting; 3) available for watershed, range improvements and vegetation treatments; 4) managed to VRM Class I, II, and III objectives; 5) NSO for oil and gas leasing; 6) closed to mineral materials disposal; and 7) retained in public ownership, among others. All of these prescriptions help to maintain wilderness characteristics. Depending on the methods used for the land treatments/improvements, short-term or long-term impacts to naturalness could occur if done on non-WSA lands (see Section 4.3.17, Vegetation, for description of methods and impacts). The occasional presence and noise of OHV use would reduce opportunities for solitude and conflict with primitive forms of recreation when vehicles were traveling the designated routes.

The potential Valley of the Gods ACEC overlies all of Lime Creek (5,560 acres), all of Valley of the Gods (13,670 acres), and a small portion of Road Canyon (1,530 acres) non-WSA lands with wilderness characteristics. The prescriptions for this potential ACEC include: 1) unavailable for oil and gas leasing; 2) retaining lands in public ownership; 3) managing to a VRM Class I objective; and 4) designating routes for OHV use; 5) closed to mineral materials disposal; 6) closed to commercial and personal firewood cutting in designated areas; and 7) available for vegetation treatments. Virtually all of these measures would protect the naturalness values associated with wilderness characteristics, as well as protect the opportunities for solitude and primitive recreation, by eliminating many surface-disturbing activities. OHV use on designated routes could temporarily interfere with opportunities for solitude and primitive recreation when OHVs are in the area. Any vegetation treatment would need to meet VRM Class I objectives and would probably be by fire, biological, or chemical methods to meet this objective.

4.3.8.12.2.2. Wild and Scenic Rivers (WSRs)

Under this alternative, three of the 29 non-WSA land areas intersect with suitable WSR segments, totaling 15.3 miles in those three areas.

Five miles of the Colorado River segment found suitable under this alternative intersect with the Gooseneck non-WSA lands with wilderness characteristics. It would be managed`for its tentative classification as "scenic" and would be under an NSO stipulation for oil and gas leasing, closed to OHV use, recommended for mineral withdrawal, managed to VRM Class I objectives and closed to motorized use. All of these management prescriptions would protect and preserve

wilderness characteristics because no surface-disturbing activities would be allowed, and noise from motorized uses would be eliminated.

There are 9.7 miles of the suitable river segment of the San Juan River that intersect with the San Juan River non-WSA lands with wilderness characteristics. This portion of the river has a tentative classification of "wild", and would be managed to VRM Class I objectives, closed to oil and gas leasing, closed to OHV use, and recommended for mineral withdrawal. All of these management prescriptions would protect and preserve wilderness characteristics because no surface-disturbing activities would be allowed, and noise from motorized uses would be eliminated.

There is 0.6 mile of the suitable portion of Indian Creek that intersects with the Shay Mountain non-WSA lands with wilderness characteristics. This river has a tentative classification of "recreational" and would be managed under VRM Class III objectives, open to oil and gas leasing under standard lease terms, and OHV use would be limited to designated routes. Although limiting OHV activity to designated routes would help protect the naturalness of the area by not allowing cross-country travel, the other management prescriptions would not protect wilderness characteristics values. This is because surface-disturbing activities could be permitted which would detract from the naturalness of the area and interrupt opportunities for solitude and primitive recreation.

4.3.8.12.2.3. Wilderness

Because Alternative B does not propose specific management to protect non-WSA lands with wilderness characteristics, contiguous WSAs and National Park Service lands would not have expanded opportunities for solitude and primitive forms of recreation afforded to them from these decisions.

4.3.8.12.3. ALTERNATIVE C

4.3.8.12.3.1. Areas of Critical Environmental Concern (ACECs)

Under this alternative there would be seven ACECs designated to protect a variety of relevant and important values, of which five ACECs would overlie portions of non-WSA lands with wilderness characteristics. Those ACECs are Indian Creek, Shay Canyon, Lavender Mesa, San Juan River, and Valley of the Gods. The management prescriptions for these ACECs would generally provide some protection to the naturalness and opportunities for solitude and primitive recreation in all of the non-WSA lands.

The 3,900-acre potential Indian Creek ACEC falls within the Indian Creek non-WSA lands with wilderness characteristics. The acreage and prescriptions for managing the ACEC are the same as described in Alternative A, thus the analysis would be the same.

The potential Shay Canyon ACEC overlies 100 acres of the Shay Mountain non-WSA lands with wilderness characteristics. The acreage and prescriptions for managing this potential ACEC would be the same as Alternative B, thus the analysis would be the same.

The potential Lavender Mesa ACEC overlies 650 acres of the Bridger Jack Mesa non-WSA lands with wilderness characteristics. The acreage and prescriptions for managing this potential ACEC would be the same as Alternative B, thus the analysis would be the same.

The potential San Juan River ACEC overlies 2,155 acres of the San Juan River non-WSA lands with wilderness characteristics. The acreage and prescriptions for managing this potential ACEC would be the same as Alternative B, thus the analysis would be the same.

The potential Valley of the Gods ACEC overlies all of Lime Creek (5,560 acres), all of Valley of the Gods (13,670 acres), and a small portion of Road Canyon (1,530 acres) non-WSA lands with wilderness characteristics. The acreage and prescriptions for managing this potential ACEC would be the same as Alternative B, thus the analysis would be the same.

4.3.8.12.3.2. Wild and Scenic Rivers (WSRs)

Under this alternative, one of the 29 non-WSA land areas intersect with a suitable WSR segment. Five miles of the Colorado River segment found suitable under this alternative intersect with the Gooseneck non-WSA lands with wilderness characteristics. As with Alternative B, it would be managed for it tentative classification as "scenic" and would be unavailable for oil and gas leasing, closed to OHV use, recommended for mineral withdrawal, managed to VRM Class I objectives, and closed to motorized use. All of these management prescriptions would protect and preserve wilderness characteristics because no surface-disturbing activities would be allowed, and noise from motorized uses would be eliminated.

4.3.8.12.3.3. Wilderness

Because Alternative C does not propose specific management to protect non-WSA lands with wilderness characteristics contiguous to any WSAs or National Park Service lands, there would not be expanded opportunities for solitude and primitive forms of recreation afforded to the WSAs or National Park lands.

4.3.8.12.4. ALTERNATIVE D

4.3.8.12.4.1. Areas of Critical Environmental Concern (ACECs)

Under Alternative D, no ACECs would be designated, therefore, management prescriptions to protect relevant and important values would not be applied and would not afford protection of wilderness values in non-WSA lands with wilderness characteristics.

4.3.8.12.4.2. Wild and Scenic Rivers (WSRs)

Under this alternative, no WSR segments would be found suitable. Therefore, management prescriptions to protect the suitable river segments would not be applied and would not afford protection of wilderness values in non-WSA lands with wilderness characteristics.

4.3.8.12.4.3. Wilderness

Because Alternative A does not propose specific management to protect non-WSA lands with wilderness characteristics, contiguous WSAs and National Park Service lands would not have expanded opportunities for solitude and primitive forms of recreation afforded to them.

4.3.8.12.5. ALTERNATIVE E

4.3.8.12.5.1. Areas of Critical Environmental Concern (ACECs)

Alternative E designates the same number of ACECs and intersects with the same number of non-WSA lands with wilderness characteristics as Alternative B. All of the non-WSA lands that fall within the ACECs (Indian Creek, Butler Wash, Dark Canyon, Shay Canyon, Lavender Mesa, Cedar Mesa, Lockhart Basin, San Juan River, and Valley of the Gods) would be afforded complete protection under this alternative due to the prescriptions proposed to protect these values. All of the lands would be closed to oil and gas leasing, closed to firewood cutting, closed to OHV use, proposed for mineral withdrawal, managed to a VRM Class I objective, and excluded from any surface-disturbing activities. The naturalness of the areas would be preserved and the opportunities for solitude and primitive recreation would be protected.

4.3.8.12.5.2. Wild and Scenic Rivers (WSRs)

All three suitable river segments that intersect with non-WSA lands with wilderness characteristics described under Alternative B would be carried forward into this alternative. This would include 5 miles along the Colorado River within the Gooseneck non-WSA, 9.7 miles along the San Juan River in the San Juan River non-WSA, and 0.6 miles of the suitable portion of Indian Creek that intersect with the Shay Mountain non-WSA lands with wilderness characteristics. Management prescriptions to protect wilderness characteristics would also be applied to those sections of suitable rivers that overlie the non-WSA lands. The prescriptions include being closed to oil and gas leasing, closed to firewood cutting, closed to OHV use, proposed for mineral withdrawal, managed to a VRM Class I objective, and excluded from any surface-disturbing activities. The naturalness of the areas would be preserved and the opportunities for solitude and primitive recreation would be protected.

4.3.8.12.5.3. Wilderness Study Areas (WSAs)

Non-WSA lands with wilderness characteristics in Arch Canyon, Bridger Jack Mesa, Butler Wash, Cheesebox Canyon, Cross Canyon, Dark Canyon, Fish and Owl Creeks, Grand Gulch, Indian Creek, Lime Creek, Mancos Mesa, Road Canyon, and Squaw and Papoose Canyon are contiguous to wilderness study areas (many of the same name) that are managed under the BLM's IMP to protect their wilderness values. Protecting and maintaining the wilderness characteristics in the non-WSA lands would continue to safeguard the naturalness and expand opportunities for solitude and primitive forms of recreation found in the WSAs. In addition, Bridger Jack Mesa, Butler Wash, Dark Canyon, Gooseneck, and Indian Creek non-WSA lands with wilderness characteristics are contiguous with lands administratively endorsed for wilderness within Canyonlands National Park. The Dark Canyon non-WSA is also contiguous with the Forest Service's Dark-Woodenshoe Canyon Wilderness Area. There are also non-WSA lands that are contiguous to lands administratively endorsed for wilderness within the Glen Canyon National Recreation Area. These are the Grand Gulch, Dark Canyon, Nokai Dome and Sheep Canyon non-WSA lands with wilderness characteristics. Non-WSA lands with wilderness characteristics that are contiguous to lands administratively endorsed for wilderness within Natural Bridges National Monument include Cheesebox Canyon and Harmony Flat. Similar to the WSAs, protecting the non-WSA lands with wilderness characteristics to preserve their wilderness values would enhance and expand the opportunities for solitude and primitive

recreation, as well as naturalness, in the National Park units and the Forest Service-designated wilderness area.

In summary, Alternatives B would provide the most long-term protection to the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics by designating the most acres as ACECs and by recommending the longest stretches of waterways for protection in the National Wild and Scenic Rivers System, followed by Alternative A. Alternative C would provide some protection of the naturalness and opportunities for solitude and primitive recreation of non-WSA lands, but recommends few ACECs and only recommends one river segment for protection in the National /Wild and Scenic Rivers System. Alternative D would provide the lowest level of protection, as it would not designate ACECs or recommend suitable river segments for protection.

4.3.8.13. Impact of Special Status Species Decisions on Non- WSA Lands with Wilderness Characteristics

Under all alternatives, management actions would focus on maintaining, protecting, and enhancing habitats for special status species. Decisions that could help protect non-WSA lands with wilderness characteristics include applying avoidance and minimization measures for all surface-disturbing activities in special-status species habitats, including using BMPs wherever possible. This would help to maintain the natural character of non-WSA lands with wilderness characteristics where they intersect with special status species habitat. Another common to all alternatives decision is to implement habitat manipulations where translocations and population augmentation of special status species would occur, if necessary. Depending on the methods used, this could degrade the naturalness of the non-WSA lands. During the time the habitat manipulation is being conducted, the opportunity for solitude and primitive recreation would be disrupted. In addition, any recovery plan actions that require range improvements could introduce an unnatural element of human impacts to the landscape, slightly degrading the natural condition of the non-WSA lands.

Mexican spotted owl habitat is generally associated with deep, narrow canyons that are within Hatch/Lockhart/Hart, Indian Creek, Harts Point, Shay Mountain, Dark Canyon, Fish and Owl Creeks, Gravel and Long Canyon, and Nokai Dome non-WSA lands with wilderness characteristics. Southwestern willow flycatcher and yellow-billed cuckoo habitat, as well as riverine habitat for endangered Colorado river fishes, fall within the San Juan River non-WSA. Actions taken to maintain, protect, and enhance these habitats for special status species would improve the populations and would enhance the natural character of the lands where these species occur in the non-WSA lands with wilderness characteristics. Further, larger and healthier populations would expand opportunities for primitive and unconfined recreation opportunities, including viewing and natural history study.

Vegetation treatments/manipulations to improve special status species habitats could be completed with fire, chemicals, biologically, or mechanically. In the long-term, vegetation treatments with fire would restore vegetation communities and display a more natural composition of grasses, forbs, shrubs, and/or trees. If these treatments occurred in non-WSA lands with wilderness characteristics, this objective would enhance the natural character of the non-WSA lands in the long-term, and healthy populations would enhance opportunities for primitive recreation – wildlife viewing and studies. In the short-term, however, burning operations would result in disturbance of the landform and vegetation through fire-line

construction needed to manage the fire. Further, the presence and noise of people, vehicles, equipment, and aircraft would eliminate opportunities for solitude and primitive and unconfined recreation in proximity to the fire. The impacts on opportunities for solitude and primitive recreation would be temporary, lasting for the duration of the burning operation and reclamation. When the fire and reclamation operations are complete, these opportunities would return. Soil and vegetation disturbance for fire-line construction would diminish the natural character of the non-WSA lands, but reclamation would restore the natural conditions in a relatively short period of time. Mechanical vegetation manipulation in non-WSA lands with wilderness characteristics would have long-term impacts on the natural character of the non-WSA lands and opportunities for solitude and primitive and unconfined recreation. While restoration of vegetation communities would be beneficial to the natural character of non-WSA lands with wilderness characteristics, the use of chain saws, bull dozers, brush hogs, etc. to accomplish the objective would leave an obvious imprint of human activity on the land, diminishing the natural character of the non-WSA land(s). Also, in the short-term, the presence and noise of people and equipment would eliminate opportunities for solitude and primitive forms of recreation in proximity to the treatment area. In the long-term, a setting clearly manipulated by humans would reduce the opportunities for both solitude and primitive recreation.

4.3.8.14. Impacts of Vegetation Decisions on Non-WSA Lands with Wilderness Characteristics

Under all alternatives, existing vegetation treatments would be maintained, as appropriate, to allow for the desired mix of vegetation types, structural stages, and landscape/riparian/watershed function and provide for native plant, fish, and wildlife habitats. Vegetation treatments could be completed with fire, chemicals, biologically, or mechanically to achieve and maintain standards for rangeland health and desired vegetation condition. In the long-term, vegetation treatments with fire would restore vegetation communities and display a more natural composition of grasses, forbs, shrubs, and/or trees. If these treatments occurred in non-WSA lands with wilderness characteristics, this objective would enhance the natural character of the non-WSA lands in the long-term. Maintenance of vegetation treatment areas with fire would maintain or enhance wildlife habitat and populations of species dependent on that habitat (deer, elk, antelope, sage grouse, song birds, etc.). If these treatments occurred in non-WSA lands with wilderness characteristics, healthy wildlife populations would enhance opportunities for primitive recreation – wildlife viewing and hunting. In the short-term, however, burning operations would result in disturbance of the landform and vegetation through fire-line construction needed to manage the fire. Further, the presence and noise of people, vehicles, equipment, and aircraft would eliminate opportunities for solitude and primitive and unconfined recreation in proximity to the fire. The impacts on opportunities for solitude and primitive recreation would be temporary, lasting for the duration of the burning operation and reclamation. When the fire and reclamation operations are complete, these opportunities would return. Soil and vegetation disturbance for fire-line construction would diminish the natural character of the non-WSA lands, but reclamation would restore the natural conditions in a relatively short period of time.

Mechanical vegetation manipulation in non-WSA lands with wilderness characteristics would have long-term impacts on the natural character of the non-WSA lands and opportunities for solitude and primitive and unconfined recreation. While restoration of vegetation communities would be beneficial to the natural character of non-WSA lands with wilderness characteristics, the use of chain saws, bull dozers, brush hogs, etc. to accomplish the objective would leave an

obvious imprint of human activity on the land, diminishing the natural character of the non-WSA land(s). Also, in the short-term, the presence and noise of people and equipment would eliminate opportunities for solitude and primitive forms of recreation in proximity to the treatment area. In the long-term, a setting clearly manipulated by humans would reduce the opportunities for both solitude and primitive recreation.

Decisions that are common to all action alternatives include prioritizing sagebrush communities for treatment within numerous areas in the Monticello FO. Non-WSA lands with wilderness characteristics that overlie these priority areas include Harts Point, Dark Canyon, and Shay Mountain. In addition, proposed greasewood treatments would overlie portions of Fish and Owl Creeks, Road Canyon, Comb Wash, Indian Creek, and Hammond Canyon. Depending on the method used to treat these areas – prescribed fire, mechanical, biological, or chemical – impacts to wilderness characteristics would be varied and are described above.

The control of noxious weeds would have both beneficial and adverse impacts on the wilderness characteristics of non-WSA lands, depending on the method of control, under all alternatives. The use of fire, chemical, and biological treatments would control noxious weeds and insects with no apparent evidence of human intervention on the landscape. Thus there would be no noticeable impact on the natural character of the non-WSA lands with wilderness characteristics, if those treatments were necessary. Control of non-native vegetation and restoration of native vegetation communities, however, would result in a more natural vegetation community, and thus a more natural condition of the non-WSA lands. The use of mechanical treatments to eradicate non-native vegetation and would leave a noticeable imprint of human work on the landscape, and degrade the natural character of non-WSA lands, if the treatments were to occur in the non-WSA lands. Depending on the vegetation community treated (grassland and shrub land vs. woodland or coniferous forest), the length of time the evidence of mechanical treatments remained on the landscape would vary before the surface and vegetation disturbances returned to a more natural or unmodified condition.

Reclaiming or restoring of up to 30,000 to 50,000 acres of vegetation treatments in FRCC III; maintaining existing land treatments; and implementing new vegetation treatments in sagebrush, pinyon-juniper, riparian, and greasewood habitats would have the same impact on the natural character of the non-WSA lands as described above. Depending on the treatment method used, the impacts on naturalness could be substantive in the short-term, but would be beneficial to the natural condition of the non-WSA lands in the long-term. If done by a surface-disturbing mechanized method, the evidence of human intervention on the land would be apparent and would be longer lasting.

4.3.8.15. Impacts of Visual Resource Management Decisions on Non- WSA Lands with Wilderness Characteristics

4.3.8.15.1. Impacts Common to All Alternatives

There are four objectives for visual resources management (VRM Classes I – IV) that provide for various levels of landscape protection and change. The objective of Class I is to preserve the characteristic landscape, while the objective of VRM Class IV provides for landscape modifications (see Chapter 3, Section 3.3.7). Land use planning decisions to designate and manage areas by Class I objectives would preserve the characteristic landscape. In non-WSA lands with wilderness characteristics, this objective (VRM Class I) would preserve the natural

character of the area. VRM Class II objectives would retain the characteristic landscape, allowing for minor changes to the landform and vegetation. This objective would generally protect the natural condition of the non-WSA lands. The objective of VRM Class III is to partially retain the existing character of the landscape, allowing for moderate changes to land and vegetation. This objective is not compatible with preserving the natural character of non-WSA lands. VRM Class IV objectives provide for major modification of the landscape, clearly incompatible with preservation of the natural character of non-WSA lands.

Under Class I and II objectives, preserving the natural character of the non-WSA lands would also preserve the undeveloped setting needed to support opportunities for solitude and primitive forms of recreation. Since VRM Class III and IV objectives would not preserve an undeveloped setting, opportunities for both solitude and primitive recreation would be diminished.

Table 4.70 shows the VRM objectives (Classes I – IV) for non-WSA wilderness areas, by alternative.

Table 4.70. VRM Classes in Non-WSA Lands with Wilderness Characteristics by Alternative

Name	Total Acres	VRM Class	Alt. A (acres)	Alt. B (acres)	Alt. C (acres)	Alt. D (acres)	Alt. E (acres)
Arch Canyon	50	I	0	0	0	0	50
		II	50	50	0	0	0
		III	0	0	50	50	0
		IV	0	0	0	0	0
Bridger Jack Mesa	23,050	I	0	0	0	0	23050
		II	18,900	19,580	18,010	0	0
		III	1,710	1,710	3,280	21,290	0
		IV	2,440	1,760	1,760	1,760	0
Butler Wash	1,660	I	0	40	40	40	1,660
		II	0	0	0	0	0
		III	1,660	1,620	1,620	1,620	0
		IV	0	0	0	0	0
Cheesebox Canyon	13,240	I	2,350	6,230	0	0	13,240
		II	3,700	0	2,610	0	0
		III	0	0	3,740	6,350	0
		IV	7,190	7,010	6,890	6,890	0
Comb Ridge	13,760	I	670	11,930	0	0	13,760
		II	10,760	0	11,650	0	0
		III	2,330	1,830	2,110	13,760	0
		IV	0	0	0	0	0

Table 4.70. VRM Classes in Non-WSA Lands with Wilderness Characteristics by Alternative

Name	Total Acres	VRM Class	Alt. A (acres)	Alt. B (acres)	Alt. C (acres)	Alt. D (acres)	Alt. E (acres)
Cross Canyon	1,350	I	0	0	0	0	1,350
		II	0	0	0	0	0
		III	0	0	0	0	0
		IV	1,350	1,350	1,350	1,350	0
Dark Canyon	66,330	I	6,530	3,260	3,260	3,260	66,330
		II	8,770	8,930	0	0	0
		III	29,510	30,880	39,800	39,800	0
		IV	21,520	23,260	23,270	23,270	0
Fish and Owl Creeks	24,650	I	2,890	0	0	0	24,650
		II	8,600	30	0	0	0
		III	11,550	0	23,040	23,040	0
		IV	1,610	24,620	1,610	1,610	0
Fort Knocker Canyon	12,410	I	5,130	0	0	0	12,410
		II	380	3,750	3,520	0	0
		III	0	0	230	3,750	0
		IV	6,900	8,660	8,660	8,660	0
Gooseneck	3,570	I	0	3,570	990	0	3,570
		II	3,570	0	80	0	0
		III	0	0	2,500	3,570	0
		IV	0	0	0	0	0
Grand Gulch	55,240	I	16,150	30	30	30	55,240
		II	6,270	0	0	0	0
		III	32,780	55,210	55,140	55,140	0
		IV	40	0	70	70	0
Gravel and Long	36,890	I	6,970	36,890	0	0	36,890
		II	29,850	0	6,350	0	0
		III	0	0	30,540	36,890	0
		IV	70	0	0	0	0
Hammond Canyon	4,700	I	0	0	0	0	4700
		II	0	0	0	0	0
		III	2,840	3,090	3,090	3,090	0
		IV	1,860	1,610	1,610	1,610	0
Harmony Flat	9,660	I	1,990	0	0	0	9,660
		II	6,000	8,400	8,400	0	0
		III	0	0	0	8,400	0
		IV	1,670	1,260	1,260	1,260	0

Table 4.70. VRM Classes in Non-WSA Lands with Wilderness Characteristics by Alternative

Name	Total Acres	VRM Class	Alt. A (acres)	Alt. B (acres)	Alt. C (acres)	Alt. D (acres)	Alt. E (acres)
Harts Point	24,740	I	450	150	0	0	24,740
		II	9,980	10,790	10,790	0	0
		III	40	20	170	10,960	0
		IV	14,270	13,780	13,780	13,780	0
Hatch Lockhart Hart	1,760	I	0	1,760	0	0	1,760
		II	1,760	0	0	0	0
		III	0	0	1,760	1,760	0
		IV	0	0	0	0	0
Indian Creek	23,280	I	3,970	19,700	4,130	0	23,280
		II	19,310	3,580	3,470	0	0
		III	0	0	15,680	23,280	0
		IV	0	0	0	0	0
Lime Creek	5,560	I	5,560	5,560	5,560	0	5,560
		II	0	0	0	0	0
		III	0	0	0	5,560	0
		IV	0	0	0	0	0
Mancos Mesa	61,570	I	19,270	15,220	0	0	61,570
		II	14,670	14,730	12,760	0	0
		III	8,740	12,090	28,780	41,540	0
		IV	18,890	19,530	20,030	20,030	0
Nokai Dome	94,270	I	16,030	12,390	0	0	94,270
		II	1,420	3,720	12,600	0	0
		III	13,680	15,160	18,490	32,000	0
		IV	63,140	63,000	63,180	62,270	0
Red Rock Plateau	17,010	I	0	0	0	0	17,010
		II	640	330	0	0	0
		III	0	0	330	330	0
		IV	16,370	16,680	16,680	16,680	0
Road Canyon	11,320	I	1,990	1,550	1,530	0	11,320
		II	240	17	0	0	0
		III	5,930	9,725	7,090	8,600	0
		IV	3,160	28	2,700	2,720	0
San Juan River	14,340	I	3,600	3,030	3,030	0	14,340
		II	650	890	890	3,020	0
		III	2,990	2,720	2,720	3,540	0
		IV	7,100	7,700	7,700	7,780	0

Table 4.70. VRM Classes in Non-WSA Lands with Wilderness Characteristics by Alternative

Name	Total Acres	VRM Class	Alt. A (acres)	Alt. B (acres)	Alt. C (acres)	Alt. D (acres)	Alt. E (acres)
Shay Mountain	6,710	I	1,890	0	0	0	6,710
		II	1,990	4,120	1,970	0	0
		III	1,110	1,040	3,190	5,160	0
		IV	1,720	1,550	1,550	1,550	0
Sheep Canyon	4,000	I	40	0	0	0	4,000
		II	0	0	0	0	0
		III	0	0	0	0	0
		IV	3,960	4,000	4,000	4,000	0
Squaw and Papoose Canyons	3,570	I	0	0	0	0	3,570
		II	0	0	0	0	0
		III	0	0	0	0	0
		IV	3,570	3,570	3,570	3,570	0
Upper Red Canyon	24,920	I	620	0	0	0	24,940
		II	0	0	0	0	0
		III	2,330	2,630	2,630	2,630	0
		IV	21,970	22,290	22,290	22,290	0
Valley of the Gods	13,670	I	13,670	13,670	13,670	0	13,670
		II	0	0	0	0	0
		III	0	0	0	13,670	0
		IV	0	0	0	0	0
White Canyon	9,080	I	30	0	30	0	9,080
		II	5,030	5,370	0	0	0
		III	0	0	5,340	5,370	0
		IV	4,020	3,710	3,710	3,710	0

4.3.8.15.2. ALTERNATIVE A

Under Alternative A, 240,480 acres would be managed by VRM Class I and II objectives in all of five and parts of 18 non-WSA lands with wilderness characteristics, protecting the natural character of those lands in the non-WSAs as described above. Conversely, 341,880 acres would be managed by Class III and IV objectives. While the focus of these VRM objectives is to provide for activities and uses that would change the landscape, this does not mean every acre would be developed or changed. Thus, in those non-WSA lands with these VRM objectives, the natural character of the affected non-WSA lands could be lost. And, if the naturalness of these areas is lost, the opportunities for solitude and primitive recreation would be lost, as the setting needed to support these opportunities would be altered.

4.3.8.15.3. ALTERNATIVE B

Under Alternative B, 217,410 acres would be managed by VRM Class I and II objectives in all of five and parts of 18 non-WSA lands with wilderness characteristics, protecting the natural character of those lands in the non-WSAs as described above. Conversely, 364,950 acres would be managed by Class III and IV objectives. The impact of these visual objectives on naturalness, solitude, and primitive recreation would be the same as described for Alternative A.

4.3.8.15.4. ALTERNATIVE C

Under Alternative C, 125,330 acres would be managed by VRM Class I and II objectives in all of one and parts of 18 non-WSA lands with wilderness characteristics, protecting the natural character of those lands in the non-WSAs. Also, under this alternative, 457,030 acres would be managed by VRM Class III and IV objectives. The impact of these visual objectives on naturalness, solitude, and primitive recreation would be the same as described for Alternative A.

4.3.8.15.5. ALTERNATIVE D

Under Alternative C, 6,350 acres would be managed by VRM Class I and II objectives in parts of four non-WSA lands with wilderness characteristics, protecting the natural character of those lands in the non-WSAs. Conversely, 570,010 acres would be managed by VRM Class III and IV objectives. The impact of these visual objectives on naturalness, solitude, and primitive recreation would be the same as described for Alternative A.

4.3.8.15.6. ALTERNATIVE E

Under Alternative D, 682,600 acres would be managed by VRM Class I objectives in all of the 29 non-WSA lands with wilderness characteristics, protecting the natural character of those lands in the non-WSAs, and the settings required to support opportunities for solitude and primitive forms of recreation.

In summary, the VRM class designations proposed in Alternative E would provide protection of the natural character of all the non-WSA lands with wilderness characteristics by applying a VRM Class I management objective to those lands. VRM objectives in Alternative A, which is the No Action Alternative, would provide protection to the natural character of the 240,480 acres in all or parts of 23 non-WSAs by applying both VRM Class I and II management objectives to those lands. Alternative B would protect 217,410 acres in all or parts of 23 non-WSAs also by applying both VRM Class I and II management objectives to those lands. Alternative C would protect 6,350 acres in portions of four non-WSA lands with wilderness characteristics.

4.3.8.16. IMPACTS OF WILDLIFE AND FISHERIES DECISIONS ON NON- WSA LANDS WITH WILDERNESS CHARACTERISTICS

Under all alternatives, a variety of decisions would be implemented to restore, maintain, and enhance wildlife habitat and populations. Improved wildlife populations would enhance the natural character of the land in all of the non-WSA lands with wilderness characteristics. Further, larger and healthier wildlife populations would expand opportunities for primitive and unconfined recreation opportunities, including wildlife viewing, hunting, and natural history study.

Within pronghorn fawning areas, which overlie a small part of the eastern portion of the Harts Point non-WSA lands with wilderness characteristics (under Alternatives B, C, and E only), special condition decisions would provide opportunities for solitude and primitive recreation on a seasonal basis by closing the habitat from May 1 – June 15 to numerous surface-disturbing activities. If construction of water sources to support antelope populations is needed, this would result in more animals and the benefits described above. Construction of human-made features on the land, however, would degrade the natural, undeveloped character of the non-WSA lands with wilderness characteristics. Under Alternative E, new water developments or facilities would most likely be precluded or mitigated within the wilderness characteristics lands due to the restrictive decisions in place.

In bighorn sheep habitat, a decision to prioritize habitat improvement projects on the "five mesa tops" could affect Upper Red Canyon, Red Rock Plateau, Gravel and Long Canyon, Cheesebox Canyon, White Canyon, and Mancos Mesa non-WSA lands with wilderness characteristics. This could include installation of guzzlers, development of springs, or vegetation manipulations, among other things. Because the five mesas are small, isolated mesa tops within a larger habitat, the animals move in and out of wilderness characteristics lands. Construction of water sources to support wildlife populations would result in more wildlife and the benefits described above. Construction of human-made features on the land, however, would degrade the natural, undeveloped character of the non-WSA lands with wilderness characteristics. Under Alternative E, new water developments or facilities would most likely be precluded or mitigated within the wilderness characteristics lands due to the restrictive decisions in place. Each of the alternatives defines a different habitat size for bighorn sheep lambing and rutting areas. Non-WSA lands with wilderness characteristics that overlie portions of this habitat by alternative are as follows:

- Alternatives A: Fort Knocker Canyon, White Canyon, Gravel and Long Canyon, Cheesebox Canyon, Mancos Mesa, and Upper Red Canyon
- Alternatives B, C and E: Fort Knocker Canyon, White Canyon, Gravel and Long Canyon, Cheesebox Canyon, Mancos Mesa, Nokai Dome, Upper Red Canyon, Gooseneck, Hatch/Lockhart/Harts, Indian Creek, and Harts Point
- Alternative D: Fort Knocker Canyon, White Canyon, Gravel and Long Canyon, Cheesebox Canyon, Mancos Mesa, Upper Red Canyon, Gooseneck, Hatch/Lockhart/Harts, Indian Creek, and Harts Point

Special condition decisions would help provide opportunities for solitude and primitive recreation on a seasonal basis by closing the lambing and rutting areas to numerous surface-disturbing activities from April 1 – June 15 and October 15 – December 15 (Alternative C), April 1 – July 15 and October 15 – December 31 (Alternatives A, B, and E), and April 15 – May 15 and November 1 – December 15 (Alternative D).

Numerous non-WSA lands with wilderness characteristics overlie crucial deer winter ranges. Numerous vegetation treatments are proposed within the crucial habitat to improve winter range. Depending on the type of treatment conducted, different impacts to wilderness characteristics could ensue. Vegetation treatments could be completed with fire, chemicals, biologically, or mechanically to achieve the desired vegetation condition. In the long-term, vegetation treatments with fire would restore vegetation communities and display a more natural composition of grasses, forbs, shrubs, and/or trees. If these treatments occurred in non-WSA lands with wilderness characteristics, this objective would enhance the natural character of the non-WSA

lands in the long-term. Maintenance of vegetation treatment areas with fire would maintain or enhance wildlife habitat and populations of species dependent on that habitat (deer and elk). If these treatments occurred in non-WSA lands with wilderness characteristics, healthy wildlife populations would enhance opportunities for primitive recreation – wildlife viewing and hunting. In the short-term, however, burning operations would result in disturbance of the landform and vegetation through fire-line construction needed to manage the fire. Further, the presence and noise of people, vehicles, equipment, and aircraft would eliminate opportunities for solitude and primitive and unconfined recreation in proximity to the fire. The impacts on opportunities for solitude and primitive recreation would be temporary, lasting for the duration of the burning operation and reclamation. When the fire and reclamation operations are complete, these opportunities would return. Soil and vegetation disturbance for fire-line construction would diminish the natural character of the non-WSA lands, but reclamation would restore the natural conditions in a relatively short period of time. Biological and chemical treatment methods would have similar impacts as prescribed fire. Mechanical vegetation manipulation in non-WSA lands with wilderness characteristics would have long-term impacts on the natural character of the non-WSA lands and opportunities for solitude and primitive and unconfined recreation. While restoration of vegetation communities would be beneficial to the natural character of non-WSA lands with wilderness characteristics, the use of chain saws, bull dozers, brush hogs, etc. to accomplish the objective would leave an obvious imprint of human activity on the land, diminishing the natural character of the non-WSA land(s). Also, in the short-term, the presence and noise of people and equipment would eliminate opportunities for solitude and primitive forms of recreation in proximity to the treatment area. In the long-term, a setting clearly manipulated by humans would reduce the opportunities for both solitude and primitive recreation.

Non-WSA lands with wilderness characteristics that overlie portions of the crucial deer winter habitat by alternative are as follows:

- Alternatives A and D: Harts Point, Dark Canyon, Butler Wash, Harmony Flat and Grand Gulch
- Alternatives B and E: Harts Point, Bridger Jack Mesa, Shay Mountain, Dark Canyon, Butler Wash, White Canyon, Sheep Canyon, Long Canyon, Gravel and Long Canyon, Cheesebox Canyon, Harmony Flat, Grand Gulch, Fish and Owl Canyon, Comb Ridge, Arch Canyon, Hammond Canyon
- Alternative C: Harts Point, Bridger Jack Mesa, Shay Mountain, Dark Canyon, Butler Wash, White Canyon, Cheesebox Canyon, Harmony Flat, Grand Gulch, Fish and Owl Canyon, and Comb Ridge

Special condition decisions would help provide opportunities for solitude and primitive recreation on a seasonal basis by closing the crucial deer winter range to numerous surface-disturbing activities from December 15 – April 30 (Alternative A), November 1 – May 15 (Alternative B and E), November 15 – April 15 (Alternative C), and December 1 – March 31 (Alternative D).

Numerous non-WSA lands with wilderness characteristics also overlie crucial elk habitat. Vegetation treatments are proposed within these areas to improve winter range for deer and elk. Depending on the type of treatment conducted, different impacts to wilderness characteristics could ensue (see analysis under crucial deer winter range above).

Non-WSA lands with wilderness characteristics that overlie portions (some very small) of this elk habitat by alternative are as follows:

- Alternatives A: None defined
- Alternatives B and E: Bridger Jack Mesa, Shay Mountain, Dark Canyon, Butler Wash, White Canyon, Gravel and Long Canyon, Cheesebox Canyon, Grand Gulch, Fish and Owl Canyon, Arch Canyon, and Hammond Canyon
- Alternative C and D: Bridger Jack Mesa, Shay Mountain, Dark Canyon, White Canyon, and Hammond Canyon

Special condition decisions would help provide opportunities for solitude and primitive recreation on a seasonal basis by closing the crucial deer winter range to numerous surface-disturbing activities from November 1 – May 15 (Alternative B and E), November 15 – April 15 (Alternative C), and December 1 – March 31 (Alternative D).

4.3.8.17. Impacts of Woodland and Forest Decisions on Non- WSA Lands with Wilderness Characteristics

Under all alternatives permits for woodland products would continue to be sold to the public, consistent with the availability of woodland products and the protection of sensitive resource values. Each alternative prescribes areas where woodland product harvest is allowed or prohibited. Table 4.71 provides the acres of areas open or closed to woodland harvest by alternatives for non-WSA lands with wilderness characteristics.

Table 4.71. Wood-Cutting Allocations in non-WSA Lands with Wilderness Characteristics

Wood-Cutting Allocations in Non-WSA Lands with Wilderness Characterstics			Alternative (acres)				
Name	Acres	Restriction	A	B	C	D	E
Arch Canyon	50	open	50	50	50	50	0
		closed	0	0	0	0	50
Bridger Jack Mesa	23,050	open	130	130	130	130	0
		closed	22,920	22,920	22,920	22,920	23,050
Butler Wash	1,660	open	0	0	0	0	0
		closed	1,660	1,660	1,660	1,660	1,660
Cheesebox Canyon	13,240	open	13,170	12,770	12,770	12,770	0
		closed	70	470	470	470	13,240
Comb Ridge	13,760	open	0	0	0	0	0
		closed	13,760	13,760	13,760	13,760	13,760
Cross Canyon	1,350	open	1,340	1,340	1,340	1,340	0
		closed	10	10	10	10	1,350
Dark Canyon	66,330	open	33,960	33,960	33,960	33,960	0
		closed	32,370	32,370	32,370	32,370	66,330
Fish & Owl Creeks	24,650	open	13,320	0	13,320	13,320	0
		closed	11,330	24,650	11,330	11,330	24,650

Table 4.71. Wood-Cutting Allocations in non-WSA Lands with Wilderness Characteristics

Wood-Cutting Allocations in Non-WSA Lands with Wilderness Characterstics			Alternative (acres)				
Name	Acres	Restriction	A	B	C	D	E
Fort Knocker Canyon	12,410	open	12,400	11,140	11,140	11,140	0
		closed	10	1,270	1,270	1,270	12,410
Gooseneck	3,570	open	0	0	0	0	0
		closed	3,570	3,570	3,570	3,570	3,570
Grand Gulch	55,240	open	21,924	0	21,924	21,924	0
		closed	33,316	55,240	33,316	33,316	55,240
Gravel & Long Canyon	36,890	open	36,850	36,420	36,420	36,420	0
		closed	40	470	470	470	36,890
Hammond Canyon	4,700	open	4,700	4,700	4,700	4,700	0
		closed	0	0	0	0	4,700
Harmony Flat	9,660	open	9,630	9,630	9,630	9,630	0
		closed	30	30	30	30	9,660
Harts Point	24,740	open	8,890	8,890	8,890	8,890	0
		closed	15,850	15,850	15,850	15,850	24,740
Hatch/Lockhart/Hart	1,760	open	0	0	0	0	0
		closed	1,760	1,760	1,760	1,760	1,760
Indian Creek	23,280	open	0	0	0	0	0
		closed	23,280	23,280	23,280	23,280	23,280
Lime Creek	5,560	open	0	0	0	0	0
		closed	5,560	5,560	5,560	5,560	5,560
Mancos Mesa	61,570	open	0	0	0	0	0
		closed	61,570	61,570	61,570	61,570	61,570
Nokai Dome	94,270	open	0	0	0	0	0
		closed	94,270	94,270	94,270	94,270	94,270
Red Rock Plateau	17,010	open	17,010	17,010	17,010	17,010	0
		closed	0	0	0	0	17,010
Road Canyon	11,320	open	1,810	0	1,810	1,810	0
		closed	9,510	11,320	9,510	9,510	11,320
San Juan River	14,340	open	0	0	0	0	0
		closed	14,340	14,340	14,340	14,340	14,340
Shay Mountain	6,710	open	4,040	4,040	4,040	4,040	0
		closed	2,670	2,670	2,670	2,670	6,710
Sheep Canyon	4,000	open	3,990	3,990	3,990	3,990	0
		closed	10	10	10	10	4,000

Table 4.71. Wood-Cutting Allocations in non-WSA Lands with Wilderness Characteristics

Wood-Cutting Allocations in Non-WSA Lands with Wilderness Characterstics			Alternative (acres)				
Name	Acres	Restriction	A	B	C	D	E
Squaw & Papoose Canyon	3,570	open	3,530	3,530	3,530	3,530	0
		closed	40	40	40	40	3,570
Upper Red Canyon	24,920	open	24,920	24,920	24,920	24,920	0
		closed	0	0	0	0	24,920
Valley of the Gods	13,670	open	0	0	0	0	0
		closed	13,670	13,670	13,670	13,670	13,670
White Canyon	9,080	open	9,080	9,080	9,080	9,080	0
		closed	0	0	0	0	9,080

4.3.8.17.1. ALTERNATIVE A

Commercial or personal wood cutting would be prohibited on 348,290 acres on all or portions of 24 non-WSA lands with wilderness characteristics. Ten non-WSAs would be completely restricted from wood-cutting activities (Butler Wash, Comb Ridge, Gooseneck, Hatch/Hart/Lockhart, Indian Creek, Lime Creek, Mancos Mesa, Nokai Dome, San Juan River, and Valley of the Gods), thereby preserving the natural character of the landscape from surface-disturbing activities associated with wood cutting. Those portions of the non-WSA lands with wilderness characteristics in the other 14 areas that are restricted from wood-cutting activities would be provided the same protections. However, in the 234,070 acres that remain open for wood cutting (and where the resource exists), wilderness characteristics may be compromised by surface-disturbing activities such as driving cross-country to the trees, cutting the trunks of trees and leaving stumps and debris, and by affecting the solitude and primitive recreation opportunities with mechanical chain saws and surface disturbances associated with human activity.

4.3.8.17.2. ALTERNATIVE B

Commercial or personal wood cutting would be prohibited on 400,760 acres on all or portions of 24 non-WSA lands with wilderness characteristics. Thirteen non-WSAs would be completely restricted from wood-cutting activities (Butler Wash, Comb Ridge, Fish and Owl Creek, Gooseneck, Grand Gulch, Hatch/Hart/Lockhart, Indian Creek, Lime Creek, Mancos Mesa, Nokai Dome, Road Canyon, San Juan River, and Valley of the Gods), thereby preserving the natural character of the landscape from surface-disturbing activities associated with wood cutting. Those portions of the non-WSA lands with wilderness characteristics in the other 11 areas that are restricted from wood-cutting activities would be provided the same protections. However, in the 181,600 acres that remain open for wood cutting (and where the resource exists), wilderness characteristics may be compromised by surface-disturbing activities such as driving cross-country to the trees, cutting the trunks of trees and leaving stumps and debris, and by affecting

the solitude and primitive recreation opportunities with mechanical chain saws and surface disturbances associated with human activity.

4.3.8.17.3. ALTERNATIVES C AND D

Under both of these alternatives, commercial or personal wood cutting would be prohibited on 350,380 acres on all or portions of 24 non-WSA lands with wilderness characteristics. Similar to Alternative A, 10 non-WSAs would be completely restricted from wood-cutting activities (Butler Wash, Comb Ridge, Gooseneck, Hatch/Hart/Lockhart, Indian Creek, Lime Creek, Mancos Mesa, Nokai Dome, San Juan River, and Valley of the Gods), thereby preserving the natural character of the landscape from surface-disturbing activities associated with wood cutting. Those portions of the non-WSA lands with wilderness characteristics in the other 14 areas that are restricted from wood-cutting activities would be provided the same protections. However, in the 231,980 acres that remain open for wood cutting (and where the resource exists), wilderness characteristics may be compromised by surface-disturbing activities such as driving cross-country to the trees, cutting the trunks of trees and leaving stumps and debris, and by affecting the solitude and primitive recreation opportunities with mechanical chain saws and surface disturbances associated with human activity.

4.3.8.17.4. ALTERNATIVE E

All 266,485 acres of non-WSA lands with wilderness characteristics in the 32 areas within the Monticello PA would be restricted from wood-cutting activities under this alternative. All wilderness characteristics values would therefore be protected from this activity and maintain the natural character and opportunities for solitude and primitive recreation.

4.3.8.18. SUMMARY OF IMPACTS

See Table 2.2 for a summary of impacts to non-WSA lands with wilderness characteristics. About 582,360 acres of non-WSA lands with wilderness characteristics have been found in the Monticello PA. Under Alternative A, there would be adverse impacts to 98% (571,057 acres) of these lands. Alternative E protects 100% (582,360 acres) of non-WSA lands with wilderness characteristics. Alternatives B, C, and D provide varying amounts of protection to non-WSA lands with wilderness characteristics; generally, speaking the protection provided is in are decreasing order.

4.3.8.19. MITIGATION MEASURES

Any surface-disturbing activities would result in impacts to naturalness. However, mitigation measures such as those found in Appendix A and Appendix I could reduce these impacts.

4.3.8.20. UNAVOIDABLE ADVERSE IMPACTS

Under all alternatives, lands inventoried as having wilderness characteristics are not withdrawn from mineral entry. Although development for locatable minerals is not anticipated, mining claimants would have the right to develop mining claims. It is possible that some unavoidable adverse impacts from mining operations could occur that would impact naturalness and opportunities for solitude.

4.3.8.21. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Any short-term use that results in surface disturbance would result in long-term impacts to naturalness.

4.3.8.22. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Any use that results in surface disturbance could impact naturalness, the larger the impact, the greater the likelihood of the irreversibility and irretrievability to wilderness characteristics. In certain areas, surface-disturbing impacts could not be reclaimed, making these impacts irreversible and irretrievable.

4.3.9. PALEONTOLOGICAL RESOURCES

The BLM Utah State Paleontologist has classified all of the geologic units within the Monticello PA according to the Potential Fossil Yield Classification system (PFYC). The BLM is currently using this study in lieu of the current paleontological resource management classification system in the process of considering the use of the PFYC as policy. The PFYC system is described in Chapter 3 (Section 3.10, Paleontology), and the results of the PFYC classification for the Monticello PA form the basis for the analysis of impacts to paleontological reources.

For this analysis, the 46 mapped geologic units that occur within the Monticello PA were classified according to the PFYC, and the results are shown in Table 4.72. Three units are Class 1, eight are Class 2, nineteen are Class 3, fourteen are Class 4/5, and two are Class 5. Surficial exposures of Class 1 units comprise approximately 19 acres, Class 2 units encompass approximately 458,885 acres, Class 3 units are within approximately 901,335 acres, Class 4/5 are in approximately 277,556 acres, and Class 5 lie within approximately 146,960 acres.

Table 4.72. Mapped Geologic Units within the BLM Monticello PA and Their PFYC Classes, in Approximate Descending Stratigraphic Order

Age	Mapped Geologic Unit(s)	PFYC Class
Quaternary (Holocene)	Landslide deposits, alluvium, sand and gravel deposits, colluvium, talus deposits, slopewash, pediment deposits, eolian deposits, dune sand, terrace gravels, surficial material	2
Quaternary (Pleistocene)	Landslide deposits, alluvium, sand and gravel deposits, colluvium, talus deposits, slopewash, pediment deposits, eolian deposits, dune sand, terrace gravels, surficial material	2
Tertiary	Abajo Mountain Intrusives	1
	Minette Intrusives	1
	Explosion Breccia	1
Cretaceous	Mancos Shale	3
	Cedar Mountain Formation	5
	Dakota Sandstone	3
	Burro Canyon Formation	4/5
	Dakota and Burro Canyon formations	4/5

Table 4.72. Mapped Geologic Units within the BLM Monticello PA and Their PFYC Classes, in Approximate Descending Stratigraphic Order

Age	Mapped Geologic Unit(s)	PFYC Class
Jurassic	Morrison Formation – Brushy Basin Member	5
	Morrison Formation – Westwater Canyon Member	4/5
	Morrison Formation – Salt Wash Member	4/5
	Morrison Formation - Recapture Member	4/5
	Bluff Sandstone	2
	Summerville Formation	3
	Summerville and Curtis Formations	3
	Entrada Sandstone	2
	Summerville Formation and Entrada Sandstone	3
	Carmel Formation	2
	Navajo Sandstone	2
	Kayenta Formation	3
	Navajo Sandstone and Kayenta Formation	3
	Wingate Sandstone	2
	Kayenta Formation and Wingate Sandstone	3
Triassic	Moenave Formation and Wingate Sandstone	3
	Chinle Formation	4/5
	Chinle Formation – Moss Back Member	4/5
	Chinle Formation – Moss Back Member and lower part	4/5
	Chinle Formation – Church Rock and Owl Rock Members	4/5
	Chinle Formation – lower part	4/5
	Chinle Formation – Monitor Butte Member	4/5
	Chinle Formation – Petrified Forest and Moss Back Members	4/5
	Chinle Formation – Shinarump Member and Mottled Siltstone Member	4/5
	Chinle Formation – upper part	4/5
	Moenkopi Formation	3
Permian	Cutler Formation	3
	Cutler Formation – White Rim Sandstone Member	2
	White Rim Sandstone Member and Organ Rock Tongue	3
	Cutler Formation – Organ Rock Tongue	3
	Cutler Formation – Halgaito Tongue	3
	Cutler Formation – Cedar Mesa Sandstone	3
	Cutler Formation – unnamed arkose	
	Cutler Formation – transition zone with Cedar Mesa Sandstone Member	

Table 4.72. Mapped Geologic Units within the BLM Monticello PA and Their PFYC Classes, in Approximate Descending Stratigraphic Order

Age	Mapped Geologic Unit(s)	PFYC Class
Pennsylvanian	Rico Formation	3
	Hermosa Formation	3
	Hermosa Formation – upper part	3
	Hermosa Formation – Paradox Member	3

Geologic mapping by: Hackman and Wyant, 1973 (Escalante 1° × 2° Quadrangle, scale 1:250,000); Haynes et al., 1972 (Cortez 1° × 2° Quadrangle, scale 1:250,000); Williams, 1964 (Moab 1° × 2° Quadrangle, scale 1:250,000); and Williams and Hackman, 1971 (Salina 1° × 2° Quadrangle, scale 1:250,000).

As discussed in Chapter 3, Section 3.10.4, Class 1 geologic units have no sensitivity (i.e., are not likely to contain recognizable fossil remains), thus none or negligible impacts to paleontological resources would be expected. Geologic units designated as Class 2 have a low sensitivity (not likely to contain scientifically valuable fossils), with likely negligible to minor impacts to paleontological resources. Class 3 geologic units have moderate sensitivity (the fossil content varies in scientific significance, in abundance, and in predictable occurrence), and the risks of adverse impacts to paleontological resources within this unit would be moderate. Class 4/5 and Class 5 geologic units have been designated high-sensitivity units (highly fossiliferous geologic units that regularly and predictably produce vertebrate fossils and/or scientifically significant nonvertebrate fossils, and that are at risk of natural degradation and/or human-caused adverse impacts), and thus would have a high risk of being adversely impacted. Since the risks to paleontological resources in Class 1 and Class 2 units range from none to minor, only potential impacts to Class 3, Class 4/5, and Class 5 units are discussed in the following subsections.

4.3.9.1. Types of Paleontological Resource Impacts

The loss or destruction of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region, would be a significantly adverse paleontological impact. Direct adverse impacts on paleontological resources would primarily concern the potential destruction of non-renewable paleontological resources and the loss of information associated with these resources, including the unlawful or unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments were disturbed, the disturbance could result in the adverse destruction of paleontological resources and subsequent loss of information. At the site-specific project level, direct, adverse impacts can typically be reduced to a level below significance through the implementation of paleontological mitigation.

Surface disturbance may result in the exposure of fossils that would not likely have been unearthed via natural processes. If mitigation measures are implemented, these newly exposed fossils would become beneficially available for salvage, data recovery, scientific analysis, and permanent preservation at a public museum. The beneficial impacts resulting from mitigation would include advances in scientific knowledge by both permitted field researchers and paleontologists who study fossils in museum collections, contributions to public education and interpretation, and community involvement and partnerships.

In general, in those areas that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for adverse impacts to paleontological resources. For areas that are directly underlain by geologic units with no paleontological sensitivity, there would be no potential for impacts on paleontological resources unless sensitive geologic units that underlie the non-sensitive unit were also impacted. Impacts analyzed in this section include direct (ground-disturbance-related), indirect (operations-related), and cumulative impacts of the proposed management decisions.

4.3.9.1.1. Direct Impacts to Paleontological Resources

Direct impacts would result from activities planned or authorized by the BLM, and would occur at the same time and place as the surface-disturbing activity. The potential for direct impacts on scientifically important surface and sub-surface fossils in fossiliferous sedimentary deposits is controlled by two factors: 1) the depth and lateral extent of disturbance of fossiliferous bedrock and/or surficial sediments, and 2) the depth and lateral extent of occurrence of fossiliferous bedrock and/or surficial sediments beneath the surface. Ground disturbance has the potential to adversely impact an unknown quantity of fossils that may occur on or underneath the surface in areas containing paleontologically sensitive geologic units. Without mitigation, these fossils, as well as the paleontological data they could provide if properly salvaged and documented, could be adversely impacted, rendering them permanently unavailable for future scientific research.

4.3.9.1.2. Indirect Impacts to Paleontological resources

Indirect impacts would occur later in time or farther away in distance than direct impacts, but are still reasonably foreseeable. They would typically include those impacts that result from the continuing implementation of management decisions and associated activities, and/or the normal, ongoing operations of facilities constructed within a specific project area. For example, an indirect adverse impact on paleontological resources would be the construction of a new road that increases public access to a previously inaccessible area, and results in unauthorized fossil collecting and vandalism. Mitigation strategies could include surveys by permitted and qualified paleontologists to collect important surface fossils, transfer them to a public museum, and identify locations of fossil localities that have the potential to yield additional fossils as erosion occurs. Other mitigation strategies could include augmentation of law enforcement staff and increased patrols, and the construction of protective fencing or other barriers around known paleontological sites.

4.3.9.2. Impacts Common to All Alternatives

Management decisions related to fire management could have long-term direct and indirect adverse and beneficial impacts on paleontological resources. Surface-disturbing actions such as road construction, the building of fire lines, and prescribed burns could damage or destroy surface fossils in paleontologically sensitive areas/geologic units (Class 3, 4/5, and 5). In these areas, paleontological resource impacts mitigation would reduce potential direct, adverse impacts to below the level of significance. Surface fossils would be collected by a qualified and BLM-permitted paleontologist prior to surface disturbance, and paleontological monitoring of construction-related excavations would allow the salvage and recovery of important sub-surface paleontological resources. The recovered fossils would be transferred to a public museum for permanent storage. Potential long-term, adverse indirect impacts would result from the

construction of new fire roads and fire breaks, which would increase OHV access into areas that were previously less accessible or inaccessible to the public, thus increasing the potential for unauthorized fossil collecting (poaching) and vandalism. The recovery and preservation of fossils as the result of paleontological mitigation would be a beneficial impact because it would permanently preserve paleontological resources that may have otherwise never been discovered, and make them available for scientific research, education, and display.

Decisions related to paleontological resource decisions common to all alternatives could have both short- and long-term, direct and indirect, beneficial impacts on paleontological resources. Under all alternatives, management decisions would be designed to reduce potential adverse impacts to below the level of significance. All alternatives would promote and facilitate scientific research by qualified and permitted paleontologists, encourage partnerships, manage access to scientifically significant fossils, reduce unauthorized use of known paleontological resources, and would provide for mitigation of adverse impacts on scientifically significant surface and sub-surface fossils where necessary to protect them and ensure their permanent storage and preservation in a public museum. Appropriate recreational use of common invertebrate and plant fossils would be encouraged, as would public education and interpretation of paleontological resources. Paleontological Resource Use Permits administered by the BLM Utah State Office for scientific study would provide important information to the Monticello FO about the locations (both geographic and stratigraphic) and kinds of important paleontological resources in their jurisdiction. Providing Internet Web sites, local interpretive sites, and written information to the public about fossils and hobby collection would have the potential to directly and beneficially impact the resource by increasing the public's knowledge of the earth sciences and encouraging good stewardship, potentially reducing illegal collection, and increasing the likelihood that important paleontological discoveries would be reported to the BLM.

Management decisions related to air quality, cultural resources, health and safety, vegetation, riparian areas, soils and watersheds, visual resources, wildlife, and special status species would have negligible impacts on paleontological resources, and therefore will not be further analyzed. No additional impact analysis is needed because maintaining air quality by ensuring that constituent pollutants do not exceed standard threshold levels; surveying sites, protecting cultural resources, and developing interpretive sites; maintaining public health by reclaiming AML sites and managing potentially hazard materials; applying vegetation treatments to improve ecosystem health; protecting riparian resources, sensitive soils, and watersheds from surface disturbances would neither inhibit nor enhance the scientific collection and analysis of important fossils, not affect recreational collection of fossils, nor alter the ability of the BLM to protect fossil resources. Also, neither would the protection of scenic quality nor protecting wildlife habitat and federally listed and sensitive species affect the preservation, collection and/or study of paleontologic resources.

4.3.9.3. ALTERNATIVES IMPACTS

This subsection discusses the impacts of the proposed alternative resource management decisions on paleontological resources. Because the analyses of the management decisions presented in this chapter do not reflect specific projects or actions, some impacts can only be expressed qualitatively. In most cases, subsequent site-specific analyses would be required in order to implement resource management decisions. These analyses would address potential site-specific impacts on a variety of resources, including paleontological resources. More detailed or locality-

specific studies and appropriate environmental documents would be prepared in compliance with NEPA and its implementing regulations as well as BLM policy as required.

Actions related to lands and realty management decisions would have long-term indirect, adverse and beneficial impacts on paleontological resources. Land acquisitions by the BLM would affect paleontological resources by increasing public access to areas that contain paleontologically sensitive geologic units and areas that contain fossil localities. Public access to these areas could result in an increased adverse risk of unauthorized collection or vandalism of paleontological resources. However, land acquistions would also create the opportunity for the BLM to establish stewardship of paleontological resources on these newly acquired lands, which could result in associated educational benefits including interpretive opportunities and the permanent storage of scientifically significant fossils collected in public museums. Transfer of BLM lands to private ownership would have long-term, indirect, and cumulatively adverse impacts on paleontological resources by removing scientifically significant fossils from the public domain, thus rendering them permanently unavailable for scientific research and education. Commercial exploration and development, and associated access of BLM lands for energy resources would have direct and indirect, adverse impacts on paleontological resources. Surface-disturbing activities associated with exploration and development could damage or destroy scientifically significant surface and sub-surface fossils. The ongoing operations of commercial energy facilities and associated infrastructure on BLM lands would have indirect, adverse impacts on paleontological resources by increasing access to lands that were previously inaccessible, and thus increasing the likelihood of unauthorized fossil collecting and vandalism.

Management decisions related to livestock grazing decisions could have direct and indirect adverse impacts on paleontological resources from livestock grazing in areas containing occurrences of scientifically significant surface fossils. This is because damage to or destruction of surface fossils is known to occur as a result of trampling by livestock (similar to the impacts on cultural resources from livestock grazing, see Section 4.3.2.3.1). Generally, grazing areas would be evaluated for important paleontological resources if they occur in areas containing paleontologically sensitive units (Classes 3, 4/5, and 5). See Section 4.3.6.3, Livestock Grazing Alternatives Impacts, for the range of acreages unavailable to livestock grazing.

Surface disturbance that results from mineral exploration and development (including geophysical surveys) could adversely affect paleontological resources by damaging or destroying them. Under all alternatives, management decisions related to minerals decisions would provide for a variety of mineral exploration and development activities for oil and gas, coal, tar sand, sand and gravel, potash, and geothermal resources. Because these activities typically involve surface disturbance, adverse impacts on paleontological resources would result under all alternatives, if mitigation was not applied. These impacts are most likely to occur in paleontologically sensitive units that are designated as Class 3, 4/5, and 5. Therefore, the PFYC classes of geologic units and surface acreage eligible for minerals exploration and development are an important consideration to paleontological resource impacts.

Management decisions related to recreation decisions would have both adverse and beneficial direct and indirect long-term impacts on paleontological resources. For example, allowing motorized vehicles into previously prohibited areas increases the likelihood that scientifically significant surface fossils could be accidentally damaged or destroyed, or intentionally vandalized. Management decisions such as implementing public education and environmental

awareness programs, such as the BLM's "Tread Lightly!" and “Leave No Trace” programs, would reduce illegal fossil collection, vandalism, or accidental destruction by educating the public on the need to preserve the resource. Developed recreation sites are closed to recreational fossil collection (see 43 CFR 8365.1-5[b]). This closure would thus reduce potentially adverse impacts on paleontological resources. Direct impacts on paleontological resources resulting from recreation decisions would be related to the level of surface disturbance associated with recreational development, such as the construction of recreational facilities including roads, and the degree of increased human activity in paleontologically sensitive areas/geologic units. Potential long- and short-term indirect impacts would also result from increases in levels of unauthorized collecting and associated vandalism that could accompany increased human activity. It should be noted, however, that regulated recreational use of areas tends to provide better protection to paleontological resources than does unregulated use. Collecting common invertebrate and plant fossils for personal, noncommercial use is an accepted, low-impact use of public lands, and could foster a greater overall appreciation for paleontological resources and their scientific importance. In areas containing known fossil localities, mitigation could include surveys to collect exposed fossils and transfer them to a qualified public museum, or the installation of fencing or other barriers around the known fossil localities to protect the resources.

Under each alternative, recreation decisions would continue existing ROWs for all existing developed recreation sites and facilities, and would provide similar protective ROWs for all new recreation facilities. The primary framework for recreation management in the Monticello PA is the Special Recreation Management Area (SRMA). SRMAs are used to define components of the recreation program including OHV designations, recreation permitting, developed recreation facilities, campsite designation, tourism, and heritage tourism. All lands outside of the SRMAs are designated as part of the Extensive Recreation Management Area (ERMA), which is defined as the area where recreational opportunities and concerns do not require explicit recreation management.

Impacts related to special designations decisions could have indirect, adverse and beneficial impacts on paleontological resources. For the purpose of this analysis, Special Designations fall into two categories: Areas of Critical Environmental Concern (ACECs) and Wild and Scenic Rivers (WSRs). FLPMA defines an ACEC as an area "within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." ACECs differ from some other special management designations in that designation by itself does not automatically prohibit or restrict other uses in the area. The 1968 Wild and Scenic Rivers Act established legislation for a National Wild and Scenic Rivers System (NWSRS) to protect and preserve designated rivers throughout the nation in their free-flowing condition, as well as their immediate environments. The Act contains policy for managing designated rivers, and created processes for designating additional rivers into the National System. To the extent that Special Designations of BLM lands in paleontologically sensitive areas/geologic units (Class 3, 4/5, and 5) result in restricted public access and use, and prohibit surface-disturbing actions, paleontological resources would be less likely to be unlawfully collected or vandalized, or damaged or destroyed by livestock, vehicular traffic, or construction. Therefore, in this general sense, Special Designations represent a beneficial impact on paleontological resources because they lessen the probability of their permanent loss to

science and education. If public access to special designations areas such as ACECs is encouraged or facilitated with trails, roads, or off-road use, and surface-disturbing actions are permitted, adverse direct and indirect impacts on paleontological resources could occur. These impacts could be reduced to below the level of significance with the implementation of paleontological mitigation measures designed to collect scientifically significant fossils prior to ground disturbance and transfer them to a public museum, or to protect resources in place with the installation of fencing or other protective barriers. Under each alternative, varying management decisions would apply to ACECs and WSRs. Decisions related to ACECs and WSRs include various levels of management prescriptions for the 12 ACECs and eligible WSRs segments managed by the Monticello FO.

Impacts related to travel decisions are generally similar to those discussed under recreation in that they include potentially adverse, direct and indirect impacts on paleontological resources associated with surface-disturbing actions, and increased public access to BLM lands resulting in a greater potential for unauthorized fossil collecting or vandalism. The construction of travel infrastructure such as roads, trails, and trailheads would be associated with construction-related surface disturbance that could damage or destroy fossils in areas with paleontologically sensitive areas/geologic units (Class 3, 4/5, and 5). The overall increase in public access to BLM lands associated with travel decisions would increase the potential for unauthorized fossil collecting (poaching) and vandalism. As with other management decisions, the potentially adverse impacts to paleontological resources could be reduced to below the level of significance through mitigation. Mitigation in itself would be a beneficial impact because it would result in the authorized collection of fossils that may otherwise never have been discovered, along with their preservation in a public museum where they would be available for scientific research and education. Mitigation strategies would include surveys of paleontologically sensitive areas/geologic units by a qualified and permitted paleontologist in areas where surface-disturbing actions are planned, to collect surface occurrences of fossils and associated data. It would also include the installation of protective fencing or other barriers around known fossil localities. Interpretive signs and displays in paleontologically sensitive areas. Mitigation could include the encouragement of lawful collection of invertebrate and plant fossils, could foster a greater overall appreciation for paleontological resources and their scientific significance.

Decisions related to woodlands decisions would have long-term direct adverse impacts on paleontological resources due to surface-disturbing actions from OHV access, road construction, and commercial and private woodland harvesting. Additionally, the increase in public access resulting from new roads would have indirect adverse impacts on paleontological resources because it could increase the potential for unauthorized fossil collecting and vandalism. The implementation of paleontological mitigation measures in paleontologically sensitive areas/geologic units prior to and during the construction of new roads and other surface-disturbing activities related to woodlands management would reduce potential adverse direct and indirect impacts on paleontological resources to below the level of significance. Such measures provide for a qualified and BLM-permitted paleontologist to collect scientifically significant surface fossils and associated data, and transfer these resources to a public museum for permanent storage.

Under all action alternatives, woodlands decisions would include the harvesting of woodlands in 9 proposed harvesting zones. Woodlands resource management decisions would be guided by

BLM Forest Health and Forest Management standards and guidelines, and the Healthy Forests Initiative.

4.3.9.3.1. Impacts of Lands and Realty Decisions on Paleontological Resources

The analysis of impacts of lands and realty decisions on paleontological resources under each alternative address wind and solar energy exploration and development, and related ROWs.

4.3.9.3.1.1. Alternative A

Under Alternative A, there are no specified restrictions on the locations of exploration and development for wind and solar energy within the Monticello PA (except in WSAs). This alternative would have the highest potential for adverse impacts on paleontological resources as it could result in the greatest amount of surface disturbance associated with wind and solar energy exploration and development activities.

4.3.9.3.1.2. Alternative B

Under Alternative B, wind and solar energy would be permitted on all lands within the Monticello PA except WSAs, eligible Wild and Scenic River segments, ACECs, all areas managed as open to minerals leasing with major constraints (such as areas under NSO leasing stipulations), designated VRM Class I, II, and III areas, migratory bird habitats and raptor-nesting complexes in riparian habitats and sagebrush and aspen, and special status species habitats. Of all the proposed alternatives, Alternative B would exclude the second largest area within the Monticello PA from wind and solar energy exploration and development, primarily because of VRM constraints on surface disturbances that could impact scenic quality (see Table 4.184 VRM Acreages by Alternative). Thus, this alternative has the second lowest potential for adverse impacts on paleontological resources as it would result in the second least amount of surface disturbance associated with wind and solar energy exploration and development activities. Compared to Alternative A, this alternative would have more beneficial impacts to the resource because more area would be protected from surface disturbances.

4.3.9.3.1.3. Alternative C

Under Alternative C, wind and solar energy would be permitted on all lands within the Monticello PA except WSAs, eligible Wild and Scenic River corridors, ACECs, all areas managed as open to oil and gas leasing with major constraints (such as areas under NSO stipulations), designated VRM Class I, II, and III areas, and migratory bird habitats and raptor-nesting complexes in riparian habitats and sagebrush and aspen. Alternative C exempts the third largest area of the PA from wind and solar energy exploration and development, primarily because of VRM management objective constraints on surface disturbances. Management decisions would be identical to Alternative B, except that energy exploration and development would be permitted in special status species habitats. The impacts of this alternative, when compared to Alternative A, would be the same as Alternative B.

4.3.9.3.1.4. Alternative D

Under Alternative D, wind and solar energy would be permitted on all lands within the Monticello PA except WSAs, designated VRM Class I areas, threatened and endangered species habitats, and all areas managed as open to oil and gas leasing with major constraints (such as

NSO areas). Alternative D exempts the fourth largest amount of BLM land from wind and solar energy exploration and development (after Alternatives B, C, and E). As related to potential surface disturbance and increased access to public lands associated with wind and solar energy exploration and development, potential adverse impacts on paleontological resources under Alternative D would be less than Alternative A for the same reasons as discussed under Alternative B.

4.3.9.3.1.5. Alternative E

Lands and realty management decisions under Alternative E would be the same as the impacts discussed under Alternative B, except that 582,360 acres of non-WSA lands with wilderness characteristics would be managed as exclusion areas for ROWs, including ROWs for wind and solar energy. This would restrict or prohibit surface disturbances and would have additional long-term, beneficial, preservation-related impacts on paleontological resources. Compared to Alternative A, this alternative would have the lowest potential for adverse impacts to the resource because it would result in the least amount of surface disturbance associated with wind and solar energy exploration and development activities.

4.3.9.3.2. Impacts of Livestock Grazing Decisions on Paleontological Resources

4.3.9.3.2.1. Alternative A

Under Alternative A, no acres of Class 1 units, 1,501 acres of Class 2 units, 129,899 acres of Class 3 units, 5,151 acres of Class 4/5 units, and 724 acres of Class 5 units would be unavailable for livestock grazing. Alternative A would have the highest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it would manage the least amount of land as unavailable to livestock grazing (117,921 unavailable acres, with an additional 16,599 acres in the Comb Wash Allotment as unavailable), and thus would have the greatest likelihood of livestock trampling of important surface fossils.

4.3.9.3.2.2. Alternatives B and E

Alternatives B and E would manage the same number of acres as unavailable for grazing (117,921 acres, with additional 26,086 acres as unavailable to livestock grazing) for the life of the plane, including portions of Slickhorn Canyon (Perkins Brother's Allotment), Rone Bailey Mesa (Upper Mail Station Allotment), Dodge Canyon Allotment, Mule Canyon, Arch Canyon, Fish and Owl Canyons, Road Canyon, Roger Allotment, West Butler Wash Canyon, and Horsehead Canyon within the Montezuma Canyon Allotment. Under Alternatives B and E, no acres of Class 1 units, 4,034 acres of Class 2 units, 126,939 acres of Class 3 units, 7,552 acres of Class 4/5 units, and 2,053 acres of Class 5 units would be unavailable for livestock grazing. These alternatives would restrict other areas to livestock trailing only, with no grazing, and the BLM would develop seasonal restrictions, unavailable acreages, and/or forage utilization limits on grazing in riparian areas considered to be Functioning at Risk. Compared to Alternative A, this alternative would have more beneficial impacts on paleontological resources because more area would be protected from the potential impacts of livestock trampling.

Alternatives B and E would have the lowest potential for long-term adverse impacts to the resource because these alternatives would impose the most restrictions on livestock grazing, with reduced potential for adverse impacts to paleontological resources. Compared to Alternative A,

these alternatives would be have less adverse impacts to the resource from livestock grazing because more area would be unavailable to livestock grazing disturbances of surface fossils. The impacts comparison of this alternative with Alternative A would be the same as discussed above for Alternative B.

4.3.9.3.2.3. Alternative C

Alternative C would have the second largest acreage managed as unavailable for livestock grazing (after Alternative E) by managing 117,921 acres as unavailable, with additional 24,762 acres as unavailable. The acreages and impacts would be the same as discussed under Alternative B, except that Alternative C opens Mule Canyon below U-95 to livestock grazing. Under Alternative C, zero acres of Class 1 units, 4,031 acres of Class 2 units, 134,159 acres of Class 3 units, 7,552 acres of Class 4/5 units, and 2,053 acres of Class 5 units would be unavailable for livestock grazing. The impacts comparison with Alternative A would be the same as discussed under Alternatives B and E.

4.3.9.3.2.4. Alternative D

Alternative D livestock grazing decisions would manage the fourth most acreage as unavailable to livestock grazing (with slightly less unavailable acreages [117,921 acres as unavailable, with an additional 22,593 acres], when compared to Alternative A). Under Alternative D, Slickhorn Canyon (Perkins Brother's Allotment), Rone Bailey Mesa (Upper Mail Station Allotment), Mule Canyon below U-95, Arch Canyon, Fish and Owl Canyons, Road Canyon, Rogers Allotment, and portions of West Butler Wash Canyons would be unavailable for livestock grazing for the life of the plan. Under Alternative D, zero acres of Class 1 units, 2,664 acres of Class 2 units, 130,032 acres of Class 3 units, 5,111 acres of Class 4/5 units, and 724 acres of Class 5 units would be unavailable for livestock grazing. Alternative D would have a higher potential for adverse impacts on paleontological resources in sensitive areas/geologic units due to livestock trampling than Alternatives B, C, and E, but a lower potential for adverse impacts than Alternative A.

4.3.9.3.3. Impacts of Minerals Decisions on Paleontological Resources

4.3.9.3.3.1. Alternative A

The number of acres open to oil and gas leasing under both standard and special stipulations within each Monticello PA RFD area under Alternative A and corresponding paleontological sensitivities of geologic units is shown in Table 4.73.

Table 4.73. Proposed Acreages per PFYC Classes Open to Oil and Gas Leasing Under Alternative A for Each of the RFD Areas

	Class 1	Class 2	Class 3	Class 4/5	Class 5
Blanding	19	78,268	36,241	163,403	120,136
Monument Upwarp	0	166,911	335,015	72,658	12,506
Paradox Fold and Fault	0	127,473	85,977	31,317	8,306
Total	**19**	**372,652**	**457,233**	**267,378**	**140,948**

Table 4.74 shows the oil and gas leasing stipulations applicable by RFD area for Alternative A.

Table 4.74 Oil and Gas Leasing Stipulations (acres) by RFD Area, Alternative A

RFD Area	Open with Standard Conditions	Open with Special Stipulations	Open with No Surface Occupancy	Closed to Oil and Gas Leasing
Blanding	270,410	127,657	9,059	15,547
Monument Upwarp	144,241	442,848	147,249	359,337
Paradox Fold and Fault	163,953	89,121	4,916	10,432

Alternative A has the second lowest potential for adverse, surface disturbance-related impacts on paleontological resources because it proposes opening the second least amount of land containing paleontologically sensitive (Class 3, 4/5, and 5) geologic units for minerals exploration and development (see Table 4.83 in Section 4.3.9.4, Summary of Impacts).

4.3.9.3.3.2. Alternative B

The number of acres open to oil and gas leasing under both standard and special stipulations within each RFD area under Alternative B and corresponding paleontological sensitivities of geologic units is provided in Table 4.75:

Table 4.75. Proposed Acreages per PFYC Classes Open to Oil and Gas Leasing Under Alternative B for Each of the RFD Areas

	Class 1	Class 2	Class 3	Class 4/5	Class 5
Blanding	19	56,593	30,408	159,113	120,217
Monument Upwarp	0	179,266	400,895	75,585	12,506
Paradox Fold and Fault	0	120,491	51,713	26,851	8,180
Total	**19**	**356.350**	**483,016**	**261,751**	**140,903**

Table 4.76 below shows the oil and gas leasing stipulations applicable by RFD area for Alternative B.

Table 4.76. Oil and Gas Leasing Stipulations (acres) by RFD Area, Alternative B

RFD Area	Open with Standard Conditions	Open with Special Stipulations	Open with No Surface Occupancy	Closed to Oil and Gas Leasing
Blanding	148,521	214,212	39,805	15,000
Monument Upwarp	192,290	456,604	35,826	390,014
Paradox Fold and Fault	24,359	182,876	49,473	11,597

Alternative B has the third lowest potential for surface disturbance-related adverse impacts on scientifically significant paleontological resources because it contains the third lowest number of acres of paleontologically sensitive (Class 3, 4/5, and 5) geologic units on acreage proposed for minerals exploration and development (see Table 4.83 in Section 4.3.9.4, Summary of Impacts). Compared to Alternative A, this alternative would have potentially more adverse impacts on the resource because more acreage with sensitive paleontological fossils would be open to minerals development.

4.3.9.3.3.3. Alternative C

The number of acres open to oil and gas leasing under both standard and special stipulations on BLM-administered lands within each RFD area under Alternative C and corresponding paleontological sensitivies of geologic units is provided in Table 4.77:

Table 4.77. Proposed Acreages per PFYC Classes Open to Oil and Gas Leasing Under Alternative C for Each of the RFD Areas

	Class 1	Class 2	Class 3	Class 4/5	Class 5
Blanding	19	75,907	36,770	164,025	120,300
Monument Upwarp	0	192,183	419,889	76,607	12,507
Paradox Fold and Fault	0	127,397	83,470	31,722	8,180
Total	**19**	**395,487**	**540,129**	**272,354**	**140,987**

Table 4.78 shows the oil and gas leasing stipulations applicable by RFD area for Alternative C.

Table 4.78. Oil and Gas Leasing Stipulations (acres) by RFD Area, Alternative C

RFD Area	Open with Standard Conditions	Open with Special Stipulations	Open with No Surface Occupancy	Closed to Oil and Gas Leasing
Blanding	254,706	142,314	8,213	16,012
Monument Upwarp	293,201	407,984	25,171	367,720
Paradox Fold and Fault	81,564	172,205	5,939	11,597

Alternative C has the fourth lowest potential for adverse impacts on scientifically significant paleontological resources because it contains the fourth lowest acreage of paleontologically sensitive (Class 3, 4/5, and 5) geologic units within areas proposed for minerals exploration and development (see Table 4.83 in Section 4.3.9.4, Summary of Impacts). Compared to Alternative A, this alternative would have potentially more adverse impacts because more acreage of sensitive resources would be open to minerals development.

4.3.9.3.3.4. Alternative D

The number of acres proposed as open to oil and gas leasing under both standard and special stipulations within the Monticello PA RFD areas under Alternative D and corresponding paleontological sensitivities of geologic units are provided in Table 4.79:

Table 4.79. Proposed Acreages per PFYC Classes Open to Oil and Gas Leasing Under Alternative D for Each of the RFD Areas

	Class 1	Class 2	Class 3	Class 4/5	Class 5
Blanding	19	75,865	37,334	163,974	120,299
Monument Upwarp	0	193,556	445,074	76,775	12,506
Paradox Fold and Fault	0	127,526	90,342	31,823	8,179
Total	**19**	**396,957**	**572,750**	**272,572**	**140,984**

Table 4.80 shows the oil and gas leasing stipulations applicable by RFD area for Alternative D.

Table 4.80. Oil and Gas Leasing Stipulations (acres) by RFD Area, Alternative D

RFD Area	Open with Standard Conditions	Open with Special Stipulations	Open with No Surface Occupancy	Closed to Oil and Gas Leasing
Blanding	303,258	118,675	8,936	15,506
Monument Upwarp	505,529	222,393	5,240	360,914
Paradox Fold and Fault	153,496	104,374	0	10,433

Alternative D would have the highest potential for adverse impacts on scientifically significant paleontological resources because it contains the largest amount of acreage of paleontologically sensitive (Class 3, 4/5, and 5) geologic units within acreage proposed for minerals exploration and development (see Table 4.83 in Section 4.3.9.4, Summary of Impacts). Compared to Alternative A, this alternative would have potentially more adverse impacts because more acreage of sensitive resources would be open to minerals development.

4.3.9.3.3.5. Alternative E

The number of acres open to oil and gas leasing under both standard and special stipulations within each RFD area under Alternative E and corresponding paleontological sensitivities of geologic units are provided in Table 4.81:

Table 4.81. Proposed Acreages per PFYC Classes Open to Oil and Gas Leasing Under Alternative E for Each of the RFD Areas

	Class 1	Class 2	Class 3	Class 4/5	Class 5
Blanding	19	56,076	30,255	156,724	119,658
Monument Upwarp	0	163,911	324,905	71,702	12,506
Paradox Fold and Fault	0	95,645	24,600	18,750	8,160
Total	**19**	**315,632**	**379,760**	**247,176**	**140,324**

Table 4.82 shows the oil and gas leasing stipulations applicable by RFD area for Alternative E.

Alternative E would have the lowest potential for adverse impacts on scientifically significant paleontological resources because it would manage the smallest acreage for minerals exploration and development in paleontologically sensitive areas/geologic units (Class 3, 4/5, and 5). Compared to Alternative A, this alternative would have potentially less adverse impacts because fewer acres of sensitive resources would be open to minerals activities and surface disturbances.

Table 4.82. Oil and Gas Leasing Stipulations (acres) by RFD Area, Alternative E

RFD Area	Open with Standard Conditions	Open with Special Stipulations	Open with No Surface Occupancy	Closed to Oil and Gas Leasing
Blanding	148,520	217,919	40,492	15,001
Monument Upwarp	170,523	433,456	35,826	454,270
Paradox Fold and Fault	24,359	172,444	46,770	24,732

4.3.9.3.4. Impacts of Non-WSA Lands With Wilderness Characteristics Decisions on Paleontological Resources

Management decisions related to non-WSA lands with wilderness characteristics decisions would have beneficial direct and indirect impacts on paleontological resources that occur within their boundaries. Non-WSA lands with wilderness characteristics would be managed to protect natural values; surface-disturbing activities would be prohibited. This decision would protect any paleontological resources that exist on non-WSA lands that are managed to protect their wilderness characteristics.

4.3.9.3.4.1. Alternatives A–D

No acres of non-WSA lands with wilderness characteristics would be managed to protect wilderness values. Therefore, no beneficial impact to paleontological resources would occur. The potentially adverse impacts to the resource would be the same as discussed under the other resources within this section.

4.3.9.3.4.2. Alternative E

Alternative E would manage 582,357 acres to protect non-WSA lands with wilderness characteristics. These lands would be managed as 1) closed to oil and gas leasing, 2) designated as VRM Class I (allowing a very low degree of surface impacts), 3) closed to OHV travel, and 4) ROWs would not be permitted. These restrictions would protect paleontological resources by precluding surface-disturbing activities.Compared to Alternative A this alternative would have more beneficial impacts on the resource because more area would be protected from surface and subsurface disturbances.

4.3.9.3.5. Impacts of Recreation Decisions on Paleontological Resources

4.3.9.3.5.1. Alternative A

Alternative A would generally have the least restrictions to recreational activities within the SRMAs and the ERMA. However, since site surveys and resource mitigation would be conducted prior to surface disturbance, the impacts from recreational actitivies on paleotological resources would likely be minor.

4.3.9.3.5.2. Alternative B

Alternative B would generally be the second most restrictive on recreational activities within the Monticello PA SRMAs and the ERMA. To the extent that increased recreation results in greater public access and may require the installation of surface-disturbing infrastructure such as trails, and buildings, adverse impacts on important paleontological resources may result. Thus, Alternative B has the second lowest potential for adverse impacts on paleontological resources (after Alternative E) related to recreation decisions. Compared to Alternative A, this alternative would be more beneficial to the resource because more restrictions would be placed on recreational activities and facility construction.

4.3.9.3.5.3. Alternative C

Alternative C generally provides the third highest level of restrictions on recreational activities within the SRMAs and the ERMA. To the extent that increased recreation results in greater public access and may require the installation of surface-disturbing infrastructure such as roads, trails, and buildings, adverse impacts on important paleontological resources may result. Thus, Alternative C has a lower potential for adverse impacts on paleontological resources related to recreation decisions than Alternatives A.

4.3.9.3.5.4. Alternative D

Alternative D would generally provide the fourth highest level of restrictions on recreational activities within the Monticello PA SRMAs and the ERMA. The impacts would be the same as those discussed under Alternative B and C, but to a potentially greater adverse degree, from fewer restrictions on recreational activities. Alternative D would a higher potential for adverse impacts on paleontological resources than Alternative A because of more restrictions on recreation-related surface disturbances and access than Alternative A.

4.3.9.3.5.5. Alternative E

The impacts on paleontological resources from recreation management decisions within the SRMAs, C-SRMAs, and the ERMA would be the same as discussed under Alternative B, except within lands with non-WSA wilderness characteristics, which would be managed with additional protective measures that would be beneficial to paleontological resources, as described above in Section 4.3.9.3.4. Approximately 165,831 acres of SRMAs would have inventoried wilderness characteristics, and would therefore be managed with prescriptions beneficial to paleontological resources. An additional 416,526 acres within the ERMA would also be managed under these beneficial prescriptions. Because of the large area managed to preclude surface disturbance and with reduced public access, Alternative E would be the most beneficial to paleontological resources. However, there would also be an adverse reduction of discovery and recovery of additional fossils and other resources due to reduced surface disturbance and access. Compared to Alternative A, this alternative would be more beneficial to the resource because of the increased level of protection within the non-WSA lands with wilderness characteristics.

4.3.9.3.6. Impacts of Special Designations Decisions on Paleontological Resources

4.3.9.3.6.1. Alternative A

Alternative A would generally be the least restrictive in terms of commercial and recreational access uses of lands designated as ACECs and eligible WSR segments. Under Alternative A, no acres of Class 1 geologic units, 96,932 acres of Class 2 units, 171,736 acres of Class 3 units, 141,790 acres of Class 4/5 units, and 93,985 acres of Class 5 units would lie within ACECs. Under Alternative A, 3,577 acres of ACECs would be open to minerals leasing under standard conditions, 122,335 acres would be open under controlled surface use and timing limitations, 95,246 acres would be open with no surface occupancy, and 292,289 acres would be closed to minerals leasing. Of all the alternatives, Alternative A would permit the greatest commercial and recreational access to ACECs and WSRs, and is associated with the highest amount of potential surface disturbance. Therefore, Alternative A has the greatest potential for adverse impacts on important paleontological resources.

4.3.9.3.6.2. Alternative B

Alternative B would generally be the second most restrictive in terms of commercial and recreational access and uses of lands proposed as ACECs and eligible WSR segments (only Alternative E is more restrictive). Under Alternative B, no acres of Class 1 geologic units, 43,954 acres of Class 2 units, 439,341 acres of Class 3 units, 21,793 acres of Class 4/5 units, and 14,804 acres of Class 5 units would be designated as ACECs. Under Alternative B, 44,884 acres of ACECs would be open to minerals leasing under standard conditions, 102,825 acres would be open under controlled surface use and timing limitations, 62,698 acres would be open with no surface occupancy, and 310,651 acres would be closed to minerals leasing. Compared to Alternative A, this alternative would be more beneficial to the resource because more restrictions would be placed on access to areas with sensitive paleontological resources.

4.3.9.3.6.3. Alternative C

Under Alternative C, no acres of Class 1 geologic units, 11,141 acres of Class 2 units, 34,302 acres of Class 3 units, 15,264 acres of Class 4/5 units, and 14,804 acres of Class 5 units would be designated as ACECs. Under Alternative C, 92,115 acres of ACECs would be open to minerals leasing under standard conditions, 101,572 acres would be open under controlled surface use and timing limitations, 35,822 acres would be open with no surface occupancy, and 291,605 acres would be closed to minerals leasing. Alternative C is less restrictive than Alternatives B and E, but more restrictive than Alternatives A and D. Therefore, Alternative C would be the third most limiting in terms of commercial and recreational access to ACECs and eligible WSR segments, and is associated with the second least degree of potential surface disturbance and resulting adverse impacts on important paleontological resources. Compared to Alternative A, this alternative would be more beneficial to the resource because more restrictions would be placed on access to areas with sensitive paleontological resources.

4.3.9.3.6.4. Alternative D

Under Alternative D, no new ACECs would be designated and no river segments would be managed as eligible for WSR status. Under this alternative, 152,809 acres of existing ACECs would be open to minerals leasing under standard conditions, 71,093 acres would be open under controlled surface use and timing limitations, 9,736 acres would be open with no surface occupancy, and 287,462 acres would be closed to minerals leasing. Alternative D would be the second least restrictive in terms of commercial and recreational access and uses of lands designated as ACECs and WSRs, and thus would potentially allow the second most degree of adverse impacts to paleontological resources of the proposed alternatives because it would allow the second highest level of commercial and recreational access to ACECs and river segments within the Monticello PA. This alternative would be more restrictive than Alternative A, so Alternative D would have potentially fewer adverse impacts to the resource than Alternative A.

4.3.9.3.6.5. Alternative E

The impacts of special designation decisions on the resource would be similar to those discussed under Alternative B because the proposed ACEC acreages and miles of eligible WSR segments would be the same. Under this alternative, the proposed ACECs would encompass approximately 109,206 acres of non-WSA lands with wilderness characteristics, and would therefore be managed with prescriptions that would prevent surface disturbances to paleontological resources. Because of the larger area managed to preclude surface disturbance and with reduced public access, Alternative E would be the most beneficial to paleontological resources. However, there would also be an adverse reduction of discovery and recovery of additional fossils and other resources due to reduced surface disturbance and access. Compared to Alternative A, this alternative would be more beneficial to the resource because greater protection would be afforded the resource.

4.3.9.3.7. Impacts of Travel Decisions on Paleontological Resources

4.3.9.3.7.1. Alternative A

Under Alternative A, 611,310 acres would be open to OHV use, 540,260 acres would be open to limited use with seasonal restrictions, 570,390 acres would be limited to existing roads and trails,

218,780 acres would be limited to designated roads and trails, and 276,430 acres would be closed to OHV use. Of the proposed alternatives, Alternative A would have the highest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it opens the highest acreage of the Monticello PA to travel and access to the general public, thus increasing the potential for unauthorized fossil collection and vandalism of scientifically significant paleontological resources in sensitive areas/geologic units. The construction of new roads, routes or trails in sensitive areas/geologic units under Alternative A would also adversely impact paleontological resources if surface disturbances were not mitigated to protect the resource.

4.3.9.3.7.2. Alternative B

Under Alternative B, no acres would be open to cross-country OHV travel, 1,359,417 acres would be limited to designated routes, and 423,698 acres would be closed to OHV use. Of the proposed alternatives, Alternative B would have the second lowest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it is the second most travel restrictive (after Alternative E). This would reduce the likelihood of unauthorized fossil collection and vandalism of scientifically significant paleontological resources resulting from increased access to public lands due to the construction of roads, routes, and trails. Compared to Alternative A, this alternative would be more beneficial to the resource because all cross-country OHV travel (and potential impacts to surface fossils from this form of travel) would be eliminated.

4.3.9.3.7.3. Alternative C

Under Alternative C, 2,311 acres would be open to cross-country OHV use, 1,362,142 acres would be limited to designated routes, approximately 3.8 miles would be limited to designated routes with seasonal restrictions, and 418,667 acres would be closed to OHV use. Alternative C would have the third lowest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it is the third-most travel restrictive. Alternatives B and E would have a lower potential for adverse impacts, and Alternatives A and D would have a higher potential for adverse impacts resulting from increased public access due to the construction of roads, routes, and trails.

4.3.9.3.7.4. Alternative D

Under Alternative D, 2,311 acres would be open to cross-country OHV use, 1,780,807 acres would be limited to designated routes, no acres would be limited to designated routes with seasonal restrictions, and zero acres would be closed to OHV use. Alternative D would have the second highest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it is the second least travel restrictive. Alternatives B, C, and E would have a lower potential for adverse impacts, and Alternative A would have a higher potential for adverse impacts resulting from increased public access due to the construction of roads, routes, and trails.

4.3.9.3.7.5. Alternative E

Under Alternative E, no acres would be open to cross-country OHV use, 812,683 acres would require travel along designated routes, and 970,435 acres would be closed to OHV use. Of all the

alternatives, Alternative E would have the lowest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it is the most travel restrictive. These restrictions would reeuce the likelihood of unauthorized fossil collection and vandalism of scientifically significant paleontological resources resulting from increased public access due to the construction of roads, routes, and trails. Compared to Alternative A, this alternative would be more beneficial to the resource because of the substantial reduction in travel opportunities, most notably on lands with non-WSA wilderness characteristics.

4.3.9.3.8. Impacts of Woodlands Decisions on Paleontological Resources

4.3.9.3.8.1. Alternative A

Under Alternative A, no restrictions would be placed on the harvesting and use of woodlands products outside WSAs and other designated exclusion areas (see Section 4.3.20.3.1.12, Impacts of Woodlands Decisions on Woodlands). Of the proposed alternatives, Alternative A would permit the most commercial and public access within the Monticello PA for woodlands product use (1,309,894 acres would be available for harvesting within the PA), including surface disturbance associated with the harvesting and access to harvesting areas. Under Alternative A, zero acres of Class 1 units, 194,783 acres of Class 2 units, 365,088 acres of Class 3 units, 186,942 acres of Class 4/5 units, and 110,193 acres of Class 5 units would be open to woodland harvest. Alternative A would have the highest potential for adverse impacts on paleontological resources in sensitive areas/geologic units because it would result in greater surface disturbance that could damage or destroy important or valuable fossils. It would also facilitate greater commercial and public access to more areas within the PA, thus increasing the potential for unauthorized fossil collecting and vandalism.

4.3.9.3.8.2. Alternative B

Alternative B would place a high level of seasonal restrictions, limits, and closures of areas to woodlands harvesting. Under Alternative B, a total of 730,074 acres of BLM lands would be available for commercial and recreational use of woodlands products with harvesting limits and restrictions specific to each of the proposed nine harvesting zones. This alternative would potentially affect no acres of Class 1 geologic units, 96,932 acres of Class 2 units, 171,736 acres of Class 3 units, 141,790 acres of Class 4/5 units, and 93,985 acres of Class 5 units on land open to woodland harvesting. Because it would allow the second least amount of surface disturbance associated with woodlands harvesting and the least amount of commercial and public access to potentially sensitive areas/geologic units of all alternatives, Alternative B would have the second lowest potential for adverse impacts on important paleontological resources. Compared to Alternative A, this alternative would be more beneficial to the resource because more restrictions would be placed on woodland harvesting that would provide greater protection to paleontological resources.

4.3.9.3.8.3. Alternative C

Of the proposed alternatives, Alternative C would manage woodland resources with the third highest level of seasonal restrictions, limits and closures of areas to harvesting. Under Alternative C, 841,938 acres would be available for commercial and private harvesting, with specified harvesting limits and restrictions for each of the nine woodland zones. This alternative

would manage woodland resources with zero acres of Class 1 geologic units, 98,838 acres of Class 2 units, 234,757 acres of Class 3 units, 153,168 acres of Class 4/5 units, and 106,909 acres of Class 5 units on land available for harvesting. Because it would allow the second lowest amount of surface disturbance associated with woodlands products harvesting and the second lowest amount of commercial and public access to potentially sensitive areas/geologic units, Alternative C would have a lower potential for adverse impacts on important paleontological resources than Alternatives A.

4.3.9.3.8.4. Alternative D

Of the proposed alternatives, Alternative D would have the fourth-highest level seasonal restrictions, limits, and closures of areas to woodland harvesting. The acreage available for woodlands harvesting would be the same as Alternative C. However, Alternative D places fewer restrictions on woodlands harvesting than Alternative C by removing the stipulation that OHV travel be restricted to 150 feet of designated routes in most woodland zones. As it would allow the second highest amount of surface disturbance associated with woodlands products harvesting and the second highest amount of commercial and public access to potentially sensitive areas/geologic units, Alternative D would have a higher potential for adverse impacts on important paleontological resources than Alternatives B, C, and E, but a lower potential for adverse impacts to paleontological resources than Alternative A.

4.3.9.3.8.5. Alternative E

The impacts of Alternative E woodland management decisions on paleontological resources would be the same as those discussed under Alternative B because the proposed management decisions would be the same, except that 1) approximately 6,197 acres within the proposed woodland harvesting zones would impose restrictions on surface disturbance to protect lands with non-WSA wilderness characteristics (these areas fall within the White Canyon, Harts Draw, and South Cottonwood zones), and 2) 548,477 acres would be available for harvesting within the PA. The impacts on paleontological resources would be beneficial in the long-term within these areas because the underlying resources would be protected. This alternative would have the lowest potential for adverse impacts on important paleontological resources because it would manage the smallest area for woodland harvesting. Compared to Alternative A, this alternative would be more beneficial to paleontological resources because over 40% less of the Monticello PA would be available for harvesting.

4.3.9.4. Summary of Impacts

In this section, the impacts of the five alternatives evaluated in this chapter are summarized. Table 4.83 summarizes the acreage available by PFYC class for mineral exploration and development.

Alternative E would have the lowest potential for adverse impacts on scientifically significant paleontological resources because it involves the least amount of acreage in paleontologically sensitive areas/geologic units (Class 3, 4/5, and 5). Alternative A would have the second lowest potential, followed by Alternative B. Alternative C would have the fourth lowest potential. Alternative D would have the highest potential for adverse impacts on scientifically significant paleontological resources.

Table 4.83. Summary of Proposed Acreages per PFYC Classes Available for Mineral Exploration and Development within the Monticello PA

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Class 1	19	19	19	19	19
Class 2	372,652	356,350	395,487	396,957	214,747
Class 3	457,233	483,016	540,129	572,750	168,343
Class 4/5	267,378	261,751	272,354	272,572	237,698
Class 5	140,948	140,903	140,987	140,984	138,121
Total Class 3-5	*865,559*	*885,670*	*953,470*	*986,306*	*544,162*
Total Acres	**1,238,230**	**1,242,039**	**1,348,976**	**1,383,282**	**758,928**

See Section 4.3.9, Paleontological Resources, for detailed PFYC class descriptions.

4.3.9.5. Mitigation Measures

As a nonrenewable resource, paleontological resources are unique. At the time fossils are discovered during paleontological surveys or mitigation-monitoring of ground-disturbing activities, many have already been subjected to a variety of destructive processes. These include predation; scavenging; disarticulation of skeletal remains; transport; primary weathering; diagenesis (physical changes in rock that occur over time, such as compaction, cementation, and mineral replacement); erosion; secondary weathering; and, if discovered during monitoring, additional damage that may have occurred during the ground-disturbing action that led to fossil discovery. Unlike other resources, it is difficult to develop measurable performance standards for paleontological mitigation because 1) fossils may have been damaged by natural processes prior to their discovery during a paleontological survey or during paleontological monitoring; 2) sub-surface fossils are often further damaged by construction activities that reveal their presence to paleontological monitors, and 3) there is no way to quantify how many fossils are preserved in the sedimentary deposits underlying a given site that were not exposed during the ground-disturbing action. Therefore, the absence of fossils would not indicate failure of the mitigation measures. Paleontological mitigation seeks to discover, via survey or monitoring, as many scientifically significant fossils as possible prior to their destruction during human-caused surface disturbance. Measurable performance standards in paleontology apply to survey- and mitigation-monitoring procedures, which ensure that fossil localities are documented thoroughly and accurately, and that fossils are collected according to professional paleontological standards.

4.3.9.6. Unavoidable Adverse Impacts

With project-specific assessments and, if appropriate, paleontological mitigation, lands and realty decisions, minerals decisions, recreation decisions, woodlands decisions, livestock grazing decisions, travel decisions, and special-designations decisions under all alternatives would reduce adverse impacts on paleontological resources resulting from surface-disturbing actions to below the level of significance. However, the increased possibility of public access to previously inaccessible lands due to new commercial and recreational activities and infrastructure will increase loss risk of paleontological resources due to unauthorized fossil collecting (poaching).

The loss of these resources represents an unavoidable adverse impact. The rate, extent, intensity, and duration of loss cannot be quantified at this time due to lack of data.

4.3.9.7. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY IMPACTS

Short-term uses of BLM lands for activities involving surface disturbance or increased public access would have long-term impacts on non-renewable paleontological resources. In paleontologically sensitive areas/geologic units, surface-disturbing activities affecting paleontological resources would include mineral development (including oil and gas), trampling by livestock, and the construction of infrastructure such as roads, trails, reservoirs, buildings, and fire lines. Travel decisions involving maintenance, upgrade, and realignment of roads and OHV use would also have long-term adverse impacts on paleontological resources in sensitive areas/geologic units. Enhancing or restricting public access through Lands and Realty decisions and Special Designations would create the potential for long-term impacts, either adverse or beneficial. In most cases, implementation of paleontological mitigation measures would reduce adverse impacts to below the level of significance, and result in beneficial impacts by salvaging and preserving fossils that otherwise may have never been discovered. Such fossils would be permanently available in a public museum for scientific research, education, and public display. Accordingly, these long-term impacts would not result in a loss of the long-term productivity of this resource.

4.3.10. RECREATION

Recreational resources are defined for this impacts analysis as the natural elements (e.g., scenery, vegetation, geology, land forms, weather) within the environment that provide the physical basis for recreation. Recreational opportunities are defined as the combination of the natural elements and human-controlled conditions (e.g., roads and trails, developed sites, signs, route markers, facilities) that create the potential for recreation. Recreational expectations are those assumptions made by the recreation resource user (for example, an OHV rider, scenic driver, or hiker [see the description of user groups below]) that, having prepared for the desired recreational experience, he/she will have that desired experience (e.g., a challenging or scenic off-road trail, driving while enjoying high-quality scenery, or the natural sights and sounds of an undeveloped landscape along a hiking trail). Recreational user satisfaction can be defined as the mental state in which the resource user is able to successfully benefit from the available recreational opportunities and recognize that his/her recreational experiences meet or exceed those recreational expectations.

The following assumptions were made and considered in the analysis of impacts of the proposed RMP management decisions on recreational opportunities and experiences, and on recreation resources within the Monticello PA:

- The BLM assumed that resource users within the Monticello PA could be classified into specific user groups, each of which has its set of recreation expectations or objectives, recreational opportunities, and needs to achieve satisfying recreational experiences. We also assumed that, because each user group has its needs, opportunities, and expectations, each group also has specific recreational conditions and criteria that increase the likelihood of satisfying user experiences. The descriptions, expectations, and criteria of these groups were derived from Monticello FO resource specialist knowledge of visitor use of recreational resources and of what constitutes user group satisfaction, based on informal but long-term in-field interviews with visitors recreating throughout the PA. For the action alternatives

(Alternatives B, C, D, and E), the Monticello FO's benefits-based recreation management (BBM) goals and objectives (see Appendix E) for the proposed SRMAs were also used in analyzing the impacts of resource decisions on user groups and on the likelihood of users having satisfying recreational experiences in these areas. The recreation user groups and assumed conditions/criteria for satisfactory recreational user experiences are:

- **Scenic Drivers** – This would include users of passenger cars and recreational vehicles (RVs) driving for pleasure while enjoying scenic attractions.
  - This user group prefers paved access to scenic vistas, cultural sites, and interpretive stations with turnoffs and/or temporary parking.
  - High traffic volumes, crowded kiosk parking areas, impacts to visual resources from paved viewpoints, and crowded developed campsites would adversely affect this user group's recreational experience.
- **Motorized (off-highway)** – This group would include users of off-road motorcycles, all terrain vehicles (ATVs), and four wheel drive vehicles.
  - This group prefers a range of settings, from remote, natural-appearing environments with non-paved surfaces and few human disturbances through settings that include graded, dirt roads and challenging trails to settings that could include moderate evidence of human sights, sounds, and surface disturbances. A moderate concentration of users and the presence of human constructed structures are acceptable. Trails and facilities provided for group activities (including parking lots, trail information, trailheads, and toilet facilities) are generally beneficial for this group.
  - Overcrowding and overuse of trails, particularly by slower users (e.g., hikers or mountain bikers) and other OHV users, would have an adverse impact on their experiences. Moderate numbers of hikers, bikers, or equestrians are unlikely to adversely affect their recreational experiences.
- **Mountain bikers** – Mountain bike users prefer a relatively natural or naturally appearing environment, with natural surface trails ranging from beginner to advanced where evidence of human disturbances, restrictions, and controls are present but are subtle or do not dominate the environment. Recreation facilities would be optional and would blend with the natural environment. Recreation management would encourage user dispersal. Preferred facilities include semi-primitive camping with basic facilities (i.e., parking lots, trailheads, and toilet facilities).
  - Overcrowding, noise (particularly from motorized users), dust/exhaust, and poor trail etiquette from other users can have an adverse impact on this group's recreational experiences.
- **Non-mechanized** – This group would include hikers, backpackers, and equestrians.
  - This group prefers a natural appearing environment with little evidence of disturbance, few restrictions or visitor controls, no motorized users, and few mountain bikers. Trails, signs and active management that foster dispersal of users are the typical management decisions needed for this user group.
  - Adverse recreational experiences include those listed under mountain biking, but would also include the high speeds of mountain biking and motorized users. The speed and noise of motorized users is of particular concern to equestrian users.

- **River floating** – This group would include those recreating in non-motorized boats (predominantly in canoes, kayaks, and rafts).
  - The needs of this group are similar to those of the non-mechanized user group, with a natural appearing environment that shows little evidence of human disturbances within the river corridor. Other than boat ramps and restroom facilities at put-in and take-out locations and designated primitive campsites, facilities needs are few.
  - Overcrowding, noise, and impacts to visual resources seen from the San Juan and Colorado Rivers would detract from the user experience.
- **Specialized Recreation** – This group includes rock climbers, competitive motorized trail users, and Building-Antenna-Span-Earth (BASE) jumpers.
  - This diverse group prefers locations that provide the conditions for specialized recreation. Recreation BASE jumpers prefer high cliffs with favorable wind conditions and safe landing zones. Rock climbers prefer a range of challenging routes in sufficient numbers so that crowding and waiting is minimized. Competitive motorized trail users prefer challenging routes, often with enough distance and open area to allow for speed.
  - Overcrowding of a given area may detract from the user or group experience for either BASE jumpers or rock climbers. Conflicts with slower moving vehicles, people, or livestock would detract from the user experience for competitive motorized trail users.
  - While recognizing that some recreational resource users may not have expectations that include high scenic quality, recreational opportunities that are likely to provide satisfying experiences in general are related in some way to scenic quality and to visual resource management (VRM) because high quality scenery was assumed to be an important recreational expectation for all user groups. Thus, it was further assumed that those management decisions that protect visual resources/scenic quality or permit fewer surface disturbances (in areas designated as VRM Class I and II and managed under their resource objectives) would have more beneficial impacts to recreational experiences and opportunities than those management decisions that allow greater degrees of surface disturbance and less visual resource protection (those areas designated as VRM Class III and IV and managed under VRM Class III and Class IV objectives).

4.3.10.1. Impacts Common to All Alternatives

Management decisions common to all of the alternatives would include developing and/or improving campgrounds (e.g., Sand Island, Indian Creek, Comb Wash), improving developed cultural resource interpretive sites (i.e., Butler Wash Ruin, Mule Canyon Ruin, Three Kiva Pueblo), and improving the Kane Gulch Ranger Station. As discussed in Section 3.10.4.3, Resource Conflicts/Impacts, increasing recreational resource use and resource use conflicts are adversely impacting recreational resources and user experiences. Accommodating the increase in resource users through improvements to recreation facilities and sites would have long-term, direct, beneficial impacts for all user groups by potentially enhancing the recreational user experience.

A fundamental component of the recreational experience in the Monticello PA is scenic quality, so those management decisions that diminish or degrade scenic quality through the effects of smoke, haze, or other air pollutants would have potentially adverse short-term or long-term impacts on the recreational opportunities that include scenic quality as part of the experience. For all of the alternatives, air quality management decisions would comply with current interagency MOUs regarding smoke management. Fire management treatment (including prescribed burning) would be timed to minimize smoke impacts and mitigation would be applied in compliance with federal and state regulations to meet air quality standards and prevent deterioration of air quality within the Monticello PA airshed. All of these decisions would have long-term, direct, beneficial impacts on recreational opportunities for all recreation user groups that include scenic quality as a component of the recreational experience because smoke, haze, and other air pollutants produced within the Monticello PA would be mitigated or limited to levels that would not likely diminish or degrade scenic quality.

Management decisions common to all of the alternatives include managing the Old Spanish National Historic Trail to beneficially protect its recreational and interpretive resource values in the long-term, with the exception that under the action alternatives (i.e., B, C, D, and E) SRPs would be authorized only for re-enactments and heritage tours. This would also have long-term, beneficial impacts on the resource by managing the potential impacts from recreational resource users.

None of the alternatives propose specific areas or acreages for fire management. Fire management decision impacts on recreation resources and all recreation user groups would be beneficial in the long-term: management decisions common to all of the alternatives would use fuels treatments (e.g., prescribed fire) to restore ecosystems and to reduce hazards associated with fuel loading. Fire suppression would be a required consideration for all non-prescribed fires. The potential disturbances caused by these activities would be short-term, surface disturbance-related impacts on recreational activities and recreation resources that would include the closing of recreational facilities and the loss of recreational opportunities within burned areas for all user groups until recreation resources were rehabilitated or restored. Recreational scenic quality would be adversely impacted in the short-term in burned areas until vegetation would re-grow. The long-term, beneficial impacts on recreation resources and user experiences would be produced by the reduced risk or likelihood of wildland fires within treated areas (and the reduced risk of loss of remote and developed recreational areas and facilities from fire). The improvement of wildlife habitat (and enhancement of recreation opportunities for wildlife viewing and hunting in the long-term) for all user groups by improving vegetation communities through fire management would have long-term, beneficial impacts to recreation. It should be noted that fuels treatments to reduce the risk of wildland fire would be similar to those used to improve vegetation communities and improve or restore ecosystem health. See Section 4.3.17.2.7, Impacts of Paleontological Resources Decisions on Vegetation, for related impacts on recreation from vegetation treatments.

Under all of the alternatives, management decisions to identify and address hazardous materials within the Monticello PA that pose health or safety risks (e.g., AML sites, hazardous waste sites) would continue to pose potential short-term health and safety risks to all recreational users in those areas where hiking, OHV use, and target shooting are in close proximity to hazardous materials and AML sites. Once the health and safety concerns of AML sites, unauthorized waste dumps, and hazardous materials sites (e.g., lead contaminated shooting ranges) were addressed

and/or the areas were reclaimed, these areas would be considered as beneficially in compliance with federal and state regulations and/or as possible recreation areas. If managed as such they would then be an additional recreation resource and potentially provide beneficial, long term recreational opportunities to all user groups.

For impacts common to all alternatives, season-of-use changes in grazing allotments would beneficially affect wildlife by improving the functioning condition of grazed areas and also providing improved forage for wildlife, which would indirectly benefit long-term recreational opportunities for wildlife viewing and/or hunting for all user groups.

There are no specific paleontological management decisions that are applicable to each alternative. However, the collection of invertebrate and plant fossils on BLM-administered public lands for personal, non-commercial use is an approved recreational activity. The impacts of paleontological management decisions common to all alternatives on recreation resources would be negligible in the short-term and long-term because fossil collection is a recognized recreational activity, and current and proposed management decisions would not constrain, limit, or enhance this activity beyond those limits already mandated in BLM regulations.

Management decisions for SSS under all of the alternatives would have impacts on special recreation users and commercial recreation groups requiring SRPs. Commercial groups would be seasonally restricted from recreating within SSS habitat to protect these species during breeding seasons, which would have adverse impacts on motorized recreational opportunities for commercial users. Private, non-commercial motorized users would not be affected by these restrictions. Specialized recreation user groups (i.e., rock climbers) would be restricted from using climbing routes within areas where raptor species would be nesting, which would have adverse impacts on specialized recreation rock climbing opportunities during raptor nesting season.

Under all alternatives, travel decisions would prohibit vehicle access within the San Juan River SRMA along a river segment from Comb Wash downstream to Lime Creek, and below Mexican Hat Bridge. This would have long, term, adverse impacts on recreation-related travel because opportunities would not be available for motorized OHV recreation within this area. Under all alternatives, non-mechanized travel would not be restricted except to protect specific resource values, preserve public safety, and maintain identified recreational opportunities. All alternatives would identify routes and provide recreational opportunities for non-mechanized travel that are independent of motorized OHV and mountain biking routes. These management decisions would have long-term, beneficial impacts on non-mechanized recreational users because the recreational opportunities for this user group would be enhanced by relatively unrestricted access throughout the Monticello PA and by management decisions to spatially separate non-mechanized users from mountain biking and motorized OHV users. These decisions would increase the likelihood that non-mechanized users would have satisfying recreational experiences where the expectations include remoteness and a sense of solitude, an undeveloped, pristine natural environment, and natural sounds and sights.

Under all of the alternatives, the impacts of management decisions for woodlands would be adverse in the long-term on recreation user groups whose expectations include solitude and a sense of remoteness in an undisturbed landscape. Woodland harvesting would be allowed within some SRMAs and within the ERMA, and there would be adverse impacts on non-mechanized users from intrusive noise produced by chainsaws and by motorized OHVs used to access and

collect harvested wood. Adverse visual impacts on non-mechanized, mountain biking, scenic driver, specialized, and some motorized OHV groups would result from wood collecting OHV surface disturbances, trash and litter, and the remnants of cut stands of pinyon and juniper.

As the impacts for air quality, fire management, human health and safety, paleontology, SSS, and woodlands would have the same impacts on recreation under all alternatives; the impacts of these resource decisions on recreation will not be discussed further.

4.3.10.2. Impacts Common to All Action Alternatives

Management decisions common to all action alternatives (Alternatives B, C, D, and E) would:

- Close the proposed San Juan River SRMA to woodland products use except for on-site collection of campfire wood and permitted collection of wood by Native Americans for ceremonial purposes. This would have long-term, direct, beneficial impacts on recreation resources and recreational experiences by preserving scenic quality along the SRMA river corridor.
- Exclude backpackers from camping within one mile of Slickhorn Canyon and Grand Gulch along the San Juan River. This would have long-term, direct, beneficial impacts for river floating user groups by potentially reducing crowding by non-mechanized user groups along the river corridor. It was also have long-term, adverse impacts on non-mechanized groups by limiting recreational opportunities along the San Juan River corridor.
- Limit camping within the proposed Cedar Mesa CSRMA (under Grand Gulch Plateau Mesa-Top Camping) to 14 days within any period of 28 consecutive days. This would have long-term, beneficial impacts on recreation resources and experiences within the CSRMA by limiting the potential impacts from commercial and private non-mechanized users.
- Require that all garbage, refuse, and solid waste be packed out of the proposed Cedar Mesa CSRMA (under Grand Gulch Plateau [In-Canyon Permitted Overnight Camping]). This would have substantially beneficial, long-term preservation-related impacts on recreation resources within this portion of the CSRMA. The impacts to non-mechanized users would be negligible because packing out waste would not affect the recreational opportunities for experiencing solitude, cultural resources, and a natural environment.
- Prohibit camping within the Indian Creek riparian corridor (within the proposed Indian Creek SRMA), from Newspaper Rock to south of the Dugway Ranch, with camping outside of the riparian corridor limited to designated camping areas and campsites. As funding permits, the designated campground at Newspaper Rock would be removed and rehabilitated, with new campgrounds and parking areas constructed within the proposed SRMA. These management decisions would have long-term, beneficial impacts on recreation resources and on recreation user groups that frequent this area (i.e., scenic drivers, specialized, motorized, and non-motorized) because recreation resources would be protected and adequate recreation facilities would be constructed to enhance the recreational experience.
- Rock climbing routes in conflict with cultural sites would be closed. This management decision would have long-term, direct, adverse impacts on specialized recreational opportunities. However, it would have long-term, beneficial impacts on other user groups that consider scenic quality an important recreational experience.
- Woodland harvesting would be prohibited within the Indian Creek SRMA and the White Canyon SRMA, including on-site collection of firewood for campsites. This would have

long-term, beneficial impacts on recreation resources by preserving recreation-related scenic resources. The impacts on all user groups would be beneficial in the long-term because the recreational experience would be enhanced by the preservation of scenic quality.

- Under all of the action alternatives, BBM would be applied to the proposed SRMAs that include targeted outcomes to enhance personal, community, economic, and environmental goals (see Appendix E). This would have beneficial impacts on all user groups, as all SRMAs would be managed with prescriptions to increase the likelihood that resource users would have satisfying recreational experiences.

The general management decisions of the action alternatives would apply adaptive management to protect natural and cultural resources, and maintain and enhance recreational opportunities. Wildlife water sources would be protected and camping would be excluded within buffer zones around these areas to allow wildlife access to water. Dispersed camping within the Monticello PA would be assessed for its environmental impacts and would be seasonally closed, as conditions warrant, to protect recreational resources, and recreational OHV off-road retrieval of game would be prohibited. These management decisions would have long-term, resource protection-related, beneficial impacts on recreation resources, but there could be short-term, adverse impacts to specific recreation user groups to protect recreation resources (e.g., seasonal exclusion of non-mechanized users from dispersed camping areas to protect recreation resources, prohibitions on off-road game retrieval for motorized OHV users).

4.3.10.3. ALTERNATIVES IMPACTS

4.3.10.3.1. ALTERNATIVE A

Under Alternative A, cultural management decisions that impact recreation resources are either unspecified or unrestricted within the areas proposed for Comb Ridge CSMA, Tank Bench CSMA, and Beef Basin CSMA. Vehicle and OHV use decisions would designate these areas as either open, limited to designated routes, or closed. There are no management decisions that address dispersed camping, private and commercial group size limits, campfires, or pets. The impacts would be long-term, substantially adverse to recreation-related cultural resources and to all recreation user groups because, as discussed in Section 3.10.4 Recreation Issues and Concerns, the current trend toward increasing recreational use within the Monticello PA is creating recreational resource use conflicts between user groups, and the potential for OHV-caused degradation of recreation resources. A lack of specific management decisions to address these concerns would perpetuate current conditions, exacerbate recreation-related cultural resource degradation, and allow resource user conflicts to intensify, resulting in a diminishing likelihood of recreation resource users having satisfactory recreational experiences.

The proposed McLoyd Canyon-Moon House CSMA and the Grand Gulch National Historic District lie within WSAs, and are subject to the management decisions required to protect the resources within WSAs. Under this alternative, public access to the proposed McLoyd Canyon-Moon House CSMA would be restricted, which would reduce and adversely impact, in the long-term, the recreational opportunities for motorized, mountain biking, and non-mechanized recreational user groups.

The proposed Grand Gulch National Historic District would be closed to OHV use, managed to restrict recreational activities if cultural or scenic values were degraded or damaged, and

managed for primitive recreational opportunities. These management decisions would have long-term, beneficial impacts on those user groups that seek solitude and dispersed and remote recreational opportunities (non-mechanized or specialized users) because the area would be managed for opportunities that they prefer, but would highly limit the recreational opportunities for mechanized user groups (scenic driver, motorized OHV, and mountain bikers).

4.3.10.3.2. ALTERNATIVE B

Under Alternative B, cultural sites within the Monticello PA would be closed to recreational use if the Monticello FO determines that recreational activities pose a risk to cultural resources. Also, in order to protect and preserve the planning area's cultural resources, climbing aids and ropes would be prohibited to access cultural sites/ruins except in emergencies or administrative needs. These management decisions would have long-term, beneficial, preservation-related impacts on recreation resources because cultural sites are a component of the recreational opportunities within the PA, and protecting these recreational resources would preserve cultural/interpretive-recreational opportunities.

Under this alternative, specific management plans and CSMA status would be developed for culturally sensitive areas within Cedar Mesa that could potentially limit or restrict recreational activities to protect cultural resources. This would have long-term, preservation-related beneficial impacts on recreation resources that include a cultural resource component by reducing the likelihood of recreation-related degradation of or loss of recreational opportunities.

To protect cultural resources, this alternative would create CSMAs in areas known to have a high density of cultural resource sites, and/or sites that may be eligible for NRHP designation and provide recreational opportunities for cultural resource interpretation. These management areas would include Comb Ridge (38,012 acres), Tank Bench (2,646 acres), Beef Basin (20,302 acres), and McLoyd Canyon-Moon House (1,607 acres). Other special management areas for cultural resources would include the current Grand Gulch National Historic District and the Old Spanish National Historic Trail.

The proposed Comb Ridge CSMA would be managed for heritage tourism, OHV use would be limited to designated routes, the CSM would be closed to dispersed camping (with camping only in designated areas), hiking would be allowed only on designated trails, and a campground would be developed in Comb Wash. These management decisions would be beneficial to recreation resources in the long-term by reducing the likelihood of recreation-related degradation or loss of recreational opportunities within the CSMA, and by enhancing the recreational experience from improved and/or expanded recreational facilities. The impacts on user groups would be variable; there would be beneficial recreational opportunities for scenic drivers, motorized, and mountain biking recreational user groups from a designated route/trail system and recreational facilities. The recreational opportunities for non-mechanized dispersed hiking, equestrian, backpacking, and specialized recreation would be few to none because of the prohibitions on dispersed camping; the low likelihood of satisfying recreational experiences that include solitude, a sense of remoteness and an undeveloped, natural environment; and the high likelihood of user conflicts between mechanized and non-mechanized user groups. Also under this alternative, recreation users would be required to obtain a permit to access Butler Wash east of Comb Ridge. The permit process would require viewing a video on low-impact recreation at Sand Island or the Kane Gulch Ranger Station. The impacts on the recreational experience caused by the additional travel time to and from these sites to watch a video would be adverse for

all user groups (the Kane Gulch Station would be approximately 22 miles one-way from the entrance to Butler Wash), and there would be a potential for non-compliance with the permitting process for this area because of the perceived inconvenience, delay, and expense.

The proposed Tank Bench CSMA management decisions would have impacts on recreation resources similar to those discussed for Comb Ridge above, but to a lesser degree, as no recreational facilities are proposed for the area. The impacts on recreational user groups would be beneficial in the long-term for scenic drivers and non-motorized users (day hikers). The area is proposed as closed to OHV use, so the recreational opportunities for motorized OHV and mountain biking recreational users would be few to none, with long-term, adverse impacts to these user groups. Closing the area to OHV recreational opportunities would have long-term, beneficial impacts to non-mechanized and specialized user groups, as resource user conflicts with motorized users would be reduced and the opportunities for solitude, quiet, and a sense of remoteness would be enhanced.

The proposed Beef Basin CSMA management decisions would have impacts on recreation resources similar to those discussed for Comb Ridge, as OHV use and hiking would be confined to designated routes, primitive car camping would be at designated sites only, and car camping facilities would be developed for primitive camping. The impacts on recreational user groups would be similar to that discussed for Comb Ridge because this area would also be managed for heritage tourism, except that additional restrictions would be placed on specialized (rock climbing) user groups to protect rock art.

The proposed McLoyd Canyon-Moon House CSMA would have impacts on culturally related recreation resources similar to those discussed for Comb Ridge: camping would be restricted to designated areas, visitors would be prohibited from entering Moon House, and hiking would be allowed only on designated routes. These management decisions would have long-term, beneficial impacts on the recreation-related cultural resource by reducing the likelihood of recreation-related degradation or loss of recreational opportunities and experiences. There would be long-term, beneficial impacts on non-motorized users, and on non-mechanized users that do not require dispersed, remote recreational opportunities (i.e., day hikers) because the hiking and driving route restrictions would be more compatible with these user groups. The recreational opportunities for non-mechanized dispersed hiking and backpacking, motorized, scenic driver, and specialized recreation would be available within the CSMA, with long-term, beneficial impacts on these users; however, management decisions to protect the cultural site would impose restrictions or controls on site visitation, pets, campfires, and waste management that could adversely reduce the level of satisfying recreational experiences within the CSMA.

As the proposed Grand Gulch National Historic District lies within a WSA, the restrictions on surface disturbances and activities that could potentially affect the area would be greater in order to preserve the wilderness characteristics of the WSA, as required by the IMP. The historic district would be closed to OHV use and trails and camping areas designated as necessary to protect cultural resources. These management decisions would have long-term, beneficial impacts on culturally-related recreation resources similar to those discussed for the Comb Ridge CSMA above. The impacts on scenic drivers, motorized, mountain biking, and specialized mechanized user groups experiences would be long-term, substantial reductions in recreational opportunities. Activities associated with these activities would be prohibited within the WSA because of their potential for surface disturbances. Non-mechanized users would benefit in the

long-term because of the recreational opportunities for remote and dispersed camping, hiking, and backpacking.

Compared to Alternative A, this alternative would have more long-term, beneficial impacts on recreation resources within the proposed Comb Ridge, Tank Bench, Beef Basin, and McLoyd Canyon-Moon House CSMAs because the recreation-related cultural resources would be protected and maintained and opportunities for education and interpretation would be preserved. Compared to Alternative A, the impacts to the proposed Grand Gulch Historic District under this alternative would be negligible because the area would continue to receive protection under the area's WSA land status. Under this alternative, approximately 62,567 acres (including the current Grand Gulch Historic District) would be designated as CSMAs. Compared to Alternative A, which does not designate any CSMAs within the Monticello PA, this alternative would have greater long-term, beneficial impacts on recreation resources because these areas would be managed for protection of their cultural/recreational resources under CSMA management plans. Compared to Alternative A, this alternative would have fewer recreational opportunities for user groups because protection-related management decisions would limit or prohibit some activities that would be allowed under Alternative A. Thus, there would be more adverse, long-term impacts to recreational opportunities under Alternative B than under Alternative A. However, unlimited use by recreation user groups under Alternative A would potentially create resource use conflicts between user groups. Alternative B, by limiting or prohibiting recreational activities in specified areas, would beneficially reduce resource use conflicts. When compared to Alternative A, Alternative B would have more certain long-term, beneficial impacts because reducing resource use conflicts would increase the likelihood that scenic driver, motorized OHV, mountain biking, and non-mechanized user groups would have satisfying recreational experiences.

4.3.10.3.3. ALTERNATIVE C

The cultural resource management decisions on recreation resources would be similar to those discussed under Alternative B for the proposed Comb Ridge, Tank Bench, Beef Basin, and McLoyd Canyon-Moon House CSMAs because the management decisions would be similar. The proposed Grand Gulch Historic District would have impacts similar to those discussed under Alternative B, but to a greater degree because while the area would continue to be managed under WSA surface disturbance restrictions and because the cultural resource management decisions would be similar, recreational opportunities for pack animal camping would be permitted. The Old Spanish National Historic Trail would have impacts similar to those discussed under Alternative B. The comparison of Alternative A to Alternative C would be similar to those discussed above under Alternative B.

4.3.10.3.4. ALTERNATIVE D

Under this alternative, Comb Ridge, Tank Bench, and Beef Basin would not be managed as CSMAs. Comb Ridge would permit OHV use only on designated routes. Beef Basin would prohibit climbing aids except as hiking route aids, develop a commercial campground in the Ruin Park area, and close campsites that degrade or adversely impact cultural sites. Management decisions under this alternative would be beneficial to recreation resources in the long-term, similar to those discussed under Alternative B, by reducing the likelihood of recreation-related degradation or loss of recreational opportunities within these areas, but to a lesser degree because

these areas would be managed with fewer resource-protecting management decisions when compared to the other action alternatives. The impacts on user groups under this alternative would be more beneficial in the short-term because fewer restrictions and prohibitions on activities within these areas would create more opportunities for all user groups. In the long-term, the impacts on user groups would be adverse because of increased resource user conflicts and degraded recreational resources, as discussed under Alternative A. Compared to Alternative A, this alternative would have more beneficial impacts on recreation resources in the short term because of the proposed resource protection measures, but in the long-term the increased likelihood of recreation user conflicts and the likely degradation of recreation resources would have impacts similar to those discussed under Alternative A.

The impacts of management decisions under this alternative on the McLoyd Canyon-Moon House area would be similar to those discussed under Alternative C because the management decisions are similar. The impacts comparison of Alternative A to Alternative D would be similar to the discussion under Alternative C above.

The impacts of management decisions on the Grand Gulch National Historic District would be similar to those discussed under Alternative C because the management decisions are similar. Likewise, the alternatives impacts comparison between Alternative A and Alternative D would be similar to those discussed under Alternative C because the management decisions are similar.

4.3.10.3.5. ALTERNATIVE E

Under this alternative, management decisions for Beef Basin, Tank Bench, the Old Spanish National Historic Trail, and McLoyd Canyon-Moon House CSMAs and the Grand Gulch Historic District would be similar to those discussed under Alternative B because no areas with non-WSA wilderness characteristics lie within these cultural/recreational areas. Within the Comb Ridge CSMA, 18,514 acres (39% of the area proposed as a CSMA) would be managed to protect the wilderness values within the non-WSA wilderness characteristics areas. The impacts on recreation resources would be beneficial in the long-term, similar to the discussion under Alternative B. Within the protected non-WSA lands with wilderness areas of the CSMA, the beneficial impacts to culturally related recreation resources would be enhanced by the increased restrictions on surface disturbances imposed by VRM Class I management objectives. The impacts on resource user groups would be the same as discussed under Alternative B because the area's proposed recreational management decisions emphasizing heritage tourism would be the same. The impacts on recreation users from the permitting process for Butler Wash would be the same as discussed under Alternative B.

4.3.10.3.6. IMPACTS OF LANDS AND REALTY DECISIONS ON RECREATION

There are no specific lands and realty management decisions under the alternatives that are applicable to recreation. Management decisions common to all of the alternatives that would potentially impact recreation resources include those proposed to protect PA resources during commercial filming projects. Management decision stipulations that require protection of habitat, soils, and cultural resources and prohibit the use of explosives or pyrotechnics or the introduction of exotic species would have short-term and long-term, beneficial impacts to recreation by preserving recreation resources. Prohibitions on pyrotechnics and explosives would have short-term, beneficial impacts on opportunities for non-mechanized, river floating, specialized, and mountain biking user groups because the potential noise and light distractions caused by these

devices would not be a source of disturbance to those who seek recreational opportunities that can provide solitude and/or minimal artificial distractions. Protection of soils, water, air, vegetation, and wildlife during filming projects would have long-term, beneficial impacts on all recreational users because maintaining recreational resources would increase the likelihood that they would have satisfactory recreational experiences. Management decisions common to all action alternatives would establish avoidance and exclusion areas for proposed ROWs. These areas would include areas with wilderness characteristics, ACECs, WSAs, WSR segments, developed recreation sites, and special emphasis and hiking areas. The impacts on recreation would be similar to the above discussion: long-term, beneficial protection of resources from surface disturbances, which would benefit all user groups because opportunities would be maintained for satisfying recreational experiences.

4.3.10.3.7. Impacts of Livestock Grazing Decisions on Recreation

Under all of the alternatives, 137,440 acres would be unavailable for livestock grazing because of vegetation, wildlife, recreation, or other resource concerns. This would have long-term, beneficial impacts on all user groups, as high scenic quality and naturalness are generally common to all recreational user expectations. Cattle tend to disrupt the backcountry experience sought by hikers, mountain bikers, and backpackers because of the presence of manure along trails and at camp sites, the consumption of wildlife forage (that potentially reduces wildlife viewing opportunities), and surface disturbances that contribute to soil compaction and soil erosion and indirectly exacerbate the opportunities for exotic species establishment and spread. Proper grazing management through the livestock grazing standards and guidelines would reduce these impacts to all recreation user groups.

4.3.10.3.7.1. Alternative A

Alternative A would make 20,361 acres (in addition to the 137,440 acres discussed above) unavailable to livestock grazing within Mule, Arch, Fish, Owl, and Road canyons, as well as Comb Wash side canyons. The impacts on recreation resources and resource user groups in these areas would be beneficial in the long-term, for reasons as discussed above.

4.3.10.3.7.2. Alternative B

This alternative would make 29,790 acres unavailable for livestock grazing. Alternative B would also develop additional seasonal use restrictions and forage utilization limits on grazing in riparian areas found to be Functioning At Risk, potentially closing land available for livestock grazing. These management decisions would have long-term, beneficial impacts on recreation resources similar to those discussed under Alternative A. Compared to Alternative A, 9,429 more acres would be unavailable for grazing under this alternative (a 46% increase in areas unavailable to livestock), which would have beneficial, long-term impacts on recreation resources and on recreational opportunities for resource users, as discussed under Alternative A.

4.3.10.3.7.3. Alternative C

Alternative C would have impacts on recreation resources and users similar to those discussed under Alternative B because the proposed management decisions would be similar (except for additional areas unavailable for grazing in south Mule Canyon). Compared to Alternative A, this

alternative would have impacts similar to those discussed under Alternative B for the same reasons.

4.3.10.3.7.4. Alternative D

Alternative D would make approximately 20,569 acres within the Monticello PA unavailable for livestock grazing, with impacts on recreation resources similar to those discussed under Alternative B because the proposed management decisions would be similar. Compared to Alternative A, this alternative would have similar impacts on recreation resources, but to a slightly more beneficial degree, because the number of acres unavailable for livestock grazing would be slightly higher (a 1% increase in exclusions compared to Alternative A).

4.3.10.3.7.5. Alternative E

The impacts of this alternative on recreation would be the same as discussed under Alternative B because the proposed grazing decisions are the same.

4.3.10.3.8. Impacts of Minerals Decisions on Recreation

4.3.10.3.8.1. Alternative A

Under Alternative A, approximately 1,387,933 acres would be available under standard stipulations and timing and controlled surface use leasing stipulations for oil and natural gas exploration and development (78% of the planning area). It should be noted, however, that the RFD predictions for minerals development are that an average total of 76 natural gas or oil wells would be drilled, with a total surface disturbance of approximately 730 acres, over the lifetime of the proposed RMP. Under this alternative, the predicted surface disturbances on BLM-administered lands within the planning area from geophysical activities over the lifetime of the proposed RMP would be 886 acres. All of the geophysical surface disturbances would be reclaimed within 10 years. Thus, the expected potential disturbance from oil and natural gas exploration and development and related disturbances would be 1,616 acres or approximately 0.11% of the area available for development.

The impacts on recreation resources from the drilling of approximately 76 oil or gas wells within the Monticello PA and geophysical activities would be minor because of the very small area of potential surface-disturbance impacts and the likelihood that this relatively small area would potentially impact visual/scenic quality to a minor degree. Additional long-term, beneficial motorized OHV recreational opportunities may be created along oil and gas well access roads if these roads were open for public access, but the impacts on these recreational opportunities would be minor, as the access roads would be short spur roads from existing roads within the planning area and the access roads would be reclaimed at the end of the well lifecycle. The impacts on recreational resource user groups that expect to experience naturalness, isolation, and high levels of scenic quality (non-mechanized, mountain biking, specialized, and river floating users) would be negligible to minor in the long-term because all wells located within high-scenic quality viewsheds (VRM Class I and Class II) would be required to meet visual resources objectives so that the visual intrusions are either hidden from or not noticeable to the casual viewer.

4.3.10.3.8.2. Alternative B

Under Alternative B, approximately 1,241,909 acres would be available under standard stipulations and timing and controlled surface use leasing stipulations for oil and natural gas exploration and development. The potential impacts of mineral exploration and development on recreation resources and resource user groups would be the same as discussed above under Alternative A because the RFD forecast for minerals development within the planning area would be similar. Under this alternative, the RFD predicts that an average of 66 wells would be drilled during the life of the proposed RMP, causing surface disturbances on approximately 636 acres. The predicted surface disturbances within the planning area from geophysical activities over the lifetime of the proposed RMP would be 794 acres. The expected total disturbance under this alternative would be approximately 1,430 acres, with total reclamation of geophysical disturbances within 10 years of the activity. Compared to Alternative A, the expected potential disturbance from oil and natural gas exploration and development and geophysical activities would be the same (approximately 0.11% of the area available for minerals development). The impacts to recreation resources and users would be the same as discussed under Alternative A.

4.3.10.3.8.3. Alternative C

Under this alternative, approximately 1,348,973 acres would be available under standard stipulations and timing and controlled surface use leasing stipulations for oil and natural gas. The potential impacts on recreation resources and recreation users would be similar to those discussed above under Alternative A because the RFD predicts that an average of 74 wells would be drilled during the life of the proposed RMP, with total surface disturbances of approximately 710 acres, and approximately 903 acres of surface disturbances from geophysical activities, totaling 1,613 acres (or 0.12% of the area available for minerals development). The expected potential disturbance from oil and natural gas exploration and development would be similar to Alternative A.

4.3.10.3.8.4. Alternative D

Under Alternative D, approximately 1,383,283 acres would be available under standard stipulations and timing and controlled surface use leasing stipulations for oil and natural gas. The expected potential disturbance from oil and natural gas exploration and development and geophysical activities would be similar to those discussed under Alternative A because the RFD predictions would be similar: an average of 75 wells drilled during the life of the proposed RMP, with approximately 721 total acres of surface disturbances and 924 acres of geophysical-related surface disturbances, totaling 1,645 acres (or 0.12% of the area available for minerals development under this alternative). The impacts to recreation resources and user groups would be the same as discussed under Alternative A.

4.3.10.3.8.5. Alternative E

Under this alternative, approximately 582,360 acres of lands with non-WSA wilderness characteristics would be closed to minerals leasing and locatable and saleable minerals disposal. This would reduce the area of potential surface disturbances from oil and gas development on lands leased under standard and timing and controlled surface use stipulations to 758,930 acres (a reduction of approximately 45% compared to Alternative A). The RFD prediction for oil, gas, and geophysical activities under this alternative would be a total of 54 wells drilled and 380

miles of geophysical exploration, with a total surface disturbance of 1,109 acres. The adverse impacts on recreation from RFD-predicted activities would be similar to those discussed under Alternative A, but to a lesser degree, because more area would be protected from potential surface disturbances within those lands with non-WSA wilderness characteristics.

4.3.10.3.9. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Recreation

Areas with non-WSA wilderness characteristics would only be managed under Alternative E, with a total of 165,831 acres of non-WSA areas with wilderness characteristics that lie within Alternative E-proposed SRMAs and CSRMAs. Recreation resources within the proposed SRMAs and CSRMAs that contain these areas would receive increased beneficial protection from surface disturbances through management decisions to preserve the wilderness values within the non-WSA wilderness areas. These protective decisions would include closing the areas to OHV travel, management under VRM Class I objectives to preserve high scenic quality, closure to firewood gathering, and closure to mineral leasing and mineral materials disposal.

The impacts on primitive recreation users would be beneficial because naturalness, solitude, and outstanding opportunities for primitive recreation would be preserved and enhanced from closure/restrictions on surface disturbing activities and other uses on 582,360 acres in non-WSA lands with wilderness characteristics.

There could be adverse impacts to some specialized user groups because no competitive, motorized, or mountain biking events would be permitted in non-WSA lands with wilderness characteristics. Specialized recreational activities (e.g., rock climbing or BASE jumping) that would potentially degrade wilderness values could be restricted or prohibited. Approximately 416,357 acres of wilderness characteristics areas would be protected within the ERMA through the same decisions and with the same impacts on recreation resources and user groups as discussed above. Compared to Alternative A, this alternative would be more beneficial to recreation resources and users because the non-WSA wilderness characteristics areas would be preserved in a pristine, undeveloped state, retaining recreational resources for more opportunities in the long-term for most user groups than under Alternative A.

4.3.10.3.10. Impacts of Recreation Decisions on Recreation

General analysis assumptions on the impacts to recreation user groups are discussed above in Section 4.3.10. Additionally, it is assumed for analysis purposes that in order to reduce resource use conflicts and to preserve recreation resources, management decision restrictions or limitations on private and commercial recreational opportunities would have both beneficial as well as adverse impacts on recreation user groups. Restrictions on resource use would have long-term beneficial impacts on those recreational user groups that seek experiences associated with a natural, undeveloped, or pristine environment; remoteness; and solitude (in general, river floating, non-mechanized, and mountain biking groups) because restrictions would reduce the likelihood of crowding and resource use conflicts and increase the perception of solitude and remoteness, thus increasing the likelihood of satisfying recreational experiences for these groups. Related is the assumption that resource restrictions on commercial permits and commercial group sizes would create more long-term, beneficial recreational opportunities for private, non-commercial users for the same reasons as discussed above: less crowding within a river corridor or on a biking or hiking route would increase the perception of solitude and remoteness, which

would increase the likelihood of a satisfying experience for users who seek these recreational qualities.

It is assumed that the proposed restrictions on resource use would also cause short-term, adverse access-related impacts, as users would be denied the opportunity to recreate in a given area, as well as create competition for day use and camping permits for private and commercial uses. These potential reductions in commercial use would reduce recreational opportunities for those users who would rely on a commercial outfitter or a permitted activity for their recreational experiences.

Analysis assumptions for recreation-related waste management and the use of fire pans include the following: By minimizing the amount of waste found around popular recreational areas, it is assumed that the short-term inconvenience of removing or burying waste would be outweighed by the long-term beneficial impacts to the recreational experience that include preservation of visual resources, human health benefits, and maintenance of unspoiled natural and cultural resources. The use of fire pans would have short-term and long-term beneficial impacts on recreation resource and opportunities because they would reduce the risk of recreation-caused wildland fire that could destroy recreation resources. Short-term beneficial impacts would include the safety of those recreating within an area, while the long-term beneficial impacts would include the preservation of the natural and cultural resources within the Monticello PA. A summary of the data contained within the proposed recreation management decisions (and used in the analysis), by alternative, is shown below in Tables 4.84 and 4.85 and in Maps 30–33.

4.3.10.3.10.1. San Juan River SRMA

Alternative A

Under this alternative, recreation management decisions would continue under current conditions, and the 15,100-acre San Juan River SRMA would continue to be impacted by conditions and trends as discussed in Section 3.10.2.5.1.

Current management decisions for river use include restrictions on motorized use, launch limits of 40,000 user days per year, limitations on group size, and a 50% commercial use limitation of total river use. Launch limits and commercial and group limits currently allow recreational opportunities for a large number of users. However, based on the recreational expectations of the river floating user group discussed in Section 4.3.10, the permitted use of motorized boating and the large number of permitted river floaters would reduce the likelihood of a satisfactory recreational experience for those users expecting to experience isolation, a pristine and non-motorized environment, and remoteness. The large percentage of commercial use would also limit, in the short-term, the river recreational opportunities of private users because half the allocation for permitted river use would only be available to commercial users.

Table 4.84. Summary of Recreation Management Decision Analysis Data for Special Recreation Management Areas (SRMAs)

Criteria Type	Decision Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
San Juan River SRMA					
	Launch limits (user days/year)	40,000	30,000	40,000	45,000
	Trip size (group #)	25	20	25	35
	Commercial (% of total trips per day)	50%	30%	40%	50%
Cedar Mesa Cultural SRMA					
Mesa Top Day Use	Trip size (group #) private and commercial	No Limit	10	12	12
Mesa Top Camping	Trip size (group #) private and commercial	No Limit	12	24	No Limit
	Dispersed vs. designated camping	Dispersed	Designated only	Designated 12–24 users	Designated 24+ users
In Canyon Day Use, Private	People per day per trailhead	No Limit	10	12	12
	Trip size (group #)	12	10	12	12
In Canyon Day Use, Commercial	Trip size (group #) per day	12	10	12	12
	Groups per day per trailhead	No Limit	1	1	2
In Canyon Permitted Overnight Camping	Trip size (group #)	12	10	12	12
	Dispersed vs. designated camping	Designated only	Designated up to 4–10 users	Designated 8–12 users	Designated 8–12 users
Private Use	Trip size (group #) per day	12	6	8	12
Commercial Use	Trip size (group #) per day	12	10	12	12
	Groups per day per trailhead	1	1	1	1
Trailhead Allocations, Overnight Visitors Per Day:	Kane	26	16	20	24
	Bullet	22	16	20	24
	Government	12	16	20	24
	Collins	22	16	20	24
	Fish/Owl	26	16	20	24
	Road Canyon	22	16	20	24
	Lime Creek	22	16	20	24

Table 4.84. Summary of Recreation Management Decision Analysis Data for Special Recreation Management Areas (SRMAs)

Criteria Type	Decision Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
	Mule Canyons	22	16	20	24
	Slickhorn Canyons	22	16	20	24
	Dark Canyon SRMA				
	Trip size (group #) private	No limit	10	15	15
	Commercial	No limit	12	15	15
	Commercial trips per week	No limit	1	3	7
	Total private users per day	No limit	15	20	No limit

Table 4.85. Summary of Recreation Management Decision Analysis Data, Special Recreation Permits (SRPs)

Decision Type	Alternative A	Alternative B	Alternative C	Alternative D
Private Use				
Day use organized event in ERMAs	N/A	25 people	50 people	75 people
Overnight group or event in ERMA	N/A	15 people	25 people	50 people
Group OHVs on designated routes	N/A	15 OHVs	25 OHVs	No limit
Mountain biking on designated routes	N/A	15	25	No limit
Group of riding/pack animals	N/A	10 animals	15 animals	20 animals
Car camping	N/A	10 vehicles, 50 people +	15 vehicles, 50 people +	20 vehicles, 50 people +
Commercial Use				
Groups size limits for commercial motorized events	Any commercial use	2 groups of 12 vehicles/ day	Same as Alternative B	2 groups of 25 vehicles/day
Balloon festivals limits	Any commercial use	35 balloons	Same as Alternative B	Same as Alternative B
Special OHV event limits	Any commercial use	350 total vehicles	Same as Alternative B	Same as Alternative B
Commercial hiking in Comb and Butler Wash	Any commercial use	10 individuals	Same as Alternative B	N/A

Under this alternative, vehicle access and camping would be restricted between Comb Wash and Lime Creek, and below Mexican Hat Bridge, which would have long-term, adverse impacts on non-river floating users by maintaining restrictions on recreation-related travel opportunities for access to and recreation within the SRMA. Other proposed management decisions would minimize resource use conflicts by designating certain reserved campsites along the river corridor, with timing stipulations that permit only one-night stays at each campsite. This would have beneficial, short-term impacts on the river recreational experience by dispersing users along the river corridor, which would reduce the perception of crowding and the impacts of human noise. Under this alternative, the permitted levels of visitation and the lack of resource protection management decisions would continue to have potentially long-term impacts to recreation resources because, as discussed in Section 3.10.2.5.1, intense river use and associated human-caused surface disturbances along the river corridor would continue to disturb riparian vegetation, create conditions for the spread of invasive species, impact special status species habitat, and degrade cultural resources.

Alternative B

Alternative B would manage the San Juan River as a 10,203-acre SRMA for the purposes of providing opportunities to engage in backcountry private and commercial river running, backcountry hiking and camping, horseback riding, and cultural site visitation. This alternative would designate and manage motorized boating within the San Juan River corridor for emergency use only. Riparian resources would be protected and launch limits would be set at 30,000 user days per year to improve the river running experience, with trip sizes limited to 20 people. Under this alternative, commercial users would also be restricted to 30% of the total river use. The impacts of these management decisions on river floating users would be beneficial in the long-term because the river floating experience would potentially be enhanced by creating conditions that reduce river use crowding and motorized noise and increase the sense of remoteness, solitude, and a pristine, natural environment. The opportunities for private users of the river would be beneficially increased in the long-term, while commercial river user recreational opportunities would be proportionally reduced. The proposed reductions in commercial river permits would also create increased competition among outfitters and those who would rely on a commercial outfitter for their recreational river opportunities within the SRMA because the opportunities for a commercially based river experience would be limited by the available permits. Under this alternative, vehicle camping restrictions would be limited to areas upstream of Comb Wash, and the bench above Sand Island would be closed to vehicle camping, and all areas within one-half mile of designated campsites would exclude vehicle camping. This would have long-term, beneficial impacts on river floating users by increasing the recreational opportunities for solitude and a sense of remoteness, but would limit the river recreational opportunities for all other user groups.

The land on the south bank of the San Juan River is owned by the Navajo Nation and camping is currently not permitted. Under this alternative, an MOU allowing camping on the south bank would be negotiated between the BLM, the NPS, and the Navajo Nation. If an MOU were agreed to, this management decision would potentially have long-term beneficial impacts on recreational opportunities for backcountry-river camping because the opportunities would be increased. The reduction in permits would have long-term, beneficial impacts on river floating recreational user groups because these conditions would increase the likelihood for a satisfactory

river floating experience in which a sense of isolation and a primitive backcountry experience is an important recreational expectation.

Under this alternative, vehicle camping would be allowed upstream of Comb Wash only, with exceptions along Lime Creek Road, the Mexican Hat Rock area, and the Mexican Hat Boat Ramp. Further restrictions under Alternative B would include closing the bench above Sand Island Recreation Area to vehicle camping and closing camping within one-half mile of designated campsites. Lime Creek Campground would be reserved for river runners only. Limiting the availability of camp sites and access along the river would potentially create a higher density of camping sites and a higher number of user impacts in areas where camping is allowed. This would potentially impact non-mechanized, specialized, and mountain biking users by degrading the overall recreational experience because the opportunities for isolation and a sense of remoteness would be marginally reduced. However, this would be offset somewhat by the designation of the Lime Creek campground (with designation contingent on project funding), which would decrease competition for campsites among river runners themselves, as well as between river runners and other recreationists. Livestock grazing restrictions and prohibitions on woodland harvesting under this alternative would have long-term, beneficial impacts on riparian resources and on the recreation resource components that lie along and within the riparian corridor, including wildlife habitat, vegetation, and scenic quality.

When compared to Alternative A, this alternative would reduce the number of annual launch limits from the current 40,000 under Alternative A to 30,000 user days per year. This 25% reduction in permitted use would increase the likelihood of satisfactory river recreational experiences where the expectation includes a sense of remoteness and solitude, and would reduce potential user conflicts and impacts on the resource by allowing river users to be more widely dispersed along the river corridor. Compared to Alternative A, Alternative B would have potentially greater long-term beneficial impacts on river floating users because it reduces the number of annual river permits, which would create more of an experience of solitude and a sense of isolation for those floating the river. However, this alternative would have more short-term, access-related recreational opportunity impacts on those potential river users who were unable to obtain permits to float the river. Compared to Alternative A, this alternative would have more beneficial preservation-related impacts on riparian resources. The long-term outcome of increasing the likelihood for satisfying private and commercial river running, backcountry, and cultural visitation recreational experiences within the proposed SRMA would include an enhanced appreciation for the area's cultural heritage, mental health maintenance from experiencing a quiet and natural environment, an improved sense of well-being from physical exercise, personal growth and development, an enhanced appreciation of the natural environment, tourist revenue from permits, and stimulation and a sense of achievement from river running challenges and risks.

Compared to Alternative A, Alternative B would reduce the size of the San Juan River SRMA to 10,203 acres (a 30% reduction in area compared to the 15,000 acres under Alternative A); however management decisions under Alternative B would seek to purchase private property and/or land development rights along the river to expand recreational areas within the SRMA boundary. This would have beneficial impacts on river recreation, if land purchases or development rights were acquired.

Alternative C

General management decisions under Alternative C would be the same as discussed under Alternative B, with similar impacts on recreation resources and resource users.

Management decisions under this alternative would allow motorized boating on the river, with impacts as discussed under Alternative A. An MOU with the Navajo Nation and the NPS would be sought under this alternative, and proposed designated camping and camping restrictions along the river corridor would have impacts as discussed under Alternative B. Commercial river use would be allowed up to 40% of the total river use, with impacts to recreational river users similar to those discussed under Alternative B. Launch limits of 40,000 user days per year would have impacts to recreation similar to those discussed under Alternative A because the management decisions are similar. The vehicle camping restrictions under this alternative would be the same as Alternative B, with similar impacts to recreation user groups. The impacts of grazing restrictions and woodland harvesting prohibition under this alternative would be the same as discussed under Alternative B because the management decisions are the same.

Compared to Alternative A, this alternative would manage the SRMA as 9,859 acres (a 33% reduction in size), with more potentially adverse impacts to recreational resources under Alternative C because the area managed for recreational resource protection would be reduced. Restrictions on grazing and woodland harvesting would have more beneficial impacts on recreation than Alternative A because recreation resources would receive more protection, and more designated campsites (assuming a successful, mutually beneficial MOU with the Navajo Nation and the NPS) would have more beneficial impacts on recreation user groups than under Alternative A. Under this alternative, the SRMA would be managed to maintain opportunities for remoteness and isolation within the bounds imposed by the permit and patrol system, which would be more beneficial to river users than Alternative A because Alternative A would not address these recreation qualities. Alternative C would have similar motorized boating and launch limit impacts as Alternative A.

Alternative D

General management decisions would be the same as discussed under Alternative B, with similar impacts on recreation resources and resource users.

Specific management decisions under this alternative would establish launch limits at 45,000 user days per year, motorized boating would be allowed, trip sizes would be limited to 35 individuals per trip, and commercial/private permit allocations would be evenly split. The impacts of these management decisions on recreational river users would be similar to those discussed under Alternative A. Management decisions to increase the number of designated campsites through an MOU with the Navajo Nation and the NPS with the purpose of reducing resource user conflicts along the river would have impacts similar to those discussed under Alternative B. Under this alternative, vehicle camping restrictions would be limited to the Sand Island area and all areas within one-half mile of designated campsites. This would have long-term, beneficial impacts on non-river floating recreation users by increasing the recreational opportunities for access to and recreation within the SRMA for scenic drivers, motorized, mountain biking, non-mechanized, and specialized recreation resource users.

Compared to Alternative A, the boundary of the SRMA under Alternative D would be reduced to 6,365 acres (a 58% reduction), thereby reducing the number of acres managed specifically for

recreational opportunities and SRMA recreation resource protection. However, while the SRMA boundary would be reduced when compared to Alternative A, those areas remaining within the proposed SRMA would receive greater resource protection than under Alternative A because more management decisions would be proposed to beneficially reduce resource use conflicts, protect recreation resources, and apply adaptive management to the SRMA for the protection of recreational resources and maintain and/or enhance recreational opportunities than would occur under Alternative A.

Alternative E

The impacts on recreation within the San Juan River SRMA would be the same as discussed under Alternative B for a portion of the SRMA (area outside the non-WSA wilderness characteristics lands).

Approximately 4,124 acres (40% of the proposed San Juan River SRMA) of non-WSA lands with wilderness characteristics lie within the San Juan River SRMA. Under Alternative E, the impacts to recreation for this SRMA would be that recreation resources would receive increased protection from surface disturbances through management decisions to preserve the wilderness values within the non-WSA wilderness characteristics areas. These protective decisions would include closing the areas to OHV travel, management under VRM Class I objectives to preserve high scenic quality, closure to firewood gathering, and closure to mineral leasing and mineral materials disposal.

The impacts on primitive recreation users would be beneficial because naturalness, solitude, and outstanding opportunities for primitive recreation would be preserved and enhanced from closure/restrictions on surface disturbing activities and other uses on 4,124 acres in non-WSA lands with wilderness characteristics.

4.3.10.3.10.2. Cedar Mesa Cultural SRMA

Alternative A

Under Alternative A the area proposed as Cedar Mesa Cultural SRMA (CSRMA) would continue to be managed as part of the current 385,000-acre Grand Gulch Plateau SRMA. Camping would be allowed only at designated campsites, campfires would be prohibited, pets would be under human control at all times and excluded from sensitive sites, stock animal use would require a permit, and specified areas within the SRMA would be open or closed to stock animal use and subject to length of stay restrictions. Group sizes would be limited and stock animal herding would be prohibited and excluded from water sources and other sensitive sites. Stock use would be limited to existing trails. All of these management decisions would have long-term, beneficial impacts within the SRMA because these decisions would maintain the cultural and natural resource recreational opportunities within the SRMA by reducing or minimizing recreation user group impacts. Recreation user groups most likely to benefit from these management decisions would be those seeking primitive, dispersed, and remote recreational opportunities (non-mechanized hikers, equestrian, and stock animal users).

Alternatives B

The management decisions under Alternative B would establish the Grand Gulch SRMA as the 375,743-acre Cedar Mesa Cultural Special Recreation Management Area (CSRMA). The SRMA would be managed to provide cultural appreciation/interpretive related recreation, and

backcountry to front country recreational opportunities. These opportunities would include rock art viewing, hiking, horseback riding, OHV riding, and camping. Pet and stock animal restrictions would be the same as discussed under Alternative A with additional stipulations that would exclude these animals from canyons requiring permits, which would have additional beneficial, preservation-related impacts on recreational resources. Woodland harvesting and collecting prohibitions and potential vegetation treatments and wildlife improvements within the proposed CSRMA would also have long-term, beneficial protection-related impacts on recreation resources. There would be short-term impacts on vegetation and scenic quality from surface disturbances caused by vegetation and range treatments, as discussed under Fire Management. Under this alternative, dispersed camping would be allowed except in cultural at-risk areas, but permits would be required for a limited number of overnight camping and day hiking groups to preserve sensitive cultural resources. This would have long-term, beneficial impacts on recreation resource users by expanding the opportunities for remote, dispersed, backcountry recreational experiences by non-mechanized, mountain biking, and motorized user groups while still preserving sensitive recreational resources. The potential outcome of these recreational opportunities would be a greater likelihood for an appreciation and understanding of the natural environment and the area's cultural heritage, improved physical health and fitness from exercise, positive contributions to the local economy and increased revenues from tourist revenue, personal growth and development by confronting physical challenges in a remote setting, and maintenance of mental health from relaxation in an uncrowded, remote, and physically stimulating environment.

Compared to Alternative A, this alternative would have impacts that are more beneficial to recreational opportunities by allowing dispersed camping within the CSRMA. There would be more long-term beneficial impacts to recreational resources under this alternative when compared to Alternative A because permitted vegetation, range, and wildlife improvements would have more long-term, beneficial impacts that would enhance the recreational experience (e.g., improved wildlife habitat that would potentially increase the likelihood of satisfying wildlife observation experiences, a healthy mosaic of vegetation that provides a natural wilderness-like experience and better sight-seeing, etc.).

Alternative C

This alternative would have management decisions and impacts similar to those discussed under Alternative B (except for those decisions addressing pet and stock animal issues) because the management decisions are similar. Pet and stock animal-related management decisions would be similar to those discussed under Alternative A except that greater limitations would be applied to stock day use under Alternative C. Stock day use would be limited to one party per day per trailhead in all canyons requiring permits, which would have short-term, adverse, but minor, limitation-related impacts on stock use recreational opportunities for this user group, but long-term, beneficial impacts on the recreational resource through resource preservation. Also, greater limitations would be placed on pets and stock animals if resource monitoring and management determined that the presence of these animals was adversely affecting recreational resources. The impacts of this decision on recreational opportunities or resource user groups would be negligible to minor because pets are not an integral component of recreational resources or opportunities within the CSRMA and alternative stock trails and recreational opportunities would be available within the CSRMA. The benefits from the recreational opportunities provided under this alternative would be similar to those discussed under Alternative B.

This alternative would have more beneficial impacts on recreation and resource users than Alternative A for reasons similar to those discussed under Alternative B because the management decisions are similar: more opportunities would be available for dispersed recreation, and more resource protection-related management decisions would be applied than under Alternative A to ensure the maintenance and preservation of recreation resources.

Alternative D

Alternative D would have management decisions and impacts similar to those proposed under Alternative C because the management decisions are the same, except for those decisions addressing pets and stock animals. Under this alternative, pets and stock would be prohibited or have limitations placed on their presence if monitoring determined they were causing adverse impacts to resources within the CSRMA. Otherwise, stock and pet management decisions and impacts would be the same as discussed under Alternative A.

Compare to Alternative A, this alternative would have more beneficial impacts on recreational opportunities and resources for reasons similar to those discussed under Alternative B because the management decisions are similar. Pet and stock-animal management decisions would be more beneficial than Alternative A because greater limitations or prohibitions would potentially be placed on them under this alternative to protect recreation resources.

Alternative E

Under this alternative, the impacts on recreation would be the same as discussed under Alternative B, except that approximately 109,700 acres (29% of the proposed SRMA) would be protected from surface disturbances to preserve the wilderness values within non-WSA lands with wilderness characteristics. This would beneficially impact recreational resources within these areas through the application of greater restrictions and prohibitions on surface disturbances, including mineral leasing closure, no off-route OHV use, designation as VRM Class I, and closing these areas to firewood collection. The impacts on resource user groups would be the same as the discussion under Alternative B because the opportunities for remote, dispersed, backcountry experiences for motorized OHV, mountain biking, and non-mechanized users would remain: OHV motorized and mountain biking travel would be allowed along designated routes within the non-WSA wilderness characteristics areas, and dispersed camping would be also be allowed within these areas. The comparison of this alternative with Alternative A would be the same as discussed under Alternative B because the management decisions are the same.

4.3.10.3.10.3. Grand Gulch

Alternative A

Under Alternative A, 385,000 acres would continue to be managed as the Grand Gulch Plateau SRMA through the management decisions established in the 1991 RMP. As a continuation of current management, the SRMA would be impacted by conditions and trends discussed in Section 3.10.4.2. These include the potential for increased resource use conflicts, disturbance of cultural resources within the SRMA, and trampling of vegetation and disturbance to wildlife from recreationists.

Grand Gulch/Cedar Mesa Top Day Use and Camping

Under this alternative, the Cedar Mesa mesa top would remain open to dispersed camping, no permits would be required, and there would be no limitations on the number and size of user groups. The beneficial impacts for all recreation user groups under Alternative A would be short-term because current recreational management would provide unrestricted opportunities for non-mechanized recreational groups that seek remoteness, solitude, and primitive backcountry experiences. The long-term impacts of unrestricted resource use would include recreational resource degradation across the mesa top from an increasing number of unrestricted recreational resource users. Current trends and conditions (see Section 3.10.4) indicate that this type of unrestricted recreational use is likely to result in visitor overcrowding, resource use conflicts, and resource degradation, with potentially adverse impacts on all recreation user groups.

Grand Gulch/Cedar Mesa In-Canyon Day Use

Management decisions for in-canyon day use within the Grand Gulch SRMA limit commercial and private groups sizes by setting the group size limits at 12 individuals, but they do not limit the number of parties per day along trails. Permits are required for commercial groups. As discussed above, the impacts of these management decisions would have beneficial short-term impacts on non-mechanized users because the recreational opportunities for experiencing daytime in-canyon hiking and sightseeing are essentially unrestricted. As the popularity of the area increases, as is indicated by current trends, the long-term impacts would include resource use conflict and recreational experience degrading impacts for those seeking a recreational experience that includes solitude, quiet, and uncrowded trails because there are no private or commercial restrictions on access to any of the day use canyons.

Grand Gulch/Cedar Mesa In-Canyon Camping

Under Alternative A, current management limits group sizes (see Table 4.84 above) and no overnight camping party may spend more than two consecutive nights at a campsite near Junction Ruin, Turkey Pen Ruin, Jailhouse Ruin, or the mouth of Bullet Canyon. Camping would be permitted in all established campsites only, away from any cultural resources and riparian areas. No campfires would be allowed.

In-canyon management decisions would restrict the number of people allowed to camp within the canyons, which would have protection-related beneficial impacts on both recreation-related cultural and natural resources while maintaining recreational opportunities for in-canyon isolation and a sense of solitude (recreational qualities that are sought by non-mechanized recreational user groups). Non-mechanized user groups may experience short-term impacts on the range of available in-canyon camping recreational opportunities because of the limitations placed on the number of users allowed to camp, where they may camp, and how long they may camp. In-canyon camping restrictions would have long-term preservation-related beneficial impacts on recreation resources by restricting the potential surface disturbances caused by camping to specific areas and requiring waste management and disposal at campsites. Restrictions on in-canyon length-of-stay would beneficially provide more recreational opportunity in the long-term for more non-mechanized user groups because more groups could potentially receive in-canyon camping permits during the camping season.

Alternatives B and E

Grand Gulch/Cedar Mesa-Top Day Use and Camping

Under the action alternatives (Alternatives B, C, D, and E), the Grand Gulch area would be managed under the Cedar Mesa CSRMA to provide cultural appreciation/interpretive-related recreation and backcountry to front country recreational opportunities. These managed opportunities would include rock art viewing, hiking and backpacking, horseback riding, OHV riding, and camping.

Management decisions under Alternatives B and E would permit an unrestricted number of day use groups on the mesa top, but limit group size for commercial and private recreational use to 10 individuals per group. Camping would be permitted in designated campsites with limitations on group size (12 individuals per group) for commercial and private groups. Waste removal would be required for overnight camping, and campsites would be closed if adaptive-management monitoring detected that recreation users were adversely impacting sensitive mesa top cultural sites. The impacts of these management decisions on mesa top recreational resources would be beneficial in the long-term because cultural resources would be protected, the intensity of surface disturbances caused by non-mechanized recreational user groups would be reduced by reducing group sizes and restricting campsites, and waste removal from campsites would reduce the impacts to natural resources. The impacts on resource users would also be beneficial in the long term: limiting both day use and camping group sizes would increase the likelihood of a satisfying recreational experience by limiting the noise, overcrowding, and use conflicts associated with large groups. Waste removal would have short-term and long-term, beneficial impacts on resource users by maintaining a satisfying recreational camping experience. Limiting group size would have negligible impacts on recreational opportunities for non-mechanized recreational users because there are no limits on the number of groups permitted on the mesa top. The potential outcome of increasing the likelihood of satisfying recreational experiences through the proposed management decisions would have beneficial impacts on resource users as discussed under Alternatives B and E, Cedar Mesa CSRMA.

Compared to Alternative A, these alternatives would have more beneficial impacts on mesa top day use and camping recreational opportunities because limitations on group size, waste removal requirements, the requirement for designated camping, and monitoring of cultural resources would provide more protection to recreational resources, reduce the potential for resource use conflicts, and reduce the intensity of recreation-caused surface disturbances to the recreation resource.

Grand Gulch/Cedar Mesa In-Canyon Day Use

In-canyon day use for commercial and private groups would have limitations on group size and group numbers per day (group size limits of 10 individuals for commercial and private; one commercial group every other day per trailhead, one private group per day per trailhead). In-canyon areas would be closed to commercial use, as needed to protect cultural and natural resources, and permits would be required for private and commercial groups. The impacts of these management decisions on recreational resources would be beneficial in the long-term because the intensity of recreation-caused surface disturbances within the canyons would be reduced and natural and cultural recreation resources would be protected. Under these alternatives, there would be potential impacts of 10 visitors per day per trailhead from private users, and five visitors per day per trailhead for commercial users (totaling 15 visitors per day

per trailhead). The impacts on in-canyon recreation users would be short-term, but minor on those non-mechanized users who seek in-canyon recreational opportunities but do not immediately receive an in-canyon permit because of group size and number limitations. The long-term impacts on resource users seeking an in-canyon recreational opportunity would be beneficial because group size and number limits (i.e., a reduction in the density of in-canyon recreation users) would: (1) beneficially increase the likelihood of a satisfying experience in which remoteness, isolation, and quiet are expected; and (2) reduce the likelihood of resource use conflicts between in-canyon day use groups.

Compared to Alternative A, these alternatives would have more beneficial, long-term impacts on recreation resources and on non-mechanized user groups because more resource protection-related management decisions would be applied to in-canyon day use. Alternatives B and E would have more long-term beneficial impacts on recreation resource users than Alternative A because more restrictions on group size and numbers would, in the long-term, create in-canyon group conditions that increase the likelihood for satisfying in-canyon recreational experiences.

Grand Gulch/Cedar Mesa In-Canyon Camping

The management decisions applicable to in-canyon camping would be the same as discussed under Alternative A except that designated campsites would be assigned based on group size and if stock animals are included in the group, limitations on group camping would be applied if monitoring determined that recreation activity was adversely impacting in-canyon cultural resources, limits on the size and number of private and commercial in-canyon camping groups would be applied, and requirements for waste removal would be enforced if monitoring determined that recreation-related waste was threatening public health and/or in-canyon resources. Under these alternatives, private group size would be limited to six individuals per day for each trailhead, and commercial groups would be limited to 10 individuals per day for each trailhead. Overnight camping use for the major trails in the proposed SRMA would be limited to 16 visitor days per trail. The impacts of these management decisions on recreation resources would be similar to the impacts discussion for Grand Gulch/Cedar Mesa top day use, in-canyon day use, and mesa top camping.

Compared to Alternative A, these alternatives would have impacts that are more beneficial to recreation resources and on recreation resource users for the same reasons as discussed under Grand Gulch/Cedar Mesa top day use, in-canyon day use, and mesa top camping.

<u>Alternative C</u>

Grand Gulch/Cedar Mesa Top Day Use and Camping

Day use management decisions and impacts would be the same as those discussed under Alternative B except there would be no group size limits, commercial or private, for groups using Kane Gulch Ranger Station, Mule Canyon Ruin, Salvation Knoll, and other sites as identified. Group size limits of 12 individuals for other private and commercial use on the mesa top would be applied, but there would be no limits on group numbers. The long-term impacts of unrestricted group size limits on recreation resources in the developed, day use areas would be negligible to minor because: (1) these sites have been managed and designed to accommodate large number of visitors and (2) adaptive management would be applied to these areas (as discussed under management decisions common to action alternatives) to ensure that resource degradation would not occur. The impacts on recreation resource users (primarily motorized

scenic drivers and non-mechanized day hikers) would be negligible because site visitation has not required a permit.

Mesa top camping management decisions and impacts would be the same as discussed under Alternative B except group size limits would be doubled (to 24 individuals) for commercial and private groups, and large groups (12–24 individuals) would be assigned designated campsites to accommodate the large group size. Increasing the group size limits under this alternative (that is, potentially doubling the number of individuals permitted to camp on the mesa top when compared to Alternative B) could have impacts on recreational opportunities to experience remoteness, isolation, and an uncrowded backcountry experience if large groups were hiking and/or camping near each other. Permitting large-group size under this alternative could also increase the likelihood of resource use conflicts (e.g., competition for shade, water, scenic view points) if several large groups are using the same trail or route, but management decisions to designate campsites for large groups would mitigate this concern. The impacts to recreation resources from permitted large groups and designating campsites for large groups would be mixed: the impacts on trailside natural resources would be more intense in the long-term because of the larger number of individuals impacting an area at the same time, but designated campsites would have long-term beneficial impacts on natural resources because it is assumed that these sites would be designed to accommodate large group sizes, thereby concentrating camping impacts within the designated area.

Compared to Alternative A, this alternative would be more beneficial for reasons discussed under Alternative B, and because even though large groups would be permitted to camp on the mesa top, management decisions would accommodate camping impacts by designating campsites that could absorb these potential impacts.

Grand Gulch/Cedar Mesa In-Canyon Day Use

The proposed management decisions and impacts for in-canyon day use under this alternative are similar to those proposed and discussed under Alternative B, except that a group size of 12 individuals per group for private and commercial use would be applied. Private and commercial use would be limited to 12 individuals per day for each trailhead, with impacts of 12 visitors per day per trailhead from private users, and 12 visitors per day per trailhead from commercial users (totaling 24 visitors per day per trailhead), a 60% increase in use compared to Alternative B. The comparison of this alternative to Alternative A would be similar to the discussion under Alternative B.

Grand Gulch/Cedar Mesa In-Canyon Camping

The proposed management decisions and impacts for in-canyon camping under this alternative would be similar to those proposed under Alternative B, except that under this alternative, private group size would be limited to eight individuals per day for each trailhead, and commercial groups would be limited to 12 individuals per day for each trailhead. Overnight camping use for the major trails in the proposed SRMA would be limited to 20 visitors per day per trail, a 25% increase in recreational use when compared to Alternative B. The comparison of this alternative to Alternative A would be similar to the discussion under Alternative B.

Alternative D

Grand Gulch/Cedar Mesa Top Day-Use and Camping

The proposed management decisions for in-canyon day use and camping under this alternative would be similar to those proposed under Alternative C, with similar impacts. The comparison of this alternative for mesa top day use to Alternative A would be similar to the discussion under Alternative C.

The proposed management decisions for mesa top camping would not establish designated campsites for large groups fewer than 24 individuals, would establish designated campsites for group sizes larger than 24 individuals, group size limits would not be set, campsite facilities would be developed as needed, and recreational activity at campsites that adversely impact cultural sites would be closed. These management decisions would have long-term impacts on recreational resources similar to those discussed under Alternative A because of the potential for resource use conflicts and overcrowding from unrestricted numbers of campers, the potential degradation of resources caused by the concentration of large camping groups at undesignated campsites, and the potential degradation of natural and cultural resources from concentrated surface disturbances caused by large camping and hiking groups. The proposed management decision to provide campsite facilities as needed to accommodate the large camping groups would have beneficial impacts on natural resources by providing for waste disposal, and it would have beneficial impacts on the recreation experience of those recreation users who expect a less primitive, less natural camping experience. However, based on the assumed recreational expectations (as described in Section 4.3.10) of non-mechanized recreational user groups, the development of mesa top campsites with toilets, fire grates, picnic tables, and other amenities would likely produce an unsatisfying recreational experience where there was an expectation of a primitive, undeveloped, natural, remote, and uncrowded backcountry experience that also provides opportunities for solitude.

The impacts on recreational users would be similar to those discussed under Alternative A.

Grand Gulch/Cedar Mesa In-Canyon Day Use

The proposed management decisions for in-canyon day use under this alternative would be similar to those proposed under Alternative C except that two commercial groups per day (with 12 individuals per group) would be permitted to access the Grand Gulch trails (totaling 24 commercial visitors per day per trail). Combined with proposed private trail use of 12 visitors per day per trail, this would have a total trail impact of 36 visitors per day per trail, an almost two and one-half times increase in permitted day trail use when compared to Alternative B and a one and one-half times increase when compared to Alternative C. The impacts would be similar to those discussed under Alternative A (e.g., resource degradation, potentially unsatisfying hiking experiences) because the number of individuals permitted to access trails under this alternative would likely create conditions that degrade, diminish, or reduce the opportunities for a sense of solitude, quiet, naturalness, and remoteness sought by this recreational user group.

Grand Gulch/Cedar Mesa In-Canyon Camping

The management decisions for this alternative would be similar to those discussed under Alternative C except that dispersed camping would be permitted for groups of seven or fewer, groups of eight to 12 and those with stock animals would be permitted to camp in designated campsites, and adaptive-management limits on visitors would be modified to protect recreational

resources. The impacts on recreational resources and on recreational users would be similar to those discussed under Alternative C because, while total overnight visitor limits would be higher (24 visitors per day per trail versus 20 for Alternative C, or a 20% increase over Alternative C), the impacts of dispersed in-canyon camping and the impacts of larger group designated camping would be similar. Compared to Alternative A, this alternative would have impacts similar to those discussed under Alternative C.

4.3.10.3.10.4. Dark Canyon SRMA

Under the action alternatives (B, C, D, and E), the 30,820-acre Dark Canyon SRMA would be established. Under these alternatives, the area would be managed under the BBM goals and objectives (see Appendix E) to provide recreational opportunities for backcountry, non-mechanized recreation, and cultural resource and heritage appreciation. The primary activities for which the area would be managed would include backcountry hiking and backpacking, canyoneering, horseback riding, cultural site visiting, and wilderness therapy and education.

Alternative A

Under this alternative, Dark Canyon would continue to be managed under the stipulations of the 214,390-acre Canyon Basin SRMA management plan (which would also continue to include Indian Creek [see below]). Management decisions under this plan would include no limitations on recreation group size or group numbers, open to dispersed camping, no permits for private use, no permit fees for commercial use, dogs and vehicles allowed, fires allowed, and a minimal ranger presence within the Canyon Basin SRMA. Current conditions and trends, discussed in Section 3.10.2.5, describe increasing demand for both private and commercial use of the area by non-mechanized user groups for primitive backcountry hiking; increasing popularity of the area combined with unlimited, unrestricted group size; minimal monitoring of potential recreation-caused surface disturbances from unrestricted camping and potential degradation of cultural resources; the unrestricted use of campfires; and the unrestricted presence of pets within the area, which would create conditions for substantial noise and surface disturbance. In the long-term, these conditions would intensify as demand for access to the area continues to grow. The impacts on recreation resource users would be beneficial in the short-term because the recreational opportunities for non-mechanized user groups to experience remote, primitive, backcountry hiking and sightseeing and a sense of solitude and isolation would be unrestricted. However, as private and commercial demand to experience this area increases, the long-term impacts on recreation users would include the potential for overcrowding, the potential for pet noise, the potential for resource use conflicts because of overcrowding, pet waste, pet-wildlife and pet-human conflicts, the increasing potential for surface disturbances that degrade cultural and natural resources, and the resulting degradation or diminishment of recreational opportunities for a satisfying primitive, backcountry recreational experience.

Alternatives B and E

Similar management decisions for the proposed Dark Canyon SRMA under Alternatives B and E would include limits on group size (10 individuals for private use, 12 individuals for commercial use), limits on the total number of private users per day (15 individuals), the establishment of a permit and fee system, designated campsites, limits on campfire use (mesa tops only), waste management, prohibitions on pets, and prohibitions on firewood collection. Under this alternative, one commercial trip allowed per week (12 individuals), combined with a maximum

15 private users per day would have a potential maximum use of 27 individuals per day within the SRMA. These management decisions would have short-term and long-term protection-related, beneficial impacts on recreation resources within the boundaries of the SRMA because: (1) limits on group size and number of users, removal of waste, and camping within designated campsites within the SRMA would reduce the intensity and area of natural resource surface disturbances; and (2) restricting campfire use would reduce surface disturbances and reduce the risk of wildland fire within the canyon. The impacts of limiting group size and numbers could cause short-term delayed entry into the SRMA for those recreation resource users seeking opportunities for a primitive, remote backcountry experience. However, these management decisions would have long-term beneficial impacts on those non-mechanized recreation resource users seeking a primitive, remote backcountry experience that includes a pristine natural environment, a sense of solitude and remoteness, and quiet. The potential beneficial outcome of the opportunities for backcountry recreational experiences would include physical rest and maintenance of mental health, improved physical fitness, increased tourist revenue, and an appreciation of the natural environment and the region's cultural heritage. The likelihood of a satisfying backcountry experience that includes the above attributes would be increased because: (1) limits on group size and group numbers would increase the likelihood of group dispersal within the SRMA; (2) designated camping, prohibitions on open fires, and requirement for waste removal would reduce natural resource impacts; and (3) and the prohibitions on pets would reduce pet-wildlife and pet-human conflicts and potentially reduce the level of intrusive noise.

Note that under Alternative E, approximately 2,522 acres (8% of the proposed Dark Canyon SRMA) would be managed as non-WSA lands with wilderness characteristics for the preservation of wilderness values. Beneficial, minor impacts to recreation resources and user groups would result from the additional restrictions or prohibitions on surface disturbances within these areas. The impacts would be minor because: (1) the proposed SRMA under this alternative would be managed to maintain the area's pristine environment for remote, dispersed, and primitive recreation, allowing only minor surface disturbance impacts, and (2) the size of the affected area would be relatively small in comparison to the size of the proposed SRMA, which would not likely affect the opportunities for primitive recreation within the proposed SRMA.

Compared to Alternative A, this alternative would preserve the recreation-related natural and cultural resources, have a greater potential to reduce or prevent resource use conflicts, and create the conditions and increase the likelihood for a satisfying recreational experience for non-mechanized recreational user groups.

Alternative C

The management decisions under Alternative C would be same as those discussed under Alternative B except that adaptive-management would assess and then determine if waste management was required to preserve recreation resources, pets would be allowed in-canyon but on leash and under physical control, fire pans would be permitted, and groups size and numbers would be increased. The impacts on Dark Canyon recreation resources would be similar to those discussed under Alternative B, but with a decrease in long-term beneficial impacts caused by an increase in permitted commercial groups (15 individuals per group for private and commercial use; an increase from one commercial group per week under Alternative B to three commercial groups per week under this alternative) and reduced restrictions on pets within the canyon. A total of 20 private users per day would be permitted. So, total permitted SRMA use per day could

be 65 users per day (45 commercial users and 20 private users). This would potentially increase maximum users per day by almost two and one-half times when compared to Alternative B. An increase in commercial groups under this alternative would reduce the sense of in-canyon solitude and remoteness because commercially-related users would potentially increase more than three times in comparison to Alternative B. The presence of pets within the canyon could create in-canyon intrusive noise and on-trail human-pet conflicts, but mandatory physical control of pets would mitigate pet-wildlife conflicts.

Compared to Alternative A, this alternative would have more beneficial resource preservation and recreation user impacts for the same reasons as discussed under Alternative B.

Alternative D

Alternative D proposes management decisions for Dark Canyon that would allow seven commercial trips per week and group size limits of 15 individuals for both commercial and private recreational groups. Dispersed camping and campfires would be permitted throughout the proposed SRMA, as would on-site collection of campfire wood and physically controlled on-leash pets in the canyon. Maximum potential commercial-type recreation within the SRMA would be limited to a total 105 individuals per day (seven groups of 15 individuals each) with no limits on the number of private groups. At least, this represents an almost four-fold increase in recreational impacts within the SRMA when compared to Alternative B. The impacts of these management decisions on recreation resources would be similar to those discussed under Alternative A because the combination of unrestricted dispersed camping, an unrestricted number of private groups, large and numerous commercial groups, unrestricted use of campfires, no designated campsites, and unrestricted collection of firewood would have substantial long-term impacts on recreation resources. As discussed under Alternative A, there would be short-term beneficial impacts on unrestricted recreational opportunities for primitive, dispersed non-mechanized backcountry recreational experiences, but these opportunities would be diminished and/or degraded, and the likelihood of a satisfying backcountry experience that includes solitude, quiet, a sense of remoteness in a pristine environment, and the potential personal benefits derived from those experiences (as discussed under Alternative B) would be adversely impacted. This would be due to overcrowding, resource user conflicts indirectly caused by overcrowding, noise, and natural and cultural resource degradation caused by the intensity of recreational use and by the intensity of surface disturbances from dispersed camping, firewood collection, and human and pet waste.

Compared to Alternative A, this alternative would have impacts similar to those discussed under Alternative A because, while Alternative A would manage the area with fewer restrictions than Alternative D, the differences between the two alternatives would be negligible.

4.3.10.3.10.5. Indian Creek SRMA

Alternative A

Under Alternative A, Indian Creek Corridor would continue to be managed under the stipulations of the 214,390-acre Canyon Basin SRMA management plan. The management decisions for this area would be the same as those discussed above under Dark Canyon Alternative A (see Section 4.3.10.3.10.4). The impacts of these management decisions on recreation resources within Indian Creek would be short-term and long-term, based on the current conditions and trends discussed in Section 3.10.2.5. Briefly, these current trends and conditions include: (1) the rapidly

increasing popularity of the area for specialized (rock climbing), non-mechanized (hiking), motorized OHV use, and scenic driver user groups; (2) the demand for additional recreational services and facilities to meet the needs of these diverse recreational users; (3) an increase in the size and intensity of use of dispersed camping areas; (4) intensifying resource use conflicts (between recreation user groups and between livestock grazing and recreational uses) because of its increasing popularity; (5) waste management concerns; (6) inadequate and/or unsafe vehicle parking along the Indian Creek Corridor; and (7) the current impacts of recreational activities on the area's cultural resources.

Continuing to manage Indian Creek under the above-mentioned conditions combined with proposed management decisions that permit unlimited, unrestricted group size, minimal monitoring of potential recreation-caused surface disturbances from unrestricted camping and potential degradation of cultural resources, the unrestricted use of campfires, and the unrestricted presence of pets within the area would create conditions for substantially intensifying surface disturbances to recreation-related natural and cultural resources. The proposed management decisions under this alternative would cause these impacts because the decisions neither address nor mitigate the current recreational trends and conditions that are affecting and are expected to continue to affect this area.

Under Alternative A, the current impacts on recreation resource user groups would continue to intensify because the management decisions proposed under this alternative do not address these conditions. Specifically, the management decisions under this alternative would permit increasing resource user group conflicts, permit an increase in health and safety concerns, permit the potential degradation of recreation cultural and natural resources, permit a diminishment and degradation of recreational opportunities, and create a substantial decline in satisfactory recreational experiences for all resource user groups because none of the adversely causative issues described above would be addressed under the proposed management decisions.

Alternative B

Under Alternative B (and the other action alternatives), the 89,721-acre Indian Creek SRMA would be established and managed to provide BBM-based opportunities for backcountry to front country recreation, as well as opportunities for interpretation of cultural resources and appreciation of the region's cultural heritage. Managed recreational opportunities would include rock climbing, OHV riding, backcountry hiking and backpacking, viewing rock art, camping, wilderness education, and sight-seeing.

Management decisions under Alternative B would include prohibitions on dispersed camping within the Indian Creek riparian corridor from Newspaper Rock to downstream of the Dugout Ranch, the Newspaper Rock campground would be closed and rehabilitated, designated-only camping would be allowed along Bridger Jack Mesa bench, a new campground would be constructed, prohibitions on woodcutting and collecting with restrictions on campfires would be applied, rock climbing routes that adversely impact cultural sites would be closed, funds from camping fees would be used to develop new facilities, parking areas would be developed, adaptive monitoring of the area would be applied to ensure resource protection, and new climbing routes would be established with designs to ensure raptor protection. Management decisions under this alternative would also prohibit dispersed camping in the Indian Creek Corridor. Other specific management decisions that address the need to protect and limit impacts to the area's natural and cultural resources, limit resource user conflicts, and meet the BLM's

mandate for multiple use within the proposed SRMA boundary were analyzed in the Indian Creek Corridor Plan and Environmental Assessment (EA) (BLM 2005m).

The proposed RMP management decisions and the management decisions contained within the Indian Creek Corridor Plan EA Decision Record would have short-term and long-term beneficial impacts on recreation resources within the proposed Indian Creek SRMA because recreation-related cultural resources and natural resources would be protected from potential degradation or disturbances caused by rock climbing, OHV use, and hiking. Intensifying visitor use and camping near Newspaper Rock would be addressed, as would waste concerns. Designated camping, prohibitions on dispersed camping and wood collection for campfires, and adaptive-management and monitoring of recreation resources within the SRMA would have short-term and long-term beneficial impacts because surface disturbances would be restricted to designated areas.

The impacts on recreational user groups that use the area would be beneficial in the short-term and long-term because building additional recreation facilities (parking lots, campgrounds, toilets, and day use picnic areas) would, respectively, reduce traffic safety concerns along the Indian Creek Corridor, relieve the demand for camping within the proposed SRMA, improve waste management conditions, and provide additional recreational opportunity areas for scenic driving users to enjoy the area. Recreation resource user groups that seek dispersed camping opportunities (e.g., rock climbers, backpackers) would be impacted by limitations that would be placed on dispersed camping (dispersed camping would not be allowed within the Indian Creek Corridor), which would reduce these opportunities and potentially diminish the recreational experiences that include dispersed camping. There would be long-term, beneficial impacts on all other recreation user groups that seek recreational opportunities in the proposed SRMA because, as the area's popularity continues to grow, the proposed management decisions would limit the number of users that are permitted to recreate and camp in the proposed SRMA, thereby reducing the potential for overcrowding and user conflicts. Management prescriptions contained within the EA, combined with the proposed management decisions under this alternative, would increase the likelihood that the current conditions and trends (as discussed under Alternative A) would be addressed, which in turn would increase the likelihood that recreational expectations would be met and that users would have satisfying recreation experiences and would maintain the range of recreational opportunities currently available in the area. The maintenance of recreational opportunities within the proposed SRMA would also increase the likelihood for beneficial experiences that include BBM objectives of challenging physical exercise and improved physical health, increased tourist revenues, education and personal development and growth, and maintenance of mental health (Table E.2.3, Appendix E).

Compared to Alternative A, this alternative would be more beneficial in the short-term and long-term because it would adequately address the resource use conflicts and recreational resource degradation concerns that are occurring within the area proposed as the Indian Creek SRMA.

Alternative C

The management decisions under this alternative would be the same as those discussed under Alternative B except that dispersed camping would be allowed within the Indian Creek Corridor (with designated, dispersed camping allowed within specific camping zones). The impacts of management decisions under this alternative would be similar to those discussed under Alternative B, but with greater surface disturbance impacts caused by dispersed camping from

the expected increasing use of the area by recreation user groups. The comparison of Alternative A to this alternative would be similar to those impacts discussed under Alternative B because the management decisions and the impacts of the management decisions are similar.

Alternative D

The management decisions and impacts on recreation resources and recreation resource users would be similar under Alternative D to those discussed under Alternative C because the management decisions are similar.

The comparison of Alternative A to this alternative would be similar to those impacts discussed under Alternative B because the management decisions and the impacts of the management decisions are similar.

Alternative E

Under this alternative, the impacts on recreation resources and users would be the same as discussed under Alternative B because the management decisions are the same, except that approximately 47,393 acres (53% of the proposed SRMA) of non-WSA lands with wilderness characteristics that lie within the proposed SRMA and would be managed to preserve their wilderness values. The impacts on recreation resources would be the same as discussed under Alternative B because surface disturbances within the proposed SRMA would be limited to specific areas (i.e., parking lots, designated camping sites, hiking trails, rock climbing on designated routes, and OHV travel along designated routes) to preserve the area's recreation resources. The impacts on recreation user groups would also be similar to Alternative B because the management decisions applied to the non-WSA wilderness characteristics areas to preserve wilderness values under this alternative (e.g., no wood gathering, no off-route OHV use, mineral leasing closures, no new road construction) would be similarly applied under the SRMA management decisions to reduce user conflicts while maintaining the area's resources and diverse range of recreational opportunities.

4.3.10.3.10.6. White Canyon SRMA

Alternative A

Under this alternative, White Canyon would not be managed as an SRMA. Management decisions under this alternative would not restrict private or commercial group size, would allow open camping and campfires, and would not require permits for private groups but would require permits for commercial groups. The impacts on recreation resources could be adverse in the long-term if campfires, camping wastes, and dispersed camping caused surface disturbances along the canyon rim were to degrade recreational resources. Increasing waste disposal within the canyon, which could degrade the in-canyon recreational experience for specialized recreation users (canyon climbers, slot canyoneers) and non-mechanized users (canyon hikers), would have short-term adverse impacts on these recreation users.

Alternative B

Alternative B would create the White Canyon SRMA (2,828 acres) for the purposes of providing outstanding recreational opportunities and visitor experiences while protecting the area's natural and cultural resource values The SRMA would be managed to provide opportunities for recreation that include backcountry hiking and backpacking, remote camping, canyoneering,

cultural site visitation, and wilderness education. Management of the SRMA would include the establishment of a backcountry permit system if deemed necessary, the development of primitive campgrounds at Soldier and Grave Crossings, the use of fire pans on mesa tops, a ban on campfires in canyons, and the requirement that wastes be packed out. These management decisions would have short-term and long-term, resource preservation-related beneficial impacts in-canyon and on the canyon rim of the SRMA by reducing or mitigating surface disturbances to recreational resources. The implementation of a backcountry permit system (as necessary to protect resources) could have access-related impacts on recreational user groups in the short-term by limiting recreational opportunities, but it would also increase the likelihood for solitude, a sense of isolation, and a satisfying canyon experience by reducing the density of canyon recreation users. The beneficial outcome of managing the area under BBM goals and objectives for satisfying recreational experiences would include the likelihood for personal development and growth from physical challenges within the canyon, an appreciation for the region's cultural heritage and natural resources, improved physical health, mental health maintenance, and tourism revenue from backcountry permits (Table E.2.5, Appendix E).

Compared to Alternative A, these alternatives would have more long-term beneficial impacts on the SRMA natural recreational resources and on the recreational opportunities for a satisfying in-canyon experience because the potential impacts caused by increasing use of the area would be less under this alternative than under Alternative A.

Alternative C

The management decisions and impacts under this alternative would be similar to those discussed under Alternative B because the management decisions would be similar. Compared to Alternative A, the impacts under Alternative C would be similar to those discussed under Alternative B.

Alternative D

Under Alternative D, the White Canyon SRMA would be established with management decisions that include the development of primitive canyon-rim campsites, waste management options if waste becomes a concern, and requirements for fire pans for in-canyon and canyon rim campfires. Management decisions would not include the establishment of a backcountry permit system, The impacts of these management decisions would have beneficial long-term impacts on recreation resources by providing canyon rim camping sites and requiring fire pans for campfires. These decisions would reduce or limit surface-disturbances to recreation resources. Recreation resources could be impacted in the long-term by the lack of a backcountry permit system because the intensity of in-canyon and canyon rim recreational use (with the potential for surface disturbances) would not be limited. The impacts of unlimited visitation and recreation within the SRMA could be adverse in the long-term because potential overcrowding would reduce the opportunities for a satisfying in-canyon canyoneering or hiking experiences if in-canyon recreational expectations include solitude, a sense of remoteness, and an unspoiled canyon environment. The potential beneficial outcomes of BBM management for satisfying recreational experiences (as discussed under Alternative B) would be unlikely because of the reduced opportunities for these experiences (see Table E.2.5, Appendix G). However, compared to Alternative A, this alternative would have impacts that are more beneficial on recreation resources and on recreational users because it proposes management decisions that would limit or mitigate surface disturbances caused by recreational resource use.

Alternative E

Under Alternative E, the management decisions and impacts on recreation would be the same as under Alternative B because the management decisions are the same, except that approximately 2,092 acres (74% of the proposed SRMA) would be managed as a non-WSA area with wilderness characteristics for the protection of wilderness values. The impacts on recreation resources would be the same as discussed under Alternative B because the proposed SRMA management decisions under this alternative would apply the same prescriptions to protect recreational resources from surface disturbances as those applied within non-WSA wilderness characteristics areas. The impacts on recreational users would be the same as discussed under Alternative B because both alternatives would have the same levels of resource protection with the same impacts on resource users.

4.3.10.3.10.7. Extensive Recreation Management Area (ERMA)

Alternative A

Management decisions for managing the ERMA are not specified under this alternative. However, general management decisions under this alternative would apply adaptive management to the Monticello PA to monitor and assess resource uses to determine if more intensive management should be applied to the ERMA. If adaptive management were to determine that an area was receiving intense use, then SRMA designation would be an option for that area, with SRMA designation assigned through the RMP amendment process. Construction of recreation facilities would be considered for areas within the ERMA, as needed, to ensure visitor health and safety, reduce user conflicts, and protect recreation resources.

All of these proposed management decisions would have long-term, beneficial impacts on ERMA recreation resources because adaptive management would ensure that changes in recreation resource use would receive an appropriate management response to protect recreation resources. The impacts on recreational resource users would also be beneficial in the long-term because ERMA adaptive management would respond appropriately to potential resource use conflicts and resource user group needs for facilities, which would maintain the likelihood for satisfactory recreational experiences for all recreation user groups.

Alternative B

Alternative B would also apply the general adaptive management decisions to the Monticello PA to monitor and assess resource uses, as discussed above under Alternative A, with the same impacts on recreation resources and resource user groups. Specific management decisions under this alternative would limit dispersed vehicle camping within the ERMA to previously disturbed areas along designated routes, limit camping to designated type camping along portions of the Bears Ears road and Deer Flat roads, and coordinate with the Glen Canyon Recreation Area on constructing a campground at Muley Point. These specific management decisions would also have long-term, beneficial impacts on recreation resources within the ERMA by limiting potential recreation-related surface disturbances from camping. The impacts on recreation user groups that seek dispersed vehicle camping opportunities would be minor in the long-term because the recreational opportunities for this type of camping within the ERMA would be reduced. The potential construction of a campground at Muley Point would be beneficial in the long-term for scenic driver groups and other recreational user groups that seek remote but

developed camping sites with high scenic quality because the campground would provide additional recreational opportunities for camping and sightseeing.

Compared to Alternative A, this alternative would have impacts that are more beneficial to recreation resources by limiting vehicle camping-related surface disturbances to areas along designated routes. The impacts on dispersed vehicle camper recreation resource users would be minor because limitations on this form of camping would reduce vehicle camping recreational opportunities. The proposed construction of a campground would have impacts that are more beneficial to recreation than Alternative A because it would provide more recreational opportunities for vehicle camping with a sight-seeing and visual quality component.

Alternative C

The management decisions and impacts on recreation resources and recreation users would be the same as discussed under Alternative B except that dispersed vehicle camping would be allowed within 150 feet of centerline on roads within the ERMA, with dispersed camping encouraged within previously disturbed areas. The impacts of these management decisions would have potentially long-term impacts on recreation resources because surface disturbances from dispersed vehicle camping would potentially degrade roadside recreation resources. However, FO monitoring and management would assess resource impacts and close and rehabilitate roadside camping areas if the level or intensity of the activity were determined to be excessive. Adaptive management would reduce the adverse impacts of roadside vehicle camping because impact mitigation would be applied. The comparison of impacts under Alternative A to this alternative would be similar to those discussed under Alternative B because the impacts discussed under Alternative C are similar to Alternative B.

Alternative D

The management decisions and impacts on recreation resources and recreation users would be the same as discussed under Alternative C except that dispersed vehicle camping would be allowed within 300 feet of centerline on roads within the ERMA. The impacts of dispersed vehicle roadside camping would be similar to those impacts discussed under Alternative C because adaptive management mitigation would be applied to areas where surface disturbances were deemed excessive, including closing and rehabilitating disturbed roadside vehicle camping sites. The comparison of the impacts Alternative A with the impacts of this alternative would be similar to those discussed under Alternative C because the impacts of Alternative C would be similar to the Alternative D impacts.

Alternative E

Under this alternative, a total of 416,526 acres of non-WSA lands with wilderness characteristics would be managed within the ERMA. These areas would be closed to firewood gathering, closed to cross-country OHV travel and new road construction, designated as VRM Class I, and closed to mineral leasing. Surface disturbances within these areas would be minimized to preserve their wilderness characteristics, which would have long-term, beneficial impacts on recreation resources. The impacts on user groups within these areas would be the same as the discussion under Alternative B because the decisions are the same: opportunities for motorized OHV travel, mountain biking, equestrian, and scenic driving into these areas would be unrestricted along designated routes; opportunities for non-mechanized recreation and dispersed camping would remain. Compared to Alternative A, this alternative would have more beneficial impacts on

recreation user groups because recreation-related non-WSA areas with wilderness characteristics would be preserved, which would maintain recreational opportunities for all users.

4.3.10.3.10.8. Special Recreation Permits (SRPs)

Alternative A

Under this alternative, the proposed special recreation permit (SRP) management decision would require SRPs for any recreation-related commercial activity within the Monticello PA (e.g., river floating), with no specified limits on group size. Under this alternative, the issuing of SRPs would be a discretionary management decision containing standard stipulations and additional stipulations as needed to control visitor use (i.e., reduce or minimize resource use conflicts), help meet management objectives, protect cultural and natural resources, and provide for the health and safety of visitors. These SRP management decisions would have long-term, beneficial impacts on recreation resources and on recreation resource users because the special recreation permit process would review the proposed commercial activity and include stipulations to ensure that recreational resources would not be adversely impacted and that the resource use would minimize conflicts between other recreational user groups.

Alternative B

Under Alternative B, the proposed management decisions for SRPs would include those discussed under Alternative A with additional management decisions that would use SRPs to manage not only commercial activities and events but also competitive events, organized group events, vending, and special areas. Specific criteria for determining if an SRP would be required would be proposed under this alternative, including: (1) events, activities, or group sizes that involve a threshold number of individuals; (2) events with potential resource use conflicts and/or health and safety concerns; (3) events that could potentially conflict with management guidelines or prescriptions; and (4) commercial limitations on group size and time of use to protect natural and cultural resources. These SRP criteria would have impacts similar to those discussed under Alternative A because they would also ensure that natural and cultural recreation resources would be protected from special event/activity-related surface disturbances, and that recreational resource user conflicts would be minimized or prevented. Compared to Alternative A, this alternative would have more beneficial, long-term impacts on recreation resources because it proposes specific SRP permit criteria, which Alternative A does not, that could be used to more finely manage and limit the adverse impacts of large recreational private and commercial groups or events.

Alternative C

This alternative would have similar impacts as discussed under Alternative B because the management decisions are similar. The comparison of this alternative to Alternative A would be similar to the discussion under Alternative B.

Alternative D

This alternative would have similar impacts as discussed under Alternative B because the management decisions are similar. The comparison of this alternative to Alternative A would be similar to the discussion under Alternative B.

Alternative E

Alternative E would have impacts similar to those discussed under Alternative B, except that no competitive motorized or mechanized events would be permitted within areas with wilderness characteristics. The impacts would be similar to those discussed under Alternative B, but to a lesser degree, because commercial-type specialized recreational opportunities would be reduced, with long-term, adverse impacts on this user group.

4.3.10.3.11. Impacts of Riparian Decisions on Recreation

4.3.10.3.11.1. Alternative A

Under Alternative A, no specific management decisions would be applied to riparian areas that would affect recreational activities. However, as discussed in Section 3.11.4 Riparian Resource Demand and Forecast, current trends and conditions under this alternative would have indirect impacts on recreational opportunities in riparian areas. The current impacts on riparian resources from recreational use and exotic species encroachment from surface disturbances would continue to degrade riparian recreational resources, and would likely in time degrade scenic quality and recreational opportunities for wildlife viewing, hiking, equestrian, and other trail uses from the loss of native riparian vegetation and riparian habitat. Livestock grazing could degrade riparian areas and recreational opportunities for wildlife viewing, sightseeing, day hiking, and camping (see Section 3.11.4.1) if standards and guidelines are not followed. Consequently, mechanized and non-mechanized user group conflicts would likely intensify as increasing numbers of users compete for use of this diminishing resource, thus reducing the opportunities for and likelihood of satisfying recreational experiences in riparian areas for all users.

4.3.10.3.11.2. Alternative B

Management decisions under this alternative would limit, seasonally restrict, or make unavailable livestock grazing in selected riparian areas determined to be Functioning At Risk. Selected riparian areas Functioning At Risk would also be closed to motorized OHV and mountain biking use if riparian assessments determined that these activities were contributing to riparian degradation. Functioning At Risk riparian areas would be temporarily closed to dispersed, motorized camping until riparian proper functioning conditions were restored. These management decisions would have long-term, beneficial impacts on recreation resources by reducing or removing the causes of surface disturbance-related impacts to riparian recreational resources. These management decisions would have short-term, adverse impacts on recreational opportunities within those riparian areas determined to be Functioning At Risk (approximately 431 miles within the planning area, see Section 3.11.2) because recreational opportunities for some motorized user groups (e.g., OHV, dispersed vehicle campers) would be reduced. There would be long-term, beneficial impacts for all resource user groups because the restoration of functioning riparian areas would increase the likelihood for a satisfying recreational experience in riparian areas where the recreational expectation includes an available water source, protection from summer heat, absence of livestock, scenic quality, and wildlife viewing.

Compared to Alternative A, this alternative would have long-term impacts that are more beneficial to recreational resources and to riparian recreational use because the proposed management decisions would specifically address the causes of recreational/riparian degradation, apply site-specific adaptive management to assess the level of riparian restoration, and

eventually increase the recreational opportunities in these areas to a greater degree than proposed under Alternative A.

4.3.10.3.11.3. Alternative C

Under Alternative C, the management decision impacts on riparian recreational resources would be similar to those discussed under Alternative B because the management decisions are the same. The comparison of Alternative A to this alternative would be the same as discussed under Alternative B above.

4.3.10.3.11.4. Alternative D

The management decision impacts on riparian recreational resources under this alternative would be similar to those discussed under Alternative A because the management decisions are the same.

4.3.10.3.11.5. Alternative E

Under Alternative E, the management decision impacts on riparian recreational resources would be similar to those discussed under Alternative B because the management decisions are the same: Functioning At Risk riparian areas would be closed to cross-country motorized OHV and mountain biking use, and closed to dispersed camping. Opportunities for these recreational activities would be reduced, with long-term, adverse impacts on motorized and mountain biking groups and those seeking dispersed, motorized camping.

4.3.10.3.12. Impacts of Soils/Watershed Resources Decisions on Recreation

4.3.10.3.12.1. Alternative A

The soil and watershed management decisions under this alternative are unspecified.

4.3.10.3.12.2. Alternatives B–E

Soils and watershed management decisions under these alternatives do not specifically address recreation resources and/or recreational users because the management decisions address soil productivity, soil erosion, sedimentation, and watershed health. However, these alternatives have proposed management decisions for erosion control plans for steep slopes that would include steep slope erosion control strategies, and would require BLM-approved survey and design plans for surface disturbing activities on these slopes. These proposed decisions would have long-term, beneficial, indirect impacts on recreation resources and recreation resource users by mitigating soil erosion that could potentially degrade recreation-related scenic quality. Compared to Alternative A, these alternatives would be more beneficial to recreation resources because Alternative A does not include recreation-related management decisions to control, prevent, or mitigate soil erosion.

4.3.10.3.13. Impacts of Special Designation–ACEC Decisions on Recreation

4.3.10.3.13.1. Alkali Ridge ACEC

Alternative A

Under Alternative A, the 40,302-acre Alkali Ridge ACEC would be managed to preserve the cultural resources contained within it. Preservation-related management decisions would include avoidance of all cultural resources by 100 feet, and all NRHP-eligible cultural resource sites would be surrounded by buffer areas for permanent protection of the sites. In those areas where cultural resources or their buffer areas could not be avoided, then appropriate mitigation would be applied to those cultural sites. These management decisions would have beneficial, long-term impacts on recreation-related cultural resources because the resource would be preserved or potential impacts mitigated, and sightseeing/interpretive recreational opportunities would be maintained.

The 2,340-acre Alkali Ridge National Historic Landmark would be managed under the same management decisions as discussed above, with the same impacts as discussed.

Alternatives B and E

Under these alternatives, the 39,196-acre Alkali Ridge ACEC would be designated as a cultural ACEC, a RMP-consistent cultural resource management plan would be written for the area, on-site collection of campfire wood collecting would be permitted, and surface disturbing activities that would potentially impact ACEC cultural resources would be prohibited. These management decisions would have long-term, beneficial impacts as discussed above under Alternative A. The impacts on recreation user groups would be similar to the impacts discussed under Alternative A.

Under these alternatives, the 2,146-acre Alkali Ridge National Historic Landmark would be managed to preserve cultural-recreational resources by prohibiting surface disturbing activities that could adversely affect those resources. The beneficial impacts on the resource and on recreational users would be similar to the impacts discussed under Alternative A but to a greater degree, because more limitations would be placed on activities that could potentially threaten the landmark's cultural-recreational resources.

Alternative C

The management decisions under this alternative would be similar to those discussed under Alternative A, except that an RMP-consistent cultural resource management plan would be written for the area and some limits would be placed on surface disturbing activities. The impacts on cultural-recreation resources and recreation user groups would be similar to those discussed under Alternative A because the management decisions are similar.

The impacts on the Alkali Ridge National Historic Landmark would be similar to those discussed under Alternative B because the proposed management decisions are similar.

Alternative D

Under Alternative D, the area would not be designated as a cultural ACEC, but an RMP-consistent cultural resource management plan would be written for the area. The impacts on cultural recreation resources would be adverse in the long-term because the management decisions under this alternative do not limit potential surface disturbing activities that could

adversely impact cultural resources, particularly livestock grazing impacts and watershed improvement projects. The impacts on sight-seeing recreation resource user groups would be adverse in the long-term because the potential degradation of cultural resources under this alternative would reduce the recreational opportunities for viewing cultural recreational resources. Compared to Alternative A, this alternative would be more adverse in the long-term for recreational resources because, until a management plan was approved for managing the area's cultural resources, this alternative provides fewer resource protection management decisions than Alternative A.

The impacts on the Alkali Ridge National Historic Landmark would be similar to those discussed under Alternative B because the proposed management decisions would be similar.

4.3.10.3.13.2. Bridger Jack Mesa ACEC

Alternative A

Under Alternative A, Bridger Jack Mesa lies within a WSA, with management decisions that are consistent with the preservation of wilderness values, including ACEC near relict vegetation values. The impacts of this alternative's management decisions on recreation resources would continue to be beneficial in the long-term because the resource would be protected. Non-mechanized user groups would continue to benefit from opportunities for dispersed camping and hiking, backpacking, and equestrian activities within the WSA's pristine and undeveloped landscape. Motorized OHV, mountain biking, specialized, and scenic driving user groups would continue to be adversely impacted by the lack of recreational opportunities within the WSA because of IMP-imposed restrictions on surface disturbances.

Alternatives B–E

The impacts on recreation resources and on resource users would be the same as discussed under Alternative A because the area lies within a WSA.

4.3.10.3.13.3. Butler Wash North ACEC

Alternative A

Under Alternative A, the 16,985-acre Butler Wash ACEC lies within a WSA, with management decisions that would be consistent with the preservation of wilderness values, including ACEC scenic values. The impacts of this alternative's management decisions on recreation resources and user groups would be negligible because the area is and would continue to be protected to preserve wilderness and scenic values.

Alternatives B–E

The impacts on recreation resources and on resource users would be the same as discussed under Alternative A because the area lies within a WSA.

4.3.10.3.13.4. Cedar Mesa ACEC

Alternative A

Alternative A would continue to manage the 296,425-acre Cedar Mesa ACEC for cultural, recreational, and primitive/natural area values. Management decisions under this alternative

would permit short-term impacts to recreational resources from surface disturbances that include rangeland and wildlife habitat improvements, as well as fire suppression to protect life and property. Areas open to mineral entry and disposal of mineral materials could have long-term surface disturbance-related impacts on recreation within the ACEC by reducing the recreational opportunities for sight-seeing in areas of high scenic quality. Management decisions that limit OHV use to designated trails that limit or prevent impacts to cultural resources, manage areas for primitive or non-motorized use, and manage the scenic highway corridor would have long-term, beneficial impacts on mechanized and non-mechanized recreational resource users because the recreational opportunities for scenic driver, motorized, and non-mechanized resource users would be maintained.

Alternative B

Under Alternative B, the 306,742-acre Cedar Mesa ACEC would be managed for its cultural resources as a cultural-ACEC. Management decisions under this alternative would close the area to dispersed camping, require camping waste be packed out, and limit day use and overnight camping permits to protect cultural resources. The impacts on recreational resources would be beneficial in the long-term because the resources would be protected from surface disturbances. Short-term impacts to recreational resources would be similar to those discussed under Alternative A. The impacts on recreational resource user groups would be a long-term reduction in the recreational opportunities for motorized and non-motorized resource users because of the restrictions placed on motorized use and the prohibitions on dispersed camping. Compared to Alternative A, this alternative would have more long-term beneficial protection-related impacts on recreational resources. This alternative would also have long-term impacts that are more adverse to recreational resource users because of the reduced opportunities for motorized and non-mechanized recreational experiences within the ACEC.

Alternative C

Under this alternative, the long-term beneficial impacts to recreational resources would be similar to those discussed under Alternative B because, though the area would not be designated as a cultural-ACEC, the management decisions applied to the area through the proposed designation as a 375,734-acre CSRMA would be similar. The long-term impacts to recreational users would be similar to Alternative B, but to a lesser degree because the area would be open to dispersed camping. Compared to Alternative A, this alternative would have more long-term, beneficial protection-related impacts on recreational resources, but it would also have more long-term, adverse impacts on recreational resource users because of the reduced opportunities for motorized recreational experiences.

Alternative D

The impacts of this alternative would be similar to those discussed under Alternative C because the management decisions are the same as proposed for Alternative C: the area would not be designated as a cultural ACEC, but would instead be managed under proposed designation as a 375,734-acre CSRMA, with similar management decisions to those proposed under Alternative B.

Alternative E

Under this alternative, the management decisions would be similar to Alternative B, except that approximately 60,049 acres (19% of the proposed ACEC) would be managed for protection of wilderness characteristics within the proposed ACEC. The impacts to recreational resources would be similar to Alternative B, but to a greater degree, from the additional surface protection of wilderness characteristics areas under VRM Class I management objectives that would preserve scenic quality, soils, vegetation, and cultural values for all user groups. Compared to Alternative A, this alternative would have more beneficial impacts on recreational resources and users by maintaining more area for non-mechanized opportunities.

4.3.10.3.13.5. Dark Canyon ACEC

Under all of the alternatives, the area proposed as the Dark Canyon ACEC lies within a WSA, with management decisions that are consistent with the IMP that stipulates preservation of wilderness values. The impacts of this alternative's management decisions on recreational resources and recreational resource users would be beneficial in the long-term because the area is and would continue to be protected and managed to preserve wilderness values. Low-impact, non-mechanized recreational activities (as discussed in Section 4.3.10.3.10.4) would continue to be permitted, with continued long-term, beneficial impacts to these users.

4.3.10.3.13.6. Hovenweep ACEC

Alternative A

Under Alternative A, the impacts on recreational resource and recreational resource users would be similar to the analysis discussed under the Cedar Mesa ACEC for Alternative A because the management decisions applicable to recreation are similar.

Alternatives B, C, and E

The impacts of these alternatives on recreation would be similar to those discussed under Alternative A because the management decisions are similar.

Alternative D

Under this alternative, the Hovenweep ACEC would not be established and management of the area would be identical with surrounding lands. The area would be available for minerals development and open to watershed and vegetation treatments that would not impact sensitive cultural sites. The impacts of management decisions on recreational resources would be short-term and long-term. Short-term impacts to recreational resources would be produced by surface disturbances from vegetation and watershed treatments that would temporarily degrade scenic quality and reduce the recreational opportunities for sight-seeing. Long-term impacts to recreational resources would be produced by the paucity of management decisions to protect the area's cultural resources from surface disturbances while permitting minerals development, livestock grazing, and campfires. The impacts on recreational resource users would be beneficial in the long-term for recreational user groups that seek opportunities for OHV and non-motorized trail use because there would be few limitations on trail development. The impacts on recreational users who seek opportunities for solitude, undisturbed and undeveloped natural landscapes, and remoteness would be adverse in the long-term because under this alternative the area would not be managed to preserve these recreational qualities. Compared to Alternative A,

this alternative would have more adverse impacts because fewer resource protection-related management decisions would be specified. The impacts on recreational resource users would be similar to Alternative A.

4.3.10.3.13.7. Indian Creek ACEC

Alternative A

Under this alternative, the 13,100-acre Indian Creek ACEC would be managed to protect visual quality. Management decisions would permit minimal surface disturbances within the area (e.g., fire suppression to protect life and property, livestock grazing, geophysical activities). The area would be closed to OHV use. Recreational activities would be restricted if adaptive management determined that scenic values were being degraded. These management decisions would have long-term, protection-related beneficial impacts on recreational resources. The impacts on recreational user groups would be variable: there would be long-term, beneficial impacts on non-mechanized groups because the area's management would be consistent with the recreational expectations of these groups (i.e., scenic quality, a pristine environment, natural sights and sounds, solitude); the impacts on mechanized recreational users would be adverse in the long-term because the recreational opportunities for these groups would be limited.

Alternative B

The impacts on recreation under this alternative would be similar to those discussed under Alternative A because the management decisions to preserve scenic quality would be similar. Compared to Alternative A, this alternative would have fewer beneficial impacts because less area would be protected for recreation-related scenic quality (a 36% reduction when compared to Alternative A.

Alternative C

This alternative would have similar impacts as Alternative B on recreational resources because the management decisions are similar. The impacts on non-mechanized recreational users would be beneficial in the long-term because dispersed camping would be permitted within the Indian Creek Corridor. The impacts on mechanized recreational users would be similar to Alternative B. Compared to Alternative A, this alternative would have fewer beneficial impacts because less area would be protected for recreation-related scenic quality (a 71% reduction when compared to Alternative A).

Alternative D

Under this Alternative, the Indian Creek ACEC would not be established. The area would not be managed to maintain scenic quality, but would be managed for consistency with the surrounding lands. Those areas that lie within WSAs would have recreation impacts similar to the impacts discussed under Alternative B because WSA resource protection stipulations would preserve scenic quality and non-mechanized recreational resources. Recreational resources in those areas within the Indian Creek corridor that lie outside of WSAs would not be managed for their protection, which would be an adverse long-term impact. The affects on recreational user groups would be variable: non-mechanized user groups would be adversely impacted in the long-term because management of non-WSA areas would be inconsistent with this group's recreational expectations that include an undeveloped and natural landscape, high scenic quality, natural sights and sounds, and a sense of remoteness and solitude; motorized, mountain biking, and

specialized recreational user groups would be beneficially impacted in the short-term because the reduced restrictions on recreational activities within non-WSA areas would create more recreational opportunities for these users. However, the long-term impacts on all resource user groups would include an increased likelihood for resource use conflicts from expected increasing numbers of users combined with the reduced limitations on recreational resource use (see Section 4.1.1.3.10.5 above). Compared to Alternative A, this alternative would be more adverse in the long-term because there would be less protection of recreational resources and an increased likelihood in the long-term for unsatisfying recreational experiences for all recreational resource users.

Alternative E

The impacts of this alternative on recreational resources and users would be the same as discussed under Alternative B because the management decisions are the same, except that approximately 3,887 acres (30% of the proposed ACEC) would be managed to preserve wilderness values within the non-WSA areas with wilderness characteristics that lie within the proposed ACEC. The impacts on recreational resources and users of these areas would be the same as discussed under Alternative A because management to maintain a high level of visual quality and to preserve a pristine environment would be applied under both alternatives.

4.3.10.3.13.8. Lockhart Basin ACEC

Alternative A

Under this alternative Lockhart Basin would not be managed as an ACEC. However, the existing Indian Creek ACEC (designated to maintain scenic quality) and the Indian Creek WSA lie partially within the Lockhart Basin area. The area would be managed to limit recreational use if adaptive management determined that visual resource values were being degraded. The area would be open for mineral leasing (subject to NSO leasing stipulations), closed to OHV use, woodland harvesting would be prohibited, and the area would continue to be designated as VRM Class III. The impacts of these management decisions on recreational resources would be adverse in the long-term because, while permitted surface disturbances within the area would be monitored and managed to ensure that scenic quality would not exceed VRM Class III management objectives, the area has been inventoried as having VRM Class II scenic quality and sensitivity. Designating the area as VRM Class III would permit scenic quality degradation, which would have long-term, adverse impacts on recreational users who seek opportunities that include high scenic quality both within the basin and those areas that overlook the basin (see Visual Resources Section 4.3.18.3.1). The long-term impacts on motorized off-road recreational users include no access to 8,642 acres of land that lie within the Indian Creek ACEC. However, there would be increased long-term opportunities for scenic drivers, mountain biking, and non-mechanized users to enjoy scenic viewing, natural sounds, and solitude.

Alternative B

Under Alternative B Lockhart Basin would be designated as a 47,783-acre ACEC and as VRM Class I for management of scenic quality. All surface disturbing activities would be prohibited, but the area would be open for campfires. The impacts to recreational resources and user groups would be beneficial in the long-term because management under the VRM Class I objectives would restrict surface disturbing activities or actions that would impair visual resources and scenic quality to very low levels of impact. The impacts on user groups that seek quiet, solitude,

and remoteness in undisturbed landscapes (i.e., hikers, mountain bikers, scenic drivers) would benefit in the long-term because opportunities would be available that would likely meet their expectations. There would be few opportunities for other mechanized or specialized user groups, so the impacts on these users would be adverse in the long-term from limited recreational opportunities. Compared to Alternative A, this alternative would be more beneficial for those groups seeking quiet and solitude, with impacts to other user groups similar to those discussed under Alternative A.

Alternative C

Under this alternative, Lockhart Basin would not be designated as a scenic ACEC. The area would be designated as VRM Class II and Class III, available for livestock use, and open for mineral leasing (subject to standard and timing and controlled surface use leasing stipulations). The impacts to recreation resources would be adverse in the long-term for all recreational resource user groups in the designated VRM Class III area because visual objectives would permit surface disturbances throughout the area from recreational and non-recreational activities that would impact visual/scenic quality both from within the basin and from recreational areas that overlook the basin (see Visual Resources Section 4.3.18.3.1).

Compared to Alternative A, this alternative would be more adverse in the long-term for recreational resources and for all recreational resource users in the VRM Class III-designated area because the visual resource objectives under this alternative would permit more surface disturbance-related impacts to recreation resources that would likely diminish the quality of recreational experiences in the area.

Alternative D

The impacts under this alternative would be the same as discussed under Alternative C because the management decisions are the same.

Alternative E

Under this alternative, management decisions would be the same as those discussed under Alternative B, except that approximately 21,298 acres (45% of the proposed ACEC) with non-WSA wilderness characteristics that lie within the ACEC boundary would be protected from surface disturbances through VRM Class I designation and under minerals leasing prohibitions. The impacts on recreation would be the same as Alternative B because the management decisions under Alternative E would also protect the proposed ACEC under VRM Class I management objectives and through prohibitions on surface disturbances.

4.3.10.3.13.9. Lavender Mesa ACEC

Alternative A

Under this alternative, the 649-acre Lavender Mesa ACEC would continue to be maintained to manage the relict vegetation on the mesa top and managed for primitive, non-motorized recreation. The management decisions would minimize surface disturbing activities within the ACEC; would exclude OHV, pack animal, and saddle stock use; and would limit recreational activities that would potentially degrade scenic or cultural resource values. These decisions would have long-term beneficial preservation-related impacts on recreational resources because scenic quality, cultural resources, and an undisturbed environment are valued components of the

recreational experience. The impacts on scenic driver, mountain biking, motorized OHV, and most specialized recreational user groups would be negligible in the long-term because, though mountain biking and motorized OHV recreational opportunities and activities would be excluded from the ACEC, the ACEC is physically inaccessible to mechanized use. The impacts on non-mechanized recreational users and specialized recreation climbing users would be beneficial in the long-term because the management decisions would maintain the recreational opportunities and expectations that are preferred by this group: natural sights and sounds, remoteness, isolation, and a pristine, undeveloped environment.

Alternative B

The impacts of management decision on recreational users under this alternative would be similar to those discussed for Alternative A because the size of the ACEC and the management decisions are similar. Compared to Alternative A, this alternative would permit a greater degree of recreational resource degradation: recreational activities would be restricted or limited only if vegetation communities were being adversely affected.

Alternative C

The impacts of management decision on recreational users under this alternative would be similar to those discussed for Alternative A because the size of the ACEC and the management decisions are similar. Compared to Alternative A, this alternative would have long-term impacts on recreational resources as discussed under Alternative B above.

Alternative D

Under this Alternative, the ACEC would not be established and would be managed consistent with the surrounding area. Mountain biking and motorized recreation on designated routes would be permitted on the mesa top but, as noted above, the mesa top is inaccessible to these recreational activities. The impacts on recreational resources under this alternative would be potentially adverse in the long-term because there would be very few limitations or restrictions on potential surface disturbing activities (e.g., unlimited dispersed camping; lack of waste management) and these surface disturbances would potentially degrade recreational resources. Management decisions under this alternative would also not limit surface disturbance-related resource degradation by those users who access the mesa top (climbers, non-mechanized users), which could further exacerbate surface disturbances on the mesa top. In the long-term, potential recreational resource degradation and the lack of resource protection would likely degrade the recreational experience for those accessing the mesa top. Compared to Alternative A, this alternative would have long-term impacts that are more adverse to recreation resources because management decisions would not preserve the recreational resources on Lavender Mesa.

Alternative E

Under Alternative E, the proposed 649-acre ACEC would be protected as an area with non-WSA wilderness characteristics. The impacts to recreation resources would be beneficial in the long-term because surface disturbance restrictions to preserve wilderness values on the mesa would be either prohibited or greatly limited. The impacts to resource users would be comparable to the discussion under Alternative A because the level of resource preservation and allowed recreational activities would be the same.

4.3.10.3.13.10. Shay Canyon ACEC

Alternative A

This alternative would continue to manage the 3,561-acre Shay Canyon ACEC for conservation of cultural resources. The area would permit limited OHV use (along designated routes) and would manage the canyon for permanent protection of sensitive cultural sites, but would have no other specified limits or restrictions on recreational activities. The impacts of this alternative's management decisions on recreational resources would be minor because: (1) the area would be managed under VRM Class I objectives, so long-term degradation of scenic quality from surface disturbances would be minimal; (2) OHV-related surface disturbances would be limited; and (3) recreation-related cultural resources would be protected. The impacts on recreational resource users would also be minor because recreational opportunities for mechanized and non-mechanized groups would be available within the ACEC.

Alternative B

Under Alternative B, 119 acres would be designated as the Shay Canyon ACEC to manage the cultural resources within the canyon. The area would be closed to camping, motorized OHV and mountain biking recreational use would be limited to designated routes, hiking would be limited to designated trails, and recreation would be limited if cultural resources were adversely impacted by these activities. The impacts on recreational resources would be beneficial in the long-term because management decisions under this alternative would prohibit surface disturbances within the proposed ACEC (e.g., NSO for oil and gas development, no campfires, restricted grazing, no surface disturbing vegetation or wildlife treatments). The impacts on recreational use within the ACEC would be adverse in the long-term because management decisions to protect cultural resources would limit the recreational opportunities for mechanized and non-mechanized recreation within the proposed ACEC. Compared to Alternative A, this alternative would have greater long-term, adverse impacts on recreational resources and on recreational opportunities within the ACEC because it would: (1) reduce the size of the ACEC to approximately 2% of the acreage managed under Alternative A, so specific ACEC-related management prescriptions for the protection of recreational resources would be reduced; and (2) reduce the recreational opportunities within the ACEC because the 119-acre proposed ACEC would be too small to accommodate the range of recreational activities presently permitted under Alternative A.

Alternative C

The impacts of this alternative would be similar to those discussed under Alternative B because the management decisions are the same.

Alternative D

Under this alternative, the Shay Canyon ACEC would not be established but would be managed consistent with the surrounding lands. Management decisions would limit OHV use to designated trails, but management of the area under VRM Class III objectives would allow surface disturbances from other land use activities. In the long-term, recreational resources would potentially become degraded through surface disturbing minerals exploration and development, livestock grazing, watershed treatments, and fuels treatments. The impacts on recreational resource users would be beneficial in the short-term because opportunities would

become available for a range of mechanized and non-mechanized recreational activities. In the long-term, the lack of management prescriptions to protect recreational resources would allow those resources (i.e., cultural, wildlife, vegetation, and scenic quality) to become degraded, which would reduce the likelihood of satisfying recreational experiences for all resource user groups. Compared to Alternative A, this alternative would have impacts that are more adverse because management decisions would not preserve the recreational resources or recreational opportunities within the Shay Canyon area.

Alternative E

The management decisions under this alternative would be similar to those discussed under Alternative B, except that approximately 99 acres (83% of the proposed ACEC) would be managed to protect wilderness characteristics within the proposed ACEC. The impacts would be similar to those discussed under Alternative B because management decisions that prohibit surface disturbances within the canyon would be similar. The adverse impacts on recreation and user groups would be the same as Alternative B, for the same reasons: the proposed ACEC is too small an area to accommodate the range of opportunities available under Alternative A.

4.3.10.3.13.11. San Juan River ACEC

Alternative A

The 15,100-acre San Juan ACEC would be managed under this alternative through the current management decisions for the San Juan River SRMA. Analyses of the impacts of those management decisions on recreation and on recreation user groups are shown in Section 4.3.10.3.10.1 above.

Alternative B

Under Alternative B, the San Juan ACEC would be managed as a 7,590-acre area for the protection of scenic, cultural, wildlife, and natural system values. Management actions would limit surface disturbances within the proposed ACEC boundaries: vehicle access and motorized OHV and mountain biking activities would be restricted to designated routes, and trails to cultural sites would be designated, as needed, to protect resource values; recreational activities would be limited or restricted if those activities were determined to adversely impact wildlife; camping sites would be closed or restricted, as necessary, to protect resource values; and climbing aids to access cultural and raptor nesting sites would be prohibited. The management decisions under this alternative would have long-term beneficial impacts on recreational resources because recreational resource values that include scenic quality, wildlife, and cultural resource components would be preserved or managed to ensure minimal impacts.

The impacts on motorized OHV, mountain biking, non-mechanized, and specialized recreational user groups would be a long-term reduction or limitation of recreational opportunities within the proposed ACEC if recreational activities were determined to have adverse impacts on cultural, scenic, and wildlife resource values. The impacts of ACEC management decisions on river users would be minor to negligible because the recreational opportunities for this group would not likely be affected by ACEC resource use restrictions: river use would be limited by group size and group numbers under the proposed SRMA (see Section 4.3.10.3.10.1), with overnight camping at designated campsites.

Compared to Alternative A, this alternative would manage 50% fewer acres along the San Juan River corridor for the preservation of recreational values and place more limitations on San Juan River corridor recreational use. However, this alternative would manage the acreage within the proposed ACEC with greater restrictions on surface disturbing activities than Alternative A, which would provide more long-term protection to those resources that contribute to the river user's recreational experience.

Alternative C

The impacts of proposed management decisions on recreation under this alternative would be the same as discussed under Alternative B because the proposed decisions would be the same.

Alternative D

Under Alternative D, the San Juan River ACEC would not be designated. However, the management decisions under this alternative would be similar to those described under Alternative B, with similar impacts to recreational resources and user groups. Compared to Alternative A, this alternative would have impacts that are similar to those discussed under Alternative B.

Alternative E

The impacts on recreational resources and users would be the same as discussed under Alternative B because the management decisions are the same, except that 2,155 acres (28% of the proposed ACEC) of non-WSA lands with wilderness characteristics that lie within the ACEC would prohibit any surface disturbances that could potentially degrade the existing wilderness values within these areas. The impacts of non-WSA wilderness characteristics area protection on recreational resources and users would be the same as the discussion under Alternative B because the ACEC would be managed under alternative decisions to ensure that there would be minimal impacts to visual, cultural, wildlife, and natural values within the ACEC.

4.3.10.3.13.12. Valley of the Gods ACEC

Alternative A

This alternative would manage the 31,387-acre Valley of the Gods (within the current Cedar Mesa ACEC) for scenic quality preservation through VRM Class I designation with surface disturbances compatible with this visual resource objective. The impacts on recreational resources would continue to be beneficial in the long-term because the VRM Class I limitations on surface disturbances would continue to preserve recreational resources (e.g., OHV use would be limited to designated routes, potential scenic quality-degrading minerals activities would require visual mitigation and/or approved plans of operation). The impacts on scenic driver, mechanized and non-mechanized recreational resource user groups would continue to be beneficial in the long-term because recreational opportunities would continue to be available for these groups, with the likelihood of satisfying scenic quality-related recreational experiences because management decisions would continue to preserve the high scenic quality of the area.

Alternative B

This alternative would manage the Valley of the Gods as a 22,863-acre ACEC for the preservation of scenic quality. The impacts on recreational resources would be similar to those discussed for Alternative A because the area would continue to be protected under VRM Class I

management objectives with a similar level of potential surface disturbances to recreational resources. The impacts on recreational user groups would be similar to the discussion under Alternative A because the recreational opportunities for scenic driving, motorized OHV, mountain biking, and non-mechanized users would be similar. This alternative would provide recreation-related scenic quality protection to 73% of the area that would be protected under Alternative A. Consequently, the amount of recreational opportunities described would be proportionally less than those provided under Alternative A.`

Alternative C

This alternative would have impacts similar to those discussed under Alternative B because the management decisions are the same.

Alternative D

Alternative D would not designate the 22,863-acre Valley of the Gods as an ACEC for the protection of scenic quality and the area would be managed under VRM Class III objectives. The area would be for a lower level of visual/scenic quality (i.e., more surface disturbances would be permitted), with potentially adverse impacts on those recreational opportunities that include a high scenic quality component. The likelihood of satisfying recreational experiences for scenic driver, mountain biking, motorized, and non-mechanized user groups within this area would be diminished in comparison with Alternative A.

Alternative E

This alternative would manage the proposed ACEC under decisions similar to Alternative B, except that approximately 20,743 acres (91% of the proposed ACEC) within the ACEC would be managed to protect wilderness characteristics. The impacts would be the same as discussed under Alternative B because management decisions to protect wilderness characteristics (designation as VRM Class I, closed to mineral leasing and minerals disposal) would also be applied to the entire ACEC under that alternative.

4.3.10.3.14. Impacts of Special Designation–Wild and Scenic Rivers Decisions on Recreation

4.3.10.3.14.1. Colorado River Segments

Alternative A

Under Alternative A, Segment #1 (a 2.2-mile segment) was not evaluated for eligibility under the NWSRS. However, the river segment would continue to be managed according to floodplains and riparian/aquatic areas guidelines described in the current RMP, which includes limiting OHV use to designated trails, NSO minerals leasing, and prohibitions on surface disturbances caused by mountain biking and motorized OHV equipment (except for fire management or geophysical work). The impacts on recreational resources would be beneficial in the long-term because recreation-related restrictions or limitations would continue to be imposed on the river segment to protect any ORVs that the river segment may possess. The impacts on mountain biking, motorized, river floating, and non-mechanized resource users would be beneficial in the long-term because recreational opportunities for these user groups would continue to be available under current management decisions.

Colorado River Segments #2 and 3 (5.5 and 6.5 miles, respectively) were determined to be eligible, and would be managed to preserve any ORVs that the segments might possess. The impacts on recreation resources would be beneficial in the long-term because recreation resources (e.g., scenic, wildlife, cultural resources) would be preserved. The impacts on motorized, mountain biking, river floating, and specialized recreational user groups would be negligible in the long-term because, though river segment eligibility would continue to prohibit surface disturbances that could potentially degrade the ORVs for these river segments, recreational opportunities would continue to be available for these user groups. The impacts on non-mechanized and river floating recreational use would continue to be beneficial in the long-term because protection of the river corridor from surface disturbances along these segments would be compatible with the recreational expectations of these users, which includes a natural-appearing environment and little evidence of human surface disturbances along the river corridor. The impacts on mountain biking and motorized users would also be beneficial in the long-term because use of designated trails along the river corridor would continue.

Alternatives B and E

Under Alternatives B and E, Colorado River Segment #1 would be recommended as suitable for classification as recreational and would be managed under VRM Class III objectives. The impacts on recreational resources would be beneficial in the long-term because recreational ORVs that include cultural, wildlife, fishery, scenic, and ecological resources (see Section 3.14.2.2) would be preserved. The impacts on recreational resource users would be variable. Management decisions under these similar alternatives would have long-term beneficial impacts on specialized, mountain biking and motorized resource users because recreational opportunities would be available along the river corridor for trail use, and they would be managed under VRM Class III objectives. Development and roads already exist on the northern side of the segment in the Moab FO planning area (see Appendix H, Special Designations). The impacts on non-mechanized and river floating user groups would beneficial in the long-term because the recreational opportunities for experiencing solitude, remoteness, natural sights and sounds, and an undeveloped and pristine, natural-looking environment would be partially preserved under the Recreation category. Compared to Alternative A, these alternatives would permit a greater degree of surface disturbance under VRM Class III management objectives that would potentially degrade recreation resources, but would also provide more opportunities for recreational resource users.

Colorado River segment #2 would be recommended as suitable for classification as scenic and would be managed under VRM Class II objectives. The impacts would be beneficial because river ORVs would be preserved. Increased mountain biking and motorized recreational opportunities would have long-term, beneficial impacts on user groups that seek those opportunities because some surface disturbances along the river corridor would be permitted. The increased recreational opportunities for solitude, isolation, and naturalness would have beneficial impacts on recreational users who seek these experiences. Compared to Alternative A, these alternatives would have impacts that are more beneficial to recreation resources because river corridor ORVs would be protected.

Segment #3 would be recommended as suitable for classification as scenic, would be managed under VRM Class I objectives, and would be closed to OHV use. The impacts of these management decisions would be beneficial in the long-term for recreational resources because

surface disturbances within the river corridor would be minimized. Under these alternatives, there would be a long-term reduction in recreational opportunities for mountain biking and motorized resource user groups because of management under the VRM Class I objectives that permit very low surface disturbances impacts. The impacts on non-mechanized and river floating users would be an increased likelihood of satisfying recreational experiences from the elimination of OHV travel (and reduced resource use conflicts with this activity) within the river corridor. Compared to Alternative A, this alternative would be more beneficial for non-mechanized and river floating users and more adverse for mountain biking and motorized users.

Alternative C

Under this alternative, Segment #1 would be recommended as not suitable under the NWSRS. The impacts on recreational resources and on recreational resource users would be adverse in the long-term because the river corridor would be managed under minerals timing and controlled surface use leasing stipulations that could have long-term, adverse surface disturbance-related impacts on recreational scenic quality within the river corridor from potential minerals development.

Under this alternative, the impacts on Colorado River Segment #2 would be similar to those discussed under Alternative B because the management decisions are similar. There would be long-term, adverse impacts to river floating users from resource use conflicts with permitted motorized boat use within the river corridor, which would diminish the recreational experience for those river floaters who seek non-mechanized, natural sights and sounds. Compared to Alternative A, this alternative would be less beneficial for recreational users because of the increased likelihood of recreational use conflicts.

The impacts on Colorado River Segment #3 would be similar to those discussed under Alternative B because the management decisions are similar. There would be impacts to river floating users as discussed under Segment #2 above because motorized boat use would be allowed. Compared to Alternative A, this alternative would have impacts similar to those discussed under Alternative B. Compared to Alternative A, this alternative would have similar impacts on recreational river use.

Alternative D

Under Alternative D, the Colorado River segments would be recommended as not suitable under the NWSRS, which would have long-term impacts on recreational river use as discussed for Segment #1 under Alternative C because the segments would be managed under controlled surface use mineral leasing stipulations. Compared to Alternative A, this alternative would be more adverse in the long-term on recreational river opportunities because management decisions would provide fewer protections to recreational resources, and the likelihood of recreational resource degradation and unsatisfying recreational experiences for river floaters and non-mechanized users along the river corridor would be increased.

4.3.10.3.14.2. Indian Creek

Alternative A

Under this alternative Indian Creek was not evaluated for eligibility under the NWSRS, but still would be managed according to the floodplains and riparian/aquatic areas guidelines described in the current RMP. The impacts on recreational use would continue to be beneficial because

recreational resources would continue to be protected under current RMP management decisions and because a range of recreational opportunities for mountain biking, motorized, and non-mechanized groups would continue to be available within the creek corridor.

Alternative B

Alternative B would manage the proposed 4.8-mile segment of Indian Creek as recommended suitable for classification as recreational. The segment would be managed as VRM Class III objectives, with OHV travel limited to designated routes. The impacts on recreational resources would beneficial in the long-term because recreation-related ORVs (i.e., cultural resources) would be protected. The impacts on recreational resource users would also be beneficial in the long-term because more recreational opportunities for motorized, mountain biking, and non-mechanized resource users would become available within the creek corridor under VRM Class III class objectives management, while continuing to protect the creek riparian and floodplain area. Compared to Alternative A, this alternative would be more beneficial for recreation because the creek would be managed with more protection of recreational resources.

Alternative C

Alternative C would manage Indian Creek as recommended not suitable. This alternative would have long-term, adverse impacts on recreational resources because the Monticello FO eligibility study determined that the creek possesses recreation ORVs, and a non-suitability recommendation would increase the likelihood that the creek's ORVs would be degraded and diminished by surface disturbing activities. Under this alternative, the area beyond the creek riparian and floodplain would be managed under standard stipulations and timing and controlled surface use mineral leasing stipulations, which would likely decrease the quality of recreational resource users' experience, as well as potentially resulting in long-term surface disturbance-related degraded or diminished recreational resources. Compared to Alternative A, this alternative would be less beneficial because it would manage the creek segment with fewer recreational resource protection measures.

Alternative D

Alternative D would manage Indian Creek as recommended not suitable. This alternative would have similar long-term impacts on recreational resources and users as discussed under Alternative C because the segment would be managed under standard mineral leasing stipulations.

Alternative E

Under Alternative E, the impacts on recreation would be similar those discussed under Alternative B, except that 0.6 miles of the Indian Creek river corridor would be managed under VRM Class I objectives to preserve non-WSA lands with wilderness characteristics. Protecting the 0.6-mile segment of river would provide additional protection to recreational resources and enhance opportunities for non-mechanized users by prohibiting surface disturbances that could degrade the area's wilderness values. The impacts to motorized, mountain biking, and specialized user groups would be the same as discussed under Alternative B because these activities would still be limited to designated routes within the river corridor. Compared to Alternative A, this alternative would have more beneficial impacts to recreational resources and users, as discussed under Alternative B.

4.3.10.3.14.3. Fable Valley

Alternative A

Under Alternative A, Fable Valley was not evaluated for eligibility under the NWSRS. The impacts on recreational resources and users would continue to be beneficial because the area lies within the Dark Canyon WSA and has been and would continue to be managed under the IMP for protection of its wilderness characteristics. The impacts on recreation resources and non-mechanized recreational opportunities would continue to be beneficial in the long-term, with opportunities for satisfying hiking, backpacking, and equestrian experiences within a pristine, undeveloped landscape. The opportunities for motorized OHV, mountain biking, specialized, and scenic driving groups would continue to be adverse in the long-term because IMP-imposed stipulations would continue to prohibit mechanized use and limit surface disturbances in these areas.

Alternatives B–E

The action alternatives impacts would be the same as discussed under Alternative A.

4.3.10.3.14.4. Dark Canyon

Alternative A

Under Alternative A, Dark Canyon was not evaluated for eligibility under the NWSRS. The impacts on recreation would be the same as discussed under Fable Canyon: the proposed wild stream segment lies within the Dark Canyon WSA and recreation resources have been and would continue to receive protection under the IMP.

Alternatives B–E

The impacts of the action alternatives would be the same as discussed under Alternative A.

4.3.10.3.14.5. San Juan River Segments

Alternative A

Under this alternative the 8.5-mile San Juan River Segment #1 was not evaluated for eligibility under the NWSRS, with impacts similar to those described under Colorado River Segment #1 for Alternative A.

Segment #2. This 10-mile segment was determined to be eligible and would be managed under VRM Class I objectives with minimal surface disturbances, OHV use limited to designated trails, and withdrawn from mineral entry. The impacts on recreational resources and users would continue to be beneficial in the long-term because recreational resources within this segment of the river corridor would be protected. The impacts on recreational user groups would beneficial in the long-term because recreational opportunities would continue to be available to mountain biking, motorized, river floating, and non-mechanized users.

Segments #3–#5. The impacts for these segments (totaling 34.8 miles) would be the same as described for Segment #2 because the management decisions would be the same.

Alternatives B and E

Segment #1. Under Alternatives B and E, this segment would be recommended as suitable for recreational classification, managed under VRM Class III objectives, and subject to NSO minerals leasing within the floodplain and riparian corridor. River ORVs (i.e., historic, fish, and wildlife) would be beneficially protected in the long-term under this classification, but it should be noted that, though these similar alternatives propose to manage the segment as suitable for classification as recreational, the eligibility study conducted by the BLM Monticello FO (see Appendix H) found that "recreation and ecological values are not ORVs found in new Segment #1" because of current uses and development along this river segment. Thus, the impact on recreational resources would be negligible to minor because this segment possesses few ORVs. A comparison of this alternative to Alternative A shows that the impacts to recreation would be similar because recreational resources have not been well preserved along this segment.

Segment #2. This segment would be recommended as suitable for recreational classification, managed under VRM Class III objectives, and subject to NSO leasing within the riparian areas and floodplain. The impacts of these management decisions on recreation resources would be beneficial in the long-term because recreation-related ORVs would be protected and recreational opportunities for river floating, mountain biking, motorized OHV, and non-mechanized activities would be maintained. Compared to Alternative A, this alternative would be less beneficial because Alternative A provided a greater degree of protection to recreational resources than this alternative.

Segment #3. This 13.3-mile segment would be recommended as suitable for wild classification, managed under VRM Class I objectives, closed to OHV use, and proposed for mineral withdrawal. These impacts on recreational resources would be beneficial in the long-term because of the high degree of protection proposed for this river segment. The impacts on user groups would be variable: closing the segment to motorized OHV use would reduce the recreational opportunities for this user group; and river floaters and non-mechanized users would benefit from the proposed management decisions because removing OHVs from the river corridor would likely enhance the recreational experience where solitude, a sense of remoteness, natural sights and sounds, and a pristine river corridor environment is expected. Compared to Alternative A, these alternatives would be more beneficial for non-mechanized user and less beneficial for motorized OHV users. The impacts of these alternatives on recreational resources would be similar to Alternative A.

Segment #4. This 4.2-mile segment would be recommended as suitable for recreation classification, managed under VRM Class III objectives, and subject to NSO leasing within the riparian areas and floodplain. The impacts to recreation would be similar to those discussed under Segment #2 because the management decisions are the same.

Segment #5. The impacts to recreation along this 17.3-mile segment would be similar to those discussed under Segment #3 because the management decisions are the same.

Alternative C

Segment #1. Under this alternative, Segment #1 would be recommended as not suitable for classification under the NWSRS. The impacts on recreational resources and users would be negligible because, as mentioned above under Alternative B, this river segment was not

considered eligible by the Monticello FO and it did not possess recreational ORVs. Compared to Alternative A, this alternative would have similar impacts.

Segment #2. This segment would be recommended as not suitable. The impacts on recreational resources would be adverse in the long-term because the Monticello FO eligibility study determined that this segment does possess recreational ORVs, so a status of non-suitability would deny NWSRS protection to these recreation-related resource values. A lack of recreational resource protection would increase the likelihood of surface disturbance-related degradation of recreational ORVs with an associated diminishing of recreational experiences and opportunities on all recreational resource users within the river corridor. The floodplain and riparian areas along the river segment would be protected under executive orders and BLM riparian management policy, but beyond these areas, the river corridor would be open to mineral development under standard leasing stipulations. Compared to Alternative A, this alternative would be more adverse to recreation resources in the long-term because it would provide less protection to these resources.

Segment #3. The impacts would be similar to those discussed under Segment #2 because the river segment was determined to possess recreational ORVs and the management decision is the same as Segment #2.

Segment #4–#5. Same as Segment #2.

Alternative D

Segment #1. Under this alternative, recreational resource within this river segment would have impacts similar to those discussed under Alternative C because the management decision is the same.

Segment #2. The impacts on recreation within this segment would be similar to those discussed under Segment #2 for Alternative C because the management decision is the same.

Segment #3–#5. Same as Segment #2, Alternative C.

4.3.10.3.14.6. Arch Canyon

Alternative A

Under Alternative A, a 6.9-mile segment of Arch Canyon was not evaluated for eligibility under the NWSRS, but would still be managed according to the floodplains and riparian/aquatic areas guidelines described in the current RMP. The impacts on recreational use would continue to be the same as those discussed under Indian Creek Alternative A because the management decisions are the same.

Alternatives B and E

Under these alternatives, the impacts would be similar to those discussed for Indian Creek Alternative B because the management decisions are the same.

Alternative C

Under this alternative, the impacts would be similar to those discussed for Indian Creek because the management decisions are the same, except that the area beyond the creek riparian areas and floodplain would be managed under standard mineral leasing stipulations.

Alternative D

The impacts under Alternative D would be similar to those discussed for Indian Creek because the management decisions are the same.

4.3.10.3.14.7. White Canyon

Alternative A

Under Alternative A, White Canyon was determined to be eligible under the NWSRS, and would be managed to preserve any ORVs that the segment might possess. The impacts on recreation would be beneficial in the long-term because recreational resources would be preserved. The impacts on specialized recreation and non-mechanized recreational user groups would continue to be beneficial because recreational opportunities would continue to be available for these users.

Alternatives B–E

Under these alternatives, White Canyon would be managed as not suitable for classification under the NWSRS because the canyon is not a free-flowing water system. Thus, White Canyon is ineligible for inclusion under the NWSRS. The impacts on recreational resources would be negligible because the action alternatives would propose designation of the area as a SRMA to protect the canyon's recreational resources and continue to provide recreational opportunities for specialized and non-mechanized recreation within the canyon. Compared with Alternative A the impacts would be similar: these alternatives would provide protection to recreational resources and provide recreational opportunities for non-mechanized and specialized user groups along the canyon rim and within the canyon.

4.3.10.3.15. Impacts of Special Designation–Wilderness Decisions on Recreation

Under all of the alternatives, WSAs would be managed consistent with the IMP until Congress releases the WSAs from wilderness review (see Section 3.14.4.4). The Monticello FO currently manages 13 WSAs to preserve their wilderness values under VRM Class I objectives. The impacts on recreation resources and non-mechanized recreational opportunities of managing these areas under the IMP would continue to be beneficial in the long term, with opportunities for satisfying hiking, backpacking, equestrian, and dispersed camping experiences within a pristine, undeveloped landscape. The opportunities for motorized OHV, mountain biking, specialized, and scenic driving groups would continue to be adverse in the long term, as IMP-imposed stipulations would continue to prohibit mechanized use and limit surface disturbances in these areas under all of the alternatives because the areas have been and would continue to be managed so that their wilderness suitability would not be impaired.

4.3.10.3.16. Impacts of Travel Decisions on Recreation

4.3.10.3.16.1. OHV Areas

Alternative A

Under Alternative A, 611,310 acres would be open to cross-country OHV use, and 1,329,430 acres would be limited to designated routes. Approximately 276,430 acres would be designated as closed to OHV use. Managing OHV use under current "open" designations would be beneficial for motorized OHV users because few restrictions on cross-country OHV use would

continue to provide long-term recreational opportunities for this resource user group. However, the resource degradation-related impacts to soils, water quality, scenic quality, cultural resources, wildlife, and vegetation (all of which are components of the recreational experience), and the impacts associated with OHV noise and other resource user groups would continue to impact other resource users within the 611,310 acres designated as open to OHV use because this area would continue to remain open to OHV-caused cross-country surface disturbances. The impacts of designated limited routes would continue to provide beneficial, long-term recreational/travel opportunities for motorized OHV and mountain biking user groups, with negligible impacts on recreational resources, as these routes would not increase surface disturbance impacts to recreational resources. WSAs would be closed to OHV travel except within designated "ways"; thus the impacts to recreation would provide opportunities for backcountry experiences to non-mechanized users, but would have adverse impacts on motorized OHV users from a lack of access to WSAs. However, the long-term impacts of OHV management decisions under this alternative on natural and cultural resources and on other recreational resource users would be substantially adverse because, as discussed in Sections 3.10.3 and 3.10.4, OHV use within the Monticello PA is increasing, with the likelihood that OHV-related resource use conflicts with other resources would continue to intensify in the long-term.

Alternative B

Under Alternative B, no acres would be designated as open to cross-country OHV use, with all OHV routes (1,359,417 acres) designated as limited to designated routes. Approximately 423,698 acres would be designated as closed to OHV use. Management decisions under this alternative would designate OHV travel routes for mountain bikes, single track motorized (motorcycles), or two-track motorized OHV use (four-wheelers, jeeps, ATV). Site-specific route adjustments would be permitted based on recreational opportunities, access needs, and resource constraints. The short-term and long-term impacts on recreational resources would be beneficial because: (1) the adverse impacts to natural and recreation-related (interpretive) cultural resources from cross-country OHV use would be eliminated, and (2) surface disturbance-related impacts from OHV use would be restricted to designated routes (which are, in effect, areas that have already been impacted by surface disturbances).

The impacts on motorized OHV users would be adverse in the long-term because a substantial area would not be managed for cross-country OHV travel, with the elimination of opportunities for this form of recreation. The impacts on mountain biking user groups would be beneficial in the short- and long-term because management decisions would permit the spatial separation of potentially conflicting resource users, which would reduce user conflicts and increase the likelihood of a satisfying recreational experience for all OHV route users. The impacts of this alternative on other resource users would be variable: the impacts on scenic drivers and specialized recreation users would be negligible because these user groups are not likely to have resource use conflicts with OHV users; and the impacts on river floating users would be beneficial in the long-term if non-motorized routes were designated along river corridors, otherwise noise-related impacts from motorized OHV use would have potentially adverse impacts on the recreational expectations of solitude, quiet, and remoteness for this group. Similarly, the potential impacts of this alternative on non-mechanized users (i.e., hikers, equestrians) would be an adverse reduction in recreational opportunities for solitude and a sense of backcountry remoteness from noise-related OHV use if designated OHV routes were to lie near hiking trails. Otherwise, the elimination of cross-country OHV travel within the planning

area would have long-term, beneficial impacts on non-mechanized users because of the reduced likelihood for encountering OHV noise and users, with a loss of a sense of remoteness, quiet, and solitude.

Compared to Alternative A, this alternative would have long-term impacts on those recreational opportunities associated with cross-country OHV use because these opportunities would be eliminated. This alternative would have more long-term beneficial impacts on recreational resources and on recreational user groups than Alternative A because: (1) resource use conflicts would be reduced through adaptive management of OHV route designation and use, and (2) surface disturbance-related impacts to natural and cultural resources from OHV use (which would affect all recreation user groups) would be reduced.

Alternative C

This alternative would designate 2,311 acres as open to cross-country OHV use, with 1,362,142 acres limited to designated routes for OHV use, and 418,667 acres designated as closed to OHV use. The open OHV play areas would lie within (1) the proposed Indian Creek SRMA in contiguous parcels (totaling 2,214 acres) along Indian Creek, and be managed under the SRMA plan prescriptions, and (2) on 97 acres within Butler Wash, managed under the Comb Ridge CSMA. Management decisions would also designate route-limited OHV use to access trailheads within WSAs, and approximately 3.8 miles would be designated as a limited OHV route within Arch Canyon. The impacts on recreation of OHV designations under this alternative would be similar to those discussed under Alternative B because the management decisions would be similar. Long-term surface disturbance-related impacts would occur within the 2,311 acres designated as open to cross-country OHV use, but the impacts would be relatively minor because: (1) the area of potential impacts is less than 1% of the Monticello PA, (2) the open OHV play areas would be managed under the proposed SRMA and CSMA to ensure that open OHV use would be contained, and (3) past recreational OHV use has already caused OHV-related surface disturbances in both areas.

Compared to Alternative A, this alternative would have impacts similar to those discussed under Alternative B because more than 99% of the area designated as open to OHV cross-country use under Alternative A would be limited to designated routes or closed to OHV use under this alternative. The comparative impacts on recreational resource user groups would be similar to those impacts discussed under Alternative B because the adaptive management decisions to respond to recreational user needs, conflicts, and opportunities would be the same as those discussed under Alternative B.

Alternative D

Under this alternative, 2,311 acres would be designated as open to cross-country OHV use, approximately 1,780,807 acres would be available for travel on limited designated routes, and no acreage would be designated as closed to OHV travel. The impacts of this alternative on recreation resources would be similar to those impacts discussed under Alternative C because a relatively small area would be affected by open OHV recreation. The impacts on non-mechanized and mountain biking recreational user groups would be adverse in the long-term, because no areas would be closed to motorized OHV use. This would increase the potential for resource use conflicts because of the increased likelihood for encounters between non-mechanized, mountain biking, and motorized OHV users throughout the planning area. Under

this alternative, the opportunities for unlimited, cross-country OHV recreation would be adversely impacted in the long-term when compared to Alternative A because approximately 609,000 acres (99% of the area designated as open under Alternative A) would have prohibitions on cross-country OHV travel, a substantial reduction in opportunities for this type of motorized OHV recreation. However, when compared to Alternative A, there would be increased opportunities for motorized and specialized (motorized) OHV recreation throughout the planning area for recreation along designated routes, which would have long-term, beneficial impacts to motorized OHV because no area would be closed to this recreational user group.

Alternative E

Under this alternative, management decisions would be the same as Alternative B, except all travel routes (approximately 179 miles of D-Class roads [see Section 4.3.16, Travel Management]) within lands with non-WSA wilderness characteristics would be closed to OHV use. The impacts on recreational use would be to reduce the opportunities for motorized OHV use and experiences on approximately 582,357 acres, which would have a substantially adverse impact to motorized user groups. However, non-mechanized user groups would benefit from the increased opportunities for solitude, a sense of remoteness, and reduced user conflicts with mechanized groups. Compared to Alternative A, this alternative would have more beneficial impacts to non-mechanized users from increased opportunities for satisfying experiences within more areas closed to motorized users. Conversely, this alternative would have greater adverse impacts to motorized OHV and mountain biking user groups from closure of travel routes within the non-WSA wilderness characteristics areas because opportunities for motorized and mountain biking recreational experiences would be reduced.

4.3.10.3.16.2. Special Stipulation Areas

Alternative A

Management decisions for special stipulation areas would include OHV exclusions within the McLoyd Canyon-Moon House cultural site (no public travel allowed along 500 feet of BLM-administered access road) to protect cultural resources, with impacts as discussed under Section 4.3.10.3.2.

Travel and access within Arch Canyon would be limited to designated routes to protect special status species and habitat within the canyon. The impacts on recreational resources within Arch Canyon would be beneficial in the long-term because wildlife habitat would be preserved from potential OHV-caused surface disturbances, and recreational opportunities for wildlife viewing, sight-seeing, and camping would be maintained.

Alternatives B and E

Under these alternatives, the access route to McLoyd Canyon-Moon House would be closed to motorized use (approximately one mile of D-Class road D4798), which would reduce or eliminate the recreational opportunities for some visitors to experience the site because it would be likely that a portion of recreational users now able to visit the site would not be able to walk there. However, reducing the level and intensity of recreational sight-seeing within the site would have long-term, beneficial impacts on the recreational/cultural resource by reducing recreation-caused impacts to the site.

Arch Canyon would be closed to OHV use, access permits for non-mechanized users (i.e., hikers, equestrians) would be required, and group sizes would be limited to two groups per day of 10 individuals per group (or 20 visitors per day). Permitted groups or individuals would be allowed to camp within the canyon. The management decisions that exclude motorized OHV and mountain biking recreation groups from the canyon would have long-term, adverse impacts on these user groups by eliminating the opportunities for these user groups to experience Arch Canyon. The impacts to recreational resources within the canyon would be beneficial in the long-term because potential surface disturbance impacts caused by OHV use would be eliminated.

Compared to Alternative A, this alternative would reduce the recreational opportunities within Arch Canyon and McLoyd Canyon-Moon House. The impacts to recreational resources within McLoyd Canyon-Moon House and Arch Canyon under this alternative would be more beneficial in the long-term when compared to Alternative A because the access exclusions, permit limitations on group size and group number for overnight camping, and limitations on recreational use would have more preservation-related impacts on recreational resources.

Alternative C

Management decisions for the McLoyd Canyon-Moon House site would have similar impacts on recreational use and on the recreation resource as discussed under Alternative B because a portion of the route (approximately 500 feet of D-Class road D4798) would be closed to motorized traffic.

Management decisions for Arch Canyon would have similar impacts on recreational use and on recreational resources as discussed under Alternative A because the management decisions are similar: OHV use would be restricted to designated routes (totaling approximately 3.8 miles) with some portions closed to protect special status species. Under this alternative, an OHV permit system and limits on the size of OHV groups and number of groups allowed to access the canyon would be applied (totaling 24 OHV visitors per day), which would have short-term impacts on those motorized recreation users seeking recreational experiences within the canyon because of limitations on OHV use in the canyon. There would be no limits on the number of non-mechanized recreational users within the canyon and no overnight camping limits for permitted OHV users and non-mechanized users, which would maintain this recreational opportunity for both user groups.

Compared to Alternative A, this alternative would have similar impacts as discussed under Alternative B for the McLoyd Canyon-Moon House cultural/recreational site.

The impacts on Arch Canyon, when compared to Alternative A, would be similar for recreational resources, but this alternative would have greater short-term impacts on motorized recreational users because of limitations caused by the maximum number of users permitted per day (24 visitors per day) under this alternative with no specified limits on access under Alternative A.

Alternative D

Under this alternative, the management decision impacts on the McLoyd Canyon-Moon House site and on recreational users of the site would be similar to those discussed under Alternative A because motorized access to the site along D4798 would be permitted under this alternative.

The management decision impacts on recreational users in Arch Canyon would be similar to those discussed under Alternative C, but to a lesser degree, because only commercial motorized

recreational users would require permits and be subject to access limitations (12 individuals per group with two groups per day). The limitations on motorized and non-mechanized camping would similar to the discussion under Alternative A because only commercial OHV users would be subject to short-term access and camping restrictions. The impacts on recreational resources within the canyon would be similar to Alternative A because motorized users would be allowed year-round, but would be limited to designated routes.

Compared to Alternative A, the impacts of Alternative D decisions for Arch Canyon would be similar because the management decisions affecting recreational resources and recreational users would be similar: few restrictions on motorized, mountain biking, and non-motorized recreational opportunities, and preservation of wildlife habitat by limiting OHV use to designated trails.

4.3.10.3.17. Impacts of Vegetation Decisions on Recreation

4.3.10.3.17.1. Alternative A

The short-term and long-term impacts of management decisions for vegetation on recreation resources and users would be similar to those discussed under the Fire Management Section 4.3.10.3.3 because the vegetation management decisions would be similar. Under this alternative, treatments would be applied to approximately 232,130 acres within vegetation communities to control exotic and invasive species and improve ecosystem health using methods similar to those for fire management, re-seeding, and restoration. Rehabilitation of disturbed areas would use techniques similar to those used for areas affected by prescribed and wildland fire.

4.3.10.3.17.2. Alternatives B and E

Under these alternatives, approximately 7,600 acres per year of a range of vegetation cover types would be treated (or approximately 114,000 acres over the lifetime of the proposed RMP), with impacts similar to those discussed in Section 4.3.10.3.3. Compared to Alternative A, these similar alternatives would treat approximately 49% of the area proposed under Alternative A, with fewer short-term, adverse impacts on recreational opportunities and resources.

4.3.10.3.17.3. Alternative C

Alternative C would treat approximately 9,300 acres per year (or approximately 139,500 acres over the lifetime of the proposed RMP) of various vegetation cover types to improve or restore ecosystem health, with impacts as discussed in Section 4.3.10.3.3. Compared to Alternative A, this alternative would treat approximately 60% of the area proposed under Alternative A, with impacts on recreation as discussed in Alternative B.

4.3.10.3.17.4. Alternative D

This alternative would treat approximately 11,300 acres per year (or approximately 169,500 acres over the lifetime of the proposed RMP) of various vegetation cover types to improve or restore ecosystem health, with impacts as discussed in Section 4.3.10.3.3. This alternative would treat approximately 73% of the area proposed under Alternative A, with impacts as discussed in Alternative B.

4.3.10.3.18. Impacts of Visual Resources Decisions on Recreation

4.3.10.3.18.1. Alternative A

Under Alternative A, approximately 371,575 acres would be managed for higher levels of visual resource protection under VRM Class I objectives, and 355,112 acres would be managed for visual resource protection under VRM Class II objectives, with approximately 41% of the planning area managed for high scenic quality. There would be lower levels of visual resource and scenic quality protection under VRM Class III and Class IV on 1,054,681 acres. The VRM Class I and II resource objectives would have long-term, protection-related, beneficial impacts on recreational resources and all recreational resource users because recreation-related scenic quality would be preserved or impacted to a minor degree. As discussed in Section 4.3.18, Visual Resources, the visual resource inventory conducted for the Monticello FO determined that the visual inventory classes (which are a measure of visual values [scenic quality, public concern for scenic quality]) were the same as the VRM classes assigned under the 1991 RMP.

4.3.10.3.18.2. Alternative B

Under Alternative B, 497,668 acres would be managed under VRM Class I (33% more than Alternative A), with 250,641 acres managed under VRM Class II visual quality objectives (42% of the planning area would be managed for high scenic quality). Approximately 1,034,813 acres would be managed under the visual resource objectives of VRM Class III and Class IV. Compared to the current VRM inventory and Alternative A, this alternative would manage 21,622 more acres under higher levels of VRM Class I and Class II scenic quality protection. This would have long-term, beneficial impacts on recreation resources and users because more acres would be managed to prevent or mitigate surface disturbances to visual and scenic quality under VRM Class I and Class II objectives, with associated long-term, beneficial impacts on recreation-related scenic quality. Compared to Alternative A, this alternative would be more beneficial because more acres would be protected from potential scenic quality degradation.

4.3.10.3.18.3. Alternative C

Under Alternative C, VRM Class I would be designated on 425,179 acres (14% more than Alternative A), and VRM Class II would be designated on 132,001 acres. This alternative would manage 31% of the planning area for high scenic quality. The combined acreage designated as VRM Class III and Class IV would be approximately 1,225,915 acres. Compared to the current VRM inventory/Alternative A, this alternative would reduce the area of higher levels of resource protection under VRM Class I and II by 169,507 acres (a 10% reduction) to 31% of the planning area. This would have long-term, adverse impacts on recreational resources and users because fewer acres would be managed for high-level protection of visual and scenic quality and more area would be managed for potential surface disturbance-related scenic quality degradation.

4.3.10.3.18.4. Alternative D

Under Alternative D, 390,424 acres would be managed as VRM Class I. The VRM Class II-designated area would comprise 8,838 acres, while the combined VRM Class III and Class IV areas would include 1,386,860 acres. Compared to the current VRM inventory and Alternative A, this alternative would reduce the number of acres for higher levels of visual resource protection under VRM Class I and II designation by 327,425 (a reduction of 19%), with

approximately 22% of the planning area managed for high scenic quality. This would have long-term, adverse impacts on recreational resources and users because fewer acres would be managed to prevent or mitigate surface disturbances to visual and scenic quality, and would allow for more scenic quality degradation under VRM Class III and IV.

4.3.10.3.18.5. Alternative E

Alternative E would manage all non-WSA lands with wilderness characteristics under VRM Class I designation, which would result in 998,370 acres within the planning area being designated for management under this VRM class objective (269% more VRM Class I acreage than Alternative A). Approximately 111,478 acres would be managed under VRM Class II objectives, and approximately 433,459 acres would be managed under VRM Class III and IV objectives. Compared to the total VRM Class I and II acreages designated under Alternative A, this alternative would have more long-term, beneficial impacts on recreation-related visual resources because 383,161 more acres would be designated to preserve high quality scenic values under VRM Class I and II objectives (see Section 4.3.18, Visual Resources).

4.3.10.3.19. Impacts of Wildlife Resources Decisions on Recreation

4.3.10.3.19.1. Alternative A

Under Alternative A, current wildlife management decisions in the 1991 RMP would seasonally close crucial bighorn sheep, pronghorn, and deer habitat in the ERMA to OHV use to protect lambing, rutting, and winter habitat. These wildlife habitat closures would have short-term, adverse, seasonal impacts on opportunities for motorized OHV recreational opportunities because open OHV use would be prohibited in these areas.

There are no specified management decisions under any of the SRMAs that would restrict or prohibit motorized OHV use or other recreational activities because of wildlife seasonal habitat closures.

4.3.10.3.19.2. Alternatives B and E

Under these alternatives, commercial-type motorized or mountain biking tours and events would be seasonally prohibited (i.e., special recreation permits [SRPs] would not be issued) for OHV routes within pronghorn, bighorn sheep, deer, and elk crucial habitat and lambing and rutting areas. This would impact commercial-type OHV recreation in the short-term by decreasing the opportunities for motorized recreation along designated routes in crucial habitat areas (see Section 4.3.16, Travel Management). Compared to Alternative A, Alternatives B and E would have more restrictions on permitted and/or commercial OHV recreational opportunities within the ERMA area because 512 miles of travel routes would be seasonally closed to commercial recreational travel, with decreased opportunities for recreational access and movement through the planning area.

4.3.10.3.19.3. Alternative C

The impacts under Alternative C would be similar to those as discussed under Alternative B because the management decisions are similar, except that elk crucial habitat would also be seasonally closed to commercial OHV use and approximately 135 miles of travel routes (26% of the routes closed under Alternative B) would be closed in the short-term to some permitted or

commercial OHV use or mountain biking tours and events. Compared to Alternative A, this alternative would have more restriction-related impacts to commercial-type recreational OHV opportunities because these opportunities would be more limited.

4.3.10.3.19.4. Alternative D

The impacts on OHV recreational user groups from wildlife management decisions under this alternative would be similar to those discussed under Alternative A because the management decisions are similar: commercial and private recreational OHV use would be permitted, though limited to designated routes within the ERMA, during seasonal wildlife restrictions.

4.3.10.4. Summary of Impacts

See Table 2.2 for a full summary of the impacts to recreation. In general, Alternatives B and E would be more beneficial in the long-term to non-mechanized users because under these alternatives mountain biking and motorized OHV user groups would be more restricted (through travel closures, access limitation, and/or travel access prohibitions to protect wilderness values within non-WSA areas with wilderness characteristics) than under the other alternatives. Under these alternatives, more opportunities would be available for non-mechanized users to experience solitude and a sense of remoteness, with reduced user conflicts from mechanized users. Alternative D would have more beneficial impacts on mountain biking and motorized OHV users because this alternative proposes fewer recreation-related travel restrictions for these groups. Alternative C would balance the benefits to non-mechanized and mechanized user groups by managing for mountain biking and motorized OHV use while also providing opportunities for non-mechanized user groups.

4.3.10.5. Mitigation Measures

In addition to the Management Common to All described in Chapter 2, Appendix A, and Appendix I, other measures to reduce or mitigate the impacts to recreational resources and recreational resource users would include:

- Apply fugitive dust control along scenic backways, historic trails, and heavily used travel routes to preserve recreation-related scenic quality;
- During and after prescribed burning, vegetation treatments, and fire suppression when areas are being reclaimed, encourage and educate recreational users to use alternate areas with similar recreational opportunities to permit affected recreational areas to re-vegetate;
- Educate recreational resource users regarding protection of recreation-related cultural and natural resources.

4.3.10.6. Unavoidable Adverse Impacts

Minerals exploration and development (e.g., seismic exploration along existing routes, spur road construction, well pad drilling) and OHV use would likely have short-term and long-term, unavoidable, adverse impacts on recreational user groups whose recreational expectations include solitude, naturalness, and a sense of remoteness (i.e., non-mechanized, river floating, and some specialized recreational user groups).

4.3.10.7. SHORT-TERM USE VS. LONG-TERM PRODUCTIVITY

In general, short-term uses (e.g., prescribed fire treatments, geophysical minerals activities, vegetation treatments) would have long-term impacts on recreational opportunities (productivity) where scenic quality is a component of recreational expectations. While disturbances to vegetation would be in the short-term, vegetation establishment and re-growth is typically long-term in the Monticello PA. Thus, the scenic quality contrasts from surface and vegetation disturbances would have potentially long-term impacts on recreational opportunities and experiences.

4.3.10.8. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

There are no unavoidable impacts that would cause irreversible, unrestorable losses of recreational resources because vegetation communities can be restored, and recreation-related cultural resources can be protected. Irretrievable impacts to recreational resources would be caused by: (1) the loss or diminishment of recreation-related scenic quality from vegetation treatments, fuel reductions, or invasive weed control until vegetation re-growth; (2) irretrievable loss of OHV and specialized recreational opportunities during seasonal closures of important special status species and wildlife areas, and (3) the irretrievable loss of scenic recreational opportunities due to mineral development until well sites are reclaimed. As discussed above in the Summary, the impacts from vegetation and surface disturbances would have long-term, irretrievable impacts on recreational opportunities to experience scenic quality until vegetation re-growth.

4.3.11. RIPARIAN RESOURCES

Within the Monticello PA, riparian areas are typically associated with perennial, intermittent, and ephemeral streams, as well as isolated springs and other water sources. The area of potential effect for riparian resources would include all riparian areas identified in the preliminary riparian inventory for the Monticello FO. Management decisions with the potential to impact riparian resource health, the proper functioning condition (PFC) of streams, water resources necessary to riparian zone establishment and survival, or the physical environment on which riparian vegetation depends (e.g., stream stability) were evaluated in this analysis.

Analysis of impacts to the riparian resources within the Monticello PA were conducted primarily by overlaying proposed management decisions (e.g., surface disturbances due to grazing, OHV travel, camping and other recreational use, and woodland harvest) on the 28,994 acres of riparian areas in the PA, as identified in the GIS-based Utah GAP database (Lowry et al. 2005) of vegetation types. In assessing the level of surface-disturbing and vegetation-modifying impacts on riparian resources, the total acreage of surface disturbance, visitor and livestock use, and loss or degradation of riparian habitat were considered. All alternatives would include riparian management actions with the potential to affect riparian resources. Where GIS or other quantitative data were unavailable, potential impacts to riparian resources were analyzed qualitatively, based on these same criteria.

Under all alternatives, management decisions for the following resources would result in negligible impacts to riparian resources: air quality, cultural resources, health and safety, and paleontological resources. The impacts would be negligible because protecting air quality, protecting cultural resources under Section 106, maintaining safety around AML sites and

reducing the risks of hazardous materials spills and spill-site cleanup, and protecting known fossil areas for scientific study and recreational collection of fossils would neither degrade nor improve the water, soil, and vegetation components of riparian resources. Accordingly, the impacts of management actions for these resource categories are not analyzed further in this section.

4.3.11.1. Impacts Common to All Alternatives

4.3.11.1.1. Impacts of Riparian Decisions Common to All Alternatives

Impacts to riparian areas in the Monticello PA would be a result of vegetation disturbance and surface-disturbing activities within the riparian zones, and are subject to restrictions to ensure that conditions are improved or at least not degraded. All alternatives must adhere to Standard 2 of the Utah BLM Standards for Rangeland Health, which apply to riparian resources in the Monticello PA. Standard 2 states that "[r]iparian and wetland areas [must be] in properly functioning condition (PFC). Stream channel morphology and functions are appropriate to soil type, climate, and function" (BLM 1997). The BLM would develop monitoring and management strategies and restrictions as necessary to meet or maintain PFC. Meeting or maintaining PFC would improve the physical and biological condition of those riparian zones that do not currently meet PFC standards, and would therefore constitute a beneficial impact to riparian zones in the Monticello PA.

Pipeline crossings of perennial, intermittent, and ephemeral stream channels would be constructed to withstand 100-year floods to prevent breakage and subsequent accidental contamination of runoff during high-flow events. Surface crossings would be constructed high enough to remain above stream flows at each crossing, and subsurface crossings would be buried deep enough to remain undisturbed by scour throughout passage of the peak flow. Hydraulic analysis would be completed in the design phase (by the project proponent) to eliminate potential environmental degradation associated with pipeline breaks at stream crossings to avoid repeated maintenance of such crossings. Specific recommendations regarding surface and subsurface crossings are found in Guidance for Pipeline Crossings (see Appendix F). These stipulations would minimize adverse impacts to riparian resources resulting from release of unrefined petroleum or hazardous substances and/or flood flow obstruction.

Under all alternatives, oil and gas development would be managed with NSO minerals leasing stipulations in riparian areas. No new surface-disturbing activities would be allowed within active floodplains or within 100 meters of riparian areas. The Monticello FO would follow BLM guidelines for managing riparian areas (see Technical Reference 1737-6: Riparian Area Management, as amended). All floodplains and riparian/wetlands would be managed in accordance with Executive Orders 11988 and 11990, Sections 303 and 404 of the Clean Water Act, and the ESA. These orders would protect riparian resources and floodplains from surface disturbance and vegetation removal.

Management of public lands by the Monticello FO would be consistent with the Colorado River Salinity Control Act and comply with Utah's state water-quality standards. Uses would be managed to minimize and mitigate damage to soils and to maintain and/or restore overall watershed health and reduce erosion, stream sedimentation, and salinization of water. These management actions would limit short- and long-term adverse impacts to riparian resources by

reducing water quality degradation, salinization, and sedimentation that would impact the biological and physical structure of riparian areas.

Floodplains and riparian areas would generally be excluded from private commercial use of woodland products (but would be accessible to Native Americans for ceremonial purposes), thus limiting adverse impacts to resources due to vegetation disturbance, streambank trampling, and noxious weed spread. Habitat, range, and watershed improvements would be allowed and have been evaluated in the 1991 Vegetation EIS (BLM 1991b). Riparian areas would be excluded from surface disturbance by mechanized or motorized equipment and from structural development under all alternatives, thereby beneficially protecting riparian resources from disturbance.

All alternatives would close social trails in Road Canyon, Fish Creek, and Mule Canyon and restrict camping within 200 feet of isolated springs and water sources to protect riparian resources by limiting trampling of vegetation, disturbance of streambanks, and noxious weed spread. Implementation of the Southwest Willow Flycatcher Recovery Plan would potentially benefit riparian resources through habitat enhancement and water management.

All alternatives would require the control of invasive and non-native weed species, as identified in Table 3.56, and prevention of the infestation and spread of new invasive species through cooperative agreements and implementation of BLM weed-management policies and action plans. Pack stock and riding stock users on BLM-administered land would be required to use certified weed-free feed. Use of certified weed-free seed mixes, mulch, and fill would be required in restoration/rehabilitation activities. To help control noxious weeds, power washing of equipment may be required for permitted uses. The Monticello FO would reduce tamarisk where appropriate using allowable vegetation treatments (refer to Section 4.3.17, Vegetation Resources, for treatment acreages). These actions would reduce adverse impacts to riparian resources from noxious weeds.

4.3.11.1.2. Impacts of Fire Decisions Common to All Alternatives

Fire management actions under all alternatives would have the same impacts on riparian resources. The impacts would generally be adverse in the short-term due to increased sedimentation and increased runoff from areas where prescribed burns are implemented. Long-term beneficial impacts would occur under all alternatives from reduction of the risk of and severity of wildland fires, and from the establishment of a more natural fire return interval. Estimated fuels reduction treatments of 5,000 to 10,000 acres per year would be designed to limit potential impacts to riparian habitat under all alternatives, which would have long-term, beneficial impacts on riparian resources.

4.3.11.1.3. Impacts of Lands and Realty Decisions Common to All Alternatives

Under all alternatives, land tenure adjustments (LTAs) could acquire riparian areas, and LTA criteria call for the retention of those riparian areas already in public ownership. LTAs would beneficially impact riparian resources under all action alternatives, as the resources would be protected by the stipulations placed on their use.

4.3.11.1.4. Impacts of Soil and Water Resources Decisions Common to All Alternatives

Under all alternatives, management of all floodplains and riparian/wetland areas in accordance with Executive Orders 11988 and 11990, the Clean Water Act, the ESA, and Utah's Rangeland Health Standards would have a beneficial impact on riparian resources in the Monticello PA. Management under the terms of these directives would reduce the disturbance of riparian vegetation and soils and the introduction and establishment of weeds on floodplains. Prohibition of surface disturbances in active floodplains or within 100 meters of riparian areas would also protect riparian systems under all alternatives.

4.3.11.1.5. Impacts of Vegetation Decisions Common to All Alternatives

Under all alternatives, vegetation treatment decisions would reduce the prevalence of invasive Russian olive and tamarisk throughout the Monticello PA and replace them with native willow and cottonwood stands. These actions would have a beneficial impact on riparian areas through the restoration of their native ecosystem characteristics.

4.3.11.1.6. Impacts of Wildlife Decisions Common to All Alternatives

Wildlife management decisions would have the same impacts under all alternatives. The management of wildlife would potentially affect resources in riparian areas where elk are allowed to graze. Some loss of riparian vegetation would occur from browsing.

4.3.11.1.7. Impacts of Woodland Decisions Common to All Alternatives

Woodland management in riparian areas would allow collection of willows and cottonwoods for Native American ceremonial purposes through a permit system. Wood-collection and harvesting practices in riparian areas would be required to maintain PFC in riparian areas, so that, although impacts to riparian productivity and health would be adverse, they would be negligible.

4.3.11.2. Alternatives Impacts

4.3.11.2.1. Impacts of Lands and Realty Decisions on Riparian Resources

4.3.11.2.1.1. Alternative A

Right-of-way (ROW) exclusions on 120,800 acres would benefit riparian areas by limiting the possibility of surface disturbances, vegetation removal, and changes in hydrology and sedimentation that might result from an expanded road network.

4.3.11.2.1.2. Alternative B

Exclusion of ROWs from bird habitat and nesting complexes in riparian habitats, as well as from VRM Class I and Class II designated areas, would beneficially limit both surface disturbance and vegetation removal in riparian zones within the Monticello PA and changes in hydrology and sedimentation that might result from an expanded road network.

4.3.11.2.1.3. Alternative C

Exclusion of ROWs from bird habitat and nesting complexes in riparian habitats, as well as from VRM Class I areas, would beneficially limit both surface disturbance and vegetation removal in riparian zones within the Monticello PA and changes in hydrology and sedimentation that might result from an expanded road network.

4.3.11.2.1.4. Alternative D

Exclusion of ROWs from threatened and endangered species habitats (which may occur in riparian habitats), as well as from VRM Class I designated areas, would beneficially limit both surface disturbance and vegetation removal in riparian zones within the Monticello PA and changes in hydrology and sedimentation that might result from an expanded road network.

4.3.11.2.1.5. Alternative E

Exclusion of ROWs from bird habitat and nesting complexes in riparian habitats, VRM Class I and Class II designated areas, and non-WSA lands with wilderness characteristics would beneficially limit both surface disturbance and vegetation removal in riparian zones within the Monticello PA and changes in hydrology and sedimentation that might result from an expanded road network.

4.3.11.2.2. Impacts of Livestock Grazing Decisions on Riparian Resources

4.3.11.2.2.1. Alternative A

Proper herd management would provide long-term protection and enhancement of riparian areas through stimulation of growth of riparian vegetation. Grazing regulations would ensure proper grazing practices through implementation of seasonal closures or closure of allotments when degradation occurs. Proper grazing practices would ensure protection of riparian areas through maintenance of vegetative cover leading to riparian area health. Drought conditions, however, could worsen adversely impacted riparian plant growth and streambank stability. Proper livestock grazing would benefit riparian systems by ensuring recruitment of riparian plant species.

Impacts on riparian vegetation vary with season of use. For example, grazing riparian areas in late spring allows vegetation to grow through summer and into the fall and protect banks during critical spring runoff and late summer thunderstorms. Changes in season of use or AUMs would ensure compliance with all standards of the Utah BLM Standards for Rangeland Health, particularly Standard 2. Compliance with Standard 2 would minimize adverse impacts to riparian areas by requiring changes in grazing management wherever monitoring shows degradation of riparian areas when PFC is not achieved.

The use of riparian exclosures within grazing allotments would protect and enhance riparian resources within the Monticello PA. The following areas would be unavailable for grazing under Alternative A: Comb Wash side canyons, including Mule Canyon below U-95, and Arch, Fish, Owl, and Road Canyons. The closure of these 2,400 riparian acres to grazing would eliminate adverse impacts to riparian resources on approximately 12% of the available riparian habitat in the planning area. The total riparian area open to grazing under Alternative A would be 17,600

acres. Table 4.86 shows the riparian acreage open to and unavailable for grazing under each alternative.

Table 4.86. Livestock Grazing in Riparian Areas, by Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open	17,600	17,200	17,200	18,020	17,200
Unavailable	2,400	2,800	2,800	2,380	2,800

4.3.11.2.2.2. Alternative B

Under Alternative B, grazing would be unavailable in all or portions of Butler Wash, Dodge Canyon, Fish and Owl Canyons, Horsehead Canyon, Road Canyon, Arch Canyon, Dark Canyon, within the Pearson Hiking Trail area, the five mesa tops, Grand Gulch, Lake and Moki Canyons, Slickhorn Canyon, Bridger Jack Mesa and Shay Canyon ACECs, Harts Canyon, and Indian Creek areas for the life of this plan. The closure of riparian areas to grazing would protect riparian vegetation (as described above under Alternative A) on approximately 2,800 acres within the Monticello PA. Grazing would still be allowed on approximately 17,200 acres of riparian area. These management actions would close approximately 14% of the grazed riparian areas within the Monticello PA, compared to closure of approximately 12% of riparian areas under Alternative A (see Table 4.86).

4.3.11.2.2.3. Alternative C

Management of livestock grazing under Alternative C with respect to riparian areas would be the same as under Alternative B, and the impacts would thus be the same as well.

4.3.11.2.2.4. Alternative D

Alternative D would close the same areas to grazing that would be closed under Alternative B, with the exception of Lake Canyon (52 riparian acres), Horsehead Canyon (24 riparian acres), Moki Canyon (100 riparian acres), Harts Canyon (140 riparian acres), Indian Creek/Kelly Ranch (84 riparian acres), and Shay Canyon (20 riparian acres). Thus, the total acreage of riparian area open for livestock grazing under Alternative D would be approximately the same as proposed under Alternative A.

The closure of riparian areas to grazing would protect and enhance riparian vegetation (described above under Alternative A) on approximately 2,380 acres within the Monticello PA. Grazing would still be allowed on approximately 18,000 acres of riparian area. These management actions would close approximately the same amount of riparian area as proposed under Alternative A (see Table 4.86).

4.3.11.2.2.5. Alternative E

The impacts to riparian resources under Alternative E would be the same as those described for Alternative B.

4.3.11.2.3. Impacts of Non-WSA Lands with Wilderness Characteristics on Riparian Resources

4.3.11.2.3.1. Alternatives A–D

Under Alternatives A through D, non-WSA lands with wilderness characteristics would not have any special management prescriptions to protect their wilderness values. Riparian resources within these areas would therefore be unaffected by management to protect the wilderness characteristics of non-WSA lands with wilderness characteristics.

4.3.11.2.3.2. Alternative E

Under Alternative E, riparian areas within 582,360 acres of non-WSA lands with wilderness characteristics would be beneficially protected from surface disturbance, vegetation removal, and other impacts (as described elsewhere in Section 4.3.11) by closure of this acreage to mineral leasing and entry, all OHV use, all ROWs permitting, mineral disposal, and woodland harvesting.

4.3.11.2.4. Impacts of Recreation Decisions on Riparian Resources

All alternatives would require that recreation be managed to meet Utah's Rangeland Health Standards, guided by the Standards for Public Land Health and Guidelines for Recreation Management for BLM Lands in Utah (see Appendix E for Standards and Guides). These guidelines describe the procedures that should be applied to achieve standards for rangeland health within the recreation program. Where long-term damage to riparian resources by recreational uses is observed or anticipated, the Monticello FO would limit or control activities through specialized management tools such as designated campsites, management of human and pet waste, permits, area closures, and limitations on number of users and duration of use. The FO would consider and, where appropriate, implement management methods to protect natural resources. Limitation on visitor numbers would reduce direct adverse impacts to riparian resources by limiting bank trampling and noxious weed spread. Dispersed camping where allowed may be closed seasonally or as impacts or environmental conditions warrant. This action would protect riparian resources in areas where degradation of riparian habitat is occurring.

The designation of SRMAs would have both adverse and beneficial impacts on riparian resources. Allowing visitation to SRMAs would result in impacts to riparian resources, such as trampling of streambank vegetation and the potential spread of exotic, invasive, or noxious weeds. Indirect impacts, including changes in timing and amount of runoff, would occur as a result of vegetation trampling and weed infestation. Limits on visitor use through implementation of a permit system in high-traffic areas would reduce long-term user impacts and related effects.

4.3.11.2.4.1. Alternative A

The San Juan River SRMA would be designated under Alternative A, and river trips on the San Juan would require a special use permit. Alternative A would continue management of the San Juan River SRMA under current launch limits, which allow approximately 40,000 user-days per year, private and commercial trips combined. Trip size would be limited to 25 people on private

trips and 25 passengers plus 8 crewmembers on commercial trips. These levels of visitor activities would directly and indirectly impact riparian resources, as discussed above.

The Grand Gulch Plateau (Cedar Mesa) would have no user allocation limits for day use, would be open to dispersed camping, and would have no limits on in-canyon numbers of parties per day. Group size would be limited to 12 for in-canyon day and overnight use; no limits on commercial use would be instituted. Trailhead allocations would range from 22 to 26 visitors for in-canyon overnight use, except the Government trailhead, which would have a limit of 12 visitors.

There would be no limits on camping and access in the Dark Canyon SRMA, and dispersed camping would be allowed in the Indian Creek Corridor SRMA, which would be designated under Alternative A. These management prescriptions would result in more direct impacts to riparian resources from visitor use under Alternative A than under any other alternative. Backpackers in Slickhorn Canyon and Grand Gulch would not be allowed to camp within 1 mile of the river, protecting riparian resources in these areas from visitor use impacts. The designated campground would be removed from the Newspaper Rock area and rehabilitated. This action would limit direct visitor use impacts to riparian resources adjacent to this campground under all alternatives.

OHV use would potentially impact riparian resources through disturbance of riparian vegetation, streambank destruction, and a subsequent increase in sedimentation. Under Alternative A, OHV use within riparian areas would be open on 10,871 acres, closed on 3,524 acres, and limited to designated routes on 6,302 acres, providing a total of 61 miles of travel routes in the Monticello FO. The percentage of riparian area open, closed, and limited to designated routes under Alternative A would be 53%, 17%, and 30% of total riparian acreage, respectively, the largest amount of riparian area open to cross-country OHV travel or with designated routes for OHV travel under all alternatives (Table 4.87). Thus, under Alternative A there would be the highest risk for potential impacts to riparian resources.

Table 4.87.OHV Use in Riparian Areas by Alternative (Acres)

OHV Category	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open	10,871 (53%)	0	135 (1%)	135 (1%)	0
Closed	3,524 (17%)	3,977 (19%)	3,676 (18%)	0	8,779 (43%)
Limited to Designated Routes	6,302 (30%)	16,458 (81%)	16,624 (81%)	20,300 (99%)	11,656 (57%)
Travel routes (miles)	61	43	52	56	43

4.3.11.2.4.2. Alternative B

Many of the impacts of recreation management on riparian resources discussed under Alternative A apply to this and other alternatives as well. User numbers under Alternative B (and under Alternative E) would generally be lower than under Alternative A and all other action

alternatives. Restrictions on camping, pets, and user-group sizes under Alternative B (and Alternative E) would also be more stringent than under other alternatives.

Alternative B would designate the San Juan River SRMA, where no motorized boating would be allowed. Launch schedules would allow approximately 30,000 user-days per year, 10,000 fewer user-days than under Alternatives A and C, and 15,000 fewer user-days than under Alternative D. Trip size would be limited to 20 people (including crew) for both private and commercial use, fewer persons than under any other alternative. These restrictions would result in approximately 30% less potential disturbance to riparian habitat than under Alternative A.

Visitor use of the Grand Gulch Plateau (Cedar Mesa) would limit group size to 10 people for day use. Primitive sites would be designated, group sizes would be limited to 12 people, and overnight visitors would be required to remove all human waste. These management actions would reduce impacts to riparian resources, whereas Alternative A would place no such limits on use of the mesa top.

In-canyon riparian resources would be protected from visitor-use impacts where use is restricted. Restrictions on use would include limits on in-canyon visitor numbers. Group size would be 2 people fewer than under Alternative A, and permits would be required for high-season use. Limits of 10 people per trailhead and one commercial trip every other day would provide more protection for riparian resources than under Alternative A, which would not designate daily visitor numbers.

In-canyon overnight use would be the same as under Alternative A, with some exceptions. Some campsites would be designated, and if human waste became a problem, a policy to carry out waste could [or might] be implemented. Private-group size would be limited to 6 people per day per trailhead, 50% less visitation than allowed under Alternative A. Total caps for trailheads would be 16 people per day, 30–40% less visitation than under Alternative A.

Fewer commercial permits would be issued for the Dark Canyon SRMA under Alternative B than under any other alternative. Camping would be allowed only in designated sites, with no dispersed camping. Group size would be limited to 10–12 and the number of private users in the canyon per day to 15, whereas Alternative A would not have any visitor use limits. These restrictions would decrease surface disturbance, the risk of trampling of riparian vegetation, and the potential for loss of shade and increased sedimentation.

Dispersed camping would not be allowed in the Indian Creek Corridor. Camping would be allowed only in designated sites, resulting in fewer adverse impacts to riparian resources than under any other alternative.

Alternative B would designate OHV travel in riparian areas, with 3,977 acres closed, 16,458 acres limited to designated routes, no acres open to cross-country travel, and a total of 43 miles of travel routes available. Closing or limiting travel in riparian areas would protect riparian resources and limit impacts from OHV use, as discussed under Alternative A. Only Alternative E would provide a higher level of protection of riparian resources.han

The percentage of riparian area open, closed, and limited to designated routes under Alternative B would be approximately 0%, 19%, and 81%, respectively. Compared to Alternative A, these limits on OHV use in riparian areas would result in 10,871 fewer acres open to OHVs, 453 more acres closed, 10,156 more acres with OHVs limited to designated routes in riparian areas, and 18

fewer miles of travel routes. Alternative B (along with Alternative E) would thus have the lowest recreation-related riparian use levels and the lowest level of potential impacts of the proposed alternatives.

4.3.11.2.4.3. Alternative C

The discussion of Alternative A provided a general description of the impacts of recreation management on riparian resources. User numbers under Alternative C would be similar to those under Alternative A. However, restrictions on camping, pets, and user-group sizes under Alternative C would be more stringent than those under Alternative A.

The San Juan SRMA would be designated, with management decisions similar to those under Alternative A. Launch limits would allow approximately 40,000 user-days per year, the same as under Alternative A. Trip size would be limited to 25 people, including crew on commercial trips. For commercial trips, the total would be 8 fewer than under Alternative A. These management actions would therefore result in slightly less adverse impact than would occur under Alternative A.

Visitor day use of the Grand Gulch Plateau (Cedar Mesa) would be limited to a group size of 12 people in most areas. Primitive sites would be designated, group size would be limited to 24 people, and overnight visitors would be required to remove human waste. These management actions would substantially reduce impacts to riparian resources on the mesa top over Alternative A, which would have no such limits.

In-canyon riparian resources would be protected from visitor-use impacts where use is restricted. Restrictions on use would include limits on in-canyon visitor numbers. Group size would be limited to 12, the same as under Alternative A, and a limited permit system would be implemented. Limits of 12 people per trailhead and one commercial trip per day per trailhead would provide more protection for riparian resources than under Alternative A, which would not limit commercial use.

In-canyon overnight use would be the same as under Alternative A, with some exceptions. Some campsites would be designated for large groups (8–12 people), and if human waste should become a problem, a requirement to carry out waste might be implemented. Private group size would be limited to 8 people per day per trailhead, 33% less visitation than allowed under Alternative A. Total caps for trailheads would be 20 people per day, resulting in approximately 10% less visitation than under Alternative A.

The Dark Canyon SRMA would be designated with three commercial permits, fewer than under Alternative A. Camping would be allowed in designated sites only, with no dispersed camping. Group size would be limited to 15 people and the number of private users in the canyon to 20 per day, resulting in a reduction of surface and vegetation disturbance in comparison with Alternative A, which would not have any visitor use limits. These restrictions would decrease surface disturbance, the risk of trampling of riparian vegetation, and the potential for loss of shade and increased sedimentation.

Dispersed camping would be allowed in the Indian Creek Corridor except within certain zones where camping is limited to designated sites, resulting in fewer impacts to riparian resources than under Alternative A.

Alternative C would manage OHV travel in riparian areas, with 3,676 acres closed, 16,624 acres limited to designated routes, and 135 acres of designated open areas. Closing or limiting OHV travel in riparian areas would protect riparian resources and limit impacts from OHV use, as discussed under Alternative A. These limits on OHV use would provide a higher level of protection of riparian resources than Alternatives A and D, but less protection than Alternatives B and E.

The percentage of riparian area that would be open, closed, and limited to designated routes for OHV use under Alternative C would be approximately 1%, 18%, and 81%, respectively. These limits on OHV use in riparian areas would result in 10,736 fewer acres open to OHVs, 152 more acres closed to OHVs, and 10,322 more acres with designated route limitations for OHVs in riparian areas than under Alternative A. Designated routes in riparians would total 52 linear miles, 9 fewer miles, or approximately 15% less, than under Alternative A.

Overall, management actions for recreation under Alternative C would provide more protection of riparian resources than would Alternatives A and D, and less protection than management actions under Alternatives B and E.

4.3.11.2.4.4. Alternative D

Impacts of recreation management on riparian resources that apply to all alternativeswere discussed under Alternative A. User numbers under Alternative D would generally be lower than under Alternative A and all other action alternatives.

Alternative D would designate the San Juan River SRMA, where no motorized boating would be allowed. Launch schedules would allow approximately 45,000 user-days per year, 5,000 more user days than under Alternative A. Trip size would be increased to 35 people (including crew) for both private and commercial use, more than under any other alternative, with approximately 5% more potential for disturbance to riparian habitat than under Alternative A.

Visitor use of the Grand Gulch Plateau (Cedar Mesa) would limit group size to 12 people for day use within the WSA and 25 people outside the WSA. There would be no site designation for groups under 24 and no group size limit. These management actions would have the same impacts on riparian resources as those under Alternative A, which would also impose no camping limits on the mesa top.

Grand Gulch in-canyon riparian resources would be protected from visitor-use impacts where use is restricted. Restrictions on use would be the same as under Alternative C, except that two commercial trips per trailhead would be allowed, with a slightly greater risk of adverse visitor impacts.

In-canyon overnight use would generally be the same as under Alternative A, with some exceptions. Some campsites would be designated, and if human waste should become a problem, carrying out waste might be required. Private group size would be limited to 12 people per day per trailhead, the same as under Alternative A. Total caps for trailheads would be 24 people per day, also the same as under Alternative A.

The Dark Canyon SRMA would be designated, with fewer commercial permits than under any other alternative. Dispersed camping would be allowed. Visitation would be limited to 15 users per day in the canyon. Surface and vegetation disturbance would be reduced in comparison with Alternative A, which would not have any visitor use limits. These restrictions would decrease

surface disturbance, the risk of trampling of riparian vegetation, and the potential for loss of shade and increased sedimentation.

Dispersed camping would be allowed in the Indian Creek Corridor, with the same exceptions as under Alternative C. Alternative D would thus result in slightly fewer adverse visitor-related impacts than Alternative A.

Alternative D would designate OHV travel in riparian areas, with no riparian areas closed to OHV use, 20,300 acres in areas limited to designated routes, and 135 acres open to cross-country OHV travel. Closing or limiting OHV travel areas in riparian areas would protect riparian resources and limit impacts from OHV use, as discussed under Alternative A. The limits on OHV use under Alternative D would provide more protection of riparian resources than those under Alternative A, as all of the riparian area within the Monticello FO would be limited to designated routes under this alternative. Under Alternative D, approximately 10,736 fewer riparian acres would be open to OHVs in riparian areas, 3,524 fewer acres would be closed, and 13,998 more acres would be limited to designated routes than under Alternative A. A total of 56 linear miles of travel routes would be designated in riparian areas, 5 fewer miles than under Alternative A.

Alternative D would have similar use levels in designated recreation areas. Impacts to riparian areas would be similar under Alternative D and Alternative A.

4.3.11.2.4.5. Alternative E

Impacts to riparian resources under Alternative E would be the same as under Alternative B, except that restrictions on OHV use would be more stringent and fewer impacts to riparian areas from OHV use would occur. Overall, impacts under Alternative E would be less adverse than under any other alternative. Alternative E would designate OHV travel in riparian areas, with 3,977 acres closed, 16,458 acres limited to designated routes, and no acres open to cross-country OHV travel. These limits on OHV use would provide the highest level of protection of riparian resources of any alternative.

The percentages of riparian areas open, closed, and limited to designated routes under Alternative E would be approximately 0%, 43%, and 57%, respectively. As a result, 10,871 fewer acres would be open to OHVs, 5,255 more acres would be closed, and 5,354 more acres would be limited to designated travel routes in riparian areas than under Alternative A. The total number of linear miles limited to designated routes in riparian areas would be 43, 18 fewer miles than under Alternative A.

4.3.11.2.5. Impacts of Special Designations Decisions on Riparian Resources

4.3.11.2.5.1. Alternative A

Areas designated as WSAs would restrict motorized use to existing routes. This management decision would protect riparian resources from new direct impacts from motorized use, as described under Section 4.3.10, Recreation. Under Alternative A, management of WSAs would continue to retain wilderness values, thus protecting riparian values through limitations on motorized use on a total of 2,400 acres of riparian area within the Monticello PA.

ACECs would have different management prescriptions based on resources of concern. Under Alternative A, a total of 5,700 riparian acres would have limitations on motorized use within ACECs. Motorized use would be limited to existing roads and trails within the Alkali Ridge ACEC and the Scenic Highway Corridor ACEC (900 riparian acres). Motorized use would be limited to designated roads and trails within the Cedar Mesa ACEC (partial), Hovenweep ACEC, and Shay Canyon ACEC (1,300 acres). Areas would be closed to motorized use within the Butler Wash ACEC, Cedar Mesa ACEC (partial), Dark Canyon ACEC, and Indian Creek corridor ACEC (3,600 acres). ACEC designation would not generally limit livestock use. All livestock exclosures were analyzed in Section 4.3.6.1, Impacts Common to All Alternatives, in relation to potential riparian impacts.

Management of ACECs under Alternative A would not limit geophysical work within these areas. Geophysical work would potentially impact riparian resources through vegetation trampling and removal, habitat fragmentation, and possible noxious plant infestation. Any geophysical work within riparian areas would require site-specific NEPA analysis.

Some overlap of ACECs and WSAs would occur under all alternatives. Six ACECs would overlap with WSAs: Bridger Jack Mesa, Butler Wash, Cedar Mesa, Dark Canyon, Indian Creek Corridor, and Lockhart Basin (see Maps 81-83).

4.3.11.2.5.2. Alternative B

The designation of WSAs under Alternative B would be the same as under Alternative A and as discussed above, except that no travel would be allowed within WSAs under Alternative B. The limitation on travel would slightly reduce the risk of impacts to riparian areas from boundary road maintenance, erosion, or changes in hydrology or sediment yield from roads.

Management of ACECs under Alternative B would not preclude OHV limits to designated routes or closure of areas to OHV use. Analysis of impacts of OHV use on riparian resources appears above in Section 4.3.11.2.1.3, Impacts of Recreation Decisions on Riparian Resources. Surface-disturbing vegetation treatments would not be allowed in the Alkali Ridge and Shay Canyon ACECs, protecting approximately 400 more riparian acres than Alternative A, which would allow surface-disturbing vegetation treatments. Indirect impacts of surface disturbance were discussed under Section 4.3.17, Vegetation. In the Shay Canyon ACEC, Alternative B would limit livestock use on 20 more riparian acres than Alternative A. Designation of the Bridger Jack Mesa, Butler Wash, Cedar Mesa, Dark Canyon, Hovenweep, Indian Creek Corridor, Lockhart Basin, Lavender Mesa, San Juan River, and Valley of the Gods ACECs would have the same impacts as under Alternative A.

4.3.11.2.5.3. Alternative C

Under Alternative C, special designation would generally result in very similar impacts to riparian resources as under Alternative B, except that ACECs would generally be managed with slightly less protective prescriptions (such as VRM Class, mineral stipulations, livestock management, camping restrictions, and woodland harvest). Like Alternative B, Alternative C would be more protective of riparian resources than Alternative A.

4.3.11.2.5.4. Alternative D

Alternative D would manage WSAs according to the IMP, resulting in the same impacts to riparian resources as would occur under Alternative A. No ACECs would be designated under Alternative D, thus there would be no impacts to riparian resources, as discussed under Alternative A.

4.3.11.2.5.5. Alternative E

The impacts to riparian resources under Alternative E would be the same as those described under Alternative B, except that riparian areas in 109,206 acres of ACECs in non-WSA lands with wilderness characteristics would be managed with additional limitations on woodland harvest, mineral entry, surface disturbance, and ROWs that would protect riparian areas. Because many of these activities are already prohibited in riparian areas and many ACECs, these further restrictions would have a minor beneficial impact on riparian resources.

4.3.11.2.6. Impacts of Special Status Species Decisions on Riparian Resources

4.3.11.2.6.1. Alternative A

The implementation of management decisions related to special status species would generally protect and/or enhance riparian resources. Recovery plans for the Southwestern willow flycatcher, Colorado River fishes, bald eagle, and yellow-billed cuckoo would benefit riparian resources through habitat enhancement and potential reductions in riparian habitat degradation. Removal of tamarisk for restoration or enhancement of special status species habitat would generally benefit riparian resources.

All alternatives, including Alternative A, would avoid loss of cottonwood gallery riparian habitats and limit surface disturbance in riparian areas to protect bald eagle roosting areas. Any disturbance of riparian vegetation would be replaced with native species or ecological equivalents for all special status species. These actions would help maintain existing riparian resources.

All alternatives, including Alternative A, would also restrict surface-disturbing activities within 300 feet of suitable Southwestern willow flycatcher and yellow-billed cuckoo habitat yearlong and would require 0.25-mile buffers for permanent noise-producing facilities. These obligate riparian species preferentially use riparian areas for all life phases. Restrictions on surface disturbance would reduce potential impacts to riparian resources, as discussed under Impacts Common to All Alternatives. The eradication of tamarisk would cause short-term surface disturbance but would result in long-term enhancement of riparian resources. The BLM would ensure that water extraction or disposal activities do not result in changes to hydrologic regimes that would result in loss or degradation of riparian habitat. Alternative A would avoid loss of riparian habitats in designated critical habitat to protect the endangered Colorado River fishes.

4.3.11.2.6.2. Alternative B

Alternative B would propose the same management decions and result in the same impacts as described under Alternative A. In addition, Alternative B would close Arch Canyon (130 riparian acres) to OHV use to protect habitat for Mexican spotted owl and flannelmouth sucker. Group size for non-motorized recreation uses would be limited to 10 individuals and 2 groups per day in

Arch Canyon, and a permit system would be implemented. These decisons would protect riparian resources and reduce impacts to riparian resources in Arch Canyon more than the actions taken under Alternative A, which would not limit use in Arch Canyon.

4.3.11.2.6.3. Alternative C

Alternative C would propose the same management decisions and result in the same impacts as those described under Alternative A. In addition, Arch Canyon would be managed to protect habitat for Mexican spotted owl and flannelmouth sucker, which would reduce adverse impacts to riparian resources from visitor impacts and OHV use. OHV use would be limited to the designated route to the end of the State Section (T37S, R20E, Section 16) year-round. The canyon would be closed year-round from the west boundary of the State Section to the end of the route at the National Forest boundary. Group size for non-motorized recreation users would be limited to 12 individuals and 2 groups per day, and a permit system would be implemented.

4.3.11.2.6.4. Alternative D

Alternative D would result in the same management and impacts as described under Alternative A. In addition, Alternative D would protect habitat for Mexican spotted owl and flannelmouth sucker in Arch Canyon, where OHV use limited to designated routes would be allowed year-round. The number of commercial motorized uses would be limited to 12 people and 2 trips a day. These management actions to protect special status species would result in fewer adverse impacts to riparian resources than under Alternative A and more adverse impacts than under the other action alternatives.

4.3.11.2.6.5. Alternative E

The impacts to riparian resources under Alternative E would be the same as those described for Alternative B because the proposed management decisions would be the same.

4.3.11.2.7. Impacts of Vegetation Decisions on Riparian Resources

4.3.11.2.7.1. Alternative A

Alternative A would not propose any riparian vegetation treatments and would involve no vegetation management decisions that would affect riparian resources.

4.3.11.2.7.2. Alternative B

The Monticello FO would conduct vegetation treatments in riparian areas under all action alternatives. Potential impacts related to vegetation treatments include increased runoff and sedimentation due to loss of vegetative cover in the short term. Improvement of riparian condition (PFC) would occur over the long term, after treatment areas have recovered.

Under Alternative B, 500 acres of riparian vegetation treatments would be completed each year, resulting in long-term improvement of riparian condition. This would be 500 more acres of riparian treatment than under Alternative A.

4.3.11.2.7.3. Alternative C

Alternative C proposes to implement 100 acres of riparian vegetation treatments each year to restore ecosystem health and PFC of riparian areas. These decisions would result in 400 fewer acres treated in riparian areas than under Alternatives B and E, 100 more acres treated than under Alternative A, and the same acreage treated as under Alternative D. Overall, the management of vegetation resources under Alternative C would result in more beneficial impacts than under Alternative A or Alternative D, and fewer beneficial impacts than under Alternatives B and E.

4.3.11.2.7.4. Alternative D

Under Alternative D, the management of and impacts to riparian resources would be the same as under Alternative C.

4.3.11.2.7.5. Alternative E

The impacts to riparian resources under Alternative E would be the same as those described for Alternative B because the proposed management decisions would be the same.

4.3.11.2.8. Impacts of Visual Resource Decisions on Riparian Resources

In general, VRM designation of Class I and Class II would limit any surface disturbance and corresponding indirect adverse impacts to riparian resources from erosion and sedimentation due to vegetation clearing and/or soil disturbance. Conversely, areas that are designated as VRM Class III and Class IV would allow surface-disturbing actions, with the associated risk of sedimentation impacts to adjacent riparian areas.

4.3.11.2.8.1. Alternative A

Management decisions under Alternative A would designate as VRM Class I and Class II 12,200 acres of riparian habitat, approximately 60% of the total riparian resources within the Monticello PA. Table 4.88 compares the number of acres designated as VRM Class I and Class II for each of the alternatives.

Table 4.88. VRM Class I and Class II Designation in Riparian Areas by Alternative (Acres)

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRM I and II	12,200	11,200	8,600	5,300	13,704

4.3.11.2.8.2. Alternative B

Management of visual resources under Alternative B would result in reduction of surface disturbance through requirement of NSO leasing stipulations and limits on construction in areas adjacent to 11,200 acres of riparian areas within the Monticello PA. Indirect impacts to riparian resources would be reduced in these areas. Under Alternative B, 1,000 fewer riparian acres would be protected through visual resource management than under Alternative A, resulting in an increased risk of surface disturbance from human-construction on 56% of riparian areas within the Monticello PA, compared to 60% under Alternative A.

4.3.11.2.8.3. Alternative C

Management of visual resources under Alternative C would result in reduction of surface disturbance through requirement of NSO and limits on construction in areas adjacent to 8,600 acres of riparian areas within the Monticello PA. Under Alternative C, 3,600 fewer riparian acres would be protected through visual resource management than under Alternative A, resulting in an increased risk of surface disturbance from human-construction on 42% of riparian areas within the Monticello FO, compared to 60% under Alternative A.

4.3.11.2.8.4. Alternative D

Management of visual resources under Alternative D would result in reduction of surface disturbance on areas adjacent to 5,300 acres of riparian areas within the Monticello PA. Alternative D would protect 6,900 fewer riparian acres than visual resource management under Alternative A, resulting in an increase of impacts on approximately 25% of riparian areas within the Monticello PA, compared to 60% under Alternative A.

4.3.11.2.8.5. Alternative E

Impacts to riparian resources under Alternative E would be the same as those described under Alternative B, except that more area would be designated as VRM Classes I and II. Under Alternative E, 1,504 more riparian acres would be protected through visual resource management than under Alternative A, resulting in a decreased risk of surface disturbance from human-construction on 67% of riparian areas within the Monticello FO, compared to 60% under Alternative A and 56% under Alternative B.

4.3.11.3. Summary of Impacts

Resource management decisions would generally allow or limit direct and indirect adverse impacts to riparian resources. All alternatives would have similar impacts on riparian resources from fire, soils, and watershed management. The alternatives differ in their impacts in management of livestock grazing, recreation management, special designations, and visual resource management.

Proper levels of livestock grazing would not result in adverse impacts to riparian resources, as discussed above. The highest level of riparian resource protection would occur under Alternatives B and E, under which fewer riparian acres would be grazed by livestock. Alternative C would provide more protection of riparian resources than Alternatives A and D, both of which would impose similar restrictions on livestock grazing in riparian areas.

Recreation decisions would generally impact riparian resources in areas where increased visitor use would result in riparian habitat degradation. Alternatives B and E would have the lowest levels of user numbers of the proposed alternatives. Alternative D would have the highest user numbers; followed by Alternative A. Alternative C would provide a level of use between Alternative B and Alternative A.

Special designations would protect riparian resources in areas where management prescriptions reduce OHV use. These limits on use would result in ranking of impacts between alternatives, as described under Recreation.

Visual resource protection would generally limit surface disturbance, resulting in reduced indirect adverse impacts to riparian resources that could result from changes in watershed hydrology and stream sedimentation. Alternative A would provide the highest level of riparian resource protection from visual resource management, followed by Alternatives B, C, D, and E, in that order.

4.3.11.4. MITIGATION MEASURES

The management decisions common to all proposed alternatives, as described in Chapter 2 and in Appendixes A and I, outline the mitigation measures that would serve to avoid and/or minimize impacts to riparian resources resulting from management actions.

4.3.11.5. UNAVOIDABLE ADVERSE IMPACTS

Any pipeline crossings of stream channels could result in the loss of riparian habitat. OHV use and presence of livestock in riparian areas have the potential for the loss or degradation of riparian habitat, but changes in management based on monitoring would limit these impacts.

4.3.11.6. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

The short-term use of vegetation treatments in specific riparian resource areas would affect the long-term productivity of the treated areas by increasing the likelihood of achieving riparian PFC in degraded riparian habitat. Long-term productivity would be beneficially impacted, since the goals of the short-term treatments in riparian areas would be to improve ecosystem health, reduce invasive and exotic species, and restore PFC.

4.3.11.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Irretrievable loss of riparian habitat could occur due to grazing, visitor trampling, and construction-related removal of riparian habitat. However, that habitat could eventually be restored, so those impacts would not be irreversible. However, it is possible that noxious-weed infestation of disturbed riparian areas could become an irreversible impact, given the difficulties observed in the past in controlling invasive species such as tamarisk and Russian olive.

4.3.12. SOCIOECONOMIC RESOURCES

Impacts to social and economic conditions could result from the implementation of any of the alternatives. While the range of socioeconomic impacts may vary depending on the alternative implemented, some management actions would have a measurable impact on socioeconomics and are disclosed in the following analysis.

Potential economic impacts include changes in employment and income, changes in tax revenue for local, state, and federal government entities, and changes in the demand for housing and public service. Where available, quantitative data are used to analyze impacts. Where quantitative data are not available, a qualitative analysis is performed based on best available information.

Social impacts to communities cannot be measured in economic terms. These human impacts include enhancements or detractions from existing lifestyles, sense of place, community values,

and unfair or unjust impacts or burdens on low income or minority populations. Accordingly, these impacts are assessed qualitatively.

Impacts to socioeconomic resources from implementation of alternatives would be considered significant if one or more of the following occurs:

- Substantial gains or losses in population/employment.
- Activities or operations substantially altering the lifestyles or quality of life of individuals utilizing or living near the Monticello FO.
- Disproportionately high and adverse environmental or human health impacts to an identified minority or low income population that appreciably exceed those to the general population around the project area.

4.3.12.1. Impacts Common to All Alternatives

4.3.12.1.1. Impacts to Environmental Justice

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires identifying and addressing disproportionately high and adverse human health and environmental impacts of federal programs, policies, and activities on minority or low income populations. To evaluate potential environmental justice impacts, the following federal agency guidance documents were reviewed:

- EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," February 11, 1994, Federal Register at 7630.
- U.S. Environmental Protection Agency, "Interim Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analysis, Office of Federal Activities," September 30, 1997.
- Council on Environmental Quality, "Environmental Justice: Guidance Under the National Environmental Policy Act (NEPA)," Executive Office of the President, December 1997.

The following five step method was used to evaluate potential environmental justice impacts associated with land management actions proposed by the BLM:

1. Identify potential minority or low income populations within the study area.
2. Identify a broad range of potential environmental and human health effects that could affect minority or low income populations including safety, traffic, air quality, noise, cultural resources, hazardous waste sites and hazardous materials transport, natural resources, land use, and socioeconomics.
3. Assess whether the potential impacts on minority and low income populations would be high and adverse.
4. Conduct extended outreach to minority and low income populations that would experience potential high and adverse effects.
5. Evaluate mitigation measures that would be used to minimize adverse impacts to minority and low income populations.

Census data for San Juan County, as well as Utah, were used for this analysis. These baseline data are summarized in Section 3.12.4.4. It includes:

- Total population.
- Percent of population of minority status (e.g., Black or African American, Hispanic or Latino, Asian American, American Indian or Alaskan Native, Native Hawaiian and other Pacific Islanders).
- Percent of population of low income status using annual statistical thresholds from the Bureau of Census Current Population Reports.
- Percent of population of minority status for the entire state of Utah.
- Percent of population of low income status in the entire state of Utah using annual statistical thresholds from the Bureau of Census Population Reports.

The data listed above were then used to determine whether the populations residing within the counties in the study area constitute an "environmental justice population" that meets any of the following criteria:

- At least one-half of the population is of minority status.
- At least one-half of the population is of low income status.
- The percentage of population of minority status is a least 10 percentage points higher than for the entire state of Utah.
- The percentage of population of low income status is at least 10 percentage points higher than for the entire state of Utah.

San Juan County is home to 27% of the state's Native American population and 55.7% of the county's total population; therefore Native Americans are not the minority in San Juan County. However, in Utah, 93.8% of the entire population identify themselves as white and 1.3% of the population identify themselves as Native American/Alaskan Native (GOPB 2002). Therefore, when considered state or region-wide, Native Americans are considered a minority. Despite the population data that indicates non-minority status within San Juan County, Native Americans are considered a minority group for the purposes of analyzing and ensuring environmental justice during this RMP process.

In 2003, the number of people in San Juan County living below the poverty line was higher than the state average (22.6% versus. 10%). While San Juan County poverty trends show a decrease over time, they remain higher than the state average. In terms of race, the Native American population has the highest poverty level in the county at 48%, or 3,809 individuals.

Under each alternative, it has been determined that BLM resource management actions would not result in disproportionate effects to "environmental justice populations" defined in Executive Order 12898. Minority and low income populations do exist in the planning area, but no BLM action proposed across all alternatives would cause disproportionate adverse impacts to these populations.

Two issues identified in Section 3.12.4.4.3 related to Native American concerns with BLM management decisions have been addressed to meet the group's needs and would not adversely impact their traditional practices. Under all alternatives, wood gathering in designated areas would be allowed, with the exception of Cedar Mesa (outside of Cedar Mesa WSA) under Alternative B. Also under all alternatives, the collection of cottonwoods and willows along riparian areas for ceremonial purposes would be permitted.

4.3.12.1.2. IMPACTS TO PILT PAYMENTS

None of the alternatives would result in significant changes in federal ownership in the planning area. Any future land exchanges or sales would be assessed to determine specific impacts, but in general, actions proposed with the RMP/EIS would not change payments to San Juan County made under the Payments in Lieu of Taxes (PILT) program according to established formulas.

4.3.12.1.3. IMPACTS TO POPULATION

Population changes in San Juan County that could be associated with the implementation of alternatives under consideration of this EIS would likely be linked to employment changes. Activities such as livestock grazing and mineral development within the Monticello FO that support jobs in the area are not expected in increase or decrease substantially under any of the alternatives (see impacts analysis below for further details). Therefore, it is not likely the BLM-related management decisions would result in significant changes in current population trends (see Section 3.12.4.2.1 for local population data).

4.3.12.2. ALTERNATIVES IMPACTS

The following resource management decisions would have negligible to minor impacts on woodland resources and will not be analyzed further in this section:

Air Quality

None of the decisions concerning air quality are expected to adversely affect the social or economic conditions of San Juan County.

Health and Safety

Health and safety management actions for all of the alternatives that would identify and address abandoned mine lands safety concerns, respond to hazardous waste releases, and protect public health and safety would have negligible adverse impacts to social and economic conditions of San Juan County. The health and safety management restrictions would not interfere or restrict the local economy or government revenue or the local social character of San Juan County.

Paleontology

Management actions for paleontological resources would have negligible impacts on socioeconomic resources because the recreational and scientific collection of fossils, as well as the protection of these resources, would be similar to current conditions and are the same across alternatives. Personal collection of invertebrate and plant fossils would be allowed throughout the Monticello PA. The recreational collection of vertebrate fossils, as well as of noteworthy invertebrate and plant fossils, is already prohibited within the Monticello PA. Therefore, the recreational collection of fossils from BLM-administered lands would have minimal impacts on the local economy. The permit-required scientific gathering of fossils within the planning area occurs rarely; approximately 1–2 permits are issued annually (see Section 3.9.2). The economic contributions, including sales and hotel tax revenue, from scientific collection would also be negligible under all alternatives.

Riparian

Management decisions common to all alternatives for riparian resources would have negligible impacts to the social and economic conditions of communities in San Juan County. The impacts would be negligible because all floodplains and riparian/wetlands would be managed in accordance with Executive Orders, the Clean Water and Endangered Species Acts, and Utah's Standards for Rangeland Health, and because there is opportunity for mineral leasing across all alternatives outside of riparian areas. These mandates and management actions would not allow great variation in the management of the resource that would have a substantial impact on the local economy or social character of communities.

Soils and Watershed

Soils and watershed actions common to all alternatives would have negligible impacts on socioeconomics. Approximately 76% of BLM lands available for surface disturbing activities are overlain with medium-risk and high-risk sensitive soils. Any surface disturbance projects (i.e., minerals development) initiated on these sensitive soils would require the use of Best Management Practices and mitigation measures such as those in Appendix A and Appendix I. The large percentage of lands available for surface disturbance and the relatively small amount of wells anticipated to be developed over the life of the plan (75 wells according to the BLM's RFD) would not result in an adverse impact on potential oil and gas exploration and development locations, so there would be no economic loss to the county. Under all alternatives developers would be able to extract oil and gas from more than three-quarters of medium- and high-risk soils and as a result generate revenues for federal and local governments.

Development on slopes greater than 20% would require a BLM-approved plan by developers and may require additional costs and time to relocate well pads and pipelines. This may result in a decrease in revenue for the developer. However, impacts to local economic conditions would be negligible given that the developers would still be permitted to produce on slopes ranging from 21–40% and generate revenue accordingly.

Special Status Species

The impacts of special status species management actions common to all alternatives on socioeconomics would be minor because temporary seasonal or spatial buffers and restrictions for roosting or nesting birds and habitat enhancement to protect special status species would not specifically restrict economic growth or social well-being. Restriction on mineral development within special status species habitat could adversely impact developers during specific times of year (see Section 4.3.7.4.8, Impacts of Special Status Species Decisions on Minerals). This could slow production due to timing limitations. However, due to the large amount of acres open to oil and gas development across alternatives (more than one million acres) and the small number of wells predicted within the Monticello FO, an adverse economic impact is unlikely because drilling would commence during periods without seasonal restrictions or year-round in areas without restrictions.

Vegetation

Vegetation management actions across all alternatives could have minor beneficial impacts to the local economy if labor, seed, and equipment maintenance come from local communities.

4.3.12.2.1. Impacts of Cultural Resources Decisions on Social and Economic Conditions

Under all alternatives, cultural resource management decisions could have potential impacts to socioeconomics. Given that San Juan County has more than 25,000 cultural sites, 60–65% of which are on BLM lands, the area is well known for its cultural resources and draws many visitors to the area. With approximately 4,000 self-identified registered visitors to cultural resource sites in the early 2000s, public interest in cultural sites appears to be increasing (see AMS Section 4.9.1.2 and 4.9.2.2 for details). Cultural resource management for recreational use draws hikers and OHV users to the area to visit sites. Increases or decreases in access to sites and the quality of the sites have the potential to socially impact the visitor and local communities and economically impact revenues.

Cultural resource management decisions could increase or decrease recreational visits to the sites and influence the overall visitor experience. The level of impacts is related to several factors, including the importance of the sites to the Native American communities in the area (the historic cultural sites in the area serve as a connection between the landscape and the local tribes' heritage), any links between local residents and cultural resources, and the degree to which specific sites draw visitors to the area.

Potential economic impacts resulting from cultural resource management decisions could include an increase or decrease in visitor spending. Increasing access could increase visitor spending in the area in the short-term, but degradation to sites could lead to long-term adverse economic impacts, as visitors may choose not to continue to come to the area.

4.3.12.2.1.1. Alternative A

Under Alternative A, 37,433 acres of land is designated for special management related to cultural resources. All of this land is located in the Grand Gulch Special Emphasis Area/Grand Gulch National Historic District. The restrictions proposed under this alternative (see Section 4.3.2, Cultural Resources, for details) reduce the risk of damage to cultural resources. The preservation of the resources in this area would have long-term beneficial social impacts to visitors and Native American communities. However, under this alternative there are minimal restrictions on other CSMAs, so the potential for loss of cultural integrity would be greater in these areas. Access to the CSMAs is not restricted under this alternative, so there is greater opportunity for access and recreation than if the sites were managed for special protections of cultural resources. Sites could be directly or indirectly impacted by increased visitor traffic (with resulting looting and vandalism). Other activities, such as oil and gas development, livestock grazing, and collection and harvesting of woodland resources would also create opportunities for direct and indirect, adverse impacts to cultural resources. These impacts could potentially degrade the visitor experience and therefore reduce the number of visitors to the area. Although difficult to quantify, a decrease in visitors to cultural sites could adversely impact the local economy through decreased traveler spending.

4.3.12.2.1.2. Alternative B

Under Alternative B, 98,348 acres of land would be subject to special management consideration for the purpose of protecting important cultural resource values. With a 162% increase in the amount of CSMAs and more use restrictions compared to Alternative A, this alternative provides

the second greatest amount of cultural resource protection after Alternative E. Management actions under this alternative would have short- and long-term, direct and indirect, beneficial social impacts. Visitor experience would be positive over the short and long-term because sites would maintain their historic and cultural integrity. Both directly and indirectly, Native American tribes would maintain a connection and the unique sense of place developed around preservation of the cultural sites in the area.

Alternative B would enact private and commercial group size limits and a permitting system in high-density cultural resource site areas. The limitations of group sizes could theoretically reduce visitation to the area. However, long-term visitation to these sites would likely continue to increase because site integrity would be maintained, providing a higher quality experience and thus potentially encouraging more people to visit the area. This in turn, would likely have long-term positive benefits to the local economy.

4.3.12.2.1.3. Alternative C

Under Alternative C, 98,348 acres of land would be subject to special management consideration to protect cultural resource values. The acreage and location would be identical to Alternative B. Restrictions are also similar to Alternative B, with the exception of the Tank Bench CSMA, which would be open to geophysical work, locatable mineral entry, mineral disposal, and oil and gas development under standard lease terms. Minor adverse social and economic impacts could occur as a result of mineral extraction if operations detract from recreational visits to cultural sites. In addition, the potential inadvertent damage to sites as a result of mineral extraction could have an adverse impact on local tribes and their connection to their cultural heritage. However, mineral development at the implementation level would be required to comply with Section 106 of the NHPA, which would require that development avoid, minimize, or mitigate such potential impacts. Other social and economic impacts would be identical to those described for Alternative B.

4.3.12.2.1.4. Alternative D

Under Alternative D, 38,995 acres of land would be subject to special management consideration for the purpose of protecting cultural resource values. This is a 5% increase from Alternative A and a 156% decrease in acres proposed under Alternatives B, C, and E. Impacts to social and economic conditions from cultural resource management decisions under this alternative would be similar to impacts described under Alternative A.

4.3.12.2.1.5. Alternative E

Impacts under Alternative E would be similar to those described in Alternative B, with the exception that lands in the Comb Ridge CSMA that were open to oil and gas leasing subject to NSO stipulations would be closed to oil and gas leasing under Alternative E. This would provide greater restrictions for development than under Alternative B and provide a higher quality experience and encourage more people to visit the area. This in turn, would likely have long-term positive benefits to the local economy.

4.3.12.2.2. IMPACTS OF FIRE MANAGEMENT DECISIONS ON SOCIAL AND ECONOMIC CONDITIONS

During a normal fire year the Moab Fire District averages 100 wildfires, resulting in 10,000 to 16,000 acres each year of disturbed and potentially damaged land. The Moab Fire District encompasses the Monticello, Moab, and Price FOs. Most fire activity occurs in the eastern half of the district, although fires can occur in almost all areas of each FO. In the 25-year period between 1980 and 2005, approximately 74% of wildland fires occurring in the Moab Fire District were caused by lightning. Prior to 1995, an average of 100 fires per year burned an average of 10,000 acres per year. The past decade has shown a trend of increasing wildland fire, with an average of 130 fires each year burning an average of 16,000 acres. With specific regard to the Monticello PA, over a 10-year period an average of 2,000 acres are burned each year (personal communication between Dave Engleman, FMO Moab FO, and Laura Burch, SWCA, September 5, 2006). See Section 3.4 for further fire management details.

In the upper Snake River Plain, which has similar vegetation types as the Moab Fire District, the average cost of wildland fire treatment was estimated to be approximately $105 per acre. The average cost for wildland fire suppression was estimated to be approximately $140 per acre (BLM 2006a). Based on an average of 2,000 acres burned per year in within the Monticello FO, the annual cost to suppress fires would be estimated to be $280,000. The cost of fighting fires, including supplies and labor, has the potential to impact the local economies.

Of the total expenditures for the fire management program, the following are estimates of approximate percentages spent in each category:

- 45% variable costs
- 30% fixed labor costs
- 25% other suppression costs (BLM 2006a)

Increased fire treatment and suppression activity could lead to more seasonal jobs in the region, as more firefighters would be needed during fire season. The fixed labor costs for suppression (see above) would be funneled back into the community since the firefighters are generally employed at a local level and thus contribute to the local economy. Areas of the economy that are boosted by the variable costs (50% of fire management expenditures) for treatment and suppression include fuel, food, lodging, maintenance, vehicles, administration, aviation, warehousing, and seeding. Assuming that 70% of the variable costs are spent in local communities (BLM 2006a), an estimated $98,000 would be funneled into the local economy annually. These contributions to the local economies would be distributed throughout the four counties comprising the Moab Fire District, including San Juan, Grand, Carbon, and Emery.

Full suppression of increasingly larger fires could potentially result in adverse fiscal impacts to affected agencies and local volunteer fire departments. If future demands for firefighting services cannot be met by current staffing levels and budgets, the Monticello FO and other agencies that help fight fires on BLM lands would be adversely impacted.

It should be noted that wildfire treatment, such as actively managing lands to reduce fuel loads, is less costly to agencies than fire suppression ($105 per acre versus $140 per acre). Expenditures for fuels treatments in the Moab Fire District (MFD), however, are currently paid almost exclusively to out-of-area contractors, providing only marginal direct economic benefits to the

local economy (personal communication between Bill Stevens, MFO, and Brain Keating, MFD fuels specialist, June 27, 2007). Actively managing BLM lands to reduce fuel loads would potentially provide economic benefits associated with the reduced risk of large-scale fires that could damage personal property (e.g., homes) and would result in lower expenditures for fire suppression treatments.

Homes and structures that are located within areas faced with wildfire threats are becoming increasingly susceptible to wildland fire, with an accompanying risk to lives and property. Communities in need of management action to reduce the threat from wildland fire on adjacent public lands are identified as WUIs. WUIs presently recognized within the Monticello PA include the communities of Blue Mountain Ranch, Natural Bridges, Bug Point, Cedar Point, Canyon Terrace, Boulder Point, Eastland, Ucolo, Summit Point, Montezuma Canyon, Bluff, Peter's Canyon, Blanding, and Monticello. Fuels treatments to reduce fuel loads in these areas would potentially have long-term beneficial impacts on these communities because of the decrease in the risk of damage to property. If there is a reduced risk of large-scale fires in WUI areas, people may be more likely to remain in these areas and individuals interested in remote locations for primary or secondary homes could be more likely to build in these areas, thus maintaining or increasing the populations of local communities.

4.3.12.2.3. Impacts of Lands and Realty Decisions on Social and Economic Conditions

Management decisions common to Alternatives A–D for lands and realty for access, permits, transfer, acquisition, or exchanges of lands within the PA would have negligible impacts on socioeconomics in the county. The impacts would be negligible because specific lands and realty management actions would be determined to be in the interest of the public and would accommodate the needs of local and state governments, including the needs for the economy, public purposes, and community growth.

Alternative E would prohibit land disposals and new ROWs on non-WSA lands with wilderness characteristics. The prohibition of land transfers, exchanges, or ROW authorizations on the proposed 582,357 acres could potentially have a minor adverse impact on socioeconomics because infrastructure development for revenue-generating activities such as mineral development, recreation, and timber harvesting would not be permitted.

Applications for filming permits limited to existing highways, roads, and pullouts throughout the Monticello FO would be granted under all alternatives provided they meet the criteria outlined in Table 2.1, Lands and Realty–Actions Common to All. Film permits have contributed minimally to the Monticello FO in recent years. In 2005, six permits were issued out of the Monticello FO totaling approximately $1,050. The costs of the film permits were $250 per day for moving shots and $100 per day for still shots. In addition to the fees collected from the BLM, filming crews contribute to the local economies via sales and hotel taxes. Under all alternatives contributions from film permits and expenditures by film crews while in the community would likely be similar to those currently experienced.

4.3.12.2.4. Impacts of Livestock Grazing Decisions on Social and Economic Conditions

A decrease in the number of acres open to grazing has the potential to negatively impact the lifestyle of ranchers in the community. Losses in grazing opportunities could result in lost income and consequently a decline in social well-being for affected ranchers and their families. The inability of ranchers to continue with traditional practices could potentially impact overall character and the way of life for residents of San Juan County. The preservation of the agricultural way of life is very important to members of the rural communities according to comments made by San Juan County residents at a workshop held by the Sonoran Institute prior to the development of the San Juan County Social and Economic Baseline Study in 2004.

Reductions in ranching-based income would make it difficult for families to earn a living on ranching alone. Family members may have to get second jobs or work off the farm to bring in additional income. If ranchers are unable to continue operations, impacts to local communities could include loss of business activity and/or the businesses themselves and a decline in population if individuals have to relocate to earn a living.

For the purposes of this analysis, the term "AUM" is used to indicate a change in available forage, not a change in the legally allotted grazing. Under Alternatives B, C, and D, portions of allotments would be unavailable for grazing. To get a sense of impacts to the permittees, the percentage of allotments closed was applied to the total number of AUMs under Alternative A (78,459 AUMs).

4.3.12.2.4.1. Alternative A

Under Alternative A, all livestock grazing actions would be the same as those laid out in the 1991 RMP, with the exceptions of new laws and regulatory policies that affect management of the resources under all alternatives. The forage availability and number of AUMs would likely continue at current levels and the economic contributions to the local communities would also continue at current levels. The total area open to livestock forage would continue to be 1,740,223 acres and the number of AUMs under Alternative A would be 78,459 (see Table 4.89).

Table 4.89. Grazing Impacts by Alternative

	Acres Available for Livestock Grazing	% Difference from Alternative A	AUMs Available for Livestock Grazing	% Difference from Alternative A
Alternative A	1,744,752		78,459	
Alternative B	1,735,265	-0.50	77,856	-0.08
Alternative C	1,736,589	-0.50	77,898	-0.07
Alternative D	1,738,758	-0.30	78,046	-0.05
Alternative E	1,735,265	-0.50	77,856	-0.08

This alternative would most closely maintain current livestock grazing conditions for permittees. Best professional judgment of the Monticello FO indicates that the acres open to grazing meet the demand of permittees. Income, jobs, sales, and tax revenue related to grazing within the Monticello PA would remain similar to current levels. Expenditures from ranchers contributing

to the local economy (e.g., feed, grazing fees, veterinary costs, fuel, repairs, and labor) would be similar to current conditions.

4.3.12.2.4.2. Alternative B

Under Alternative B, there would be a 9,487-acre reduction (0.5% decrease) in the amount of acreage open to livestock foraging. There would be a 0.08% decrease or 603 less AUMs than Alternative A (see Table 4.89). See Section 4.3.6, Livestock Grazing, for details on closures to livestock.

It is not likely that 0.5% decrease in available forage would have an adverse, substantial, long- or short-term impact on the ranching community. Overall, the 1,735,265 acres of total forage open under this alternative would meet the needs of grazing permittees, similar to Alternative A. It is possible that a slight decrease in forage acreage may require the supplementation of feed, which would come at a cost to the rancher. However, the slight decrease in acres open to forage is not likely to impact the social conditions related to agriculture. A 0.5% decrease in the amount of acres open to forage would not likely result in a loss of agricultural related jobs and income; therefore the quality of ranching life in and around the Monticello FO would likely be unaffected by this resource decision under this alternative.

4.3.12.2.4.3. Alternative C

Impacts to the social and economic conditions from grazing would be the same under Alternative C as Alternative D because the acres of forage available for livestock grazing would be the same between the two alternatives.

4.3.12.2.4.4. Alternative D

With a 0.30% decrease in the number of acres open to forage and a 0.05% decrease (or 20 AUMs) in the number of AUMs under Alternative D, impacts to the social and economic conditions in San Juan County resulting from grazing would be similar to Alternative A.

4.3.12.2.4.5. Alternative E

Impacts to the social and economic conditions from grazing would be the same under Alternative E and Alternative B because the acres of forage available for livestock grazing would be the same.

4.3.12.2.5. Impacts of Minerals Decisions on Social and Economic Conditions

4.3.12.2.5.1. Locatable Minerals

<u>Uranium-Vanadium</u>

The number of acres open to uranium and vanadium extraction is similar under all alternatives (varying less than 8%) with more than 1,520,000 acres available to exploration and development. Therefore, potential adverse impacts (i.e., restricting the number of acres open to extraction) would be negligible under Alternatives A–E.

Recent increases in the price of uranium have led to a substantial increase in the filing of uranium claims within the Monticello FO. Between FY 2004 and FY 2006, 1,972 mining claims

were filed on BLM lands. While the exact percentage of uranium claims versus other locatable mineral claims is not known, it is likely that the majority of the claims filed were for uranium. In addition, the Mineral Potential Report indicates a high potential for the occurrence of uranium and vanadium in historic mining areas. While the increase in the filing of mining claims does not necessarily predict future development, any extraction activities would have beneficial impacts on local economic conditions because developers would require goods and services in nearby towns.

Potential adverse effects from a dramatic increase in uranium exploration and extraction could include increased amount of stress on the local communities that have primarily identified themselves through the ranching and agriculture industries. Increases in health risks to the local communities could also have adverse impacts. Past uranium mining activities are currently suspected of increased health problems in the Monticello community. While this claim is currently under investigation by the Utah Department of Health, a resurgence of uranium mining activities could have similar adverse health impacts on the miners and members of the community. However, since BLM has no discretion regarding locatable mineral exploration and development, short of recommending areas for withdrawals, impacts resulting from this RMP would have negligible impacts on the resource.

Other Locatables

As in the case of uranium, the extraction of other locatables such as copper, placer gold, and limestone would not be adversely impacted regardless of the alternative selected. This is due to the large number of acres open to extraction and the small amount of mining that is likely to take place. Under all alternatives, the number of acres open to extraction exceeds 1,520,000 and varies less than 8% between alternatives (see Section 4.3.7.3, Summary of Locatable RFD and Saleable RFD, for exact acreages).

The newly opened Lisbon Valley Copper Mine, located within the Monticello FO, would continue operations under all alternatives. Contributions to the social and economic conditions in San Juan County from employment, property taxes (the mine is located partially on private land as well as BLM land), and indirect retail goods and services would continue regardless of the RMP alternative selected.

4.3.12.2.5.2. Saleable Minerals

Sand, gravel, building stone, and clay have a high potential for occurrence, and extraction of these minerals would likely occur throughout the life of the RMP regardless of the alternative selected. Minor—or even negligible—impacts to socioeconomics would be likely because the operations are typically small, and the number of acres open to extraction would likely be adequate to accommodate demand. Alternative E has 1,167,224 acres open to development of saleable minerals, while the other four alternatives have more than 1.2 million acres available. Under all alternatives, these acreages should be sufficient to meet demand for saleable minerals (see Section 4.3.7.3, Summary of Locatable RFD and Saleable RFD, for exact acreages).

4.3.12.2.5.3. Leasable Minerals

Potash and Salt

Under all alternatives, the same minimum amount of potash and salt development would be expected. Given the large amount of acreage open for leasable mineral development (Table 4.90) it is anticipated that the number of acres open would accommodate the demand for potash and salt extraction. The expected level of development would not appreciably contribute to the economy of San Juan County.

Table 4.90. Summary of Well Potential and Acres Open to Leasing on BLM Land Per Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Predicted Wells				
Acreage Open	1,238,230	1,241,910	1,348,973	1,383,283	758,930
% Of Total Acreage Open Compared to Alternative A	--	0.30	8.20	10.50	-38.70
Total Number of Wells/LOP	73	66	74	75	54
Total Annual Well Potential	4.86	4.4	4.93	5	3.6

Oil and Gas Development

The greatest socioeconomic impacts from minerals decisions would result from changes to the oil and gas leasing program that currently exists in the planning area. Because of undefined market and non-market factors, the following analysis is based on simplified assumptions used to quantify general estimates of development costs, employment, production, and production revenue. This analysis is based on the assumptions included in Table 4.90 pertaining to the number of wells drilled per year, employment, production, and fiscal impacts.

Wells Drilled per Year

This analysis is based on an estimate of potential wells drilled annually over the life of the plan. Given the limited range in the number of wells drilled per alternative, under Alternatives A–D, on BLM land (66–75 wells over the next 15 years), a maximum of 5 wells annually (75 wells divided by 15 [life of the RMP] = 5) was assumed. The range between alternatives is 9 total wells, which would produce little overall variation between alternative impacts in terms of socioeconomic impacts. Alternative E proposes substantially fewer wells over the life of the plan (54 wells or 3.6 wells drilled annually), in comparison to Alternatives A–D. Given the reduced number of wells under Alternative E, the following analysis also considers the impacts of 3 wells per year in addition to the 5 wells per year under Alternatives A - D. See Table 4.90 for average number of wells predicted per alternative.

Although there are more acres open for development under Alternative B, compared to Alternative A the well potential is slightly lower. This is because the percentage of acres open to development within specific RFD areas is greater under Alternative A than Alternative B. For example, 98% of the Paradox Sub-basin is open to development under Alternative A and 81% is open to development under Alternative B. The percentage open to development impacts the total

number of wells predicted for each RFD area throughout the life of the plan. Within the Paradox Sub-basin the total number of wells predicted is 25 and, because of the reduction in percentage open to development under Alternative B, 20 wells are predicted.

Under Alternative E there would be a 38% reduction in acres open for oil and gas leasing and a 26% percent decrease in the predicted oil and gas wells compared to the No Action Alternative. This disproportionate decline can be explained by the substantial decrease in acres open for development in the Monument Upwarp RFD area, which has a large portion of lands with wilderness characteristics and a lower overall development potential when compared to the other alternatives. In contrast to the decline in acres open for leasing, the number of wells drilled per year varies slightly between Alternative E (3.6 wells) and the No Action Alternative (4.8 wells).

Employment

The drilling and completion of an oil well requires a crew of approximately seven full-time employees (FTE). In addition to the crew members, there are several service and supply companies that contribute to well development. One oil well could involve the services of up to 25 employees from drilling to completion. Of the total number of persons involved in the well production, approximately four to five live on site. The other service employees are in the area only temporarily and typically stay in nearby hotels on a short-term basis. It is not likely that the employees related to the oil and gas exploration and completion of wells within the Monticello FO are residents of San Juan County (personal communication between Jeff Brown, Monticello FO, and Laura Burch, SWCA, on August 11, 2006).

Given the small number of wells predicted annually per alternative (five wells in Alternatives A–D and three in Alternative E) it is reasonable to assume that the same crew and service professionals (or equivalent in the amount of employees) would be responsible for all three to five wells throughout production. This suggests that the overall contribution to San Juan County employment from oil well development is minimal, regardless of alternative. It is not likely that the employment derived from the drilling and completion of wells in the area would positively impact poverty or unemployment rates in San Juan County.

The production of a single well can last up to 20 years and it is during this time that local citizens are employed by oil and gas companies. These oil and gas production jobs pay well (relative to other jobs within the county) and could employ up to 20–30 people throughout the life of the well. However, employment related to mining activities, including oil and gas development, only contributed 5.6% to the total employment in San Juan County in 2000 (see Section 3.12.4.2.6).

Production

While the majority of mineral development activity currently occurring within the Monticello FO is oil production (493 producing oil wells versus 15 producing gas wells, per Section 3.8.2.1.1, Table 3.16), there is a potential for the number of gas wells to increase in demand for domestic production of non-renewable resources. Therefore, this analysis will look at the production of both oil and natural gas wells. It assumes that five wells would be drilled annually under Alternatives A–D and three wells under Alternative E; these wells may be any combination of oil or gas.

According to the Energy Information Administration (EIA), in January 2007 current-day oil price was $56.29 per 42-gallon barrel (EIA 2007). In 2004, the average yearly production per oil

well in Utah was 7,141 barrels of oil. Potential annual revenue per oil well is $401,967, assuming that 7,141 barrels are recovered (7,141 × 56.29). The life of each well is estimated to be 15–20 years. The rate of production per oil well declines approximately 10% per year after the initial year. Therefore, annual revenue per well would begin at $401,967 and decrease 10% per year throughout the life of the well.

As of December 2006, the current natural gas price according to the EIA was $6.65 per thousand cubic feet (MCF) for natural gas (EIA 2007). In 2004, the average yearly production per gas well in the state of Utah was 75,153 MCF (EIA 2007). For analysis purposes, potential annual revenue per natural gas well is assumed to be at the state-wide average of $499,767 (75,153 × $6.65). The life of each well is estimated to be 20 years. The rate of production declines approximately 10% per year after the initial year, according to the Utah Department of Natural Resources (UDNR 2004). Therefore, the recovery value would begin at $499,767 and decline 10% per year throughout the life of the well.

Fiscal Impacts

The drilling and completion of wells in the Monticello FO would have an impact on local and state governments resulting from services provided, tax, and other revenue received. Tax and royalty revenue would be realized for the life of the well, with diminishing returns after maximum production is reached. The severance tax and royalty revenue generated from natural resource development depends on the amount of the commodity produced. Given the uncertainty of the geology and the market, the quantification of revenue is somewhat speculative.

The severance taxes collected on mineral production are distributed within the state according to a formula published in state statutes. Severance tax revenues are distributed to a variety of state and local entities, including the state's general fund, the state highway fund, counties, cities, and towns. Local government entities within the Monticello FO will only benefit from a percentage of severance taxes collected on production within the study area. However, these entities will also benefit from severance taxes collected on mineral production occurring in other parts of the state (BLM 2003g).

In 2002 the severance tax rate for oil and gas development on Utah lands was 3% of the value up to and including the first $13 per barrel for oil and $1.50 per MCF of natural gas; and 5% of the value above these prices. The estimated ad valorem taxes for each mineral type are based on production and assessed values and current tax rates. Ad valorem taxes assessed on property associated with oil and gas operations generate tax revenue for the counties and with respect to this RMP, the greater the number of producing wells in the Monticello FO, the greater the generation of property taxes associated with oil and gas extraction assets.

Royalty revenue to the federal, state, and county governments equals approximately 12.5% of production revenue. The federal government returns 50% of the total royalties to the state where the mineral production occurs. The royalties are then distributed between the state and counties where the production takes place. Assuming the recovery value for one oil well is $401,967 per year, royalty revenues would be $50,246 per well at maximum production (401,967 × 0.125). If the recovery value for one natural gas well were $499,767 per year, royalty revenues would be $62,471 per well at maximum production (499,767 × 0.125).

San Juan County receives a portion of federal mineral lease monies returned to the State of Utah by the federal government through the Permanent Community Impact Fund Board (CIB). The

funds received by the county for infrastructure projects would likely continue in amounts similar to recent contributions regardless of the BLM alternative selected because CIB funding is not directly correlated with production by county but rather by applicant eligibility.

4.3.12.2.5.4. Alternatives A–E

Under Alternatives A–D impacts from oil and gas development would be virtually the same regardless of alternative selected because the acreage open for development varies by less than 11% and the estimated total wells drilled over the life of the plan varies by nine (see Table 4.90). Alternative E allows for less development, with 19 fewer wells than Alternative A and a 38.7% reduction in acres open for development.

4.3.12.2.5.5. Alternative A

Trends related to employment would remain unchanged as long as the wells continued to be drilled and produced. Throughout the life of the plan, it is assumed the FTE required to drill and complete the well would remain at seven, and that the approximately 25 well service employees would remain unchanged. Under all alternatives, the employees responsible for long-term production of the oil and gas wells (approximately 30–40 employees) would remain the same as current conditions. Because there are so few wells anticipated per year, hiring additional employees to drill and produce wells would not be because as the current number of employees is sufficient to meet the demand. Poverty and unemployment rates would not be positively or adversely impacted. Under all alternatives, local employment resulting from oil and gas activities would continue to have a negligible impact on the job base in San Juan County.

The annual estimated royalty revenue from five oil wells would be $251,225. The annual estimated royalty revenue from five natural gas wells would be $312,350 (Table 4.91). The range of economic contributions would vary depending on the combination of oil and gas wells that are producing annually.

Table 4.91. Annual Estimated Royalty Revenue from Oil and Gas Development Per Alternative

	Royalty Revenue–Oil *	Royalty Revenue–Natural Gas*
Alternatives A–D: 5 wells	$251,225	$312,350
Alternative E: 3 wells	$150,735	$187,410

*Revenue at maximum production, decreasing 10% annually.

Assuming that producing wells occur on public lands, 50% of the royalties revenues listed in Table 4.91 would go to the state, 10% of the royalties would go to the General Fund of the US Treasury, and 40% of the of royalties would go to the special purpose accounts of the reclamation fund (BLM 2005n).

Production taxes, such as severance taxes and ad valorem taxes resulting from oil and gas development would increase or decrease in proportion to the amount of production occurring within San Juan County. Overall, the contributions to the local economy from production taxes would be similar to current contributions. Annual oil and gas lease rental would also continue to contribute to the economy in a similar fashion under all alternatives.

4.3.12.2.5.6. Alternative B

Government revenues in the form of royalties from oil and gas production under Alternative B would be similar to those under Alternative A, given that the total well potential between the alternatives is similar (73 under Alternative A and 66 under Alternative B). Although the number of wells under Alternative B is slightly lower, the number of acres open for oil and gas development is slightly greater under Alternative B by 0.3% (see Table 4.90). Employment levels would remain similar to Alternative A.

4.3.12.2.5.7. Alternative C

Government revenues in the form of royalties from oil and gas production under Alternative C would be similar to those under Alternative A, given that the total well potential between the alternatives is similar (73 under Alternative A and 74 under Alternative C). The number of acres open for oil and gas development is slightly greater under Alternative C by 8.2% (see Table 4.90). Employment levels would remain similar to Alternative A.

4.3.12.2.5.8. Alternative D

Government revenues in the form of royalties from oil and gas production under Alternative D would be similar to those under Alternative A, given that the total well potential between the alternatives is similar (73 under Alternative A and 75 under Alternative D). The number of acres open for oil and gas development is greater under Alternative D by 10.5% (see Table 4.90). Employment levels would remain similar to Alternative A.

4.3.12.2.5.9. Alternative E

Alternative E would have the greatest potential for adverse economic impacts when compared to the other alternatives. Government revenues in the form of royalties from oil and gas production under Alternative E would be less than those under Alternative A, given that the total well potential between the alternatives varies by 19 wells (73 under Alternative A and 54 under Alternative E). Compared to Alternative A, the number of acres open for oil and gas development is 38.7% less under Alternative E (see Table 4.90). Annual estimated royalty revenue generated under Alternative E would be $100,490 less for oil and $124,940 less for gas than Alternative A (see Table 4.91). Employment levels are unlikely to be adversely impacted by Alternative E because it is probable that the same number of employees would be required to service three wells under Alternative E as would be required to service the five wells under Alternatives A–D. Further, given that oil and gas development is not a major contributor to the local workforce and the annual reduction under Alternative E is 1.4 wells annually, it is not likely that local employment levels will be adversely impacted by Alternative E in comparison to Alternatives A–D.

4.3.12.2.6. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Social and Economic Conditions

4.3.12.2.6.1. Alternatives A–D

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternatives A–D, resulting in no additional impacts on socioeconomics.

4.3.12.2.6.2. Alternative E

Alternative E manages 582,357 acres of non-WSA lands with wilderness characteristics to provide maximum protection for the qualities of naturalness, outstanding opportunities for primitive and unconfined recreation or solitude, and supplemental values where present. As with VRM, this resource itself is not a management tool, but relies on restrictions on other resources to achieve its management goals. The tools used include restrictions on vegetative and fuels treatments, travel management, minerals and energy, lands and realty, and recreation. These restrictions are identical to the restrictions discussed in Chapter 4 for each of these resources under Alternative D, and the socioeconomic impacts are similar for each of these resources so restricted.

As with VRM management, the restrictions on development under this alternative have the greatest potential to restrict economic opportunities for those whose livelihood depends all or in part on the restricted activities. This would be particularly true in the case of minerals development and motorized recreation. Conversely, those whose livelihood or even sense of well-being depends on values associated with wilderness characteristics and primitive recreation would receive the greatest benefit under Alternative E. As with VRM, this alternative could benefit those businesses that rely on those recreational visitors who value wilderness qualities.

It is difficult to predict whether the potential socioeconomic gains described above will outweigh the socioeconomic losses which could result from this alternative. Managing lands for wilderness characteristics may have some positive benefits to the local economy, above and beyond benefits to individual users of these areas. There is extensive literature that argues that protecting lands as wilderness provides local, regional, and even national economic benefits. An example is a recent study published by the USFS that summarizes much of the relevant research on this topic, with a special emphasis on recreation. While most published research emphasizes designated wilderness, some of these arguments may be applicable to non-WSA lands with wilderness characteristics (Bowker et al. 2005).

4.3.12.2.7. Impacts of Recreation Decisions on Social and Economic Conditions

Proposed recreation management decisions for the Monticello FO have the potential to impact local and regional socioeconomic conditions. The socioeconomic impacts would primarily be in the form of income and employment effects in the economies that serve the recreational user. Future recreational uses could also affect the fiscal resources and services by the BLM and other government agencies.

However, the relationship between changes in land use decisions pertaining to recreational use and the associated social and economic impacts are difficult to quantify. Therefore, some assumptions have been made:

- Increasing recreational opportunities could positively affect visitation, which could also benefit local businesses and overall traveler spending in the region.
- Improving the recreational experience would have a positive effect on the social component of recreation, potentially increasing visitation.
- With increased recreational use, local businesses would benefit economically. According to a state-commissioned study by D.K. Shifflet & Associates, non-resident travel within Utah has consistently been about double that of resident tourism, measured in terms of visitor-days

(D.F.Shifflet & Associates 2006). For 2005, for example, the study found that non-resident visitor days accounted for 66.2% of state-wide visitor days. Not all visitors, of course, are recreational visitors (e.g., business, visiting family), nor are all recreational visitors using BLM lands. Given the lack of other data sources, this figure seems reasonable for purpose of estimating visitor spending, in that non-resident visitors typically spend more per day than resident visitors. It is likely that this figure (66.2%) is too high for some activities and too low for others.

Data on expenditures per local (defined as Utah resident) and non-local visitor day were obtained from the above source. That study estimated non-resident visitor spending state-wide at $103 per day, with resident spending state-wide averaging $61 per day. A large part of the difference was due to spending on lodging, implying that many resident visitors are not on overnight trips, which may be representative of the planning area.

With the trend toward increased recreation within the Monticello FO, user conflicts are likely to remain an issue regardless of the alternative selected. User groups, as defined in Section 4.3.8, Non-WSA Lands with Wilderness Characteristics, include motorized (on-road), motorized (off-road), non-motorized, non-mechanized, river floating, and specialized recreation. Increases in conflicts between user groups have the potential to adversely impact visitor experience in the area. The adverse impact to the visitor regarding their recreation experience would likely be short-term. However, long-term adverse impacts to the county's economy could be possible because users would choose to recreate in other areas where they feel they are more likely to have a positive recreational experience. This would contribute to a loss in traveler spending in the area.

4.3.12.2.7.1. Alternative A

As stated in Section 3.12.4.2.7, tourist spending has grown slowly and consistently since the 1990s. Under current management actions recreational use is projected to continue to follow existing trends. Local and regional social and economic impacts from recreation and tourism would be similar to those experienced currently. Visitation to local attractions would be anticipated to follow the existing continual growth trend.

Employment in the travel and tourism-related industries would remain around 1,083, the number of tourism-related jobs reported by the Utah Division of Travel Development in 2003. Tourism-related spending in San Juan County would total approximately $35.5 million dollars (adjusted for inflation), as it did in 2003. Travel and tourism-related employment would continue to account for approximately 15% of San Juan County's total job base. Expenditures for leisure and hospitality services are taxed at the local and state level and are a benefit to counties. Under Alternative A, tax revenue from visitor spending (i.e. hotel, restaurant, and sales tax) would similarly contribute to the local government's fiscal resource base.

The number of activities impacted by launch limits and trip sizes within SRMAs would be least restrictive and most similar to current conditions under Alternative A. Economic contributions from these groups would also be similar since reductions in permits would not change under Alternative A.

Under the No Action Alternative, 611,310 acres would be open to OHV use and 1,329,430 acres would be designated as limited. As evidenced in the Monticello FO AMS, OHV ownership has increased substantially throughout the last five years within San Juan County and throughout the

state. OHV use has increased from 1,833 riders reported in 2002 to 12,060 riders in 2005, as discussed in Section 3.10.4.1. Despite the increase in OHV uses within the Monticello FO, the majority of riders stay on existing roads. The best professional judgment from BLM Monticello FO indicates that acres currently designated as limited, and acres designated as limited across all alternatives, are sufficient in meeting the current demand and foreseeable future demand (personal communication between Gary Torres, Monticello FO, and Laura Burch, SWCA, on Sept. 7, 2006).

This alternative would allow for OHV users to access the largest number of areas open to OHV compared to other alternatives and more than 1.3 million acres of routes designated as limited. This alternative most closely represents the current conditions for OHV access and as such it is likely that the economic contributions from the user group would be similar to current contributions. Because this alternative has the lowest number of acres designated as limited, it is possible that densities in OHV users on existing roads could increase, but an adverse impact to users and indirectly the local economies is not anticipated. Socioeconomic contributions from OHV use would remain similar to current conditions because the number of riders using the area would be similar to 2005 visitation numbers (12,060 OHV users). Contributions to the local economy from hotel taxes, retail, maintenance, and restaurant sales would continue along the current path.

Recreational users who require or prefer motorized access would enjoy the most short-term benefits under Alternative A. Individuals or groups who value solitude would have fewer places to enjoy that did not allow motorized access, potentially decreasing their recreational experience and/or social well-being. Resource degradation-related impacts to soil, water quality, cultural resources, wildlife and scenic quality and other impacts associated with OHV use and cross-country travel would adversely impact recreational opportunities and visitation in the long-term.

4.3.12.2.7.2. Alternative B

Decreases in group and trip sizes and boat launches per day or visit within SRMAs could decrease the number of visitors to the planning area and patrons to San Juan County communities. However, decreases in visitors to the area would only occur if use within the SRMA is at capacity. For example, during the high-water season a reduction in launch limits for the San Juan River may limit the number of visitors likely to run the river and patronize local businesses. Limits to group numbers and trip sizes in SRMAs such as Grand Gulch, where permit use is not currently at capacity, would not adversely impact the local economy because visitors would not be turned away.

In recreation areas where use is at capacity, the decreases in group and trip sizes could result in lower recreation-based income and jobs and thus, adversely affect the local economy. The fiscal resources of the local county government would also be indirectly impacted by a decrease in recreational visits to the county. Expenditures for leisure and hospitability services are taxed at the local and state level and are a benefit to counties. It is possible that local government revenue from hotel, restaurant, and sales tax on goods purchased would be reduced under Alternatives B and E. However, because the proportion of total recreation expenditures versus expenditures from local residents and/or non-recreational visitors is not possible to quantify, it is generally concluded that a decrease in recreational use in the area would lead to a decrease in tax revenues for the local government.

The 25% reduction in launch limits per year on the San Juan River would equate to a 25% reduction in revenues for the BLM's fee demonstration program (if the program is operating at capacity), thus adversely impacting services to the public. It is likely that the reduction in launch limits would only prohibit river users during peak season, thus limiting the amount of revenue generated for the fee demonstration program and local retailers. The temporary reduction in launch limits could have a long-term, indirect, adverse impact on local businesses because 25% fewer people would contribute to the local economies prior to or after river trips. However, these impacts would be short-term as peak flows would likely last less than one month's time. During low-water years and non-peak seasons when river use is not at capacity, the reduction in launch limits would have a negligible impact on the local economy.

Under Alternative B, zero acres would be designated as open to OHV use, with all OHV routes (1,397,417) designated as limited. The number of acres designated as limited under Alternatives B and E are not anticipated to reduce the level of OHV travel in the planning area because the number of acres designated as limited would be greater than the No Action Alternative, which appears to meet the demand of OHV users.

Groups or individuals who value solitude and non-motorized activities would have the most places to enjoy under Alternatives B and E, perhaps enhancing the visitor experience. This alternative is least responsive to the desires of individuals and groups who feel public lands should remain open to motorized vehicle access, potentially detracting from their social well-being. The potential for adverse impacts as a result of resource degradation-related OHV use would be smallest under this alternative, thus having a long-term beneficial impact on visitation to the area.

4.3.12.2.7.3. Alternative C

Under Alternative C impacts to socioeconomics from recreation would be similar to Alternative A given similar group and trip sizes and launch limits. Alternative C would provide more potential for increased visitation and economic contribution to regional economies than Alternative B.

This alternative would designate 2,311 acres as open to OHV use, with 1,362,142 acres designated as limited for OHV use. Economic contributions to the local economy as a result of Alternative C would be similar to Alternative A.

4.3.12.2.7.4. Alternative D

Impacts to socioeconomics from recreation would greatest under Alternative D. Recreational opportunities would be greatest under this alternative, with a 29% increase in trip size and 11% increase in launch limits on the San Juan River, increased group and trip sizes throughout the planning area, and unlimited OHV group sizes on designated routes. Increasing access to recreational opportunities may increase visitation to the area and potentially increase overall tourist spending. The greater the number of visitors to the area, the greater the demand for goods and services; thus an increase in employment and spending in the tourism-based industry is likely. Under Alternative D, impacts to the local and regional economy would have long-term beneficial impacts.

Under Alternative D, 2,311 acres would be designated as open to OHV use, with 1,780,807 acres limited to designated routes. Economic contributions to the local economy as a result of Alternative D would be similar to Alternative A.

From a social perspective, impacts from recreation could have positive short-term effects because various user groups have the greatest amount of access under Alternative D. However, the long-term impacts of increased recreation use could be adverse, as crowding, user conflicts, and the degradation of the environment could detract from the visitor experience.

4.3.12.2.7.5. Alternative E

Alternative E includes management prescriptions to protect wilderness characteristics on 582,360 acres of non-WSA lands with wilderness characteristics. The overall management prescriptions associated with this alternative would have a stronger emphasis on primitive, semi-primitive, and non-motorized uses than any of the other alternatives. Fewer recreational facilities would be developed. Expenditures by individuals who either desire increased OHV access or developed recreational facilities might decline relative to the other alternatives. These expenditure reductions could cause a loss of income and jobs in the socioeconomic study area. For individuals seeking more primitive and non-motorized recreational experiences, visitation and resulting expenditures and related economic activity, as well as satisfaction, would likely be greatest under this alternative.

As discussed earlier under non-WSA lands with wilderness characteristics, some have argued that the very existence of wilderness characteristics within an area can provide economic benefits to the local economy. To the extent that managing additional lands to preserve wilderness characteristics attracts clients and employees to the planning area, there could be corresponding positive economic benefits to local communities. Local businesses that benefit from the preservation of non-WSA lands, such as Wilderness Quest, would benefit the most from Alternative E.

In a recent comprehensive study completed by the USFS National Use Visitor Monitoring Program for the Moab FO (USFS 2007), the top four activities on BLM lands in Moab mentioned by respondents were (1) hiking/walking/trail running, (2) bicycling/mountain biking, (3) driving a passenger vehicle for pleasure, and (4) viewing natural features. Taken together, this accounted for more than half the responses. Given that the driving answer was in reference to paved roads, these results strongly suggest that OHV use is not necessarily what pushes the recreation economy. The described activities all could benefit from Alternative E and all these groups could be spending in the local economies. Although this study was done for the Moab FO, it does border Monticello and arguably Moab is a better known destination for OHV enthusiasts. The study included both resident and non-resident recreationists.

Under Alternative E, impacts to socioeconomics from recreation would be similar to Alternative B, given similar group and trip sizes and launch limits. Identical to Alternative B, this alternative would result in the closure of 423,698 acres to cross-country OHV use and 1,359,417 would be designated as limited for OHV use. Whether potential economic losses resulting from restrictions on some recreationists would be offset or surpassed by economic gains from other types of recreationists cannot be predicted in this document.

4.3.12.2.8. Impacts of Special Designations Decisions on Social and Economic Conditions

4.3.12.2.8.1. ACECs

Protecting the specific, identified relevance and importance values of ACECs limits activities that are considered incompatible with specific values and resources of concern. Specifically, mineral development and extraction would be limited as a result of ACEC designations. It is important to note the ACEC designation does not completely restrict development. Standard stipulations and controlled surface use are permitted in areas that do not compromise the values or resources of concern. Mineral development with NSO (i.e., directional drilling) is also permitted within ACECs. See Table 4.92 for ACECs by mineral leasing stipulations.

Table 4.92. ACECs by Mineral Leasing Stipulation

Leasing Stipulation	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
Closed	292,289*	57%**	310,651	60%	291,605	56%	287,492	55%	399,345	77%
No Surface Occupancy	95,246	19%	62,698	12%	35,822	7%	9,736	2%	32,802	6%
Special Stipulations	122,335	24%	102,825	20%	101,572	19%	71,093	14%	65,028	12%
Standard Stipulations	3,577	1%	44,884	9%	92,115	18%	152,809	29%	23,940	5%

*Acres proposed within Monticello FO

**% of total ACECs

The designations of ACECs would have minor to substantial, negative impacts on minerals resource extraction and development because they would exclude lands from minerals development and lower the number of locations where potential wells could be drilled. The lower number of locations could indirectly lead to a lower yield and commercial supply of oil and natural gas and fewer royalties paid to the federal government and/or the State of Utah. An approximate monetary impact would be difficult to estimate because desired future locations of development in proposed ACEC sites are unknown. However, the development area with the greatest number of wells projected to be drilled annually is the Blanding Sub-basin, with 3–13 wells drilled per year, according to the Monticello FO RFD. Therefore, if a proposed ACEC was within the Blanding Sub-basin there would be greater potential for adverse economic impacts to potential oil and gas developers and subsequently local and federal governments in comparison to the other development areas. The Paradox Fold is the development area with the second highest projected number of wells per year, with 1–6 wells. The Monument Upwarp is predicted to have 1–2 wells drilled per year, and consequently the smallest chance to be adversely impacted by the ACEC designation with respect to oil and gas development.

Under all alternatives OHV use would be allowed in ACECs on designated routes, although the miles of Class D roads would vary slightly between alternatives (see Table 4.144). Allowing OHV access within ACEC designations may be beneficial in the long-term for socioeconomics

because opportunities would remain available for recreational access. Revenue generated in local communities by OHV users would be similar to current conditions.

Commercial-type travel (including motorized/mechanized recreational vehicle use) within the planning area would be allowed under Alternatives A, B, and E, but the impacts on travel would be negligible because no restrictions or prohibitions are specified under these alternatives.

Under Alternatives B, C and E commercial-type motorized or mechanized tours and events would be seasonally prohibited (i.e., SRPs would not be issued) for routes within pronghorn, bighorn sheep, and elk crucial habitat and lambing and rutting areas; thus having minor short-term adverse impacts on travel. However, private motorized or mechanized use within ACECs would be allowed throughout the year and not subject to the seasonal commercial restrictions (see Section 4.3.16, Travel Management, for the proposed times when travel routes would be closed or limited to designated routes in order to protect these wildlife species). Under Alternative D there would be no private or commercial recreational travel restrictions through crucial wildlife habitat.

4.3.12.2.8.2. WSAs

The Monticello FO contains 13 WSAs totaling 386,027 acres (or approximately 21% of BLM lands). WSA designations would continue to apply across all alternatives, including the No Action Alternative (Alternative A), and would be managed in a manner that does not impair their suitability for congressional designation (BLM 1991c). These designations are non-discretionary and, thus, are beyond the scope of this EIS's analysis.

4.3.12.2.8.3. WSR Designations

Alternatives A and D do not recommend WSR designations. Alternative B recommends 92.4 river miles be designated as WSRs including Segments #1–3 of the Colorado River, Indian Creek, Fable Valley, Dark Canyon, San Juan River Segments #1–5, and Arch Canyon. Alternative C recommends that 18.4 river miles be designated as WSRs including Segments #2–3 of the Colorado River and Dark Canyon (see Section 4.3.14.4.3, WSRs – Alternative C).

Management prescriptions for mineral activities in riparian and floodplains within WSR designations do not allow surface occupancy. Therefore, Alternatives B and E would adversely impact mineral resource extraction and development because they propose the greatest amount of river miles as WSR and lower number of locations where wells could be drilled. This lower number of locations could potentially lead to a lower yield of oil and natural gas and fewer royalties paid to the federal government and/or the State of Utah.

The designation of WSRs under Alternatives B, C, and E could potentially lead to an increase in tourism revenue to the BLM and local communities, thus having a long-term, beneficial impact on the local economies. The designation of rivers and/or river segments could attract more people to the area who enjoy the type of recreation that often accompanies these designations (including high scenic qualities and opportunities for solitude). The increase in tourism based on river recreation could lead to increased revenue to local river running companies, increased permit revenue, and increase in tourist dollars spent within nearby communities.

Within the proposed WSRs, under Alternatives B, C, and E, OHV use would be limited to designated routes.

4.3.12.2.9. EFFECTS OF TRAVEL DECISIONS ON SOCIAL AND ECONOMIC CONDITIONS

Socioeconomic impacts from travel-related decisions would likely result from the recreational use of OHVs. Impacts resulting from the closure and designation of OHV routes are discussed in Section 4.3.12.2.7, Effects of Recreation Decisions on Social and Economic Conditions.

4.3.12.2.10. IMPACTS OF VISUAL RESOURCE DECISIONS ON SOCIAL AND ECONOMIC CONDITIONS

4.3.12.2.10.1. Alternatives A–E

The demand for a range of recreation opportunities would not be limited as a result of VRM classifications, so impacts to socioeconomics from recreational visitation would be minor under all alternatives. Opportunities for recreation with high levels of scenic quality (in VRM Class I and II designated areas) will remain throughout WSAs, ACECs, SRMAs, and along WSRs. See Section 4.3.12.2.9 for more details on recreation impacts to socioeconomics.

Under all alternatives areas available for oil and gas leasing subject to standard or special stipulations would be managed under VRM Class III or IV objectives (depending on inventory), and areas that inventory as VRM Class II but are in areas open to leasing subject to standard or special stipulations would be managed under VRM Class III objectives, unless otherwise specified in the management prescriptions. Mineral activities in designated VRM Class I and II areas, if allowed, would be subject to at least NSO stipulations. It is difficult to accomplish oil and gas activities of any kind (directional or otherwise) under VRM Class I and II objectives. Table 4.93 illustrates the percentage and acres of land open to mineral development based on VRM classification.

Alternative D would have the least amount of lands under VRM Class I and II objectives, and thus the most acres open for oil and gas exploration and development. Beneficial impacts to socioeconomics would be greatest under this alternative because developers would have the greatest number of acres open to standard and special stipulation leasing and the greatest amount of revenue potential. Impacts to socioeconomics would be slightly less under Alternative C with 7.8% less land under VRM Class III and IV. This decrease could result in a decrease in potential revenue.

Table 4.93. VRM Class Acreages by Alternative

Class	Alternative A/ VRM Inventory	Alternative B	Alternative C	Alternative D	Alternative E
VRM I	371,575	497,668	425,179	390,424	998,370
VRM II	355,112	250,641	132,001	8,838	111,478
VRM III	416,806	426,350	531,920	692,741	264,369
VRM IV	637,875	608,463	693,995	691,119	407,459
Subtotal III and IV	1,054,681	1,034,813	1,225,915	1,383,860	671,828
Total*	**1,781,368**	**1,783,122**	**1,783,095**	**1,783,122**	**1,781,676**

Source: BLM 2007d.

*Acreage figures may vary by alternative due to the changes in GIS technology and variances in shapefiles.

Compared to Alternative D, revenues from oil and gas development could be adversely impacted, as 17.4% fewer lands would be open to leasing in designated VRM Class III and IV areas. Economic impacts from Alternatives B would be similar to Alternative A because there is only a 1.2% decrease in VRM Class III and IV areas under Alternative B.

When compared to Alternative A, Alternative E places the greatest restrictions on development to protect VRM with a 21% decrease in VRM Class III and IV lands. As discussed earlier, the restrictions to protect visual resources are decisions within other resources that can impact visual quality. Restrictions under this alternative to protect scenic qualities include restrictions on vegetative treatments and fuels management, travel management, minerals and energy, lands and realty, and recreation. The restrictions on development under VRM classes I and II under this alternative have the greatest potential to restrict economic opportunities for those whose livelihood depends all or in part on the restricted activities. This would be particularly true in the case of minerals development and motorized recreation. Conversely, the scenic qualities of the planning area that attract visitation would receive the greatest degree of protection under Alternative E. This could positively impact those businesses that rely on that type of recreation visitation, including lodging, restaurants, and outfitting.

The exact number of oil and gas activities that would be restricted as a result of VRM Class I and II designation is difficult to speculate given that future proposed well locations are unknown at this time. Impacts to oil and gas development would occur in locations where drilling would have occurred absent the VRM restrictions. To the extent that VRM precludes development, there would be an adverse economic impact. Because such a large number of acres are open to development (over one million under Alternatives A–D and 671,828 under Alternative E) and the relatively small number of wells proposed over the life of the RMP (75 wells maximum), restrictions on economic opportunities would be minor to moderate depending on desired well locations.

4.3.12.2.11. Impacts of Woodlands Decisions on Social and Economic Conditions

4.3.12.2.11.1. Alternative A

In 2006 the Monticello FO issued 556 wood gathering permits. Approximately 80–90% of the permits issued in a given year are to Navajos who live on the Navajo Reservation. The high percentage of Native American permittees is due to the fact that many use the wood for subsistence living. The wood is used for heating their homes and other domestic needs. The Navajos harvest wood on BLM lands because wood gathering is not permitted on the reservation.

Management decisions under Alternative A would allow commercial and private woodland products harvesting within the entire planning area, except for 386,027 acres within WSAs, developed recreation areas, and other areas designated as excluded from harvesting. Accordingly, approximately 1,309,894 acres (73% of the PA) would be open to woodland harvest and the remaining 27% would be closed because of WSA-protection constraints under the IMP. There would be few restrictions on harvesting woodland resources under this alternative.

Wood gathering on Cedar Mesa would continue under the No Action Alternative. Current conditions on Cedar Mesa illustrate the damage that unpermitted wood gathering has caused in

the area. Cross-travel has caused damage to cultural sites and impaired the WSA. Under this alternative damage to the area would likely continue.

Identified as a tribal trust issue in the RMP scoping process, cottonwood and willow harvesting in riparian areas for ceremonial purposes would be allowed under all alternatives.

4.3.12.2.11.2. Alternative B

Alternative B would allow commercial and private woodland products harvesting (with permitted off-road travel to collect wood) on a total of 730,074 acres within designated woodlands harvesting zones. This would permit woodland harvesting on approximately 41% of the planning area, with 59% of the planning area (1,055,053 acres) closed to woodland harvesting for products use. The closure of 38% more of the PA, compared to Alternative A, could have moderate social and economic impacts on the groups that depend on wood gathering in area for subsistence.

Under this alternative permitted harvesting of woodlands on a substantial portion of the planning area would be required. Restrictions on cross-country OHV use to gather wood could potential minor adverse impacts on the groups who use the vehicles gather wood in the planning area.

Cedar Mesa would be closed to wood gathering under this alternative. Impacts to individuals who gather wood in this area would be adverse because current harvesting practices in the area would cease. Private and commercial harvesting would be accessible on Montezuma Ridge, approximately 40 miles away from Cedar Mesa. This would likely result in an economic hardship for individuals who gather wood in this area because traveling to an area 40 miles away would be costly (in terms of gas for vehicle and vehicle maintenance) for a population that is highly impoverished.

4.3.12.2.11.3. Alternatives C and D

Under Alternatives C and D there would be fewer number of acres (841,938) potentially available for woodland harvesting compared to Alternative A (47% of the planning area compared to 73% under Alternative A).

Restrictions on cross-country OHV use to gather wood could have potential minor, adverse impacts on the groups who use the vehicles to gather wood in the planning area. Under Alternatives C and D 2,311 acres would be designated as open to cross-country travel (0.1% of the planning area). The remaining acres open to OHV use would be designated as limited to existing roads.

Cedar Mesa would remain open to woodland harvesting under these alternatives. Thus, groups who use this area to gather wood for subsistence living would be able to continue to do so with restrictions on cross-country travel.

4.3.12.2.11.4. Alternative E

Under Alternative E, the impacts to socioeconomics from woodland resources would be similar to the impacts discussed under Alternative B because the management actions would be similar. However, under Alternative E 31% (548,477 acres) of the Monticello PA would be open for woodland harvesting versus 41% (730,074 acres) under Alternative B. Under Alternative E, approximately 582,357 acres of non-WSA lands with wilderness characteristics within the

planning area would be protected from surface disturbances, including disturbances caused by woodland harvesting.

Because Alternative E closes the greatest amount of acreage to woodland harvest, long-term, adverse impacts to private and commercial woodland harvesting individuals and groups would be greatest. Cross-country OHV restrictions would be greatest under Alternative E, with 580,772 acres closed. Current harvesting practices would no longer be permitted on Cedar Mesa. While the resource would still be available under Alternative E, permittees would have to modify collection practices and travel longer distances to obtain wood.

4.3.12.3. Summary of Impacts

Overall, the local socioeconomic conditions would not experience substantial adverse impacts from BLM resource management decisions under Alternatives A–D. With significantly more acres closed to surface disturbing activities under Alternative E, the potential for revenue generating activities, such as mineral development or OHV use, would likely result in decreases in contributions to the local economy. However, tourism-based revenue from individuals who prefer hiking, backpacking, and sight-seeing in a wilderness-like setting would potentially be greater under Alternative E. Many management decisions for resources such as air quality, fire management, health and safety, lands and realty, paleontology, soils and watersheds, special status species, and woodlands would have minor impacts on social and economic conditions. Resource management decisions for cultural resources, livestock grazing, minerals, non-WSA land with wilderness characteristics, recreation, special designations, travel, and visual resource management would have greater impact than those listed above. Population, employment, and local revenue would remain relatively unchanged with the implementation of Alternatives A–D and may decrease slightly under Alternative E. The influence of proposed resource management decisions would not contribute to a substantial change in the economic diversity of San Juan County. See Table 2.2 for a full summary of the impacts to socioeconomic conditions.

4.3.12.4. Mitigation Measures

No mitigation measures have been identified for impacts to social, economic, and environmental justice conditions.

4.3.12.5. Unavoidable Adverse Impacts

No unavoidable adverse impacts to social, economic, and environmental justice conditions resulting from resource management decisions were identified.

4.3.12.6. Short-term Use versus Long-term Productivity

Short-term use of resources in the planning area would have negligible impacts on the long-term social and economic health and stability in San Juan County.

4.3.12.7. Irreversible and Irretrievable Impacts

There are no irreversible and irretrievable impacts to social, economic, and environmental justice conditions.

4.3.13. SOILS AND WATER RESOURCES

This section discusses impacts to soils and water resources from management actions and resource uses discussed in Chapter 2. The existing conditions of soils and water resources are described in Chapter 3.

All of the alternatives would impact soil and water resources within the Monticello PA, because all include actions that would result in surface disturbance of some kind. Surface disturbance would impact soils and water resources to varying degrees, depending on the amount, location, and type of surface disturbance; the soil type; the time of year; and the surface hydrology. Surface-disturbing activities that currently occur and that are expected to continue include grazing, oil and gas and mineral exploration and development and associated access routes, recreation and off-highway vehicle (OHV) use, and woodland harvest and other forms of vegetation removal and treatments.

For the purposes of this broad scale analysis, the primary indicator of impacts to soils and water resources is the amount of surface disturbance caused by management decisions made for other resources, particularly surface disturbance that occurs in highly erodible, reclamation-limited, or other sensitive soils. Another important indicator of impacts to water resources is a decrease in water quality conditions in perennial streams, including levels of suspended sediments, sediment bedload, dissolved solids, nutrient loads, bacteria counts, and water temperatures. Once these parameters exceed the State water quality standards at a site, the perennial stream is listed on the 303d list, which is the final indicator of poor water quality conditions. The soil limitations with the highest potential to impact soils and water resources are wind erodibility, water erodibility, and shallow root depth. All factors were analyzed and varying degrees of risk were evaluated with regards to these limitations.

All soils in the Monticello PA are susceptible to accelerated erosion, but sensitive soils are more susceptible to impacts. Surface-disturbing activities could result in any of the following impacts under any alternative: increased soil erosion and sedimentation, decreased soil productivity, changes to quantity and quality (e.g., salinity) of surface water and groundwater, loss of vegetation or prevention of revegetation, or introduction of noxious weeds and the attendant increases in water use (e.g., tamarisk uses large quantities of groundwater), and/or changes in soil chemistry and productivity. Analyses of impacts to soil and water resources in this section are based upon the factors contributing to site degradation and their inherent risks (Table 4.94), according to SSURGO soils mapping for the Monticello PA.

Some sites are at risk of degradation because surface layer wind and/or water erodibility factors are high. Kw refers to the relative ease of water erosion. The slope factor accounts for the tendency of steeper slopes to erode more easily. The wind erodibility group refers to the relative ease of wind transport of surface materials.

Other sites are at risk of degradation due to reclamation-limiting factors (i.e., factors that prevent soils from being fully reclaimed following surface disturbance). See Table 4.79 for a list of these factors. In reclamation-limited soils, one or more factors make site reclamation difficult in semi-arid environments, including alkalinity, droughty soils, soil rooting depth, salinity, available water capacity, and sodium adsorption. Available water capacity refers to the amount of water available for plant uptake. Salinity refers to the amount of salt within soils that can be dissolved in surface waters. The sodium adsorption ratio refers to the amount of sodium that can be held by

the soils and influence nutrient uptake. Rooting depth refers to the depth of soil, which influences how far plant roots can grow. Finally, alkalinity refers to soil pH, which generally limits plants' ability to establish when it is higher (i.e., more basic).

An important soil component often affected by surface disturbance is the biological soil crust, comprised of cyanobacteria, lichens and mosses. These crusts help to stabilize soils, reducing erosion and increasing soil productivity. Biological soil crusts have not been mapped and could occur in most of the soils within the Monticello PA.

Table 4.94. Factors Contributing to Site Degradation and Their Inherent Risks*

Factors	High Risk	Moderate Risk	Low Risk	Restrictive Feature
Erodibility				
Kw Factor (surface layer) and Slope (sl)[1]	K ≥ .37, sl ≥ 10%; or K = .20-.36, sl > 30%	K = .20-.36, sl 10-30%; or K < .20, sl > 30%	K < .20, sl 10-30%; or sl < 10%	Water erosion hazard
Wind Erodibility Group (surface layer)	1, 2	3, 4, 4L	5–8	Wind erosion hazard
Limits on Reclamation				
Available Water Capacity (average to 40 inches; in/in)[2]	< 0.05	0.05–0.10	0.10 <	Droughty soils
Salinity3 (mmhos/cm; surface layer)	16 <	8–16	< 8	Excess salt
Sodium Adsorption Ratio4 (surface layer)	13 <	4–13	< 4	Excess sodium
Depth to Bedrock or Hardpan (inches)	< 10	10–20	20 <	Rooting depth
Alkalinity (pH of surface layer)	9.0 ≤	7.8–8.9	< 7.8	Excess alkalinity

* Draft parameters developed by the BLM's National Science and Technology Center, SSURGO soils mapping.

[1] K Factor of surface layer adjusted for the effect of rock fragments. Slope is the maximum value for the range of slope of a soil component within a map unit.

[2] Maximum value for the range of available water capacity for the soil layer; inches of water per inches of soil.

[3] Maximum value for the range in soil salinity.

[4] Maximum value for the range in sodium adsorption ratio.

Throughout this analysis, highly erodible soils, reclamation-limited soils, and biological soil crusts are collectively referred to as sensitive soils. Biological soil crusts are discussed only qualitatively and are not included in the tables. However, any of the other soil parameters may overlap in any area, and so acreages presented in this analysis are not additive. For example, a particular acreage may have soils with shallow rooting depth as well as high wind erodibility. Acreages are also only approximate, due to limitations in soil mapping techniques and the planning area-wide scale of analysis.

Decisions regarding the management of resources other than soil and water in the Monticello PA may affect soil and water resources either directly or indirectly. Those impacts may be beneficial or adverse, and are described below. Management decisions regarding air quality, lands and

realty, paleontology, socioeconomics, or wildlife resources would result in negligible impacts to soils and water resources. The impacts would be negligible because protecting air quality, making lands and realty decisions, allowing recreational fossil collection and scientific study of fossils, improving the local and regional economy, and maintaining habitat for non-listed wildlife species would not have surface-disturbance impacts on sensitive soils and soil crusts. Therefore, impacts from these management decisions were not analyzed.

4.3.13.1. ASSUMPTIONS

For the purposes of this programmatic-level analysis, the acreages disclosed in Table 4.95 to 4.100 are assumed to be evenly distributed across the smallest nominal geographic area represented in each table. The limitations of this type of broad-scale analysis are best seen in cases when surface disturbance is concentrated in areas that are highly sensitive. Site-specific National Environmental Policy Act (NEPA) analysis of impacts to soils and water resources would be required before individual project implementation for projects proposed in sensitive soils. Refer to Table 4.94 for factors that determine inherent risk of site degradation. Areas where surface disturbance would occur in critical watersheds, priority sub-basins, 100-year floodplains, within 100 meters (m) of a natural spring, and public water reserves would need to be analyzed on a site-specific basis.

The analysis of cultural resource decisions on soils and water resources was based upon acreage of watershed treatment allowed or not allowed due to the presence or absence of cultural resources. Watershed treatments would generally provide long-term beneficial impacts to soils and water resources. Restrictions on dogs and human waste disposal associated with cultural resource decisions were also considered, where dogs and human waste would adversely impact soils and water resources. The designation of Cultural Special Management Areas (CSMAs) would generally limit watershed treatments and provide restrictions on human waste disposal and pets.

The analysis of the impacts of fire management decisions on soils and water resources was based upon the acres of treatment by soil type. Due to the lack of specific areas designated for treatment each year under the proposed Draft Resource Management Plan (DRMP), the actual acreage of treatment in areas with soil limitations is difficult to quantify; therefore, a qualitative assessment of long-term impacts was made. Individual fire management projects will be analyzed at the implementation level with site-specific NEPA.

Under all alternatives, all BLM-administered lands in the Monticello PA would be placed in one of the following oil and gas leasing stipulations developed in the RMP: standard lease terms (SLT), timing limitations (TL), controlled surface use (CSU), no surface occupancy (NSO), and closed to oil and gas leasing. Impacts related to these categories and conditions would depend upon surface disturbance in areas with soil limitations. Generally, where areas are closed to disposal of mineral materials or NSO, there would be no surface disturbance and thus negligible or no adverse impacts to soils and water resources. Areas open to mineral use under standard lease terms or timing limitations would potentially have short-term adverse impacts to soils and water resources where surface disturbance would occur in limited soils. However, under all alternatives, the relative amount of potential mineral-related soil disturbance and groundwater withdrawal in the planning area is minimal and, consequently, would likely have negligible impacts to soils and water resources. Refer to Tables 4.1 – 4.3 for the estimated acreages of surface disturbance related to mineral development.

All alternatives would be subject to limits on surface disturbance related to paleontological resources. Recreational collectors may collect and retain reasonable amounts of common invertebrate and plant fossils for personal, non-commercial use. Surface disturbance must be negligible, and mechanized tools may not be used; therefore, the adverse impacts to soils and water resources from paleontological management decisions would be negligible.

Analysis of impacts of vegetation treatments was based upon total acres of treatment and a qualitative assessment of how that treatment would impact watershed condition. Total acres of treatment by water and/or wind erodibility risk and reclamation potential are included. Direct impacts to soils and water resources in critical watersheds, priority sub-basins, 100-year floodplains, or within 100 meters of a spring would require finer scale watershed hydrology data. Qualitative analysis of soils and watershed resource impacts was completed where these resources would be impacted.

4.3.13.2. Impacts Common to All Alternatives

4.3.13.2.1. Impacts from Soils and Water Decisions Common to All Alternatives

The BLM would manage soils and water resources to maintain watershed health and provide favorable conditions for water flow and maintain stable and efficient stream channels as required to provide for fish and wildlife habitat, recreation, and livestock use. All floodplains and riparian/wetlands would be managed in accordance with Executive Orders 11988 and 11990, sections 303 and 404 of the Clean Water Act, and the Endangered Species Act. Maintenance of satisfactory watershed conditions would be required as indicated by maintenance of riparian proper functioning condition (PFC) and Utah's Rangeland Health Standards and Guidelines for Grazing and Recreation. Impacts Common to All Alternatives for riparian PFC were analyzed in Section 4.3.11.1, Riparian Resources. These management decisions would result in beneficial impacts to soils and water resources by protecting and restoring watershed health, healthy soils and good water quality conditions.

Surface-disturbing activities that are currently occurring and are expected to continue include grazing, access to and maintenance of existing oil and gas wells and access roads, recreation and OHV use, and woodland harvest/vegetation removal. As a result of surface-disturbing activities in areas having soils prone to wind erosion, water erosion, or with limitations on reclamation, impacts common to all alternatives include soil erosion, sedimentation, and impacts to surface and ground water quantity and quality. Surface disturbance can result in loss of vegetation or prevention of revegetation, increased soil erosion and sedimentation, and increased salinity in surface waters. Erosion control practices for slopes greater than 20% would be the same for all alternatives, as per Utah's Non-Point Source Management Plan (UDEQ 2000b). Careful planning of development to minimize impacts to soil and water is important in protecting water quality and soil productivity. Part of this planning includes compliance with the Utah BLM Standards for Rangeland Health (Appendix D). All alternatives must adhere to Rangeland Health Standards 1 and 4:

- Upland soils [must] exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.
- BLM will apply and comply with water quality standards established by the State of Utah (R317.2) and the federal clean water and safe drinking water acts. Activities on BLM lands

will fully support the designated beneficial uses described in the Utah Water Quality Standards (R317.2) for surface and groundwater.

In addition, site-specific conditions would need to be documented before modifying any management actions. Activities that would not comply with Standards 1 and 4 in the short-term would require reclamation and rehabilitation to ensure water quality, soil productivity and sustainability. These management decisions would reduce the accelerated erosion and other impacts associated with surface disturbing activities, which can be considered a relative beneficial impact to soil and water resources.

The BLM would manage public lands consistent with the Colorado River Salinity Control Act, comply with Utah's State water quality standards, and collaborate with San Juan County and local municipalities on management of municipal watersheds to meet local needs. Maintenance or improvement of soil quality and long-term soil productivity would be achieved through the implementation of Standards for Rangeland Health and other soil protection measures. Uses would be managed to minimize and mitigate damage to soils. The BLM would prioritize the watersheds identified on the 303d impaired lists. Modification of BMPs and vegetation would be managed to meet water quality standards and maintain watershed function in Montezuma Creek, Indian Creek (Forest Service boundary to Newspaper Rock), Johnson Creek (and tributaries from confluence with Recapture Creek to headwaters), and Recapture Reservoir to achieve water quality standards and watershed function. Watershed function would be assessed using Utah's Rangeland Health Standards, riparian PFC, and state water quality standards. These actions would result in the maintenance and restoration of overall watershed health, including reduction of erosion, stream sedimentation, and salinization of water.

Any proposed activities that would be located in reclamation-limited soils (shown as high-risk in Table 4.94) would incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability in site specific planning and associated NEPA. This would beneficially reduce the accelerated erosion and other impacts associated with surface disturbing activities.

4.3.13.2.2. Impacts of Fire Management Decisions Common to All Alternatives

Fire management under all alternatives would follow the guidelines in Utah Land Use Plan Amendment for Fire and Fuels Management (LUP Amendment), and is incorporated by reference into the DRMP (BLM 2005g). The document can be found at www.ut.blm.gov/fireplanning/index.htm. The impacts of fire management on soil and water resources would be adverse in the short-term due to increased sedimentation and increased runoff from areas where vegetation is removed from prescribed burns or other fuel reduction treatments. Long-term beneficial impacts would occur under all alternatives due to the potential reduction of fire severity and impacts, as well as improving the ability to control fire in and around treated areas. Please refer to the environmental assessment of the LUP Amendment (BLM 2005g) for analysis of impacts to soils and water resources related to plan implementation.

Under all alternatives, estimated fuels reduction treatments of 5,000 to 10,000 acres per year would be targeted subject to budgetary constraints. Fuels reduction treatments would be designed to limit potential short-term adverse impacts to areas with soil limitations and limit changes in surface hydrology under all alternatives. The return of a more natural fire return interval would result in long-term beneficial impacts to soils and water resources through reduced fire severity, which would lower the potential for long-term loss of vegetative cover and resulting stream

sedimentation and changes in surface hydrology due to increased runoff. The actual location of treatment areas will be determined based on need and individual treatments will be analyzed with site-specific NEPA.

4.3.13.2.3. Impacts of Health and Safety Decisions Common to All Alternatives

The management of hazardous materials under all alternatives would affect soils and water resources in the short-term, where Abandoned Mine Lands (AMLs) are rehabilitated. Water-quality-based AML program priority watersheds have been identified by the state based on (a) one or more water laws or regulations; (b) threat to public health or safety; and (c) threat to the environment. The rehabilitation of watersheds impacted by AMLs would result in long-term beneficial impacts on soils and water resources by reducing the detrimental impacts of AML water drainage. The impacts of these decisions would be the same under all alternatives; therefore, no impacts analysis was completed by alternative.

4.3.13.2.4. Impacts of Recreation Decisions Common To All Alternatives

Managing recreation to meet Utah's Rangeland Health Standards would ensure that standards for rangeland health are met within the recreation program, thereby beneficially impacting soil productivity. Limiting or controlling activities through specialized management tools, where long-term damage to soils or water resources by recreational uses is observed or anticipated, would reduce the area of existing long-term impacts to soils and water resources in the Monticello PA. Long-term impacts would also be reduced through revisions to recreation management plans and management framework plans when they prove to be inadequate to maintain public land health.

OHV access for game retrieval would follow all area and route designations. (There would be no off-road retrieval). The public would be notified of these restrictions in the Federal Register. These limits on OHVs would reduce long-term adverse impacts that would otherwise result from motorized recreation.

Under all alternatives, dispersed camping, while allowed where not specifically restricted, may be closed seasonally or as impacts or environmental conditions warrant. The BLM would emphasize "Leave No Trace" camping and travel techniques throughout the Monticello PA. BLM would consider and, where appropriate, implement management methods to protect soils and water resources.

4.3.13.2.5. Impacts of Wildlife and Fisheries Decisions Common to All Alternatives

Wildlife and fisheries decisions under all of the alternatives would prioritize the maintenance and/or improvement of lowland riparian, wetlands, and low and high desert scrub communities, which are the four most important and used habitat types by migratory birds in the Monticello PA. It is likely that the maintenance and/or improvement of these habitats would have indirect benefits to soils and water resources by ensuring the ecological functions of these systems. Beneficial impacts to soils and water resources due to wildlife and fisheries management would correspond to improvement of vegetative conditions and was evaluated in Sections 4.3.17, Vegetation Resources, and 4.3.11, Riparian Resources.

4.3.13.2.6. Impacts of Woodlands Decisions Common To All Alternatives

Floodplains and riparian/aquatic areas would be excluded from woodland product use except for limited on-site collection of driftwood for campfires, and uses for Native American ceremonial purposes as determined on site-specific basis. Cottonwood and willow harvest would be allowed in areas with proper functioning condition for Native American ceremonial uses only, which would minimize potential adverse increases in surface water temperature due to loss of vegetation cover immediately adjacent to streams. Harvest would be administered under a permit system, where restrictions on harvest would be implemented as necessary to achieve or maintain PFC, and maintain or improve Threatened or Endangered Species/Special Status Species (TES/SSS) habitat. These actions would limit adverse impacts to soils and water resources resulting from vegetation disturbance in riparian areas.

4.3.13.3. Alternatives Impacts

4.3.13.3.1. Impacts of Cultural Resource Decisions on Soils and Water

4.3.13.3.1.1. Alternative A

Management actions under Alternative A would not designate any CSMAs. This alternative would not place limitations on watershed treatments, so soils may be subject to surface disturbing treatments but would not experience the potential long-term beneficial impacts of those treatments. The disposal of human and pet waste would not be controlled within any CSMAs under Alternative A. Potential impacts including e-coli contamination of water and small amounts of soil disturbance with subsequent sedimentation would continue to occur. Cultural resource management under Alternative A would not limit vegetative treatments, so some soils would be subject to surface disturbing treatments. Long-term adverse impacts from cultural resource decisions would be partially mitigated by the closure of the Grand Gulch Special Emphasis Area to surface disturbing activities.

4.3.13.3.1.2. Alternative B

Cultural Resource decision impacts on soil and water resources would be identical to those under Alternative A with the following exceptions:

1) Alternative B would designate Comb Ridge (38,012 acres), Tank Bench (2,600 acres), and Grand Gulch National Historic District (37,400 acres) as CSMAs. These designations would prohibit surface disturbing vegetation treatments in these areas. This would prevent potential short-term increases in erosion and subsequent potential for sedimentation in perennial watercourses. However, these limitations would also result in some potential long-term increases in erosion and/or sedimentation in areas where the restrictions prevent effective fuels management or post-fire rehabilitation. Limits on vegetative treatment would also reduce long-term improvement of soil productivity and stability that can result from vegetation management.
2) In the Comb Ridge, Tank Bench, Beef Basin (20,300 acres), McLoyd Canyon-Moon House (1,600 acres), and Grand Gulch CSMAs, human waste would be packed out, thus reducing the potential adverse impacts to soils and water resources from e-coli contamination. McLoyd Canyon-Moon House and Grand Gulch CSMAs would not allow pack animals or

pets, further limiting adverse impacts to soils and water resources from streambank trampling and animal waste.

In summary, Alternative B would place limits on watershed treatments within 40,700 acres. These limits on watershed treatments would reduce the potential for increased erosion and sedimentation in the short-term, but would also prevent potential long-term benefits to watershed health in comparison with Alternative A. However, human waste, pets, and livestock would be managed with greater restrictions in CSMAs under Alternative B than under any other alternative, resulting in the lowest level of adverse impacts to soils and water resources from these sources.

4.3.13.3.1.3. Alternative C

Alternative C would allow surface disturbing land treatments in Comb Ridge, Tank Bench, and Grand Gulch (non-motorized only) (refer to Section 4.3.17, Vegetation Resources). This would have short- and long-term impacts identical to those described under Alternative A. Additionally, under Alternative C, groups larger than 20 would be required to pack out human waste in the Beef Basin CSMA. All human waste would be required to be packed out of the McLoyd Canyon-Moon House CSMA. Qualitative analysis of impacts related to these limits was discussed under Alternative A. These limits would generally reduce adverse impacts to soils and water resources, as compared to Alternative A.

Overall, Alternative C would limit the beneficial impacts of watershed treatments less than Alternative A. Human waste disposal and group size would be controlled more than under Alternative A, with corresponding benefits to soils and water resources.

4.3.13.3.1.4. Alternative D

Alternative D proposes to manage McLoyd Canyon-Moon House (1,607 acres) as a CSMA, where visitors would be required to pack out human waste resulting in lower adverse impacts to water resources in this area than under Alternative A. Grand Gulch National Historic District (37,388 acres) would be managed with the same prescriptions as under Alternative C. Comb Ridge, Tank Bench, and Beef Basin would not be managed as CSMAs, and would therefore be at greater risk of adverse impacts to soil and water resources due to improper human waste disposal.

Overall, Alternative D would provide the fewest beneficial impacts to soils and water resources due to cultural resources decisions, as compared to the other action alternatives. Alternative D would provide more protection of soils and water resources than Alternative A, which would not designate any CSMAs.

4.3.13.3.1.5. Alternative E

Cultural resource decision impacts on soil and water resources would be identical to Alternative B, except that Alternative E would close the Comb Ridge CSMA (38,012 acres) and Beef Basin CSMA (20,300 acres) to oil and gas leasing, surface disturbing vegetation treatments, and cross-country OHV use. These prescriptions would provide greater protection for soils and water resources than any other alternative.

4.3.13.3.2. Impacts of Livestock Grazing Decisions on Soils and Water

Livestock grazing management decisions would affect soils and water resources when AUMs for livestock and/or wildlife are adjusted in response to evidence from monitoring that water quality or soil degradation is imminent or occurring. Depending on season of use and duration, reducing AUMs could have a short-term, direct, and potentially beneficial impact, as it could increase the area of ground cover left after the grazing season. Changes in ground cover, including biological soil crusts, would have direct, long-term impacts to water quality and soil productivity.

With respect to livestock grazing, the alternatives vary between areas proposed as unavailable for livestock grazing. Impacts on vegetation (and subsequently, on water and soils) vary depending on the season of use in relation to vegetation growing seasons. For example, proper grazing in areas with the potential for periods of high runoff (generally due to spring runoff and late summer thunderstorms) would reduce or minimize the adverse impacts of these events: banks that retain their vegetation (due to properly managed livestock grazing) would likely be protected from erosion caused by high flows.

4.3.13.3.2.1. Alternative A

Livestock grazing would be monitored for compliance with all rangeland standards (Appendix D). Where monitoring shows site degradation, adaptive management of livestock use through changes in seasons of use and closure of areas not meeting rangeland standards would reduce adverse impacts to soils and water resources.

Alternative A would have long-term indirect beneficial impacts to soil and water resources in the Comb Wash side canyons (Mule Canyon below U-95, Arch, Fish, Owl, and Road). These areas would be continue to be unavailable for livestock grazing and lack of improper or heavy grazing pressure would allow vegetation to recover, subsequently restoring soil productivity. The impacts of livestock grazing on soil and water resources on other allotments within the Monticello PA would continue to be managed in accordance with Utah Rangeland Health Standards. The areas unavailable for livestock grazing under Alternative A would protect approximately 3,000 acres of wind erodible soil, 5,600 acres of water erodible soils, and 14,600 acres of soil with poor reclamation potential from adverse impacts due to grazing. Livestock grazing would continue to occur on approximately 94,500 acres of wind erodible soils, 16,300 acres of water erodible soils, and 328,700 acres of soil with poor reclamation potential. Refer to Table 4.95 for comparison with other alternatives.

Table 4.95. Livestock Grazing in Soils with Limitations

Alternative(s)	Limitation	Open	Unavailable
Alternative A	Wind	94,500	3,000
	Water	16,300	5,600
	Reclamation Limited	328,700	14,600
Alternatives B and E	Wind	94,200	3,300
	Water	16,300	5,600
	Reclamation Limited	326,000	17,300

Table 4.95. Livestock Grazing in Soils with Limitations

Alternative(s)	Limitation	Open	Unavailable
Alternative C	Wind	94,200	3,300
	Water	16,300	5,600
	Reclamation Limited	326,000	17,300
Alternative D	Wind	94,500	3,000
	Water	16,300	5,600
	Reclamation Limited	328,500	14,800

4.3.13.3.2.2. Alternative B

Under Alternative B, the BLM would develop seasonal restrictions, closures, and/or forage utilization limits on grazing in all riparian areas and especially those Functioning At Risk. These actions and closures of areas to grazing would reduce adverse impacts to soils and water resources similarly to Alternative A. The total area with limited soils open to livestock grazing under Alternative B would be very slightly less than under Alternative A. Refer to Table 4.95 for comparison of alternative impacts. For a qualitative description of the impacts of removal of grazing from riparian areas, see Section 4.3.11.2.2, Impacts of Livestock Grazing Decisions on Riparian Resources, for Alternative A.

4.3.13.3.2.3. Alternative C

Alternative C would have the same closure areas and management of livestock grazing, and therefore the same impacts, as Alternative B. The one exception would be Mule Canyon, only part of which would be made unavailable for grazing under Alternative C. Therefore, Alternative C would have very slightly more adverse impacts on soils and watersheds than Alternatives B and A. However, the acreage of limited soils open to livestock grazing is nearly identical under all alternatives.

4.3.13.3.2.4. Alternative D

Alternative D would make the same areas unavailable to grazing as Alternative B, with the exception of the Horsehead Canyon within the Montezuma Canyon allotment, Dodge Canyon allotment, and Mule Canyon allotment north of U-95, all of which would be open to livestock grazing under Alternative D. There would be no seasonal restrictions, closures, and/or forage utilization limits on grazing in riparian areas classified as Functioning at Risk, so fewer reductions in adverse impacts would occur as compared to Alternative B. This alternative would have very similar impacts to sensitive soils as would occur under Alternative A (see Table 4.95).

4.3.13.3.2.5. Alternative E

Under Alternative E, the total area with limited soils open and unavailable for livestock grazing would be the same as under Alternative B, with the same impacts to soils and water resources.

4.3.13.3.3. IMPACTS OF MINERAL DECISIONS ON SOILS AND WATER

Impacts related to mineral development would occur where sensitive soils were impacted through surface disturbance. Disturbance of sensitive soils would contribute to short-term adverse impacts to soils and water resources as a result of loss of vegetative cover, and would contribute to sedimentation of surface waters and loss of soil productivity. Proposed oil and gas facilities and infrastructure development would cause a loss of soil productivity and water quality degradation due to construction-related surface disturbances.

4.3.13.3.3.1. Alternative A

Refer to Table 4.96 below for a comparison of limited soil acreage open and closed under Alternative A and the action alternatives. Alternative A would result in more adverse impacts to soils and water resources as compared to the action alternatives, which have fewer acres of limited soils open to mineral development. A total of 77,600 acres of wind erodible; 15,000 acres of water erodible; and 217,300 acres of reclamation-limited soils would be open to surface-disturbing mineral leasing under Alternative A. A total of 23,500 acres of wind erodible; 12,800 acres of water erodible; and 85,000 acres of reclamation limited soils would be closed to surface-disturbing mineral leasing. It should be noted that Table 4.96 indicates areas open for surface-disturbing leasing; it does describe the actual predicted disturbance from mineral development.

Geophysical exploration would also be allowed under Alternative A, and would potentially adversely impact soils and water resources in areas with limited soils for up to 10 years. Table 4.97 outlines estimated potential surface disturbance due to oil and gas leasing and geophysical exploration over the life of the plan (15 years). This surface disturbance would have potential long-term adverse impacts on soils and water resources where disturbance occurs in sensitive soils. Under Alternative A, the total potential surface disturbance due to oil and gas leasing and geophysical exploration would be 665, 189, and 731 acres in the Blanding Sub-basin, Monument Upwarp, and Paradox Fold and Fault Belt respectively. These acreages would represent less than 1% of the total Monticello PA and disturbance would impact a very small percentage of the limited soils open to surface disturbance (see Table 4.96).

4.3.13.3.3.2. Alternative B

Under Alternative B, the following acreages of sensitive soils would be open for mineral leasing: 74,000 acres of highly wind erodible soils; 15,100 acres of highly water erodible soils; 276,930 acres of reclamation sensitive soils. This would be approximately 3,600 less wind erodible; 100 more water erodible; and 59,630 less reclamation sensitive acres open to mineral leasing than under Alternative A. A total of 3,300 more wind erodible; 200 less water erodible; and 37,500 less reclamation sensitive soils would be closed, as compared to Alternative A (see Table 4.96). The total estimated surface disturbance from mineral development and exploration would be lower under Alternative B (1,430 acres) than under Alternative A (1,585 acres), as shown in Table 4.97.

Table 4.96. Acreage of Limited Soils Open and Closed to Surface-Disturbing Mineral Leasing by Alternative

		Alternative A			Alternative B			Alternative C			Alternative D			Alternative E		
		Wind	Water	Reclamation Limited	Wind	Water	Reclamation Limited	Wind	Water	Reclamation Limited	Wind	Water	Reclamation Limited	Wind	Water	Reclamation Limited
Blanding Sub-basin	**open**	14,000	3,800	102,900	9,600	3,300	82,230	14,300	3,800	99,100	14,400	3,800	99,000	9,642	3,219	78,555
	closed	700	400	8,200	5,000	800	27,300	300	300	10,400	300	300	10,500	5,057	900	30,975
Monument Upwarp	**open**	43,600	10,200	8,500	49,000	11,000	101,600	49,900	11,700	108,300	50,100	12,100	108,800	8,926	4,301	41,000
	closed	22,500	12,000	75,200	17,000	11,300	5,900	16,400	16,900	52,300	1,600	10,200	51,700	57,136	17,975	119,574
Paradox Fold and Fault Belt	**open**	20,000	1000	105,900	15,400	800	93,100	1000	19,300	104,300	20,200	1,100	107,000	11,164	358	76,476
	closed	300	400	1,600	4,800	500	14,300	1000	400	3,200	<100	200	500	9,076	953	30,942
Total in Monticello PA	**open**	**77,600**	**15,000**	**217,300**	**74,000**	**15,100**	**276,930**	**65,200**	**34,800**	**311,700**	**84,700**	**17,000**	**314,800**	**29,732**	**7,878**	**196,031**
	closed	**23,500**	**12,800**	**85,000**	**26,800**	**12,600**	**47,500**	**17,700**	**17,600**	**65,900**	**1,900**	**10,700**	**62,700**	**71,269**	**19,828**	**181,491**

Table 4.97. Predicted Surface Disturbance over Life of Plan From Oil and Gas Leasing and Geophysical Exploration

	Alternative A				Alternative B				Alternative C				Alternative D				Alternative E			
	Blanding Sub basin	Monument Upwarp	Paradox Fold and Fault Belt	Total	Blanding Sub basin	Monument Upwarp	Paradox Fold and Fault Belt	Total	Blanding Sub basin	Monument Upwarp	Paradox Fold and Fault Belt	Total	Blanding Sub basin	Monument Upwarp	Paradox Fold and Fault Belt	Total	Blanding Sub basin	Monument Upwarp	Paradox Fold and Fault Belt	Total
Oil and gas average disturbance LOP	394	69	236	699	363	79	194	636	395	82	233	710	395	86	240	721	345	30	143	518
Geophysical surface disturbance LOP	271	120	495	886	249	137	408	794	271	143	489	903	271	149	504	924	237	53	301	591
Total predicted surface disturbance	665	189	731	1,585	612	216	602	1,430	666	225	722	1,613	666	235	744	1,645	582	83	444	1,109

4.3.13.3.3.3. Alternative C

Under Alternative C, the following approximate acreages of sensitive soils would be open to surface disturbing activities related to mineral leasing: 65,200 acres of highly wind erodible soils; 34,800 acres of highly water erodible soils; and 311,700 acres of reclamation sensitive soils. This would result in potential for surface disturbance on approximately 12,400 less wind erodible acres; 19,800 more water erodible acres; and 94,400 more reclamation limited soils than under Alternative A. Approximately 17,700 wind erodible acres; 17,600 water erodible acres; and 65,900 reclamation-limited acres would be closed to mineral leasing. The 1,613 acres of total estimated surface disturbance would be greater than the 1,585 acres estimated under Alternative A (see Table 4.97).

4.3.13.3.3.4. Alternative D

Under Alternative D, the following acreages of sensitive soils would be open to potential surface disturbing activities related to mineral leasing: 84,700 acres of highly wind erodible soils; 17,000 acres of highly water erodible soils; and 314,800 acres of reclamation sensitive soils. This would result in potential adverse impacts on 7,100 more wind erodible acres; 2,000 more water erodible acres; and 97,500 more reclamation-limited soils than under Alternative A. A total of 1,900 wind erodible acres; 10,700 water erodible acres; and 62,700 reclamation-limited acres would be closed to mineral leasing. An estimated total of 1,645 acres of soil disturbance due to minerals development and exploration would be greater than under Alternative A (1,585 acres) and the other action alternatives (see Table 4.97).

4.3.13.3.3.5. Alternative E

Under Alternative E, the following acreages of sensitive soils would be open for mineral leasing: 29,732 acres of highly wind erodible soils; 7,878 acres of highly water erodible soils; and 196,031 acres of reclamation sensitive soils. This would be approximately 47,868 less wind erodible; 7,122 less water erodible; and 21,269 less reclamation sensitive acres open to mineral leasing than under Alternative A. A total of 47,769 more wind erodible; 7,028 more water erodible; and 96,491 more reclamation sensitive soils would be closed, as compared to Alternative A. The 1,109 acres of estimated surface disturbance due to mineral development and exploration would be lower than under any alternative, including the 1,585 acres expected under Alternative A (see Table 4.97).

4.3.13.3.4. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Soils and Water

4.3.13.3.4.1. Alternatives A–D

There would be no direct impacts from non-WSA lands with wilderness characteristics decisions on soils and water under these alternatives, since no lands would be managed to preserve wilderness characteristics. Because these areas would not receive protective management, they may be open to adverse impacts to soils and water resources, such as additional development, ROWs, and surface disturbing activities.

4.3.13.3.4.2. Alternative E

Under Alternative E, a total of 582,360 acres of non-WSA lands with wilderness characteristics would be managed to maintain their wilderness characteristics. These areas would be closed to OHV use, which would reduce soil disturbance, erosion, and associated impacts to water quality. Lands with wilderness characteristics would also be closed to mineral leasing and disposals and would prohibit new road construction or ROWs, which would also reduce impacts to soils and water resources. Finally, lands with wilderness characteristics would be closed to woodland harvest, thereby eliminating associated surface disturbance and associated impacts to soils and water resources. Therefore, Alternative E would have beneficial impacts to soils and water resources over approximately 582,360 more acres than any other alternative, including Alternative A.

4.3.13.3.5. Impacts of Recreation Decisions on Soils and Water

Recreation management decisions would potentially affect sensitive soils and water quality in critical watersheds and priority sub-basins under all alternatives. The disturbance of sensitive soils (reclamation limited, highly erodible, or biological crusts) through surface disturbance and loss of vegetative cover in areas open to OHV use would increase the risk of stream sedimentation and resultant decreases in water quality. Disturbance levels would be relative to amount of surface disturbance and proximity to water resources. Limiting OHV use to designated routes would minimize adverse impacts to soils and water. Vegetation disturbance in riparian areas and highly-erodible areas from OHV use or visitor use would increase the risk of water quality degradation and loss of soil productivity due to accelerated wind and water erosion and vegetation removal.

Vegetation disturbance leading to increased surface runoff and alteration of erosional and depositional processes would occur in areas with high visitor use. Recreation permit systems would continue to manage visitor use in areas with sensitive soils or in riparian areas. Analysis of visitor use was completed under Section 4.3.11.2.4, Impacts of Recreation Decisions on Riparian Resources. Impacts to soils and water resources from visitor use would be at the same relative levels as riparian impacts.

4.3.13.3.5.1. Alternative A

Recreation management decisions under Alternative A would allow OHV use in sensitive soils with potential to disturb 36,400 acres of wind erodible, 5,700 acres of water erodible, and 179,700 acres of reclamation-limited soils. OHV use could potentially result in short-term surface disturbance resulting in streambank destruction, vegetation damage, and sedimentation of surface waters. OHV trails could also lead to increased incidence of water erosion due to gullying resulting in sedimentation of streams. A total of 64,600 acres of wind erodible, 22,000 acres of water erodible, and 199,100 acres of reclamation limited soils would be limited to designated routes or closed to OHV use, thus reducing adverse impacts on soils and water resources in closed or travel limited areas. Refer to Table 4.98 for comparison between alternatives.

Table 4.98. OHV Use in Reclamation-Limited Soils by Alternative

		Alternative A			Alternative B			Alternative C			Alternative D			Alternative E		
		wind	water	reclamation limited	wind	water	reclamation limited	wind	water	reclamation limited	wind	water	reclamation limited	wind	water	reclamation limited
All RFD areas	open	36,400	5,700	179,700	0	0	0	200	0	300	300	0	300	0	0	0
	closed or limited	64,600	22,000	199,100	101,000	27,700	376,100	100,800	27,700	375,800	100,700	27,700	375,800	101,000	27,700	376,100

4.3.13.3.5.2. Alternative B

OHV use under Alternative B would be the lowest of any alternative, along with Alternative E (see Table 4.98). No areas would be open to cross-country OHV use within the Monticello PA. This would result in 36,400 less wind erodible acres; 5,700 less water erodible; and 179,700 less reclamation sensitive acres where OHV use would occur on designated routes than under Alternative A.

Several SRMAs would be designated under Alternative B, which would result in management restrictions that would impacts soils and water resources. Within the San Juan River SRMA, launch schedules would allow approximately 30,000 user/days per year, which is 10,000 fewer user days than Alternative A and Alternative C, and 15,000 fewer user days than Alternative D. Trip size would be limited to 20 people (including crew) for both private and commercial use, which is fewer than any other alternative. These management actions would reduce adverse impacts due to visitor use more than any other alternative (except Alternative E, which would have the same management). Camping permits would be less than any other alternative in the Grand Gulch Plateau (Cedar Mesa) In-Canyon Camping Area, resulting in the greatest amount of soil and water resources protection of any alternative. Levels of camping are shown in the Alternatives Matrix. The Dark Canyon SRMA would allow fewer commercial permits than under any alternative. Camping in designated sites would be allowed and dispersed camping would not be allowed. Group size would be limited to 10–12 with 15 private users per day in the canyon. Alternative A would not have any user limits within the Dark Canyon SRMA. Limits on group size and number of commercial permits would reduce bank trampling, human waste (e-coli), and noxious weed spread in regulated areas. These actions would result in a reduction of surface and vegetation disturbance due to human use, thus having the highest level of protection for soils and water resources of any alternative. Dispersed camping would not be allowed in the Indian Creek Corridor. Camping would only be allowed in designated sites resulting in fewer impacts to riparian resources than any alternative.

4.3.13.3.5.3. Alternative C

Under Alternative C very few areas would be open to OHV use within the Monticello PA. This would result in 36,200 less wind erodible acres; 5,700 less water erodible acres; and 179,400 less reclamation sensitive acres subject to impacts from OHV use than under Alternative A. Areas closed to OHV use and limited to designated routes would be nearly the same as under Alternative B (see Section 4.3.13.2.4). By reducing OHV use to designated trails and closing some areas to OHV use, Alternative C would have the similar levels of impact to sensitive soils as Alternative B, and far fewer than Alternative A (see Table 4.98).

The San Juan SRMA would be designated with similar management as under Alternative A. Launch limits would allow approximately 40,000 user/days per year, which is the same as under Alternative A. Alternative C would allow fewer user days than Alternative D and more user days than Alternatives B and E. Trip size would be limited to 25 people (including crew) total for both private and commercial trips, which is fewer than Alternative A and Alternative D, and more than Alternatives B and E. Refer to discussion in Alternative A for impacts related to soil and vegetation disturbance from visitor use.

The camping numbers in Grand Gulch Plateau (Cedar Mesa) In-Canyon Camping Area would be more than Alternatives B and E and less than Alternative A and Alternative D, as reflected in the Alternatives Matrix. Camping in designated sites would be allowed in the Dark Canyon SRMA. Group size would be limited to 15 with up to 20 private users per day. These limits would protect soils and water resources from adverse impacts due to visitor use more than Alternative A and Alternative D (which would not designate camping limits) and less than Alternatives B and E. Dispersed camping would be allowed in the Indian Creek Corridor except for within the following designated dispersed camping zones that have been established: Bridger Jack Mesa, Indian Creek Falls, and Creek Pasture. Camping within these zones would be limited to designated sites. These limits on camping would protect soils and water resources more than Alternative A and Alternative D and less than Alternative B.

Overall, Alternative C would provide more protection of soils and water resources due to management actions for recreation than Alternative A and Alternative D and less protection than under Alternatives B and E.

4.3.13.3.5.4. Alternative D

Under Alternative D, 300 acres of wind erodible and 300 acres of reclamation limited soils would be open to OHV use within the Monticello PA. This would be 36,100 less wind erodible acres; 5,700 less water erodible; and 179,400 less reclamation-limited acres open to OHV use than under Alternative A. There would be no areas closed to OHV use under Alternative D, but nearly all OHV use would be limited to designated routes (see Section 4.3.13.2.4). By reducing OHV use to designated trails, Alternative D would have the similar levels of use within sensitive soils as Alternative B, and far fewer than Alternative A (see Table 4.98).

Alternative D would allow approximately 45,000 user/days per year, private and commercial trips combined within the San Juan SRMA, which would result in a higher level of use than under any other alternative. Trip size would be increased to a maximum of 35 people per trip for both private and commercial use, which would be more people per trip than any other alternative. Camping permit numbers in the Grand Gulch Plateau (Cedar Mesa) In-Canyon Camping Area would be greater than Alternatives B, C, and E and fewer than under Alternative A, as reflected in the Alternatives Matrix. Dispersed camping would be allowed in the Dark Canyon SRMA, resulting in the same impacts as under Alternative A. The group size would be the same as Alternative C, with no limits on private user numbers. Dispersed camping would be allowed throughout the Indian Creek corridor, which would provide the lowest amount of protection of soils and water resources of any alternative.

Overall, Alternative D would provide the lowest level of protection for soils and water resources due to recreation decisions than any action alternative but a higher level of protection than under Alternative A.

4.3.13.3.5.5. Alternative E

Under Alternative E, the impacts of recreation decisions on soils and water resources would be the same as under Alternative B, except that no OHV travel would be allowed within non-WSA lands with wilderness characteristics (582,360 acres). By reducing OHV use to designated routes and closing the highest overall acreage to OHV use of any alternative (958,410 acres),

Alternative E would have the lowest use levels, and consequently, the lowest OHV-related soils impacts within designated recreation areas, of any alternative.

4.3.13.3.6. Impacts of Riparian Decisions on Soils and Water

4.3.13.3.6.1. Alternative A

Alternative A would limit surface disturbance in riparian areas, and would thereby limit adverse impacts to soils and water resources, since riparian areas naturally filter surface runoff and attenuate floods. Reduction of floods would limit the amount of erosion and sedimentation of water bodies.

All floodplains and riparian/wetlands are managed in accordance with Executive Orders 11988 and 11990, sections 303 and 404 of the Clean Water Act, and the Endangered Species Act, thus protecting riparian areas from impacts related to surface disturbance. These protections would indirectly reduce adverse impacts to soils and water resources by reducing sedimentation and salinization of water.

Under Alternative A, oil and gas development would be No Surface Occupancy (NSO) in riparian areas. The Monticello PA would follow Utah's Standards for Rangeland Health and Guidelines for Grazing and Recreation Management to achieve riparian PFC. No new surface disturbing activities would be allowed within active floodplains or within 100 meters of riparian areas. These actions would protect soils and water resources from adverse impacts due to surface disturbance.

4.3.13.3.6.2. Alternative B

Impacts under Alternative B would be the same as under Alternative A except that selected areas would be closed to motorized use and livestock trailing, which would result in minor beneficial reductions in impacts to soils and water resources.

4.3.13.3.6.3. Alternative C

Under Alternative C, the impacts of riparian decisions would be the same as under Alternative B.

4.3.13.3.6.4. Alternative D

Under Alternative D, the impacts of riparian decisions would be the same as under Alternative A.

4.3.13.3.6.5. Alternative E

Under Alternative E, the impacts of riparian decisions would be the same as under Alternative B.

4.3.13.3.7. Impacts of Soils and Water Decisions on Soils and Water

In addition to those impacts common to all alternatives described in Section 4.3.13.2, soils and water decisions specific to each alternative would also affect soils and water resources.

4.3.13.3.7.1. Alternative A

There would be no additional impacts under Alternative A.

4.3.13.3.7.2. Alternative B

Under Alternative B, soil erosion and subsequent stream sedimentation would be beneficially reduced by stipulations requiring that erosion control plans be developed for surface disturbing activities on slopes greater than 20%. These measures would reduce erosion and sedimentation relative to Alternative A.

4.3.13.3.7.3. Alternative C

Under Alternative C, soil erosion and subsequent stream sedimentation would be beneficially reduced by stipulations requiring that erosion control plans be developed for surface disturbing activities on slopes greater than 20%, and that surface disturbance be limited on slopes greater than 40%. These measures would reduce erosion and sedimentation relative to Alternatives A and B.

4.3.13.3.7.4. Alternative D

Under Alternative D, soil erosion and subsequent stream sedimentation would be beneficially reduced by stipulations requiring that erosion control plans be developed for surface disturbing activities on slopes greater than 40%. These measures would reduce erosion and sedimentation relative to Alternatives A.

4.3.13.3.7.5. Alternative E

Impacts under Alternative E would be the same as under Alternative B, except that additional restrictions on surface disturbing activities would apply within non-WSA lands with wilderness characteristics. Therefore, impacts to soils and water resources would be less adverse under Alternative E than under any other alternative.

4.3.13.3.8. Impacts of Special Designations Decisions on Soils and Water

Special Designations would generally reduce adverse impacts to floodplains, soils, and water resources through limits on surface disturbance within Areas of Critical Environmental Concern (ACECs) and river segments designated as Wild and Scenic under the National Wild and Scenic River System (NWSRS). Short-term adverse impacts to soils and water resources would occur in areas where vegetation treatments are allowed within special designations. Allowing vegetation treatments would result in increased sedimentation in the short-term, but would provide long-term beneficial impacts on soils and water resources by improving vegetation cover and health.

Under all alternatives, ACEC designation would generally require areas with surface disturbance to be reclaimed within five years after project completion. This would reduce any long-term adverse impacts to soils and water resources. The total acreage of limited soils in ACECs by alternative is shown in Table 4.99 below. Short-term adverse impacts would still occur due to any surface-disturbing activities in these areas, but effective reclamation would prevent these impacts from being long-term. Additionally, OHV use would generally be limited to designated trails or prohibited, thus reducing adverse impacts as discussed under Section 4.3.13.2.4, Impacts of Recreation Decisions Common to All Alternatives.

Table 4.99. ACEC Special Designations in Limited Soils, by Alternative

	Alternative A			Alternatives B and E			Alternative C			Alternative D		
	wind	water	reclamation limited	wind	water	reclamation limited	wind	water	reclamation limited	wind	water	reclamation limited
ACECs	9,400	12,200	91,400	9,200	11,200	100,000	300	600	14,100	0	0	0

4.3.13.3.8.1. Alternative A

A total of 9,400 acres of wind erodible soils; 12,200 acres of water erodible soils; and 91,400 acres of reclamation-limited soils would be within designated ACECs under Alternative A (see Table 4.99). These designations would generally reduce impacts to soils and water resources due to surface disturbance, as described above.

The designation of river segments as Wild and Scenic would not be evaluated under Alternative A. River segments determined eligible for designation in the 1991 RMP would retain protections from surface disturbance, thus limiting adverse impacts. River segments not evaluated in the 1991 RMP would not be protected from surface disturbance and its impacts.

4.3.13.3.8.2. Alternative B

Designation of ACECs and Wild and Scenic river segments proposed under Alternative B would limit surface disturbance on 9,200 acres of wind erodible; 11,185 acres of water erodible; and 100,000 acres of reclamation limited soils. This would result in protection of 200 fewer acres of wind erodible; 1,000 fewer acres of water erodible; and 8,600 more acres of reclamation limited soils, as compared to the Alternative A. However, the management prescriptions of special designations under Alternative B are generally slightly more protective than under Alternative A.

Management of Wild and Scenic Rivers under Alternative B would recommend Dark Canyon (2,048 acres) and San Juan River Wild Segments #3 and #5 (4,896 acres) as Wild under the WSR system. These designations would limit surface disturbance within the river corridors at these locations. These actions would provide more long-term protection of soils and water resources than Alternative A, which would not designate any Wild river segments.

The designations proposed under Alternative B would result in the protection of more acres of reclamation limited soils and biological soil crusts than Alternative A.

4.3.13.3.8.3. Alternative C

Designation of ACECs and Wild and Scenic river segments proposed under Alternative C would limit surface disturbance on 300 acres of wind erodible; 600 acres of water erodible; and 14,100 acres of reclamation limited soils. These designations would result in less protection for soils and water resources than under Alternative A (see Table 4.99).

Management of Wild and Scenic Rivers under Alternative C would recommend Dark Canyon (2,048 acres) as Wild under the WSR system. This designation would limit surface disturbance within the river corridor. These limits on surface disturbance would provide more long-term protection of soils and water resources than Alternative A, which would not designate any Wild river segments.

The designations proposed under Alternative C would result in the protection of fewer acres of reclamation limited soils and biological soil crusts than Alternative A.

4.3.13.3.8.4. Alternative D

There would be no special designations under Alternative D. No reduction in adverse impacts would occur under this alternative, resulting in the lowest level of protection from adverse impacts.

4.3.13.3.8.5. Alternative E

Under Alternative E, the impacts of special designations decisions on soils and water resources would be the same as under Alternative B.

4.3.13.3.9. Impacts of Special Status Species Decisions on Soils and Water

The management of special status species under all alternatives would generally be positive where soils are indirectly protected from disturbance due to protections for TES. Where treatments are limited due to the presence of TES, impacts could be beneficial or adverse.

4.3.13.3.9.1. Alternative A

Under Alternative A, the BLM would conduct inventories and monitoring studies in order to determine special status plant and animal species locations, potential habitat, population dynamics, and existing and potential threats. Beneficial impacts would occur where riparian areas and waterways would be protected through implementation of current and future sensitive species Conservation Agreements. These agreements include the Colorado River cutthroat trout Conservation Agreement and Strategy and Conservation Agreement for the roundtail chub, bluehead sucker, and flannelmouth sucker.

Specific actions to improve habitat for some TES would likely result in beneficial impacts on soils and water resources due to improvement of natural water filtration and increased water holding capacity of natural vegetation. Limits on surface disturbance would reduce adverse impacts due to loss of vegetation and its natural water filtration and flood attenuation properties. The protections of Bald eagle winter roosting sites, including avoidance of disturbance to or loss of large cottonwood gallery riparian habitats, would reduce adverse impacts to soils and water resources by maintaining the natural filtration of these areas. Where riparian gallery habitats are lost, adverse impacts to soils and water resources would be due to increased runoff and lack of filtration of surface waters. Bald eagle protection would also require avoidance of surface disturbance in riparian areas, with the same impacts as discussed above. The protections for Mexican spotted owls (MSO) would require any activity that includes water production would be managed to ensure maintenance or enhancement of riparian habitat, thus reducing adverse impacts to soils and water resources.

Any BLM lands that contains riparian habitat within the range of Southwestern willow flycatcher or yellow-billed cuckoos would be managed to avoid development and/or implement use restrictions. The BLM would ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat. Revegetation of temporarily disturbed areas within riparian areas and adjacent uplands would be done with native species or ecological equivalents. These actions or limits on disturbance would reduce the adverse impacts of disturbance to soils and water resources as discussed above. Avoidance of development and/or use restrictions within BLM areas, watersheds, or tributaries to Designated Critical Habitat for the Colorado River fish (bonytail, humpback chub, Colorado pikeminnow, and razorback sucker) would also result in reduction of adverse impacts to soils and water resources. Finally, limits on water depletions to protect special status fish would also result in reduction of adverse impacts such as reduced spring flood magnitudes or less frequent floodplain inundation.

4.3.13.3.9.2. Alternative B

Under Alternative B, the impacts of special status species decisions would be the same as under Alternative A, except that there would be minor additional protective measures within Gunnison sage-grouse and Mexican spotted owl habitat that would also benefit soils and watersheds, such as prohibitions on road construction within 2 miles of active strutting grounds. These additional measures would have a minor impact on soils, but would have a greater benefit than under Alternative A.

4.3.13.3.9.3. Alternative C

Under Alternative C, the impacts of special status species decisions would be the same as under Alternative A, except that there would be minor additional protective measures within Gunnison sage-grouse and Mexican spotted owl habitat that would also benefit soils and watersheds, such as prohibitions on road construction within 0.6 miles of active strutting grounds. These additional measures would have a minor impact on soils, but would have a greater benefit than under Alternatives A and D. They would have a less beneficial impact than Alternatives B and E.

4.3.13.3.9.4. Alternative D

Under Alternative D, the impacts of special status species decisions would be the same as under Alternative A, except that there would be negligible, additional protective measures within Gunnison sage-grouse and Mexican spotted owl habitat that would also benefit soils and watershed, such as prohibitions on road construction within 0.25 miles of active strutting grounds. These additional measures would have a negligible beneficial impact on soils.

4.3.13.3.9.5. Alternative E

Under Alternative E, the impacts of special status species decisions would be the same as under Alternative B.

4.3.13.3.10. Impacts of Vegetation Decisions on Soils and Water

Vegetation treatments would potentially impact soils and water resources through changes in vegetation type and canopy cover, and the resulting shifts in water runoff and erosion. Vegetation treatments would potentially increase surface water temperature due to lost

vegetation cover adjacent to streams, which would be an adverse impact on water resources. Surface disturbing vegetation treatments could also result in increased erosion and stream sedimentation. Analysis of beneficial impacts of vegetation treatments was based upon total acres of treatment that improves watershed condition.

4.3.13.3.10.1. Alternative A

Under Alternative A, existing vegetation treatment would continue on 232,100 acres.

4.3.13.3.10.2. Alternative B

Under Alternative B, the impacts from vegetation management decisions would be similar to those described under Alternative A. Alternative B would result in approximately 6,600 acres of vegetation treatments per year, or a total of 99,000 acres over 15 years. This is approximately 133,100 fewer acres of vegetation treatments than Alternative A, and would therefore result in fewer short-term adverse impacts and fewer long-term beneficial impacts to soils and water resources.

4.3.13.3.10.3. Alternative C

Under Alternative C, the impacts from vegetation management decisions would be similar to those described under Alternative B. Alternative C would result in approximately 7,800 acres of vegetation treatments per year, or a total of 117,000 acres over 15 years. This is approximately 115,100 fewer acres of vegetation treatments than Alternative A, and would therefore result in fewer short-term adverse impacts and fewer long-term beneficial impacts to soils and water resources.

4.3.13.3.10.4. Alternative D

The impacts from vegetation management decisions under Alternative D would be similar to those described under Alternative B. Alternative D would result in approximately 9,300 acres of vegetation treatments per year, or a total of 139,500 acres over 15 years. This is approximately 92,600 fewer acres of vegetation treatments than Alternative A, and would therefore result in fewer short-term adverse impacts and fewer long-term beneficial impacts to soils and water resources.

4.3.13.3.10.5. Alternative E

Under Alternative E, the impacts of vegetation management decisions on soils and water resources would be the same as under Alternative B.

4.3.13.3.11. Impacts of Visual Resource Decisions on Soils and Water

The designation of VRM classes would result in indirect impacts to soil and water resources depending on the type of surface disturbing activity that these classes would allow. For example, VRM Class I would stipulate NSO and would limit potentially adverse surface-disturbing activities in order to protect scenic quality, whereas VRM Class II would stipulate that management activities not alter landforms, but would not necessarily limit surface disturbing activities. For the purpose of this analysis, the potential impacts of VRM designation are

evaluated based on the acreage of each limited soil type that would be protected by being within areas designated as VRM Class I and II. These acreages, by alternative, are listed in Table 4.100.

4.3.13.3.11.1. Alternative A

Under Alternative A, approximately 35,800 acres of wind erodible, 15,800 acres of water erodible, and 135,800 acres of reclamation limited soils would be designated as VRM Class I and II. Approximately 12,500 acres wind erodible, 17,200 water erodible, and 78,100 acres reclamation limited soils would be designated as VRM Class III and IV, and therefore would be at greater risk of adverse impacts due to surface disturbances.

4.3.13.3.11.2. Alternative B

Visual resource management under Alternative B would designate 34,500 acres of wind erodible; 16,300 acres of water erodible; and 135,200 acres of reclamation limited soils as VRM Class I and II. This would result in the protection of 1,300 fewer wind erodible acres; 500 more water erodible acres; and 600 fewer reclamation-limited acres than under Alternative A.

4.3.13.3.11.3. Alternative C

Visual resource management under Alternative C would designate 28,600 acres of wind erodible; 12,900 acres of water erodible; and 105,100 acres of reclamation limited soils as VRM Class I and II. This would be 7,200 fewer wind erodible acres; 2,900 fewer water erodible acres; and 30,700 fewer reclamation-limited acres designated as VRM Class I and II than under Alternative A.

4.3.13.3.11.4. Alternative D

Visual resource management under Alternative D would designate approximately 16,300 acres of wind erodible; 10,700 acres of water erodible; and 60,500 acres of reclamation limited soils as VRM Class I and II. This would be 19,500 fewer wind erodible acres; 5,100 fewer water erodible acres; and 75,300 fewer reclamation-limited acres designated as VRM Class I and II than under Alternative A (see Section 4.3.18, Visual Resources, for a qualitative description of the impacts of VRM).

4.3.13.3.11.5. Alternative E

Visual resource management under Alternative E would designate 72,796 acres of wind erodible; 21,164 acres of water erodible; and 199,099 acres of reclamation limited soils as VRM Class I and II. This would result in the protection of 36,996 more wind erodible acres; 5,364 more water erodible acres; and 63,299 more reclamation-limited acres than under Alternative A.

Table 4.100. VRM Designation - Limited Soils by Alternative

	Alternative A			Alternative B			Alternative C			Alternative D			Alternative E		
	wind	water	reclamation	wind	water	reclamation	wind	water	reclamation	wind	water	reclamation	wind	water	reclamation
VRM I and II (acres)	35,800	15,800	135,800	34,500	16,300	135,200	28,600	12,900	105,100	16,300	10,700	60,500	72,796	21,164	199,099
VRM III and IV (acres)	12,500	17,200	78,100	13,000	3,200	77,300	13,000	3,500	86,600	14,400	3,800	99,600	28,118	6,529	176,631

4.3.13.3.12. Impacts of Woodlands Decisions on Soils and Water

Impacts to soils and water resources from woodlands decisions would result from an increased risk of vegetation removal, surface disturbance, soil compaction, and hydrological changes in areas open to woodland harvest. This risk would be due to the potential for surface disturbance from motorized vehicles and foot traffic during wood gatherings, as well as the loss of woody shrub and forest vegetation from areas, particularly those areas with sensitive and/or highly erodible soils.

4.3.13.3.12.1. Alternative A

Under Alternative A, a total of 1,309,894 acres of the Monticello PA would be open to woodland harvest. Therefore, Alternative A would result in the highest risk of impacts to soils and water resources (Table 4.101), as described above.

Table 4.101. Acres of Soils Available for Woodland Harvesting, By Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Available for Woodland Harvesting (Acres)	1,309,894	730,074	841,938	841,938	548,477

4.3.13.3.12.2. Alternative B

Under Alternative B, a total of 730,074 acres would be open to woodland harvest, or 579,820 fewer acres than under Alternative A. Therefore, Alternative B would result in a lower risk of adverse impacts to soils and water resources, as described above.

4.3.13.3.12.3. Alternatives C and D

Under Alternatives C and D, a total of 841,938 acres would be open to woodland harvest, or 467,956 fewer acres than under Alternative A. Therefore, Alternatives C and D would result in a lower risk of adverse impacts to soils and water resources, as described above.

4.3.13.3.12.4. Alternative E

Under Alternative E, a total of 548,477 acres would be open to woodland harvest, or 761,417 fewer acres than under Alternative A. Therefore, Alternative E would result in a lower risk of adverse impacts to soils and water resources, as described above.

4.3.13.4. Mitigation Measures

Any activity with potential for surface disturbance would be required to follow stipulations as outlined in Appendix A and Appendix I. These surface stipulations would protect soils and water resources by requiring Best Management Practices (BMPs) for all activities in limited soils or on slopes greater than 20%. The use of BMPs would limit adverse impacts to soils and water resources.

4.3.13.5. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts would include short-term, increased erosion and sedimentation and short-term nutrient release to surface waters due to prescribed burning and vegetation treatments; increases in surface water temperature due to vegetation cover lost because of vegetation treatment and woodland harvesting immediately adjacent to streams; and loss of soils productivity and water quality degradation due to surface disturbances caused by proposed oil and gas facilities and infrastructure.

4.3.13.6. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Livestock grazing would provide a short-term economic benefit for the livestock industry that would not affect the long-term soil productivity of soils and water if Rangeland Standards and Guides are met as detailed in Chapter 2 Management Common to All. Similarly, minerals development, recreation, and OHV use would provide a short-term economic benefit to the tourism industry and would not affect long-term soil productivity and water quality if appropriate applicant committed measures and Chapter 2`Management Common to All is effectively implemented. However, where surface disturbing activities in reclamation-limited soils cannot be mitigated successfully or reclaimed, some long-term loss of soil productivity could result.

4.3.13.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Drilling of oil and gas wells would result in an irretrievable loss of that soil productivity within wellpad, wellpad infrastructure, and access roads during the productive life of the well. Areas dedicated to cross country or concentrated OHV use may not be able to be completely restored due to erosion, and some small irretrievable losses of soil may occur. None of the adverse impacts would be irreversible because soils and water productivity could be restored in the long-term.

4.3.14. SPECIAL DESIGNATIONS

Impacts from the various alternatives related to values associated with Areas of Critical Environmental Concern (ACECs), Wild and Scenic Rivers (WSRs), and Wilderness Study Areas (WSAs) are described in this section.

In general, management of specially designated areas is focused on allowing those uses and activities that are considered compatible with the specific, special resources of concern, while restricting those uses and activities that would impact those identified value(s). In the case of ACECs, the management focuses on protecting specific, identified relevant and important values, resources, natural systems, or managing natural hazards.

For river segments that are eligible/suitable for congressional designation into the national system, the management focuses on protecting the specific, identified, outstandingly remarkable values, free-flowing nature, and tentative classifications for eligible river segments.

For WSAs, the management focuses on maintaining the wilderness setting, characteristics and experience, and meeting the non-impairment standard of the IMP. Accordingly, this impact analysis will determine how each alternative impacts the relevant and important values for ACECs, the outstandingly remarkable values and tentative classifications for eligible Wild and Scenic Rivers, and the wilderness setting, characteristics and experience and the non-impairment

standard in WSAs. WSAs will be managed under the IMP in all alternatives. The only decisions being considered for WSAs are OHV, travel routes, and VRM designations.

4.3.14.1. ACECs – Impacts Common to All

Impacts common to all would be caused by adherence to resource program policies such as best management practices, cultural mandates, appropriate fire management response, etc. It will be assumed that all of these would have beneficial effects to the relevant and important values and will not be discussed further. In addition, except for Alternative A, No Action, OHV use would be limited to designated routes unless otherwise specified. This would have beneficial impacts to the relevant and important values of the ACECs by eliminating surface disturbance from cross-country OHV travel. Limiting OHV use to designated routes throughout the planning area would also likely result in a large scale shift in riding in motorized recreation as OHV riders throughout the field office adjust their riding habits to comply with the new restrictions. This shift would likely result in fewer instances of inadvertent, casual, or deliberate illegal riding off designated routes, and would consequently also decrease the risk of impacts to resources within the ACEC.

Any section(s) of a proposed or existing ACEC that falls within a WSA would be managed under the IMP, which strictly regulates surface disturbance and impacts that would alter the naturalness, opportunities for primitive recreation and solitude of the area. One of the practical effects of interim management is permitted activities in WSAs (except grandfathered and valid existing rights) are limited to temporary uses that create no new surface disturbance, nor involve permanent placement of structures (H-8550-1 Interim Management Policy for Lands Under Wilderness Review-BLM 1995). Prescriptions for lands that lie in both (overlap) ACECs and WSAs must comply with the prescription (IMP or ACEC) that is most restrictive. Since the IMP imposes special management conditions to protect wilderness characteristics, it is assumed that there would be no impacts to the relevant and important values in the overlap areas and that ACEC management would be duplicative in most instances. Table 4.102 lists the ACECs with the percent of WSA overlap. Maps 81, 82, and 83 show the areas where ACECs would overlap with WSAs under each alternative.

4.3.14.2. ACECs – Alternatives Impacts

In order for an area to be designated as an ACEC, it must meet the criteria of "relevance" and "importance" and require special management to protect the relevant and important values, resources, natural systems, or hazards (generally referred to as values) as described in 43 CFR 1610.7-2 and BLM Manual Section 1613.11-.12. This analysis focuses on impacts to these values. These impacts are described in detail under Alternative A (No Action). The subsequent impacts analysis for the action alternatives (B, C, D, and E) discloses their level of impact in comparison to Alternative A.

ACECs are areas that are subject to special management to protect relevant and important values. While standard management includes compliance with policy, laws, and mandates, special management typically includes restrictive prescriptions such as closures to mineral development, limits on livestock grazing or restrictions on woodland product harvest, VRM I management, and packing out human waste. Some of the decisions to be made in this plan would have no adverse impacts on existing or potential ACECs, eligible river segments, or WSAs regardless of the alternative chosen. Only decisions that may affect the values of these areas are analyzed further.

Table 4.102. ACECs by Alternative, with Percent of Each that is WSA

ACECs	Alternative A		Alternatives B and E		Alternative C		Alternative D	
	Acres[a]	% WSA	Acres	% WSA	Acres	% WSA	Acres	% WSA
Alkali Ridge	39,202	0	39,196	0	39,196	0	0	N/A
Bridger Jack Mesa	6,260	100	6,225	100	0	N/A	0	N/A
Butler Wash North	17,464	100	17,365	100	0	N/A	0	N/A
Cedar Mesa	295,336[b]	64.0	306,743	68.3	0	N/A	0	N/A
Dark Canyon	61,660	100	61,660	100	0	N/A	0	N/A
Hovenweep	1,798	0	2,439	0	2,439	0	0	N/A
Indian Creek	8,510	13.4	8,510	80.4	3,905	0	0	N/A
Lockhart Basin	N/A	N/A	47,783	0	0	N/A	0	N/A
Lavender Mesa	649	0	649	0	649	0	0	N/A
Shay Canyon	3,561	0	119	0	119	0	0	N/A
San Juan River	0	0	7,590	0	7,590	0	0	N/A
Scenic Highway	57,737 [c]	9,930	0	N/A	0	N/A	0	
Valley of the Gods	0[d]	0	22,863	0	22,863	0	0	N/A
Total	**488,616**		**521,141**		**76,764**		**0**	

[a] GIS technology has changed since the last RMP. Acres listed under this alternative may be slightly different even though the polygon is the same size under other alternatives.

[b] Includes Pine and Step Canyons 21,280 acres of the Scenic Highway Corridor ACEC

[c] Does not include 21,280 acres that overlaps with the Cedar Mesa ACEC.

[d] Acreage included in Cedar Mesa ACEC (31,387 acres).

4.3.14.2.1. ALKALI RIDGE ACEC[3]

Alkali Ridge is proposed as an ACEC (39,202 acres) under Alternatives A, B, C, and E to provide special management attention to protect the area's relevant and important cultural values. The area would not be designated as an ACEC under Alternative D.

4.3.14.2.1.1. Alternative A

Under Alternative A, Alkali Ridge ACEC would be managed as open to most resource uses including mineral development, woodland harvest, livestock and OHV use, and land treatments. Cultural resources would be avoided by a sufficient margin as to allow permanent protection. This ACEC would also encompass the Alkali Ridge National Historic Landmark, which would have identical management prescriptions under this alternative, including the requirement that cultural resources be avoided by 100 feet. It should be noted that agency responsibilities to a National Historic landmark are higher than to National Register listed or eligible properties (see 36CFR65.2(c)(2): Federal agencies must take actions to minimize impacts to such a resource, in consultation with the Advisory Council). Active leasing within a landmark where data recovery

[3] In order to reduce redundancy, when similar impacts occur in different ACECs, a detailed explanation of impacts will be given in the first ACEC presented. Subsequent analysis will summarize the impacts and the reader can assume that the detailed information of impacts from the previous ACEC also applies.

might be required would likely be construed as an increased threat. In the remainder of the ACEC, all cultural properties eligible for the National Register of Historic Places would be surrounded by an avoidance area sufficient enough to allow permanent protection.

In general, direct impacts to cultural resources under this alternative would be avoided through adherence to the Section 106 process and avoidance of sites through relocation of surface disturbing activities. However, cultural resource districts, landscapes, and some traditional cultural properties (TCPs) would not be afforded the same beneficial protection due to the fact that these types of resources often cover vast geographic areas and have multiple individual sites which may be affected by the physical and auditory disturbances created by construction and operation of mineral development infrastructure and other surface disturbing activities. Physical and auditory disturbances are especially critical to TCPs where view shed and soundscapes are the primary components. These impacts can render the TCP non-functional for the related Native American tribe or other cultural group (BLM 2004).

Although livestock grazing would be managed under the Standards for Rangeland Health there is potential for direct impacts to cultural resources from trampling and loss of vegetation in areas with livestock grazing, especially in riparian areas or other areas where cattle tend to congregate. Trampling can dislodge and fracture cultural artifacts and destroy site integrity. Loss of vegetation exposes cultural resources making them more susceptible to looting and degradation from exposure (Roney 1977). Most of the adverse effects to the sites in the Monticello FO have occurred from past livestock grazing and trailing activities (personal communication between Nancy Shearin, Monticello FO and Deb Reber, SWCA, 2006). Future disturbance will only add to the site degradation.

Indirect negative impacts to cultural resources may also occur from recreational activities that are not targeted under Section 106. Increasing visitation from hikers, cyclists, and OHV users to more remote areas would increase the risk of intentional and inadvertent damage to cultural resources. Loss of ground cover may churn up archaeological deposits and destroy historical context. Archaeological materials exposed by natural or human-induced erosion would then become vulnerable to unauthorized collection (VanderHoek 2005). The risk would be greater from OHV use due to their ability to travel over greater distances and access more remote locations. Under Alternative A OHV use is limited to existing trails in 90% of the proposed ACEC with the other 10% open to OHV use. In the area that is open to OHV use there would be potential for direct negative impacts from inadvertent damage to sites from cross-country OHV travel.

Alternative A allows for private and commercial use of woodland products. There is potential for negative indirect impacts to cultural resources from this activity. Impacts consist primarily of unintended damage to cultural sites by driving vehicles off designated roads for the cutting and loading of wood and the subsequent use of the resultant "trail" (tire tracks) by OHV riders (BLM 2004).

Allowing surface disturbing vegetation treatments would have adverse and/or beneficial long-term effects. Adverse effects would be possible if cultural surveys (especially in areas of dense vegetation cover) do not reveal cultural resources and treatments inadvertently destroy them. Vegetation treatment projects also could impacts sites where Native Americans collect plants that are culturally significant. (CA. State Board of Forestry and Fire Protection 2006) In addition, if locations of cultural resources are known and surrounding areas are treated, the demarcation

between the treatment and non-treatment areas makes cultural resources more visible and therefore more subject to damage and looting. Conversely, beneficial impacts to cultural resources would occur from the reduction in fuels loading and may protect sites from wildfire in addition to offering positive benefits to other resource programs.

Under Alternative A the area would be open for mineral leasing with 473 acres (< 1.0%) managed under Standard Stipulations and 38,729 acres (99.0%) under timing and controlled surface use. The entire ACEC falls within the Blanding Sub-Basin RFD area that has a high potential for mineral development. Approximately 41 wells are predicted to be developed in the area totaling 394 acres of surface disturbance. (See minerals discussion for specifics). Although surveys would have to be conducted prior to development, identified sites would have to be avoided, and mitigation measures employed there is a risk of impacts to the integrity of the landscape as discussed in the second paragraph of Alternative A.

4.3.14.2.1.2. Alternative B

Alternative B management prescriptions differ from Alternative A by proposing to close the area to woodland product use and surface disturbing vegetation treatments, restricting livestock use if cultural resources are being impacted and managing the area as VRM IV rather than VRM III.

There would be a beneficial long-term effect from closing the area to woodland product use because it would eliminate any chances of secondary impacts from cross-country travel to collect wood. (See discussion of impacts from OHV use under Alternative A) This proactive decision would offer a greater degree of protection to cultural resources than Alternative A.

Unlike the other alternatives, Alternatives B specifically states that livestock use would be restricted if cultural resources are being damaged. There is no difference between this alternative and Alternatives A, C, and D from a management perspective as this restriction could be implemented regardless of whether or not it is stated in the RMP. However it does forewarn the permittee and may give the resource specialist more leverage to implement the restriction for site-specific proposals because it would be based on recent analysis and decisions.

Alternative B would limit OHV use to designated trails in the entire ACEC rather than the 90% under Alternative A. This would offer a slightly greater margin of protection for cultural resources over Alternative A by eliminating cross- country travel in an additional 10% of the area.

Alternative B does not allow for surface disturbing vegetation treatments and treatment must avoid cultural sites by a sufficient margin as to have no impact. This decision provides the highest degree of beneficial protection to cultural resources because is does not allow for surface disturbance thereby eliminating any possibility of damage from surface disturbing activities.

The final difference between Alternative A and Alternative B is the change from VRM management class III to VRM IV. VRM IV would allow for major modifications to the landscape in comparison to VRM III that would allow moderate changes. However, this shift of VRM management class is unlikely to have a substantial effect on cultural resources and associated values as both classes allow for development and associated surface disturbance.

Under this alternative, the ACEC would also include Alkali Ridge National Historic Landmark which would be managed with the same prescriptions as the ACEC with the following exceptions: 1) it would be managed as NSO for oil and gas leasing rather than timing and

controlled surface use; 2) campfires would not be allowed; 3) it would be closed to geophysical work and the disposal of mineral materials; and 4) it would be recommended for withdrawal from locatable mineral entry. These actions would have direct beneficial long-term effects to cultural resources because they would eliminate any chance of inadvertent disturbance to cultural sites from mineral development and recreational use, thereby reducing potential risk to the integrity of the sites on a landscape level.

4.3.14.2.1.3. Alternative C

Alternative C proposes the same management prescriptions as Alternative A except for prescriptions involving woodland harvest and vegetation treatments. Woodland harvest would be allowed but off-road travel to conduct that harvest would be allowed in chained areas only. Since surveys are required prior to chaining activities cultural resources would typically have been identified and avoided before subsequent woodland harvest occurs. However, indirect OHV impacts could result as described in Alternative A.

Alternative C also differs from Alternative A in that it allows for woodland product use, however that use would be confined to specific areas within Alkali Ridge if cultural resources are being damaged. This adaptive management strategy offers beneficial protection, including the closure of areas if there is evidence of damage. This is more restrictive than Alternative A and less restrictive than Alternative B.

Alternative C allows for vegetation treatments with non-surface disturbing methods being preferred. If surface disturbing treatments were approved access routes would have to be reclaimed to prevent future use. This decision would prevent adverse impacts from OHV use as routes would be reclaimed thereby eliminating access. It also allows for noxious weed treatments that use the minimum amount of surface disturbance necessary.

Alkali Ridge National Historic Landmark would be managed the same as it is under Alternative B except the area would be open to geophysical exploration that meets the definition of "casual use". Impacts would be similar to Alternative B with a slightly greater risk of minor surface disturbance from geophysical exploration.

4.3.14.2.1.4. Alternative D

Under Alternative D the area would not be designated as an ACEC and would be managed as open to all uses. The area would be available for woodland harvest, watershed improvements, and livestock use. It would be managed as available for mineral development and as VRM Class IV.

The impacts for this alternative would be similar to Alternative A.

4.3.14.2.1.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B because the management decisions would be the same.

4.3.14.2.2. Bridger Jack Mesa ACEC

Bridger Jack Mesa is proposed as an ACEC (6,260 acres-Mesa top only) under Alternatives A, B, and E to protect the relevant and important relict vegetation values. It would not be designated

as an ACEC under Alternatives C and D. The entire proposed ACEC falls within the Bridger Jack Mesa WSA.

4.3.14.2.2.1. Alternative A

Under Alternative A the area would be designated as an ACEC and managed to exclude almost all surface disturbing activities including mineral development which would only be allowed with No Surface Occupancy stipulations. By curtailing virtually all surface disturbing activities this alternative would offer direct long-term beneficial impacts to the relevant and important values. It should be noted that since the area is overlapped by Bridger Jack WSA and managed under the IMP it would be managed so as to prevent impairment to the wilderness values (Map 81). This serves the same purpose as the proposed management prescriptions and is therefore duplicative management.

Recreational use would be allowed but would be limited if vegetative resources are being damaged. Due to the inaccessibility of the area recreation use is anticipated to be low. OHV and mountain bike use would not be allowed. Therefore, recreational activities would consist mainly of light foot traffic and would have minor to negligible negative effects on the vegetation.

4.3.14.2.2.2. Alternative B

Alternative B would also designate the area as an ACEC and proposes the same management prescriptions as Alternative A except there would be an allowance for non-motorized/non-mechanized commercial recreation if the vegetation communities would not be adversely impacted. In addition, there would be a slight modification of the ACEC boundary to exclude the non-vegetated spires. Impacts would be similar to Alternative A.

4.3.14.2.2.3. Alternative C

Alternative C proposes to drop the current ACEC designation and manage the area with prescriptions of the surrounding area with the only special management being exclusion from livestock and saddle stock grazing and woodland product use. As with Alternatives A and B it would be managed under the IMP so vegetation values would be protected regardless of whether or not it is an ACEC. As mentioned under Alternative A the area is mostly inaccessible unless you are a climber, so the exclusions of livestock grazing and woodland product use don't appear to be necessary to protect the resource.

4.3.14.2.2.4. Alternative D

Alternative D is the same as Alternative C.

4.3.14.2.2.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B. Under this alternative, approximately 8 acres of land with non-WSA wilderness characteristics would be managed to protect the wilderness values within this area; however, this relatively small area and the remainder of the proposed ACEC would receive similar protection under WSA IMP stipulations, as discussed under Alternative A, so the impacts to wilderness values would be the same as Alternative B.

4.3.14.2.3. BUTLER WASH NORTH ACEC

Butler Wash North is proposed as an ACEC (17,464 acres) to protect the areas scenic values under Alternatives A, B, and E. The area would not be designated as an ACEC under Alternatives C and D. The entire proposed ACEC would lie within the Butler Wash WSA.

4.3.14.2.3.1. Alternative A

Under Alternative A the area would be managed as NSO for minerals leasing with exceptions allowed if a project proposal meets the visual quality standards for the area. Since the area would be managed as VRM I the visual standards to retain a natural landscape are high. As per BLM Manual 8410 the objectives would be to preserve the existing character of the landscape and the level of change should be very low and should not attract attention. Consequently, any development must adhere to these standards and the visual quality would be preserved. Geophysical work would be allowed but these types of operations are intermittently spaced and their effects are localized, resulting in minimal surface disturbance. Thus, direct negative impacts from geophysical work on the scenic quality would be low.

As a result of the decision to close the area to use of woodlands products there would be no harvest of pinyon juniper thereby providing beneficial impacts to visual resources by retaining the natural character of the landscape.

Livestock grazing would be allowed and would be managed under the Standards and Guidelines for grazing management. One of the guidelines states that when establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience would be considered. Aesthetic and scenic values, water, campsites and opportunities for solitude are among those considerations. For that reason there would be negligible effects from this activity on the scenic quality.

Note: Since the entire area falls within a WSA, management prescriptions between the alternatives would have to conform to the IMP. Designating the area as an ACEC would provide little if any additional protection to the area.

4.3.14.2.3.2. Alternative B

Alternative B proposes an almost identical management prescription as Alternative A except the BLM would seek to acquire State inholdings and would impose limitations on livestock grazing if scenic resources are being impacted. Seeking state inholdings would have a major beneficial impact to the ACEC values because the State is not obligated to follow the IMP on their inholdings within WSAs so development is possible within those areas. Any development involving surface disturbance would have a negative impact on the scenic values. If the BLM acquires those inholdings they would be managed in accordance with the IMP thereby protecting the scenic values of the ACEC.

4.3.14.2.3.3. Alternative C

Alternative C would not designate Butler Wash ACEC and management would default to the IMP. This alternative would not pursue State inholdings that would allow for development on State sections and could impact the scenic values of the ACEC as noted above.

4.3.14.2.3.4. Alternative D

Alternative D is the same as Alternative C.

4.3.14.2.3.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B because the management decisions would be the same. Note that 37 acres of land with non-WSA wilderness characteristics would be managed to protect the wilderness values within this area. Similar to the discussion for Bridger Jack Mesa, this relatively small area would receive similar levels of wilderness value protection under the IMP, so the impacts would be the same as Alternative B.

4.3.14.2.4. CEDAR MESA ACEC

Cedar Mesa is currently managed as an ACEC under Alternative A to protect its cultural, scenic, fish and wildlife values and the designation would continue under Alternatives A, B, and E. Under Alternative A, the ACEC (295,336 acres) would include Valley of the Gods. Under Alternatives B and E the ACEC (306,743 acres) would not include Valley of the Gods as it is proposed as a separate ACEC under these alternatives. Cedar Mesa would not be designated as an ACEC under Alternatives C and D. The area would also be managed as a CSRMA under all alternatives. (See the recreation section for a discussion of impacts from this decision). Grand Gulch, Road Canyon, Fish Creek Canyon, and Mule Canyon WSAs overlie the proposed Cedar Mesa ACEC comprising 209,619 acres or 71% of the proposed ACEC under Alternative A and 68% under Alternative B. The existing ACEC configuration includes Valley of the Gods (22,863 acres), which is proposed as a separate ACEC under Alternatives B, C, and E.

The WSAs would be managed under the IMP and the Grand Gulch Special Emphasis area management prescriptions are discussed in the next section.

The remaining acres would be managed as outlined in the alternatives matrix and the impacts from those decisions are discussed below. Those prescriptions that are in line with IMP direction would also apply to the WSA area.

4.3.14.2.4.1. Alternative A

Under Alternative A, the 295,336 acre area would be available for land treatments and wildlife habitat and range improvements. All of these actions would have beneficial impacts to the relevant and important wildlife values by maintaining or enhancing vegetation and forage.

With this alternative the area is open to woodland product harvest in designated areas. On-site collection of dead fuel wood would be allowed throughout the entire area. The harvesting of woodland product could be detrimental to the values of the ACEC depending on the area involved and the amount of wood harvested. Direct adverse effects include human disturbance, surface disturbance, and removal of wildlife habitat. Indirect effects include the potential introduction of weedy, non-native species to wildlife habitats, which would compete with the native species on which wildlife depends.

Under Alternative A the area would be open for mineral leasing with 1,521 acres (< 1.0%) managed under Standard Stipulations, 75,892 (26.0%) under timing and controlled surface use, 23,387 acres (8.0%) under NSO, and 194,537 (66.0%) as closed to leasing. The entire ACEC falls within the Monument Upwarp RFD which has low potential for mineral development (See

minerals discussion for specifics). Nine wells would be developed in the Monument Upwarp during the life of the plan totaling 69 acres of surface disturbance. There would also be surface disturbance created by geophysical work totaling 120 acres within the Monument Upwarp. This would be totally reclaimed within ten years. The area is also open to the disposal of mineral materials and mineral entry. Depending on the location of these activities, there would be a risk of compromising the scenic values of the ACEC because of surface disturbance caused by mining activities and mineral development. There would be indirect negative impacts to wildlife and fish due to sedimentation, habitat fragmentation, and noise from construction and operational activities. All of these development activities may be limited by the prescription that revegetation for surface disturbance would be limited to what can be successfully established within 5 years after project completion. Depending on the soil and vegetation type in the project area this could preclude some development and would benefit the values of the ACEC.

In the areas where the Scenic Highway Corridor overlaps (21,280 acres) the ACEC special conditions for the Corridor take precedence. The Corridor would be managed as open to most uses including mineral entry but it would also be managed as NSO for minerals and as VRM I. These two prescriptions would rule out any occurrences of visible surface disturbance and would consequently protect the values of the ACEC in this area of overlap.

Special protective management prescriptions close the Grand Gulch Special Emphasis Area to the following uses: mineral leasing, geophysical work, disposal of mineral materials, woodland product harvest, and ORV use. In addition a withdrawal from mineral entry would be requested and the area would be managed as VRM I. All of these actions would benefit the area by preventing surface disturbance.

4.3.14.2.4.2. Alternative B

Alternative B's management prescriptions diverge from Alternative A in the aspects of recreational use, livestock use, and woodland product harvest.

Under Alternative B the area would be available for livestock use but with special conditions to protect at risk cultural resources. The special conditions mostly involve fencing to keep livestock from impacting sites with features at risk such as standing walls or large middens. Restrictions would be in conformance with the grazing permit renewal stipulations specific to protecting cultural resources at risk from livestock impacts within each allotment. Thus, there would be variations in protective measures for each allotment depending on site density and type. (personal communication between Nancy Shearin, Monticello FO and Deb Reber, SWCA on August 24, 2006) This prescription will offer beneficial direct impacts to the cultural values of the ACEC by preventing damage from livestock trampling.

Recreation use under Alternative B would be curtailed in the following ways: 1) the area would be closed to dispersed camping; 2) overnight campers would be required to pack out human waste; 3) recreation permits for both day and overnight use would be limited as necessary to prevent cultural site damage from over visitation and 4) campfires would be limited to mesa tops and would be closed if there are impacts to cultural sites. All of these actions would provide beneficial direct and indirect impacts to the cultural, scenic, fish and wildlife values. Closing the area to dispersed camping and limiting visitation would decrease surface disturbance, limit social trails, and may reduce vandalism, pot hunting, and surface collections.

Alternative B provides for additional beneficial impacts to the ACEC values by requiring that human waste be packed out. This decision would maintain aesthetic values, water quality, and improve health and safety concerns. For much of Cedar Mesa there is concentrated use in narrow corridors. These small areas cannot isolate and naturally process large amounts of human waste. Research has shown that buried feces, and the microbes in it, persist for many months when buried. The volume of waste generated along the trail, combined with a climate that is not conducive to composting, make significant "digestion" of waste unlikely.

Closing the area to private and commercial use of woodland products would have direct beneficial impacts to the relevant and important values of the ACEC. This decision would diminish impacts to cultural sites by eliminating unintended damage from driving vehicles off designated roads for the cutting and loading of wood and the subsequent use of the resultant "trail" (tire tracks) by OHV riders. This decision would also prohibit the harvesting of pinyon-juniper providing beneficial impacts to wildlife species such as mule deer, elk, mountain lion, neotropical birds, and upland game birds, which use this vegetation type as habitat.

Impacts to the Grand Gulch Special Emphasis Area would be the same as Alternative A.

4.3.14.2.4.3. Alternative C

Under Alternative C the area would not be designated as an ACEC. It would be managed as a C-SRMA (see Section 4.3.10, Recreation).

Impacts to the Grand Gulch Special Emphasis Area would be the same as Alternative A.

4.3.14.2.4.4. Alternative D

Alternative D would be the same as Alternative C.

Impacts to the Grand Gulch Special Emphasis Area would be the same as Alternative A.

4.3.14.2.4.5. Alternative E

The impacts under Alternative E would be the same as those described under Alternative B, except that approximately 60,049 acres (20% of the proposed Cedar Mesa ACEC) would be managed to preserve the wilderness values within non-WSA lands with wilderness characteristics. This management would benefit the relevant and important (scenic, wildlife, and fish) values of the ACEC within this area by reducing visual impacts, habitat fragmentation, and surface disturbance. These areas would be managed as VRM Class I, closed to mineral leasing, managed as exclusion areas for ROWs, closed to new road construction, closed to woodland harvesting and gathering, and closed to off-route OHV travel.

The impacts to the Grand Gulch Special Emphasis Area would be the same as Alternative A.

4.3.14.2.5. Dark Canyon ACEC

Dark Canyon is an existing ACEC (61,660 acres) and Alternatives A, B, and E (61,660 acres) would continue ACEC management to protect the scenic and wildlife values. The ACEC would not be designated under Alternatives C and D. Dark Canyon WSA overlaps the entire proposed ACEC (Maps 81 and 82).

4.3.14.2.5.1. Alternative A

Alternatives A proposes to exclude most surface disturbing activities including woodland product use, OHV use, livestock use, and mineral development. The area would also be managed under VRM I management class. The prescriptions of VRM I management and exclusion of surface disturbing activities offer the same benefits in terms of impacts and are somewhat duplicative. Excluding surface disturbing activities would have beneficial impacts to the relevant and important values because the natural character of the landscape would be retained thereby protecting scenic values. These management prescriptions would also offer benefits to wildlife by eliminating noise from construction projects, preventing habitat fragmentation, retaining soil structure and preventing vegetation loss. VRM I management would have similar beneficial impacts because the level of change to the characteristic landscape must be very low and not attract attention consequently eliminating most surface disturbing activities.

Besides the benefits of reducing surface disturbance, closing the area to OHV use would benefit wildlife by eliminating noise disturbances. Scientific literature indicates some wildlife species may be affected by excessive noise and disturbance. Displacement during winter depletes energy reserves needed for survival and reproduction by mammals and birds. On the other hand, some species (especially deer) adapt to the noise disturbance over time and may no longer be displaced by the activity (USFS 2005).

Under Alternative A, area recreation use would be limited if cultural or resources or scenic values are being damaged. Although this decision would be beneficial in the long term there is risk of short term direct and indirect negative impacts to the area from increased recreation use as limitations on use would only be applied after there is evidence of damage. Scenic values could be compromised by localized surface disturbance. Vegetation around the perimeter of campsites could be destroyed as more and larger groups occupy the sites. There is potential for cutting of greenwood because of lack of dead and downed wood for campfires and an increased risk of human induced wildfire. Water quality could be diminished by an increase in human and pet waste. Negative impacts to wildlife could occur from noise disturbances during sensitive breeding and foraging periods.

A withdrawal for mineral entry would be requested and this would have the same beneficial impacts as the preclusion of surface disturbance prescription noted above.

4.3.14.2.5.2. Alternative B

Alternative B differs from Alternative A because campfires would only be allowed on mesa tops (not in the canyons) and there would be a requirement to pack out human waste. As stated under Cedar Mesa ACEC, Alternative B requires that human waste be packed out would maintain aesthetic values, water quality, and improve health and safety concerns. This would indirectly benefit wildlife as they rely on healthy water systems. Packing out waste would offer some benefits to the scenic values by reducing the risk of erosional forces revealing human waste and paper by-products. Restricting campfire use to mesa tops would have minor beneficial impacts to the scenic values by reducing the risk of wildfire and eliminating unsightly campfire rings, ash, and debris. Reducing the risk of wildfire would have long-term beneficial impacts on wildlife because habitat would be preserved.

4.3.14.2.5.3. Alternative C

Alternative C is the same as Alternative B, except woodland harvest would be allowed and a withdrawal for mineral entry would not be requested.

4.3.14.2.5.4. Alternative D

Alternative D management prescriptions are the same as Alternative C.

4.3.14.2.5.5. Alternative E

The impacts under Alternative E would be the same as those described under Alternative B because the management decisions would be the same. Approximately 281 acres of non-WSA lands with wilderness characteristics would be managed to preserve the wilderness values within this area; however, the proposed ACEC would lie entirely within the Dark Canyon WSA, so the impacts would be the same because wilderness values protection would be applied under IMP stipulations.

4.3.14.2.6. HOVENWEEP ACEC

Hovenweep is an existing ACEC (1,798 acres) and Alternatives A, B, C, and E would continue ACEC management to provide special management attention to protect the area's relevant and important cultural and habitat management values. The size of the ACEC would be increased from 1,798 acres under Alternative A to 2,439 acres under Alternatives B, C, and E. The additional 620 acres is contiguous with the existing ACEC and is east of Hovenweep National Monument. The area would not be designated as an ACEC under Alternative D.

4.3.14.2.6.1. Alternative A

Under Alternative A, No Action, Hovenweep ACEC would be managed as open to most uses except for the disposal of mineral materials and woodland product use.

Mineral leasing would be subject to standard terms on 170 acres (9.0% of the ACEC), timing and controlled surface use on 913 acres (51.0%), which includes the ten acres of Cajon Pond Habitat, and no surface occupancy on 735 acres (40.0%) for the Visual Protective Zone. Surface uses would be precluded in Cajon Pond during the shorebird and waterfowl courtship and nesting season (March 1-June 30). The proposed ACEC is in the Blanding Sub-basin, the RFD area that has high potential for mineral development. Those portions that are managed with timing and controlled surface use or standard terms would be subject to impacts from surface disturbance (see Alkali Ridge ACEC impacts discussion). The NSO stipulations for the Visual Protection Zone would offer indirect beneficial protection to values of the ACEC by eliminating surface disturbance.

Mineral entry would be allowed with an approved plan of operation.[4] This would have negative effects on the values of the ACEC if approved. Although impacts to cultural sites would be mitigated there is still a risk of loss of site integrity and damage to cultural resources from

[4] There is no historical knowledge of the evolution of these seemingly opposite management decisions other than mineral withdrawals require congressional approval which can be extremely labor intensive and time consuming to obtain.

relocation. Depending on the location of the mine, there could be degradation to visual quality in the Visual Protective Zone and Hovenweep National Monument.

4.3.14.2.6.2. Alternative B

Under Alternative B an additional acquired 620 acres contiguous to the eastern border of the current ACEC and Hovenweep National Monument would be added to the ACEC. Alternative B would be managed the same as Alternative A except under Alternative B no new routes would be designated within the ACEC and surface disturbing land treatments would not be allowed. One other key difference between Alternative A and B is that Alternative B would manage the area as open to oil and gas leasing with standard stipulations. The fact that oil and gas leasing would be managed under standard stipulations could negate the positive aspects of the other two decisions, which preclude surface disturbance. Allowing surface disturbance of up to 9.6 acres per well would have a detrimental effect on the visual, cultural, and wildlife resources. The visual protection zone and Cajon pond would be open for development. This could degrade the scenic quality of the surrounding areas including Hovenweep National Monument and may impact wildlife species utilizing the pond as habitat. In addition to surface disturbance, indirect adverse effects include noise and habitat fragmentation.

4.3.14.2.6.3. Alternative C

Alt C is similar to Alternative A except that it would allow for watershed improvements and vegetative treatments as long as cultural sites are not impacted and the emphasis would be on non-surface disturbing treatments. This allows for more protection of cultural sites while still allowing the flexibility to conduct treatments when needed to prevent noxious weed infestations and to improve wildlife habitat.

As with Alternative B, the main difference between Alternative C and Alternative A is the change from managing oil and gas leasing as NSO and timing and controlled surface use to standard stipulations. Impacts would be the same as noted in Alternative B.

4.3.14.2.6.4. Alternative D

Alt D would not designate the ACEC and would manage the area with similar prescriptions of the surrounding area. This equates to the same management as Alternative C except the area would be managed as VRM IV. This would allow for the level of change to the landscape to be high rather than moderate. This difference would have a negligible on the impacts to the ACEC values. Consequently, impacts from Alternative D would be similar to Alternative C.

4.3.14.2.6.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B.

4.3.14.2.7. INDIAN CREEK ACEC

Indian Creek is proposed as an ACEC under Alternatives A, B, C, and E to provide special management attention to protect the area's relevant and important scenic values. The area would not be designated as an ACEC under Alternative D. The size of the proposed ACEC varies between alternatives. Under Alternative A it would be 8,510 acres with 6,130 acres (47%) overlapping the Indian Creek WSA (Map 81). Under Alternatives B and E, the ACEC would be

8,510 acres with 4,602 acres (54%) overlapping the Indian Creek WSA (Map 82) and under Alternative C it would be 3,908 acres with the WSA completely excluded (m\Map 83). The WSA would be managed under the IMP.

4.3.14.2.7.1. Alternative A

Under Alternative A the area would be managed as closed to the disposal of mineral materials, woodland product harvest, and OHV use. Closures to all of these activities would benefit the scenic quality by preventing surface disturbance.

Surface disturbing activities such as mineral leasing, geophysical work and mineral entry would be allowed but they would be subject to a VRM I management standard which would either preclude the project entirely or only allow it if it meets the visual quality standards for the area. (As an example, mineral infrastructure may be located in a deep gully or other area that is topographically invisible from a typical viewpoint.) Restricting or concealing these activities would preserve the soil and vegetation in visible areas thereby protecting the scenic quality.

Recreation use would be curtailed if scenic values were damaged. As mentioned in Section 4.3.10, Recreatioin, this would have an impact as the use would be allowed until there is evidence of damage. The evidence could be as minor as footprints in biological soil crusts to something more significant such as a social trail in sensitive soils.

The area would be available for livestock use. This would have negligible impacts on the scenic quality.

Another management prescription that would preserve and enhance the scenic qualities would be the requirement that revegetation be done with native species only. This would help retain the natural characteristics of the area and eliminate unnatural breaks of differing vegetation types.

4.3.14.2.7.2. Alternative B

Alternative B proposes three changes from Alternative A to protect relevant and important values. First, the BLM would request a secretarial withdrawal for the area, which means it would be permanently closed to mineral entry. This would guarantee that mineral entry would not occur in this area even in non-visible areas. This affords permanent protection from surface-disturbing mining activities by preventing viewshed degradation.

The second, a prescription for allowing geophysical work if VRM I can be met, is a moot point as all uses would have to meet VRM I.

Third, closing the corridor proper to dispersed camping would mainly protect riparian resources but would offer minor indirect protection to the visual resources by preventing areas from becoming denuded of vegetation due to overuse.

4.3.14.2.7.3. Alternative C

Alternative C is the same as B except it allows for some dispersed camping but only outside of specified zones. The difference between the two alternatives to prevent damage to scenic resources is negligible.

4.3.14.2.7.4. Alternative D

Alternative D would not designate the area as an ACEC and would allow all uses including dispersed camping. The area would be managed as VRM III. The area (3908 acres) that is NSO under Alternatives A, B, and C would be managed as available to mineral leasing with timing and controlled surface use. Allowing for surface disturbing activities and construction of mineral infrastructure would not protect the area's scenic qualities and could alter the nature of the landscape.

4.3.14.2.7.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except approximately 3,887 acres (30% of the proposed ACEC) would be managed to maintain the wilderness characteristics of non-WSA lands with wilderness characteristics, including closure to mineral leasing. This would have long-term, beneficial impacts on the proposed ACEC's important scenic values because protection of non-WSA lands with wilderness characteristics values would also include designation as VRM I.

4.3.14.2.8. LOCKHART BASIN ACEC

Lockhart Basin is proposed as an ACEC (47,783 acres) under Alternatives B and E to provide special management attention to protect the area's relevant and important scenic values. There is currently no existing ACEC for Lockhart Basin. A portion of the potential ACEC includes the existing Indian Creek ACEC. The area would not be designated as an ACEC under Alternatives C
and D.

4.3.14.2.8.1. Alternative A

Under Alternative A the portion that is a WSA within the existing Indian Creek ACEC (6,884 acres) would be managed as VRM I. The remaining 39,091 acres would be managed as VRM II. Although the area would be open to most uses including mineral development with the stringent nature of the VRM I and II classes would preclude almost all surface disturbance and would preserve the scenic values of the ACEC, especially in VRM I areas. There would be some risk of change to the landscape under VRM II but as noted in VRM class objectives they should not attract the attention of the casual observer.

4.3.14.2.8.2. Alternative B

Alternative B and Alternative E are the only alternatives proposing that Lockhart Basin be designated as an ACEC to protect its scenic values. Alternative B would preclude surface disturbing activities, manage the area under VRM I scenic quality objectives, and propose the area for withdrawal from mineral entry. Precluding surface disturbing activities and managing the area as VRM I would offer a high degree of protection of the visual resources thereby protecting the ACEC's relevant and important values.

4.3.14.2.8.3. Alternative C

Alternatives C would not designate the ACEC and would allow most uses except woodland product harvest. Mineral leasing would be subject to timing limitations and controlled surface

use but only in the bighorn sheep area. The rest of the area would be open with Standard Stipulations. The area would be managed as VRM III. These alternatives would not protect the scenic values of the area as oil and gas development would be allowed and the wells along with the associated infrastructure would degrade the visual quality from select viewpoints.

4.3.14.2.8.4. Alternative D

Alternative D is the same as Alternative C.

4.3.14.2.8.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except that approximately 21,298 acres (45% of the proposed ACEC) would be managed to protect the wilderness characteristics of non-WSA lands with wilderness characteristics. This management would provide additional protection for the ACEC's relevant and important (scenic) values by closing these acres to mineral leasing and geophysical exploration (by eliminating exemptions for geophysical exploration when VRM Class I criteria could be met), and by managing the non-WSA lands with wilderness characteristics under VRM I scenic quality objectives.

4.3.14.2.9. LAVENDER MESA ACEC

Lavender Mesa is an existing ACEC (649 acres) and the designation would continue under Alternatives A, B, C, and E to protect the area's relevant and import relict vegetation values. The area would not be designated as an ACEC under Alternative D.

4.3.14.2.9.1. Alternative A

Alternative A would prohibit OHV use, disposal of mineral materials, use of woodland products, grazing, land treatments (including vegetation treatments), wildlife habitat improvements, watershed control structures, and surface disturbance. The area would be managed as VRM Class II. Recreational use would be allowed but access is difficult. This alternative offers beneficial long-term impacts to the proposed ACEC values by precluding virtually all surface disturbances thereby protecting the relict vegetation. There could be minor adverse impacts from hikers and climbers trampling vegetation or camping on the relict vegetation but recreational use can be curtailed under this alternative if there are any signs of damage to relict vegetation. Some mineral development would also be allowed but only on the slopes of the mesa as the mesa tops are closed. This would not impact the relict vegetation values on the mesa tops.

There is a risk of negative impacts from the exclusion of vegetation treatments. If noxious weed seeds were introduced by a hiker or wildlife (birds) and the species spread throughout the mesa they would be difficult to contain by manual pulling. This could have adverse effects to the native species and the relict vegetation values because the noxious weeds could take over their habitat.

4.3.14.2.9.2. Alternative B

Alternative B management prescriptions are the same as Alternative A except under Alternative B there would be allowances to conduct non-surface disturbing vegetative treatments to control invasive species and for rehabilitation of disturbed surfaces. Alternative B would also prohibit campfires and limit recreation if vegetative resources are being impacted.

These prescriptions would offer a slightly higher degree of beneficial impacts to the relict vegetation than Alternative A because controlling invasive species would benefit the native plants. Given that invasive plants draw excessive amounts of water from the soil, displace native plants, and are practically unusable for food, cover, or nesting substrate by native wildlife (BLM Undated) they are a major threat to native species. Implementing this prescription would reduce the risk of invasive species gaining a foothold in the area consequently protecting and allowing for an increase in relict vegetation.

Prohibiting campfires would also provide a higher level of protection to the relict vegetation values in comparison to Alternative A by eliminating the possibility of damage from campfires, campfire rings, or the possibility of human induced wildfires.

4.3.14.2.9.3. Alternative C

Impacts from Alternative C are the same as Alternative B.

4.3.14.2.9.4. Alternative D

Alternative D differs from Alternative A because the area would be managed as VRM III rather than VRM II and travel would be limited to designated routes rather than being closed to OHV use. Neither of these prescriptions would have any impact to the relict vegetation values. Although VRM III has a much lower visual standard requirement than VRM II the impacts would be precluded by the other prescriptions that limit surface disturbance such as the NSO category for minerals leasing. Since the area in inaccessible to vehicles limiting them to designated routes is a moot point.

4.3.14.2.9.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except that additional protections of the ACEC's relevant and important (relict vegetation) values would occur due to management intended to maintain the wilderness characteristics of non-WSA lands with wilderness characteristics. This alternative would provide more protection for relict vegetation by closing the entire 649-acre ACEC to oil and gas leasing and locatable mineral entry, as well as managing it under VRM Class I objectives to allow a very low level of surface disturbance.

4.3.14.2.10. SHAY CANYON ACEC

Shay Canyon is an existing ACEC (3,561 acres) and Alternatives A, B, C, and E would continue ACEC management to provide special management attention to protect the area's relevant and important cultural values. The size of the ACEC would be reduced to 119 acres under Alternatives B, C, and E to only include the area with the highest site density. It would not be designated under Alternative D.

4.3.14.2.10.1. Alternative A

Under Alternative A the area proposed for designation is 3,561 acres and would include the Newspaper Rock art panel, the riparian corridor of Indian Creek and the core of Shay Canyon.

Alternative A would allow for grazing, campfires, and camping within the ACEC. All of these activities would increase the risk of minor localized surface disturbance to the cultural and

paleontological sites from trampling and exposure. There is also potential for looting and vandalism from campers who may discover previously unexposed sites.

Under Alternative A the area would be managed as VRM Class I. This management prescription would virtually eliminate the risk of damage from major surface disturbing activities within the 3,561 acres because of the restrictive nature of this management class. Consequently, even though mineral development (including minerals disposal, entry and leasing) would be allowed under Alternative A, it is virtually precluded by the overriding requirements of VRM Class I. There is some risk of localized surface disturbance from geophysical work but it would be minor and would not impact the values of the ACEC.

This alternative would allow for vegetation treatments and watershed and habitat improvements. The requirement that revegetation must be successfully established within 5 years after project completion supplements these prescriptions and assures that although there may be some temporary surface disturbance no irreparable harm would occur from these activities within the ACEC. The area is closed to woodland product harvest and this would further protect cultural resources by eliminating the chance of negative impacts from vehicles driving off designated roads for the cutting and loading of wood.

4.3.14.2.10.2. Alternative B

The size of the ACEC would be reduced to 119 acres under Alternative B and the management prescriptions for that smaller area would be more restrictive than under Alternative A. No surface disturbance would be allowed for vegetation, watershed, or wildlife treatments/improvements. The area would be closed to the disposal of mineral materials, woodland product harvest, and camping. Livestock use would be restricted to trailing only and hiking would be limited to designated trails (except for side canyons). Mineral leasing would be managed as NSO. All of these prescriptions would offer beneficial protections to the ACEC values by reducing the possibility of surface disturbing activities damaging cultural sites. The VRM II prescription under this alternative would complement these prescriptions by only allowing minimal visual intrusions.

The remainder of the existing ACEC that would not be designated under this alternative but would be managed in a manner similar to Alternative A except it would be managed as VRM II rather than VRM I. This would be less restrictive than Alternative A but since several other prescriptions limit surface disturbance the risk of adverse impacts would be minimal.

4.3.14.2.10.3. Alternative C

Alternative C would be the same as Alternative B.

4.3.14.2.10.4. Alternative D

Under Alternative D the area would not be designated as an ACEC and as with Alternative A grazing, vegetation treatments, campfires and camping within the ACEC would be allowed. As noted under Alternative A these activities would increase the risk of surface disturbance to the cultural and paleontological sites from trampling, vandalism, and exposure. In addition mineral development including minerals disposal would be allowed under Alternative D. There could be adverse impacts if surveys missed sites or cultural resources were damaged during relocation but in an area of this size the risk would be low. With this alternative the area would be managed as

VRM III rather than VRM II as it is under Alternatives A and B. This would allow for a higher level of surface disturbance than under Alternatives A and B and would increase the potential for impacts to cultural sites.

4.3.14.2.10.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except that there would be additional protections to the ACEC's relevant and important (cultural resources) values from the management prescriptions for non-WSA lands with wilderness characteristics. Under this alternative, prescriptions for protection of 99 acres of non-WSA lands with wilderness characteristics (83% of the proposed ACEC) would provide more protection for cultural resources by closing the ACEC to oil and gas leasing, geophysical exploration, and mineral entry; managing it under VRM Class I objectives; and closing the ACEC to off-route OHV use. The impacts of these activities on cultural resources are discussed in Section 4.3.2, Cultural Resources.

4.3.14.2.11. San Juan River ACEC

The San Juan River is proposed as an ACEC (7,590 acres) under Alternatives B, C, and E to protect the areas relevant and important wildlife, scenic, cultural values, and natural systems. The area would not be designated under Alternatives A or D but would be managed as the San Juan River SRMA. It should be noted that the area south of the river corridor is under the jurisdiction of the Navajo Nation, and these prescriptions would not apply.

4.3.14.2.11.1. Alternative A

Under Alternative A the area would not be designated as an ACEC but would be managed as an SRMA (15,100 acres). Please see Recreation (Section 4.3.10) for a description of impacts from SRMA decisions under this alternative.

Oil and gas leasing would be managed with timing and controlled surface use stipulations within the ROS-Semi Primitive Motorized class areas and NSO within the ROS-Primitive class areas (see Map 29). The remaining area would be managed with standard stipulations. The ROS-P class area corresponds with the eligible segment proposed as a Wild and Scenic River and would be protected from development within a quarter-mile of centerline. This would have beneficial impacts to the relevant and important values. Areas outside of this corridor would be managed with timing and controlled surface use and standard stipulations. The values of these areas could be negatively impacted if mineral development were to occur because of surface disturbances, visual intrusions, and disruptions to wildlife and wildlife habitat.

Grazing is allowed under this alternative and could cause direct short-term negative impacts to the riparian areas. Springs and tributary streams are especially susceptible as livestock tend to congregate/loiter in these areas. Cattle grazing in riparian areas affects nutrients, fecal bacteria, sediments, stream banks, and vegetation in the riparian ecosystem, with associated effects on water quality. Livestock grazing in riparian areas can cause non-point source water pollution. (Mosley et al. 2005) Although grazing is managed under the Standards for Rangeland Health and permittees generally follow its mandates, it is difficult to apply these standards to free-roaming cattle on a day-to-day basis. Consequently there can be occasional impacts in these areas.

Livestock grazing may also cause long-term direct impacts to cultural resources. (See Alkali Ridge ACEC Alternative A).

Under this Alternative the area would be recommended for withdrawal from mineral entry. This would directly benefit the values of the ACEC by precluding major surface disturbance. This decision would help to preserve the pristine nature of the river corridor and would enhance the recreational experience. Sedimentation and pollution from surface disturbance would be reduced thereby improving or maintaining water quality and wildlife habitat. The visual integrity of the area would be preserved.

The river corridor would be managed as VRM I, II, and III. In those areas that would be managed as VRM I or II the values of the ACEC would be protected because surface disturbance would not occur in VRM I areas and would be very limited in VRM II areas. However those areas that would be managed as VRM III would be subject to surface disturbing activities and that could adversely impact the values of the ACEC.

4.3.14.2.11.2. Alternative B

This alternative differs from Alternative A because the entire area would be managed as NSO for mineral leasing and the VRM categories would shift from a higher percentage of VRM I to a higher percentage of VRM II and III. In addition the entire area would be closed to mineral materials disposal rather than just the ROS-P areas, and livestock grazing seasons of use would be shortened by two weeks to one month depending on the allotment.

Managing the entire area as NSO for mineral leasing would have beneficial impacts to the values of the ACEC by preventing surface disturbance. Shifting from a higher percentage of VRM I to VRM II and III could have some impacts to the values of the ACEC because some level of surface disturbance may be allowed under VRM II and would certainly be allowed under VRM III. Even though the disturbances may meet the visual standards there would still be the risk of impacts to the wildlife, cultural, and natural systems values because of sedimentation, noise, and inadvertent damages to cultural sites from development.

Closing the entire area to minerals materials disposal would further protect the values of the ACEC by eliminating surface disturbance and impacts from mining activities such as and noise from construction and operations.

Shortening the seasons of use for livestock grazing would benefit the values of the ACEC by reducing forage and habitat conflicts with wildlife and reducing the risk of impacts to riparian areas as noted in Alternative A.

4.3.14.2.11.3. Alternative C

Alternative C would be the same as Alternative B.

4.3.14.2.11.4. Alternative D

The area would not be designated as an ACEC under this alternative. The area would be managed with the same prescriptions, as Alternative B except that the entire area would be managed as VRM II, livestock use would be allowed from October 1-May 31, and the area would not be recommended for mineral withdrawal.

Managing the entire area as VRM II would offer beneficial protections to the values of the ACEC by precluding most surface use and retaining the visual integrity of the landscape. Livestock seasons of use would be similar to Alternative A. Please see the discussion under that alternative for possible impacts. Since the area would not be recommended for withdrawal there would be a risk of impacts to the values of the ACEC from mineral entry but riparian corridors would be managed as NSO and so there would only be impacts if an exception was applied or the area was outside of the riparian corridor.

4.3.14.2.11.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except that approximately 2,155 acres (28% of the proposed ACEC) of non-WSA lands with wilderness characteristics would be managed with further resource protections in order to preserve their wilderness values. This management decision would further protect the relevant and important (wildlife, scenic, cultural values, and natural systems) values of the ACEC by closing the non-WSA wilderness area to mineral leasing and entry, managing the area under VRM Class I objectives, excluding ROWs, prohibiting new roads, and closing the area to woodland harvesting and off-route OHV travel.

4.3.14.2.12. Scenic Highway ACEC

The BLM does not make decisions establishing scenic byways. There are several Scenic Byways or Backways including: Indian Creek Corridor Scenic Byway, Bicentennial Trail of the Ancients, Monument Valley to Bluff Scenic Backway, Lockhart Basin Road Scenic Backway, Abajo Loop Road Scenic Backway, and Trail of the Ancients Scenic Backway. Management of lands that intersect the Scenic Byways and Backways could impact them depending on the activities allowed.

Generally, surface disturbing activities could have an adverse impact to the visitor experience that might be driving by on their way to a destination or visiting the Cedar Mesa area. VRM Classes I and II tend to protect the scenic values and are therefore a benefit to the Scenic Byways and Backways because they allow NSO or CSU. Protection such as NSO, closed to leasing, ROW avoidance and exclusion areas, and special designations such as WSAs, ACECs, and WSRs could all benefit the Scenic Byways by restricting or minimizing surface disturbance. Standard terms and conditions allow for moving oil and gas operations up to 200 meters and could delay activities for up to 60 days which could be used to mitigate some impacts. Impacts from dust clouds (from filming, mineral development or exploration) could be allowed in most of these areas and would adversely impact visitor experiences; however, the impact would be short term.

Alternatives B and E tend to be more restrictive regarding surface disturbing activities. Alternative E is the most restrictive protecting 538,360 acres for non-WSA lands with wilderness characteristics by closing the area to surface disturbing activities, OHV use, and recommending the area for withdrawal.

WSAs are managed the same for all alternatives and restrict activities that might adversely impact the Scenic Byways and Backways. Alternative A, allowed managed the lands as NSO and VRM Class I. This generally would restrict surface disturbing activities on the entire 71,000 acres of the Scenic Highway Corridor ACEC.

Management for the Alternatives B and E would protect the Lockhart Basin area as a Visual ACEC and would be managed as VRM Class II, which would protect the Indian Creek and Lockhart Basin Road Scenic Backways.

The Abajo Loop Scenic Backway is primarily on Forest Service land and BLM does make decisions for those lands.

4.3.14.2.12.1. Alternative A

Under Alternative A the area proposed for designation as an ACEC is 136,127, although 78,390 acres overlap with Cedar Mesa ACEC. Thus outside the Cedar Mesa ACEC, the Scenic Highway ACEC is 57,737 acres. Further, there are 9,930 acres that overlap with WSAs and are protected by the IMP (Map 81). The 9,930 acres would continue to be protected under all alternatives.

Alternative A would allow for mineral leasing with NSO, open to mineral entry with an approved plan of operation, excluded from land treatments, and managed as VRM Class I. VRM Class I, would eliminate the risk of damage from major surface disturbing activities within the 57,737 acres because of the restrictive nature of this management class. Consequently, even though mineral development (including minerals disposal, entry and leasing) would be allowed under Alternative A, it is restricted by the overriding requirements of VRM Class I. There is some risk of localized surface disturbance from geophysical work but it would be minor and would not impact the values of the ACEC.

4.3.14.2.12.2. Alternative B

Under Alternative B the area is not proposed for designation as an ACEC. However, due to the overlap of 21,280 acres with the Cedar Mesa ACEC protection of scenic values would still occur. As stated above those lands that overlap with WSAs would be protected by the IMP (Map 82). No appreciable impacts to those lands would occur.

4.3.14.2.12.3. Alternative C

Under Alternative C the area is not proposed for designation as an ACEC. However, due to the overlap of 21,280 acres with the Cedar Mesa CSRMA protection of scenic values would still occur. As stated above those lands that overlap with WSAs would be protected by the IMP. No appreciable impacts to those lands would occur.

4.3.14.2.12.4. Alternative D

Impacts would be the same as those discussed for Alternative C.

4.3.14.2.12.5. Alternative E

Impacts would be the same as Alternative B except for those non-WSA lands with wilderness characteristics which are closed to leasing, closed to OHV travel, recommended for withdrawal from mineral entry and protected as VRM Class I. These restrictive measures would reduce impacts so as to be negligible for any lands that overlap between the Scenic Highway ACEC and non-WSA lands with wilderness characteristics.

4.3.14.2.13. VALLEY OF THE GODS ACEC

Valley of the Gods is an existing special emphasis area within the Cedar Mesa ACEC. Under Alternatives B, C, and E, 22,863 acres (including the special emphasis area) would be proposed as a stand-alone ACEC to provide special management attention to protect the area's relevant and important scenic values. The area would not be designated as an ACEC under Alternative D.

4.3.14.2.13.1. Alternative A

Under Alternative A the special emphasis area would be managed as NSO for mineral leasing and it would be open to the disposal of mineral materials, mineral entry, and geophysical work. Since the area would also be managed as VRM I this would preclude most development and resultant surface disturbance except in areas that could not be seen. This would have beneficial impacts on the scenic values of the ACEC by protecting the area from visible surface disturbance. With Alternative A the area would be open to woodlands harvest but this should not impact the values of the ACEC because there are very few woodland resources in the area. In addition the area is open to livestock and OHV use limited to designated trails. These prescriptions could have minor impacts to the scenic values from localized surface disturbance but would not impact the larger landscape. A mineral entry would not be pursued under this alternative but again with a VRM I management class visible surface disturbance would be precluded.

4.3.14.2.13.2. Alternative B

Under Alternative B the size of the ACEC would be reduced to 22,863 acres, 8,524 acres less than the visual emphasis area under Alternative A. Alternative B differs from Alternative A because the area would be closed to the disposal of mineral materials, mineral leasing, and woodland product harvest and a withdrawal from mineral entry would be pursued. These prescriptions do not offer any additional protections to the scenic values because the area would be managed as VRM I and as mentioned above this would preclude surface disturbance in any visible areas of the ACEC. It may however offer additional protection to other resource values because it would preclude surface disturbance in areas that are not visible to the average traveler. One other difference from Alternative A is that campfires would not be allowed. This would offer temporary beneficial protections to the scenic values of the ACEC by preventing haze.

4.3.14.2.13.3. Alternative C

The impacts for Alternative C are the same as Alternative B.

4.3.14.2.13.4. Alternative D

Under Alternative D the area would not be designated as an ACEC. The area would be managed as open to minerals leasing, entry and disposal, with a VRM III classification. Since this area has high development potential for limestone and sand and gravel and moderate development potential for oil and gas some development could occur. This would negatively affect the relevant and important scenic values of this proposed ACEC by interrupting the panoramic view with manmade structures and creating surface disturbance. However, depending of the type and the location of development, it may be possible to screen from key observation points although it

would not be required under VRM III. The area would be available for campfire use under this alternative and this would cause temporary impacts to the scenic values from haze.

4.3.14.2.13.5. Alternative E

The impacts under Alternative E would be the same as those under Alternative B, except that approximately 20,743 acres of the ACEC (91%) would be managed with further resource protections in order to maintain those non-WSA lands with wilderness characteristics that lie within the ACEC boundaries. This management would further protect the relevant and important (scenic) values of the ACEC through closure to mineral leasing and entry, management under VRM Class I objectives, exclusion of ROWs and new roads, closure of the area to woodland harvesting and wood gathering, and closure of the area to off-route OHV travel.

4.3.14.3. Wild and Scenic Riverss – Impacts Common to All

In all action alternatives (B, C, D and E) where eligible rivers would be determined suitable, the BLM would manage these segments to protect or enhance the outstandingly remarkable values, tentative classification, and free-flowing nature of these rivers with specific protection allocations within the river corridor (1/4 mile of the high water mark on each side of the river). The extent of BLM's authority, which is limited to those portions of the segment where BLM manages the shoreline, or other lands within the corridor, and is subject to valid existing rights. Further discussion is presented in Appendix H, Special Designations including the suitability determination.

The free-flowing character of eligible river segments would be protected to the extent that modifications such as stream impoundments, channelization, and/or riprapping would not be permitted along BLM shorelines. However, depending upon the alternative, values may be at risk from potential mineral development, OHV activity, or other surface disturbing activities. Also, the protection is limited because there are no federal reserved water rights established for in-stream flow purposes because of eligibility or suitability determinations. In addition, unless BLM land is somehow involved in a proposed action, BLM has no control of potential modifications of the shoreline or other development (including development related to the perfection of water rights) on non-public lands. Because of these factors, there would be no affect on the Colorado River Compact from protective management of eligible/suitable segments. BLM's management authority only extends to public lands within the river corridor, and there are no water rights associated with suitability determinations. A suitability determination also has no effect on existing water compacts. Table 4.103 outlines the segments of rivers that would be determined suitable by alternative.

4.3.14.4. Wild and Scenic Rivers – Alternatives Impacts

Shown in Table 4.104 is a summary of management prescriptions by alternative. In all cases where the recommendation is "suitable wild" the lands are recommended for withdrawal from mineral entry.

Table 4.103. River Segments that would be Determined Suitable and Total River Miles (RM), by Alternative

River/ River Segment	Alternative A	Alternatives B and E	Alternative C	Alternative D
Colorado River				
Segment #1-Recreational	0	2.2	0	0
Segment #2-Scenic	0	5.5	5.5	0
Segment #3-Scenic	0	6.5	6.5	0
Indian Creek-Recreational	0	4.8	0	0
Fable Valley-Scenic	0	6.8	0	0
Dark Canyon-Wild	0	6.4	6.4	0
San Juan River				
Segment #1-Recreational	0	8.5	0	0
Segment #2-Recreational	0	10	0	0
Segment #3-Wild	0	13.3	0	0
Segment #4-Recreational	0	4.2	0	0
Segment #5-Wild	0	17.3	0	0
Arch Canyon-Recreational	0	6.9	0	0
Totals	**0**	**92.4**	**18.4**	**0**

Table 4.104. River Segments Evaluated and Recommended for Wild and Scenic River Designation by Alternative

Segment	Acres	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Colorado River Segment #1	352	Not evaluated NSO in floodplains and riparian corridors ROS semi primitive, non-motorized	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B
Colorado River Segment #2	880	Eligible NSO in floodplains and riparian corridors ROS semi primitive, non-motorized	Recommendation: Suitable, Scenic VRM II NSO oil and gas leasing	Recommendation: Suitable, Scenic Same as Alternative B	Recommendation: Not Suitable	Recommendation: Suitable, Scenic Same as Alternative B
Colorado River Segment #3	1,040	Eligible NSO in floodplains and riparian corridors ROS semi primitive, non-motorized	Recommendation: Suitable, Scenic VRM I NSO oil and gas leasing Recommended for withdrawal from mineral entry	Recommendation: Suitable, Scenic Same as Alternative B	Recommendation: Not Suitable	Recommendation: Suitable, Scenic Same as Alternative B, except: Closed to oil and gas leasing.
Indian Creek	1,536	Not evaluated	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms NSO in floodplains and riparian corridors	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B
Dark Canyon	2,048	Not evaluated	Recommendation: Suitable, Wild VRM I Closed to oil and gas leasing Recommended for withdrawal from mineral entry	Recommendation: Suitable, Wild Same as Alternative B	Recommendation: Not Suitable	Recommendation: Suitable, Wild Same as Alternative B
Fable Valley	2,176	Not evaluated	Recommendation: Suitable, Scenic VRM II NSO oil and gas leasing	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Scenic Same as Alternative B, except: Closed to oil and gas leasing

Table 4.104. River Segments Evaluated and Recommended for Wild and Scenic River Designation by Alternative

Segment	Acres	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
San Juan River Segment #1	1,360	Not evaluated	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms NSO in floodplains and riparian corridors	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B
San Juan River Segment #2	1,600	Eligible. VRM I Withdrawn from mineral entry Surface disturbance from mining activities on existing claims would be limited to the extent possible without curtailing valid existing rights Area above the rim in the vicinity of the Bluff airport lease would be available for mineral material disposal. In areas closed to OHV a plan of operations is required for any mining-related activity other than casual use	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms NSO in floodplains and riparian corridors	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B
San Juan River Segment #3	2,128	Same as San Juan River Segment #2	Recommendation: Suitable, Wild VRM I NSO oil and gas leasing Recommended for withdrawal from mineral entry	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Wild Same as Alternative B, except: Closed to oil and gas leasing

Table 4.104. River Segments Evaluated and Recommended for Wild and Scenic River Designation by Alternative

Segment	Acres	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
San Juan River Segment #4	672	Same as San Juan River Segment #2	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms NSO in floodplains and riparian corridors	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B
San Juan River Segment #5	2,768	Same as San Juan River Segment #2	Recommendation: Suitable, Wild VRM I NSO oil and gas leasing Recommended for withdrawal from mineral entry	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Wild Same as Alternative B
Arch Canyon	2,208	Not evaluated	Recommendation: Suitable, Recreational VRM III Standard oil and gas lease terms NSO in floodplains and riparian corridors	Recommendation: Not Suitable	Recommendation: Not Suitable	Recommendation: Suitable, Recreational Same as Alternative B

4.3.14.4.1. ALTERNATIVE A

Under Alternative A, a suitability determination would not be made, but those river segments that were determined eligible in the 1991 San Juan RMP would remain eligible with this alternative. Where BLM manages the shoreline or other lands within the river corridors they would be managed to maintain the free-flowing nature, outstandingly remarkable values, and tentative classification. The segments determined to be eligible were Colorado River Segments #2 and #3 and San Juan River Segments #2 (portion), #3, #4, and #5. Because the eligible river corridors would be subject to the existing land use plan as far as resource allocations are concerned, they may be subject to case-by-case actions. These would be addressed through the NEPA process with mitigation applied. If any proposed actions would affect the eligibility or suitability of the river segment, it is BLM policy to deny the action until suitability can be considered. Although a suitability determination would not be made in Alternative A (No Action), all eligible rivers would continue to be managed to protect the outstandingly remarkable values (ORVs) in a case-by-case manner. The protective measures identified for the Colorado and San Juan River segments would continue.

The San Juan River (Segments #1 and #2), Arch Canyon, Fable Valley, Indian Creek would be managed as open to minerals leasing under standard stipulations or timing and controlled surface use. The San Juan River (Segments #3, #4, and #5), Fable Valley, and Dark Canyon would be managed as NSO or closed to mineral leasing. All segments except for the Colorado River and Dark Canyon would be open to mineral entry and the Colorado, Indian Creek, and San Juan River Segments (#1 and #2) are open to minerals material disposals. Generally, riparian corridors would be managed as NSO under BLM's riparian policy and therefore, regardless of the leasing category these areas would be protected from development. However there is an exception to allow for development in riparian areas if there are no other practical alternatives. In addition, on smaller rivers, in areas where the 0.25-mile WSR corridor extends beyond the riparian corridor there would not be NSO protection. In these instances, where mineral leasing (with standard stipulations or timing and controlled surface use), entry, or disposal would be allowed the outstandingly remarkable values of these rivers may be at risk from surface disturbance, habitat fragmentation, loss of visual integrity, and noise from construction and operation of mineral development infrastructure.

With this alternative, Dark Canyon and the San Juan River would be managed as SRMAs. This would enhance this segment's recreational values, and would not affect the other outstandingly remarkable values. It would not affect the free-flowing nature of the river, and would be in keeping with the tentative classification of scenic, recreational or wild.

Arch Canyon, Colorado River (Segment #2), and the San Juan River (Segments #1 and #2) are in an open OHV category. Temporary impacts to outstandingly remarkable values could occur from surface disturbance and noise. All the remaining eligible river segments would be in a limited or closed OHV category. River corridors would largely be protected from disturbance related to OHV activity.

4.3.14.4.2. ALTERNATIVE B

With Alternative B, 92.4 river miles involving the following eligible river segments – Colorado River (Segments #1, #2, and #3), Arch Canyon, Fable Valley, Indian Creek, Dark Canyon, and the San Juan River (Segments #1 through #5) would be determined suitable for designation into the National Wild and Scenic River System (see Table 4.104). Overall, because of the increased acreage identified and managed as suitable, and because other resource allocations such as OHV use limited to designated routes, and closure to mineral entry in all wild segments, this alternative would provide greater protection to outstandingly remarkable values than would the No Action Alternative.

The San Juan River (Segments #1 and #2), Colorado River (Segment #1), Indian Creek and Arch Canyon would be managed as open to minerals leasing under standard stipulations or timing and controlled surface use. The San Juan River (Segments #3, #4, and #5), Fable Valley, and Dark Canyon would be managed as NSO or closed to mineral leasing. All segments would be open to mineral materials disposal and the Colorado River (Segments #1 and #2), the San Juan (Segments #1, #2, and #4), Arch Canyon, and Fable Valley would be open to mineral entry. The risks to the ORVs in these segments are as noted above in Alternative A.

With Alternative B the Colorado River (Segment #3) would be managed as VRM I and Colorado River (Segment #2) and Fable Valley would be managed as VRM II. These segments would have direct beneficial protection to the scenic values and indirect benefits to other resource values because the VRM Management Class would limit surface disturbance. Unless other management prescriptions would limit surface disturbance in these areas, the remaining segments would be at risk for adverse impacts to the ORVs from surface disturbing activities.

With this alternative, the San Juan River and Dark Canyon would be managed as SRMAs. This would enhance these segments' recreational values, and would not affect the other outstandingly remarkable values. It would not affect the free-flowing nature of the river, and would be in keeping with the tentative classification of scenic.

All eligible river segments would be in a limited or closed OHV category, with most of the segments limited. River corridors would largely be protected from disturbance related to OHV activity. No loss of outstandingly remarkable values from OHV use would be anticipated during the life of the plan.

4.3.14.4.3. ALTERNATIVE C

With Alternative C, 18.4 river miles involving the eligible Colorado River Segments #2 and #3 and Dark Canyon Segment would be determined suitable for designation into the National Wild and Scenic River System (see Table 4.104). This alternative would be more protective to the ORVs than Alternatives A and D but less so than Alternatives B and E.

The San Juan River (Segments #1, #2 and #4), Colorado River (Segment #1), Indian Creek and Arch Canyon would be managed as open to minerals leasing under standard stipulations or timing and controlled surface use. The San Juan Segments #3 and #5, Fable, and Dark Canyon Rivers would be managed as NSO or closed to mineral leasing. All segments would be open to mineral materials disposal. With Alternative C, mineral withdrawals would be pursued on the San Juan Segments #3 and #5 and Dark Canyon to restrict mineral-related disturbance and would therefore permanently protect the outstandingly remarkable values and tentative classification of

the river segments from mineral entry. The risks to the ORVs in the segments open to minerals leasing under Standard Stipulations and timing and controlled surface use are as noted above in Alternative A, paragraph two.

With Alternative C, Colorado River (Segment #1) and Dark Canyon would be managed as VRM I and Colorado River (Segment #2) and Fable Valley would be managed as VRM II. These segments would have beneficial direct protection to scenic and other resource values because the classifications limit surface disturbance. Unless there would be other management prescriptions that would limit surface disturbance in these areas the remaining segments would be at risk for adverse impacts to the ORVs.

With this alternative, Dark Canyon and the San Juan River would be managed as SRMAs. This would enhance these segments' recreational values, and would not affect the other outstandingly remarkable values. It would not affect the free-flowing nature of the river, and would be in keeping with the tentative classification of scenic.

All eligible river segments would be in a limited or closed OHV category, with most of the segments limited. River corridors would largely be protected from disturbance related to OHV activity. No loss of outstandingly remarkable values from OHV use would be anticipated during the life of the plan.

4.3.14.4.4. ALTERNATIVE D

No segments would be recommended for designation under this alternative. This alternative would offer the least protections to the WSRs in comparison to Alternatives A, B, C and E.

The San Juan River (Segments #1, #2, and #4), Colorado River (Segments #1, #2, and #3), Indian Creek and Arch Canyon would be managed as open to minerals leasing under standard stipulations or timing and controlled surface use. The San Juan River (Segments #3, #5), Fable Valley and Dark Canyon Rivers would be managed as NSO or closed to mineral leasing. All segments would be open to mineral materials disposal. No mineral withdrawals would be pursued with this alternative.

With Alternative C, Fable Valley and Dark Canyon would be managed as VRM I and the San Juan would be managed as VRM II. These segments would provide direct protection to scenic and other resource values because these classifications limit most surface disturbing activities. The remaining segments would be managed as VRM III. Unless there would be other management prescriptions that would limit surface disturbance in these areas the remaining segments would be at risk for adverse impacts to the ORVs from surface disturbance, habitat fragmentation, loss of visual integrity, and noise from construction and operation of mineral development infrastructure.

With this alternative, Dark Canyon and the San Juan River would be managed as SRMAs. This would enhance this segment's recreational values, and would not affect the other outstandingly remarkable values. It would not affect the free-flowing nature of the river, and would be in keeping with the tentative classification of scenic.

All eligible river segments would be in a limited or closed OHV category, with most of the segments limited. River corridors would largely be protected from disturbance related to OHV activity. No loss of outstandingly remarkable values from OHV use would be anticipated during the life of the plan.

4.3.14.4.5. ALTERNATIVE E

The impacts under Alternative E would be the same as those under Alternative B, except that Colorado River Segment #3, San Juan River Segment #3, and Fable Valley would be closed to oil and gas leasing, and Colorado River Segment #3 and San Juan Segment #3 would be managed lands to maintain the wilderness characteristics of non-WSA land with wilderness characteristics where they exist along those segments. Because of these additional management prescriptions, this alternative would offer the greatest protection to WSRs in comparison to Alternatives A, B, C and D.

4.3.14.5. IMPACTS TO WILDERNESS AND WILDERNESS STUDY AREAS (WSAS)

WSAs are managed under the Interim Management Policy (IMP), which directs the BLM to manage the area so as not to impair their suitability for preservation as wilderness. This applies to all uses and activities except those specifically exempted from this standard by FLPMA (such as grandfathered uses) (BLM 1995). Because of this there would be no impacts to WSAs from implementation of this plan except in areas with existing valid rights. In those areas the impacts would be similar to those described in Section 4.3.8, Non-WSA Lands with Wilderness Characteristics. Table 4.105 shows the acreages of WSAs in the Monticello FO.

Table 4.105. Acreages of WSAs in the Monticello FO

WSA	Acreage
Bridger Jack Mesa	6,301
Butler Wash	22,043
Cheese Box Canyon	14,826
Cross Canyon	945
Dark Canyon ISA Complex	67,822
Fish Creek Canyon	46,089
Grand Gulch ISA Complex	105,181
Indian Creek	6,884
Mancos Mesa	50,876
Mule Canyon	5,977
Road Canyon	52,372
South Needles	159
Squaw and Papoose Canyon	6,552
Total	**386,027**

All WSAs would be managed as VRM Class I, which prohibits (except for valid existing rights) surface disturbing activities. This would enhance and protect the wilderness characteristics of these lands. The WSAs would limit OHV travel and to designated routes would enhance and protect the wilderness characteristics of these lands.

4.3.14.6. SUMMARY OF IMPACTS

Alternatives B and E would manage the largest area (521,141 acres) of the Monticello PA as ACECs, followed by Alternative A (488,616), and Alternative C (76,764 acres), respectively. No ACECs would be designated as ACECs under Alternative D. Although Alternative A would designate a comparable number of areas as ACECs, its management prescriptions would generally not be as protective of the ACECs' relevant and important values as Alternatives B, C, and E. Therefore, Alternative E, which has the most acres designated and the most protective management prescriptions, would be the most beneficial to ACECs relevant and important values, followed by Alternatives B, C, and A, respectively. Alternative D would not have any beneficial impacts to ACECs' values. Alternatives B and E best prevents irreparable damage to the relevant and important values, resources, natural systems and natural hazards. Alternative D does the least to prevent irreparable damage to the relevant and important values, resources, natural systems or natural hazards. However, to some degree because WSAs overlap many of the ACECs in Alternative A, protection is generally in place (Map 81).

In all action alternatives (B, C, D and E) where eligible rivers would be determined suitable, the BLM would manage these segments to protect or enhance the outstandingly remarkable values, tentative classification, and free-flowing nature of these rivers with specific protection allocations within the river corridor (1/4 mile of the high water mark on each side of the river) to the extent of its authority, which is limited to those portions of the segment where BLM manages the shoreline or other lands within the corridor, and is subject to valid existing rights. Under Alternative A, a suitability determination would not be made, but those river segments that were determined eligible in the 1991 San Juan RMP would remain eligible with this alternative. Where BLM manages the shoreline or other lands within the river corridors they would be managed to maintain the free-flowing nature, outstandingly remarkable values, and tentative classification. Under Alternatives B and E, 92.4 miles of river would be recommended as suitable; with the greatest beneficial impacts to WSRs. Management prescriptions under Alternative E would be slightly more protective than those under Alternative B. Alternative C would recommend 18.4 miles of river as suitable. Alternative D would not find any segments suitable.

The management of WSAs would be the same under all alternatives. WSAs would be managed under the Interim Management Plan (IMP), which directs the BLM to manage the area so as not to impair their suitability for preservation as wilderness.

4.3.14.7. MITIGATION MEASURES

No mitigation measures would be required under any of the alternatives.

4.3.14.8. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts would occur from mineral development and OHV activity where they are permitted under any alternative.

4.3.14.9. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Any loss of ACECs' relevant and important values, WSRs' outstanding remarkable values, or WSA's wilderness characteristics would persist throughout the life of the RMP, and would constitute a long-term loss of these values as a result of short-term uses.

4.3.14.10. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Any loss of ACECs' relevant and important values, WSRs' outstanding remarkable values, or WSAs' wilderness characteristics due to mineral development or OHV activity would be irretrievable until the impact area was fully reclaimed.

4.3.15. SPECIAL STATUS SPECIES

This section discusses impacts to special status species from management decisions of other resources and resource uses described in Chapter 2. Existing conditions concerning special status species are described in Chapter 3.

Because of the large number of special status species that may occur in the Monticello PA, including Threatened, Endangered, and Sensitive species, it was determined that, in some cases, the most effective way to disclose impacts at the programmatic level would be to analyze the impacts to the habitat cover type used by those species. Accordingly, for the purposes of analysis, the special status species described in Chapter 3, Section 3.15 are grouped by habitat type, as shown in Table 4.106 below. Impacts to federally listed species are also analyzed by habitat type. Quantitative information is provided for the following species: Mexican spotted owl (MSO), Gunnison sage-grouse, Southwestern willow flycatcher (SWFL), bald eagle, and Colorado River fish (humpback chub, Colorado pikeminnow, razorback sucker, and bonytail). The habitats associated with these species are representative of the habitats of the other special status species (see Table 4.106). All habitat impacts analyzed in this section are approximations based on assumptions regarding the potential locations of facilities, vegetation treatments, grazing, and other impacts from management decisions. Representations of the available habitat (and critical habitat where designated) for these representative species within the Monticello PA can be found in Map 86 (Colorado fish species and MSO), Map 85 (bald eagle), and Map 84 (SWFL).

In all of the following subsections, management decisions discussed for each of the proposed alternatives are in addition to those discussed under Management Common to All Alternatives in Table 2.1 of Chapter 2. The Proposed Action and alternatives have the potential for adverse impacts on special status species through decisions for resource management such as travel, recreational use of the land, vegetation treatments, and oil or gas development.

For most resource decisions for which there is limited variation in impacts by habitat type, impacts are discussed by alternative in order to give an overall description of the impacts resulting from the management action.

Air quality and paleontology will not be analyzed in detail in this section because protecting air quality, and allowing recreational collection of fossils and scientific study of fossils would neither inhibit nor enhance the protection of federally listed wildlife and plant species under the Endangered Species Act. The impacts of the above resource decisions to special status species would be negligible.

Table 4.106. Grouping of Special Status Species by Habitat Type

Habitat	BLM Special Status Species	Federally Listed Species	Designated Critical Habitat
Desert Shrub	Wildlife: Gunnison's prairie dog, desert night lizard, ferruginous hawk, short-eared owl, Brewer's sparrow, loggerhead shrike, pinyon jay, sage sparrow	Wildlife: None	Wildlife: None
	Plants: Cronquist milkvetch, Cutler milkweed, Copper Canyon milkvetch, Skull Valley spring-parsley, Hole-in-the-Rock prairie clover, spineless hedgehog cactus, Cataract Canyon gilia, Paradox breadroot, Howell scorpionweed, Bluff phacelia, Mancos shadscale, Jane's globemallow	Plants: None	Plants: None
Sagebrush and Perennial Grassland	Wildlife: Brewer's sparrow, loggerhead shrike, pinyon jay, sage sparrow, Virginia's warbler, Gunnison's prairie dog, ferruginous hawk, short-eared owl, desert night lizard, Gunnison sage-grouse, Mogollon vole, kit fox, silky pocket mouse, burrowing owl, Swainson's hawk, prairie falcon	Wildlife: black-footed ferret (E; Extirpated)	Black-footed ferret: No critical habitat rules have been published for the black-footed ferret.
	Plants: Chatterley's onion, Copper Canyon milkvetch, spineless hedgehog cactus, redroot buckwheat	Plants: None	Plants: None
Pinyon-Juniper Woodland	Wildlife: gray vireo, pinyon jay, Virginia's warbler	Wildlife: None	Wildlife: None
	Plants: Chatterley's onion, spineless hedgehog cactus, redroot buckwheat, Paradox breadroot, Howell scorpionweed	Plants: None	Plants: None
Conifer and Mountain Shrub	Wildlife: Yavapai mountain snail, Gunnison's prairie dog, Lewis's woodpecker, northern goshawk, three-toed woodpecker, broad-tailed hummingbird, black-throated gray warbler	Wildlife: None	Wildlife: None
	Plants: spineless hedgehog cactus	Plants: None	Plants: None

Table 4.106. Grouping of Special Status Species by Habitat Type

Habitat	BLM Special Status Species	Federally Listed Species	Designated Critical Habitat
Riparian and Wetland	Wildlife: American white pelican, bobolink, peregrine falcon, Arizona toad, smooth greensnake, bluehead sucker, roundtail chub, flannelmouth sucker, western yellow-billed cuckoo (C)	Wildlife: Bald eagle (T), SWFL (E), bonytail (E), Colorado pikeminnow (E), humpback chub (E), razorback sucker (E)	Colorado River fishes: Designated critical habitat includes portions of the Colorado River and the Green River downstream from the Yampa River, along the San Juan River from Shiprock, NM to the inflow of Lake Powell; and the 100-year floodplain.
	Plants: alcove bog orchid	Plants: None	Plants: None
Caves and Rock Crevices (Seeps)	Wildlife: Allen's big-eared bat, big free-tailed bat, fringed myotis, spotted bat, Townsend's big-eared bat	Wildlife: California condor (E; Experimental)	California condor: Potential nesting habitat occurs within the Monticello PA; however, any individuals in Utah are part of an experimental, non-essential population.
	Plants: pinnate spring-parsley, Nevada willowherb, alcove rock-daisy, kachina daisy	Plants: Navajo sedge (T)	Navajo sedge: Potential population in San Juan County occurs on Navajo land.
Rocky Slopes and Canyons	Wildlife: common chuckwalla	Wildlife: MSO (T)	MSO: Designated critical habitat consists of 8.65 million acres in AZ, CO, NM, and UT. In UT, critical habitat has been designated in portions of San Juan County within the Monticello PA.
	Plants: Nevada willowherb, Canyonlands lomatium, western hophornbeam	Plants: None	Plants: None

(C) = candidate for federal listing
(T) = federally listed as threatened
(E) = federally listed as endangered

The analysis of other impacts to special status species used the following assumptions:

- Special status species include BLM-listed special status species and federally listed species.
- Acres of SWFL habitat used in this document also include potential habitat for the yellow-billed cuckoo. For both of these species, the total acres of riparian vegetation in the Monticello PA were used to calculate acres of habitat.
- The bald eagle habitat acres used in this document include a 1-mile-wide buffer on all streams and rivers in the Monticello PA, all BLM mule deer winter range and a .0.5-mile buffer on Highways SR-191, SR-95, SR-275, and SR-211 (personal communication between Deb Reber and Susan Martin, SWCA, and Tammy Wallace, BLM, September 22, 2006).
- Acres of habitat for the MSO and the 4 endangered Colorado River fish species used in this document are taken from the GIS habitat layer for these species provided by the USFWS and BLM. Acres of Gunnison sage-grouse habitat used in the following analyses were taken from the DWR habitat GIS layer.
- All references to the Colorado River fishes are specifically referring to the Federally endangered bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). These 4 species are managed similarly, and impacts can typically be analyzed as a group.
- The proposed alternatives have the potential for both adverse and beneficial impacts on special status species through decisions including travel management, recreational use of the land, vegetation treatments, and oil or gas development. Wherever possible, this document quantifies the amount and types of habitats that would be directly disturbed or reclaimed due to such decisions. However, it is often difficult to quantify the loss or improvement of quality or condition of a habitat. Subtle increases or decreases in weeds, shrubs, forbs, water availability, undisturbed areas, and birthing or wintering grounds can greatly affect the distribution, health, and survival of a diversity of sensitive plant and animal species. The degree to which these impacts could occur varies by alternative; alternatives that increase the amount of surface disturbance within special status species' habitats generally have greater potential adverse impacts on these species. Attempts are made to address potential impacts for resource management decisions, but the discussions are often qualitative due to the difficulty in measuring such changes.
- Additional assumptions for this chapter include the following: (1) implementation of all the alternatives would be in accordance with existing laws, regulations, and standard management guidelines; (2) decisions associated with emergency or public safety would be performed at the discretion of the Authorized Officer; (3) though impacts resulting from implementation of any of the alternatives may extend beyond the Monticello PA boundaries, they will be analyzed to their logical conclusion even if they extend these boundaries (an example of this would be analyzing impacts to aquatic species, including downstream impacts beyond the Monticello PA boundaries); and (4) public land users will comply with the decisions and allocations contained in the alternatives.

4.3.15.1. Impacts Common to All Alternatives

Under all alternatives, the BLM would comply with all recovery plans and conservation agreements for special status species as detailed in the Chapter 2 Summary Table of Alternatives (Table 2.1). In addition, the Conservation Measures from LUP-level Consultations for T&E

Species of Utah would be adhered to where applicable (USFWS 2006). Further, the BLM is required to use methods and procedures necessary to improve the condition of special status species and their habitats to the degree such that their special status recognition is no longer warranted (BLM 2001c). There would be no specific individual protections provided for the majority of special status species listed in Table 4.106, including the black-footed ferret, which has no special protective measures in place because there are no known populations in the Monticello PA. Many of these species, however, would be indirectly protected by the restrictions and buffers in place for Gunnison sage-grouse, MSO, SWFL, yellow-billed cuckoo, bald eagle, Navajo sedge, California condor, the endangered Colorado River fishes, and migratory birds (discussed in Section 4.3.19, Wildlife and Fisheries). These special status species protections are discussed in the following sections.

Under all alternatives, the Reasonable and Prudent Measures and Terms and Conditions identified in consultation with the USFWS for the Utah Land Use Plan Amendment for Fire and Fuels Management would be implemented in fire-related actions (see Appendix B, Fire Management). Maintenance of existing healthy ecosystems and protection of threatened, endangered, and special status species are two of the criteria for establishing fire management priorities. Implementation of these criteria would have beneficial impacts on special status species habitat in the Monticello PA by preserving native plant species and assuring that special status species would not be directly impacted by fire.

Fuels management actions would occur under all of the alternatives. Wildland fire use may be authorized in special status species habitats, and this could adversely impact special status species by burning or cutting of vegetative cover, reduction of the overall quantity or quality of habitat or forage, or mortality of individuals due to fire, trampling, or crushing. Indirect impacts to special status species and their habitats could include increased exposure to predators due to reduced vegetation cover, increased soil erosion, or other impacts to habitat quality. In the long-term, after appropriate rehabilitation wildland fire would benefit special status species habitat in an area by removing competition from weedy natives and invasive species. Once the competition was removed, a diverse native community would have the potential to establish itself in the area (Monsen 2004), which would mean more available forage and cover for special status wildlife species and available habitat for special status plant species (Stevens 2004).

Wildland fire use would not be authorized in the following areas unless reasonable Resource Protection Measures were in place: 1) areas that are known to be highly susceptible to post-fire cheatgrass or other weed invasion, 2) important terrestrial and aquatic habitats, and 3) non-fire-adapted vegetation communities (see Chapter 2 Table 2.1, Summary Table of Alternatives). These measures would also have beneficial impacts on special status species habitat by reducing the spread of weeds and preserving native plant species.

Fuels management actions include surface-disturbing treatments on 5,000–10,000 acres annually. Over the life of the plan, this would result in 75,000–150,000 acres of land being subject to fuels management. Impacts would be analyzed with site-specific NEPA once it is determined where individual treatments would occur. These actions include mechanical and manual treatments, prescribed fire, chemical or biological vegetation control, and aerial/ground seeding.

The LUP Amendment for Fire and Fuels Management indicates that the majority of treatments would occur in pinyon-juniper woodland and sagebrush habitats, and would impact the species dependent upon those habitats (Table 4.106). In the short-term, vegetation treatments could

result in the trampling or removal of special status plant species and the disturbance of special status wildlife species by human presence. In the long-term, however, vegetation treatments would benefit special status species habitat in an area by removing competition from weedy natives and invasive species. Once the competition was removed, a diverse native community would have the potential to establish itself in the area (Monsen 2004), which would mean more available forage and cover for special status wildlife species and available habitat for special status plant species (Stevens 2004).

Under all alternatives, abandoned mine lands (AMLs) would be prioritized for area reclamation and mitigation. Site-specific NEPA analysis would be completed on all potential AML projects, thereby preventing adverse impacts to special status species.

Lands and realty decisions that could potentially impact special status species include access, easements, leases and permits, utility/transportation systems, exchanges, disposals, and withdrawals. Under all alternatives, WSAs would be exclusion areas for ROWs. Withdrawals and excluded areas would preserve and protect special status environmental resources and areas. Similarly, the acquisition and retention of any special status species habitat, quality riparian areas, and key productive ecosystems would have beneficial impacts on special status species.

All areas not identified as avoidance or exclusion would be available for ROWs and could be subject to multiple-use terms on a case-by-case basis (BLM 2004a). The use of ROWs for utility and communication infrastructure could have direct, long-term adverse impacts on special status plant and wildlife species habitat due to surface disturbance for utility lines, communication sites, solar and wind energy sites, pipeline installation, trampling by workers and vehicles during construction activities, as well as impacts to special status bird or bat species and migration routes from wind turbines and construction of maintenance access roads. Additionally, noise and human presence associated with infrastructure installation could have adverse impacts on special status wildlife species in the Monticello PA. The installation of power poles would increase raptor predation on Gunnison's prairie dog and Gunnison sage-grouse by providing hunting perches. Although this would be an adverse impact on these prey species, it would also provide a beneficial impact on raptor species in the planning area (see Section 4.3.19, Wildlife, for details).

Under all alternatives, applications for filming permits would have to meet the criteria that they do not impact special status species or their habitat. Accordingly, implementation of these minimum-impact criteria would prevent adverse impacts to special status species from filming.

Grazing would continue to be unavailable on 134,520 acres in the areas identified in the Summary Table of Alternatives (Table 2.1), and Table 4.146 in Section 4.3.17, Vegetation, shows the acres unavailable for livestock grazing by vegetation type.

Livestock grazing allotments occupy approximately 99% of all lands within the Monticello PA. Detrimental impacts from grazing could include loss of biodiversity, lowering of population densities, disruption of some ecosystem functions, changes to community organization, and changes to the physical characteristics of both terrestrial and aquatic habitats (Chaneton and Lavado 1996; Fleischner 1994; Olff and Ritchie 1998). Within grazing allotments, special status species may be impacted by trampling, reduced forage or cover vegetation, reduced quality of riparian and wetland habitats, and other impacts to habitat quality or quantity.

Under all alternatives, livestock grazing would be managed according to the Guidelines for Grazing Management to achieve the Standards for Rangeland Health (BLM 1997). By adhering

to these standards, the impacts from livestock grazing on special status species are expected to be minimal. Grazing use would be unavailable on approximately 137,440 acres in the Monticello PA whereby adverse impacts to special status species by livestock would be reduced or eliminated. These closures could eliminate potential direct impacts from livestock grazing on special status species and associated habitat. Potential indirect, beneficial impacts could include increased habitat for special status species.

Under all alternatives, grazing would be modified when monitoring indicates that objectives are not being met or resources are being adversely impacted. This would mitigate the adverse impacts of surface disturbance on riparian habitat associated with livestock grazing in the Monticello PA.

Impacts to special status species from recreation include direct impacts from use of mechanized and non-mechanized vehicles, ground disturbance from trail development, trampling of individuals, habitat fragmentation, and increased access to secluded fragile habitats and species. Increased visitor use of recreational areas may also adversely impact special status species through increased noise and human presence. Indirect adverse impacts to riparian areas from recreation could include alternation of plant community structure and species composition, reduction in the relative abundance of species, and changes to stream channel morphology, all of which may contribute to habitat degradation. Management of recreational areas that includes measures to reduce surface disturbance and resource degradation would also reduce these adverse impacts on special status species.

The adverse impacts of recreation decisions would be partially mitigated by the required reclamation of disturbed areas to meet the Utah Standards for Public Land Health and Guidelines for Recreation Management (Appendix E) and protective measures outlined for federally listed species in Appendix Q. OHV use and dispersed camping are emphasized here due to the higher use levels of these activities in the Monticello PA, and the potential for direct adverse impacts to sensitive species and their habitats from these activities throughout the Monticello PA.

Under all alternatives, riparian areas would be managed as NSO for oil and gas leasing. They would, however, be open to mineral entry and disposal of mineral materials, but not in active floodplains or within 100 meters of riparian areas. Woodland product collection would be prohibited. These restrictions would decrease the intensity the impacts of surface disturbance on riparian habitat in the Monticello PA.

Livestock grazing would be permitted, with potentially adverse, indirect impacts from grazing in riparian habitat. A reduction in surface disturbance enables native vegetation to establish faster in riparian habitat.

Vegetation treatments including the use of mechanized or motorized equipment would be allowed in riparian areas. These treatments would have both beneficial and adverse impacts on vegetation in riparian habitat. Long-term beneficial impacts would include reduction of weed populations and creation of favorable conditions for establishment of native species. This, in turn, would improve riparian habitat for special status wildlife species. Short-term adverse impacts would include crushing and inadvertent removal of special status plant species during the treatment process. There could also be temporary adverse impacts on special status fish species habitat due to increased overland flow associated with soil compaction on soils adjacent to riparian areas (see Section 4.3.6, Livestock Grazing).

The SWFL Recovery Plan would be implemented in all suitable habitat areas. This would have beneficial impacts on any species within SWFL habitat because of the goals of the recovery plans, which are, 1) increase and improve occupied, suitable, and potential breeding habitat; 2) increase meta-population stability; 3) improve demographic parameters; 4) minimize threats to wintering and migration habitat; 5) survey and monitor; 6) conduct research; 7) provide public education and outreach; 8) assure implementation of laws, policies, and agreements that benefit the flycatcher; 9) track recovery progress (USFWS 2002e).

The Utah's Standards for Rangeland Health and Guidelines for Grazing (Appendix G) and Recreation Guidelines (Appendix E) would be followed to achieve proper riparian functioning. Overall, the BLM would avoid degradation of habitats that could result in the loss of riparian vegetation, which would have beneficial impacts to special status species by preventing riparian habitat alteration.

Under all alternatives, soils and watershed decisions would comply with Utah's Standards for Rangeland Health and Guidelines for Grazing (Appendix G) and Recreation (Appendix E). In addition, all floodplains and riparian/wetlands would be managed in accordance with Executive Orders 11988 and 11990, sections 303 and 404 of the Clean Water Act, the Colorado River Salinity Control Act, and the Endangered Species Act, which would protect the quality of stream water and federally listed species habitat. Also, uses in the Monticello PA would be managed to minimize and mitigate damage to soils, and activities located in areas with special status soils would be subject to site-specific NEPA. These restrictions would decrease the number of acres in the Monticello PA subject to the adverse impacts on special status species and habitat associated with surface-disturbing activities. This includes the indirect impacts of potential stream water contamination associated with increased sedimentation from runoff associated with disturbed areas (see Soils Sections, Chapters 3 and 4).

Vegetation treatments would be allowed in riparian areas to reduce tamarisk, where appropriate. These treatments, in conjunction with native species seeding and planting, would help restore healthy functioning to watersheds.

Special Designation areas, such as ACECs, WSAs, and WSRs would generally reduce long-term impacts to special status species that occur within their boundaries. Impacts to special status species vary among alternatives based on the acreage of these specially designated areas, and the oil and gas leasing stipulations assigned within them. ACECs are designated to protect identified relevant and important values such as cultural resources, scenic qualities, and natural systems. ACEC designation would reduce impacts to special status species and habitats by limiting human activity and surface disturbances, preserving habitat, and limiting noise.

WSAs are established in order to provide for the protection of wilderness character and for the use and enjoyment of visitors in a manner that leaves it unimpaired for future use. By definition, no surface disturbance, permanent new development, or ROW would be allowed in the WSAs; the lands would be closed to oil, gas, and mineral leasing. Under all alternatives, where ACECs overlap WSAs (see Maps 81–83), WSA management would take precedence. This land would be managed according to the IMP.

Under all alternatives, any river segments found suitable for designation as a WSR would be recommended to Congress. Once identified—but prior to their official designation by Congress—these river segments would be managed to protect their free-flowing condition and

outstandingly remarkable values. These qualities would be maintained within 1/4 mile on each side of the river. The BLM would not seek water rights in these segments, and OHV travel would be limited to designated routes.

A comparative analysis of the management (specifically relating to oil and gas leasing stipulations) of the ACECs under each alternative would be the best representative of potential impacts of Special Designation decisions on special status species. Impacts of surface-disturbing oil and gas activities on special status species and their habitats include direct and indirect human-caused disturbance (i.e., vehicular traffic, trampling of vegetation, noise, and human presence) of individual species and their habitats. Further discussion of the qualitative impacts of surface disturbing oil and gas activities on native vegetation (special status species habitat) can be found in Section 4.3.17, Vegetation.

Under all alternatives for travel management, any new trail designations would consider special status species habitat, which could reduce the adverse impacts of surface and noise disturbance on special status plant and animal species. In addition, National Scenic Byways and Backways would be designated in the Monticello PA. These roads already exist, so there is not likely to be an appreciable impact on special status plant and animal species and their habitat resulting from these designations.

A number of trails would be managed for non-mechanized travel under all alternatives (see Chapter 2 Table 2.1, Summary Table of Alternatives, for the list). Because these trails are already established and in use, there is not likely to be a noticeable increase in disturbances of special status species and habitat resulting from trail maintenance. There would also be trails and/or areas open to OHV use under all alternatives. OHV use can physically damage the vegetation in special status species habitat and cause noise disturbance, which could have direct, adverse impacts on special status species, especially birds and big game, in the Monticello PA (Reijnen and Foppen1995, Gelbard and Belnap 2003). The surface disturbance associated with OHV use can have direct and indirect adverse impacts on individual plants and animals as well as their habitat.

Under all alternatives, vegetation-related seed gathering and plant collection would be allowed in all areas meeting Utah's Rangeland Health Standards and Grazing Guidelines (BLM 1997). This could have short-term, direct adverse impacts on special status species and their habitat due to trampling and human disturbance during collection activities. Sagebrush habitat would be managed as described in the National Sage-grouse Habitat Conservation Strategy (BLM 2004d). A list of sagebrush communities prioritized for treatment is located in the Summary Table of Alternatives, Table 2.1. These restoration treatments would have long-term beneficial impacts on special status species in native sagebrush communities by providing them with improved habitat (Monsen 2004). The spread of noxious, invasive, and non-native weed species would be controlled through implementation of BLM weed management policies and action plans. In addition, restoration activities and stock animal feed would be required to use certified weed-free seed mixes, mulch, and feed. Actions taken to help slow/stop the spread of weeds in the Monticello PA would help reduce the adverse impacts of surface disturbance associated with stock use, oil and gas development, and other activities that result in the adverse impacts associated with alteration of special status species habitat. Those non-native, exotic, and invasive species of management concern for the Monticello PA are included in Table 3.58.

Under all alternatives, lands within the Monticello PA would be designated and managed as VRM classes I through IV (see Chapter 3, Section 3.18, Visual Resources). All WSAs, and eligible/designated WSR segments would be managed as VRM Class I or II. Very limited and minor impacts to scenic quality would be allowed in areas designated as VRM Class I or II. Vegetation treatments, with short-term impacts on visual quality, and other similar surface-disturbing activities designed to enhance native vegetation, would be allowed in VRM Class I or II areas. These limitations on surface disturbances as well as allowed habitat enhancement would mitigate the adverse impacts of management activities in special status species habitat.

In areas designated as VRM Class III or IV, visual objectives would allow moderate or major changes to the visual landscape. Most types of surface-disturbing activities and human visitation would be allowed in VRM Class III or IV areas. These types of disturbance could have short- and long-term adverse impacts on special status species and their associated habitat in the Monticello PA.

In occupied priority migratory bird habitat, surface disturbance would be avoided from May 1 through July 30. In addition, maintenance/improvement of lowland riparian, wetlands, and low and high desert scrub communities would be prioritized in the Monticello PA. These three requirements would benefit both migratory bird and special status species in these habitats by maintaining and improving habitat necessary for survival.

Reintroduction of native fish and wildlife species into historic or suitable ranges would continue where it is determined to be appropriate. This could help to reestablish special status species, including the Colorado River endangered fish species, in their historical habitat. This would have beneficial impacts on these species in the Monticello PA.

Bighorn sheep habitat on the 5 mesa tops (56,740 acres) would be prioritized for improvement because of potential loss of habitat caused by surface disturbance in these areas. On-site mitigation would be required for projects that disturb or remove forage and browse species used by desert bighorn sheep. These requirements would help mitigate the adverse impacts of surface-disturbing activities on special status species in sagebrush and desert shrub habitat used by bighorn sheep. Listed under each alternative are seasonal wildlife protection areas for big game species. The special conditions common to all alternatives include no use of pyrotechnics, shooting during permitted filming, no use of low-flying aircraft, and minimal surface disturbing activities (see Appendix P for minimal impact criteria during filming). Exceptions to special conditions for the seasonal wildlife protection areas could be granted by the Monticello FO Manager if it can be shown that legal rights would be curtailed, animals are not present in the specific project location, or the activity can by conducted so as not to adversely affect wildlife species. In addition, maintenance and operation activities for mineral production as well as hunting would be allowed during seasonal restrictions. These special conditions would protect and benefit special status species that utilize these areas during the seasonal protection. There would be less noise and direct disturbance from humans to special status species.

There would be 17,300 acres allotted as wildlife habitat on slopes of Peter's Canyon and East Canyon, which would have beneficial impacts on special status species in this area by reducing forage competition and direct impacts from livestock.

Impacts to special status species from woodland management activities include removal of trees used by these species as cover, roosting, or breeding sites; direct impacts to individuals from

trampling or crushing during harvesting; and indirect impacts due to changes in vegetation structure, which could be beneficial or adverse depending on the species. Woodland harvest resulting in reduced probability of wildfire would likely reduce potentially adverse impacts to special status species that occupy woodland habitats.

Indirect adverse impacts of wood gathering include off-road driving, trampling, and removal of native vegetation, which result in special status species habitat degradation that can include reductions in prey species, forage species, and cover.

Sensitive wildlife species in pinyon-juniper woodland habitat would face short- and long-term adverse impacts from surface and noise disturbance associated with woodland harvest.

All WSAs, Arch Canyon, Alkali Ridge NHL, Grand Gulch NHD (mesa-top), Beef Basin, Fable Valley, Comb Ridge CSMA (south of Highway 95), San Juan SRMA, developed recreation sites, areas unavailable for livestock grazing, wildlife exclosures, cultural sites, Indian Creek Corridor, McLoyd Canyon-Moon House, Grand Gulch Plateau CSMA (in-canyon), Grand Gulch NHD (in canyon), floodplains, and riparian/aquatic areas would be excluded from woodland harvesting. This decision would provide beneficial impacts to special status species by protecting habitat from harvesting related surface disturbances and loss of vegetation cover.

4.3.15.1.1. NAVAJO SEDGE

Site-specific plant inventories would be required prior to any proposed surface-disturbing projects in suitable Navajo sedge habitat. Activities that would be avoided in suitable habitat include road construction, land disposal and approval of ROW corridors, and grazing activities (trailing, salting, watering, and herding). All motorized travel would be limited to designated routes in suitable Navajo sedge habitat. The use of herbicide and chemical treatments would be restricted. These avoidance measures and restrictions would help to mitigate the adverse impacts of habitat degradation and fragmentation for the Navajo sedge.

4.3.15.1.2. BLACK-FOOTED FERRET

No critical habitat rules have been published for the black-footed ferret. There are no special protective measures in place because there are no known populations in the Monticello PA. However, the 1988 Recovery Plan states, “direct reduction in the area occupied by prairie dogs has been shown to reduce the number of black-footed ferrets linearly” (USFWS 1988). Therefore, it can be assumed that critical habitat for the black-footed ferret coincides with prairie dog habitat (including areas of short vegetation and bare ground), and that impacts described in this chapter for prairie dogs would be the same for the black-footed ferret.

4.3.15.1.3. GUNNISON SAGE-GROUSE

Major threats to the Gunnison sage-grouse include roads, fences, and power poles that fragment habitat and provide perches and viewing areas for sage-grouse predators, including raptors, leading to increased sage-grouse mortality (Connelly et al. 2000, Crawford et al. 2004). Additional threats to Gunnison sage-grouse include reduction in native vegetation distribution and human disturbance during breeding and nesting season. The BLM's Guidance for the Management of Sagebrush Plant Communities for Sage-grouse Conservation, BLM's National Sage-grouse Habitat Conservation Strategy (BLM 2004d) and Gunnison Sage-grouse Rangewide Conservation Plan (BLM 2005l) would be implemented in suitable habitat in the Monticello PA.

An additional 320 acres of suitable Gunnison sage-grouse habitat would be managed as a conservation easement to protect and enhance their habitat. Adherence to these plans would have beneficial impacts on Gunnison sage-grouse and other special status sagebrush species in the Monticello PA because of the habitat protections and restrictions on human disturbance specified in these plans.

4.3.15.1.4. MEXICAN SPOTTED OWL (MSO)

There would be no ground-disturbing activities allowed within a 0.5-mile radius of known MSO nests, with the 0.5-mile protective radii designated as Protected Activity Centers (PACs). These would be protected as outlined in the MSO Recovery Plan (USFWS 1995). Because healthy, native vegetation is a key component of suitable habitat (food source and shelter for owl prey species), these restrictions would have long-term beneficial impacts on MSOs and other special status species in the MSO nest buffer zones. MSO Designated Critical Habitat and suitable habitat would be avoided or use restrictions would be implemented. Suitable habitat restrictions would include staying on designated routes or revegetating access routes created by a project: actions that would help mitigate the adverse impacts of any surface disturbance associated with road construction in MSO prey habitat.

In addition, surveys would be required for temporary activities taking place within 0.5 miles of suitable MSO habitat during breeding season (March 1–August 31). For all permanent actions, two years of surveys would be required prior to commencement of the activity. If MSOs were found during the surveys, no disturbing actions or permanent structures would be allowed within 0.5 miles of any identified nest sites or PACs. Additionally, noise emissions would be reduced below 45 dBA at 0.5 miles from suitable habitat. This would help reduce the stress of noise on MSOs during the breeding season. Various studies have shown that human presence and noise disturbance leads to a significant reduction in prey handling and delivery by females, impacts that would reduce nest success (Frid 2002; Swarthout and Steidl 2003). These requirements would mitigate the adverse impacts of human disturbance on MSOs during breeding season.

4.3.15.1.5. BALD EAGLE

Bald eagles would be protected as outlined in the Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250, as amended). There is no recovery plan for this species. Activities on BLM lands that contain nesting or winter roosting habitat for the bald eagle would be avoided or restricted, depending on the duration and timing of the activity. Bald eagles would be managed according to the Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006c). These management requirements would include restrictions and avoidance measures, including required surveys prior to activity, possible monitoring during the activity, implementation of seasonal and spatial buffers during the breeding season (January 1–August 31), and avoidance of disturbance in riparian areas unless impracticable. No future ground-disturbing activities would be authorized within a 0.5-mile radius of known bald eagle nest sites year-round. Deviations may be allowed only after appropriate levels of consultation and coordination with the USFWS. In addition, no permanent above-ground structures would be allowed within a 0.50-mile radius of a winter roost site if the structure would result in the habitat becoming unsuitable for future winter roosting by bald eagles.

As discussed in the MSO section, these requirements would help to mitigate the adverse impacts of human disturbance on bald eagles during breeding and roosting seasons.

4.3.15.1.6. SOUTHWESTERN WILLOW FLYCATCHER (SWFL) AND YELLOW-BILLED CUCKOO

In SWFL and yellow-billed cuckoo riparian habitat, there would be no surface-disturbing activities within 300 feet of riparian areas, restrictions that would have long-term beneficial impacts on riparian special status species and their habitat within those buffer zones by eliminating ground disturbance and preventing habitat degradation. In addition, native species revegetation of disturbed riparian and adjacent upland areas would be required upon completion of an activity. Surveys would be required for activities taking place within suitable riparian habitat (see Map 54). Construction and other disruptive activities would not be permitted within a 0.25 mile buffer of occupied breeding habitat from May 1 through August 15. No permanent loud-noise-emitting facilities would be permitted within 0.25 miles of riparian habitat. In addition, SWFL would be protected as outlined in the SWFL Recovery Plan (USFWS 2002e). These requirements would help to mitigate the adverse impacts of human disturbances on special status bird species during breeding, nesting, and roosting seasons.

4.3.15.1.7. CALIFORNIA CONDOR

California condors and their habitat would be protected as outlined in the Recovery Plan for the California condor (USFWS 1996). If California condors are found to nest in the Monticello PA, there would be no roads or permanent structures allowed within 1 mile of the nest. In addition, no surface-disturbing activities or special use permit groups would be allowed within 1 mile of the nest during breeding season. These requirements would help to mitigate the adverse impacts of human disturbance on nesting California condors. Adverse impacts would be similar to those discussed for the MSO.

4.3.15.1.8. ENDANGERED COLORADO RIVER FISHES

The humpback chub, Colorado pikeminnow, razorback sucker, and bonytail chub would all be protected as outlined in their respective recovery plans (USFWS 2002a; USFWS 2002b; USFWS 2002c; USFWS 2002d). All water depletions from any portion of the Upper Colorado River drainage basin above Lake Powell have been determined to adversely affect or modify the critical habitat of the 4 resident endangered fish species and must be reported to the BLM (USFWS 1987). Any new depletion would require formal Section 7 consultation with the USFWS and would require implementation of the Conservation Measures dictated in the Programmatic Biological Opinion for depletions to the Colorado River system (USFWS 1987).

Surveys and monitoring would be required for activities taking place within designated critical habitat. Loss or degradation of riparian habitats would be avoided. The Utah Oil and Gas Pipeline Crossing Guidance would be implemented for all activities occurring near riparian areas (Appendix F). These requirements would help mitigate the adverse impacts of disturbance on special status fish species within the Monticello PA because of the associated reductions in human impacts such as grazing and surface-disturbing activities on fish habitat (Lentsch and Converse 1997).

4.3.15.2. ALTERNATIVES IMPACTS

4.3.15.2.1. IMPACTS OF CULTURAL RESOURCE DECISIONS ON SPECIAL STATUS SPECIES

4.3.15.2.1.1. Alternative A

Under Alternative A, the potential direct adverse impacts of cultural resource decisions on special status species include disturbance of individual wildlife and plant species. Wildlife could be disturbed by cultural resource site visitors, and plant species could be trampled or uprooted by visitors in cultural areas with high visitation. The potential indirect adverse impacts of cultural resource decisions on special status species include habitat disturbance and/or alteration caused by surface disturbance. This includes potential introduction and spread of weedy, non-native plant species. Human disturbance, including noise and vegetation trampling, in special status species habitat would be reduced due to the closure of the Grand Gulch Special Emphasis Area/Grand Gulch National Historic District to private and/or commercial use of woodland products, mineral leasing, OHV use, and mechanized or mechanical surface disturbance, including vegetation treatments. This would have beneficial impacts on special status species by decreasing the amount of surface disturbance caused by foot/vehicle traffic, tree removal, and oil and gas development in the area. Long-term adverse impacts would occur on special status species by not allowing mechanized or mechanical vegetation treatments that are designed to improved habitat for wildlife.

4.3.15.2.1.2. Alternative B

Under Alternative B, 4 areas totaling 62,567 acres would be managed as CSMAs. Prescriptions for the CSMAs under Alternative B would have beneficial impacts to special status species because there would be limits on the number of visitors and surface disturbance allowed, and OHV restrictions would be imposed. Acres of each CSMA by vegetation type are provided in Table 4.145 in Section 4.3.17, Vegetation. The CSMAs are located in riparian, sagebrush, desert shrub, conifer/mountain shrub, and pinyon-juniper woodland habitat types. The dominant vegetation type in all CSMAs combined is pinyon-juniper woodland; therefore, more impacts would be expected on pinyon-juniper woodland–dependent special status species. Alternative B would have more beneficial impacts on special status species than would Alternative A because of restrictions on surface disturbance and visitor numbers within the proposed CSMAs. The impacts of cultural resource decisions on special status species would be the same as those discussed in Alternative A for the Grand Gulch National Historic Area.

4.3.15.2.1.3. Alternative C

Alternative C would designate the same total acreage of CSMAs as would Alternative B; however, the management decisions would be different. As compared to Alternative B, Alternative C would allow for a higher number of visitors per CSMA; Comb Ridge CSMA (38,012 acres) and Tank Bench CSMA (2,646 acres) would be open to oil and gas leasing subject to standard lease terms; and Comb Ridge CSMA would be available for private and/or commercial use of woodland products. These decisions would have an adverse impact on special status species due to noise disturbance and habitat alteration and disturbance. Because the pinyon-juniper woodland habitat type is the most prevalent in the Comb Ridge CSMA, the

allowance could result in habitat alteration for special status plant and animal species and noise disturbance for animal species during wood removal activities.

Under Alternative C, the impacts of cultural resource decisions on special status species in the Grand Gulch National Historic District would be the same as those discussed for Alternative A.

4.3.15.2.1.4. Alternative D

Under Alternative D, no CSMAs would be proposed for designation. Visitors would be allowed in greater numbers and more area would be open to woodland product harvest under this alternative. In addition, 2,646 more acres (the proposed Tank Bench CMSA under Alternatives B and C) would be open to mineral material disposal and geophysical work. These management decisions would have adverse impacts on special status species as described in the other alternatives.

This alternative would have fewer adverse impacts on special status species than would Alternative A because visitor use numbers would be imposed for Butler Wash east of Comb Ridge and for McLoyd Canyon-Moon House, and woodland product harvest would not be allowed in Beef Basin. However, there would be more adverse impacts to special status species under Alternative D than under Alternatives B and C because of the decisions to allow for more visitors, woodland product harvest, and mineral development.

4.3.15.2.1.5. Alternative E

The impacts from Alternative E cultural management decisions on special status species would be the same as Alternative B.

4.3.15.2.2. Impacts of Fire Management Decisions on Special Status Species

4.3.15.2.2.1. Desert Shrub Habitat

Under all alternatives, wildland fire use or fuels management actions and associated surface-disturbing treatments would not be authorized in desert shrub habitats, which are known to be highly susceptible to post-fire cheatgrass or other weed invasion, unless reasonable Resource Protection Measures were in place. Resource Protection Measures would result in beneficial impacts because fire management activities that promote weed invasion could adversely impact special status plant species through direct impacts to individuals and competition from weed species. These also indirectly impact special status wildlife through short- and long-term changes in vegetation composition and structure and weed-induced destabilization of biological soil crusts.

4.3.15.2.2.2. Sagebrush and Perennial Grassland and Pinyon-Juniper Woodland

The LUP indicates that the majority of fuels management treatments would occur in pinyon-juniper woodland and sagebrush habitats. Impacts would be analyzed with site-specific NEPA once it is determined where individual treatments would occur. Under all alternatives, fuels management actions would include surface-disturbing treatments on 5,000–10,000 acres annually within the Monticello PA. Over the life of the plan, this would result in approximately 75,000–150,000 acres of land subject to fuels management.

Impacts to special status species would include trampling or removal of vegetation and associated disturbance to sensitive wildlife species from fire and human presence. In the long-term, however, vegetation treatments would potentially benefit special status species habitat by removing competition from weedy natives and invasive species.

4.3.15.2.2.3. Riparian and Wetland Habitats

Direct adverse impacts from fire management decisions would include aquatic habitat degradation and modification, including sedimentation and salinization resulting from soil erosion and stream bank destabilization, changes in water chemistry, changes in flow pattern, and possible water withdrawals (USFWS 2002a; BLM 2005c; Trombulak and Frissell 2000). Indirect beneficial impacts of fire management on special status species and their habitats include the reduction of catastrophic wildland fires that cause habitat modification, soil erosion, stream sedimentation, and water quality degradation. Indirect adverse impacts of fire management in riparian areas include the potential for alteration of plant community structure, species composition, and a relative abundance of species. Fire is an imminent threat to special status species riparian habitats, because native riparian plants are neither fire-adapted nor fire-regenerated; therefore, fires in riparian habitats can cause catastrophic, immediate, and drastic changes in riparian plant density and species composition (USFWS 2002a). Under all alternatives, wildland fire and fuels management decisions would not be authorized in potential special status species riparian habitats (see Section 4.3.15.1).

4.3.15.2.2.4. All Other Special Status Species Habitats in the Monticello PA

Under all other habitat types, wildland fire use would not be authorized unless reasonable Resource Protection Measures were in place if the habitat is deemed susceptible to post-fire cheatgrass or other weed invasion, important as terrestrial and aquatic habitat for special status species, or a non-fire-adapted vegetation community.

4.3.15.2.3. Impacts of Health and Safety Decisions on Special Status Species

4.3.15.2.3.1. Riparian and Wetland Habitats

Hazardous waste contamination from AML sites could directly or indirectly impact special status species in the short- and long-term. Special status fish and amphibian species may be particularly vulnerable to adverse impacts to water quality, which could result in mortality of individuals and reduced forage or prey availability, as well as impacts to other habitat qualities. Any impacts to water quality could indirectly impact sensitive wildlife species that use affected riparian or wetland habitats through exposure to contaminants or impacts to prey availability or habitat quality.

Under all alternatives, some AML sites would be prioritized due to hazardous waste contamination and water-quality issues. The top criteria used to prioritize water-quality-based AML programs include threats to the environment (see special status species section of Table 2.2, Summary of Impacts), which takes into account habitat quality for all special status fish species (see Table 4.106). These actions are conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authority and follow CERCLA processes. These reclamations would help to mitigate for the adverse impacts of poor water

quality on special status fish species because the threat of groundwater contamination would be removed. Long-term water-quality monitoring would be required.

4.3.15.2.3.2. Caves and Rock Crevices

In addition to naturally occurring caves and rock crevices, abandoned mining structures are often used as roosting habitat by bats, including sensitive bat species. Of the 18 bat species in Utah, 14 species regularly occur in abandoned mines. One state special status species (Townsend's big-eared bat) has been found exclusively in abandoned mines (Grandison 2004). Of the special status bat species occurring in the Monticello PA (see Table 4.106), three are known to use caves as winter, day, or night roosts: Townsend's big-eared bat, fringed myotis, and spotted bat (Oliver 2000). These species have the highest potential for being adversely impacted by the reclamation and mitigation of AMLs. Completely sealing off AML entrances could have direct adverse impacts to roosting individuals and populations, including the reduction of suitable roosting habitats. Under all alternatives, potential mitigations to avoid and/or minimize impacts to special status bat species would include preconstruction surveys and the installation of bat-compatible mine gates and cupolas that allow bats to pass through but prohibit human entrance. Use of mitigation structures and monitoring would lessen adverse impacts of mine closures on bats.

4.3.15.2.3.3. All Other Special Status Species Habitats in the Monticello PA

Under all alternatives, impacts to all other special status species from health and safety decisions would be negligible because they do not occur on AML sites.

4.3.15.2.4. Impacts of Lands and Realty Decisions on Special Status Species

4.3.15.2.4.1. Alternative A

Under Alternative A, proposals for ROWs for wind or solar energy development would be considered in the Monticello PA except in WSAs. In addition, proposals for ROWs in VRM Class I and II areas would be difficult if not impossible to authorize because the development would not likely meet the VRM Class I and II management objectives for minimal to minor surface disturbances.

In all other areas where ROWs would be authorized, there could be long-term direct, adverse impacts on special status species habitat where installation would occur. These impacts would result from vegetation crushing and removal associated with construction and habitat fragmentation. Short-term direct impacts could result from noise disturbances. Long-term indirect adverse impacts could result from the potential introduction of invasive plant species by construction equipment and building personnel. This alternative has the greatest amount of acreage open to ROW authorization and, therefore the greatest potential for impacts to special status species.

4.3.15.2.4.2. Alternative B

Alternative B would consider proposals for ROWs for wind or solar energy development in the Monticello PA except in WSAs; designated VRM Classes I, II, and III areas; Wild and Scenic River corridors; ACECs; raptor habitat; migratory bird habitat; and special status species habitat (not federally listed species habitat). The magnitude of the adverse impacts under this alternative

would be reduced as a result of the total combined acreages that would be exclusion and avoidance areas for ROWs.

4.3.15.2.4.3. Alternative C

Under Alternative C, the impacts of lands and realty decisions on special status species would be the same as under Alternative B except for the increase in surface disturbance associated with the following: 1) the allowance of ROWs in ACECs and VRM Class II and III areas, and 2) the authorization of ROWs for wind or solar energy in special status species habitat (except for federally protected species). These differences would increase the number of acres in the Monticello PA with potential to be adversely affected by surface disturbance and human presence associated with this management decision. An increase in acreage open to disturbance could have short- and long-term adverse impacts on special status plant and wildlife species in the Monticello PA, as noted under Alternative A.

4.3.15.2.4.4. Alternative D

Under Alternative D, the impacts of lands and realty decisions on special status species would be the same as under Alternative C except for the increase in surface disturbance associated with ROWs being allowed in Wild and Scenic River corridors, which would increase the number of acres in the Monticello PA open to surface disturbance and human presence associated with this management decision. An increase in acreage open to disturbance could have short- and long-term adverse impacts on special status plant and wildlife species in the Monticello PA, as noted under Alternative A.

4.3.15.2.4.5. Alternative E

Under Alternative E, the impacts of lands and realty decisions on special status species would be the same as under Alternative B, except that this alternative would exclude authorization of ROWs on approximately 582,357 acres of non-WSA wilderness characteristics areas in the Monticello PA (33% of the planning area would be ROW exclusion areas). The impacts of excluding ROW development to protect non-WSA wilderness values would be beneficial in the long-term on special status species habitat because surface disturbances within habitat would potentially be reduced. Because of the restrictions on surface disturbance and human presence, this alternative would have the lowest level of adverse impacts on special status species of the five alternatives.

4.3.15.2.5. Impacts of Livestock Grazing Decisions on Special Status Species

4.3.15.2.5.1. Alternative A

Under Alternative A, 125,356 acres would be unavailable for livestock grazing (those areas shown in Table 4.28, including the Comb Wash Allotment). Table 4.107, below, shows the number of acres of habitat for select special status species unavailable for grazing under each alternative.

Table 4.107. Special Status Species Habitat Unavailable for Grazing by Alternative

Species	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Bald Eagle	4,835	7,898	7,898	4,835	7,898
Federally Listed Fish	0	0	0	0	0
MSO	71,178	73,010	73,010	71,178	73,010
SWFL	2,381	2,816	2,816	2,394	2,816
Gunnison Sage-grouse	0	0	0	0	0

Riparian and Rocky Slopes and Canyons

Under Alternative A, approximately 2% of the total 250,264 acres of bald eagle habitat, 10% of the total 22,896 acres of SWFL habitat, and 19% of the total 378,518 acres of MSO habitat in the Monticello PA would be unavailable for livestock grazing.

Adverse impacts of livestock on special status riparian species could include loss of riparian habitat as a result of grazing of palatable native plant species. Once disturbed, these areas could become more susceptible to invasion by noxious and introduced weeds, which tend to be low value forage and cover species for special status wildlife (Popolizio et al. 1994, Sarr et al. 1996, Belsky et al. 1999).

Under Alternative A, none of the total 1,690 acres of designated critical fish habitat in the Monticello PA would be unavailable for livestock grazing. Potential adverse impacts on special status fish species and their habitat would include direct, adverse impacts of livestock presence in streams and indirect, adverse impacts of increased stream sedimentation resulting from overland flow associated with riparian soil compaction. Cattle hooves compact the soil on stream-bank slopes, which results in less rainwater infiltration into soils and more overland flows. The result is large, short-lived flows rather than small, perennial flows (Trimble and Mendel 1995).

Sagebrush, Desert Shrub, Conifer, and Pinyon-Juniper Woodland

Under Alternative A, none of the Gunnison sage-grouse habitat in the Monticello PA would be unavailable for livestock grazing, which could have direct and indirect adverse impacts on Gunnison sage-grouse individuals and their habitat. Livestock grazing, when properly grazed, would not necessarily have adverse impacts on the native plant populations in an area. However, when improper grazing occurs, adverse impacts on native vegetation could be possible in some areas (Sparrow et al. 2003; Young and Evans 1973). The invasion and establishment of weedy species in arid environments is common following surface disturbance. Most native plant species are slow-growing, and generally cannot compete with invasive plants in disturbed areas (Stevens 2004). Under all alternatives, using standards and guides, grazing could be reduced in those areas where the native vegetation appears to be stressed. This would mitigate the adverse impacts of surface disturbance on these special status plant and wildlife habitats associated with livestock grazing in the Monticello PA. Table 4.146 in Section 4.3.17, Vegetation, shows the number of acres unavailable for grazing in each habitat for each alternative.

4.3.15.2.5.2. Alternative B

Under Alternative B, 134,843 acres would be unavailable for livestock grazing (those areas shown in Table 4.28 with additional unavailable acreages shown in Table 4.29). In addition, seasonal restrictions, closures, and/or forage utilization limits would be imposed on grazing in riparian areas determined to be Functioning at Risk. This would mitigate the potential adverse impacts of livestock grazing in special status species habitats, as discussed in Alternative A.

Riparian and Canyons

Under this alternative, 3% of total bald eagle habitat would be unavailable for livestock grazing, which would be 1% more than under Alternative A; 19% of total MSO habitat would be unavailable for livestock grazing (same as Alternative A); 12% of SWFL habitat would be unavailable for livestock grazing (2% more than under Alternative A). These proposed grazing restrictions would have more beneficial impacts on special status species than Alternative A because more potential habitat would be protected from grazing-related surface disturbances to vegetation. There would be no critical fish habitat unavailable for grazing under this alternative.

Sagebrush, Desert Shrub, Conifer, and Pinyon-Juniper Woodland

Under Alternative B, none of the Gunnison sage-grouse habitat in the Monticello PA would be unavailable for livestock grazing, which would have the same level of direct and indirect adverse impacts on Gunnison sage-grouse individuals and their habitat as under Alternative A. The additional acres of federally listed species habitat closed to livestock grazing under this alternative would decrease the magnitude of the adverse impacts associated with livestock grazing decisions more than under Alternative A or D.

4.3.15.2.5.3. Alternative C

Under Alternative C, 133,519 acres would be unavailable for livestock grazing. The impacts would be similar to Alternative B because the only difference between the two alternatives is Mule Canyon south of U-95 (1,324 acres) would unavailable for livestock grazing.

4.3.15.2.5.4. Alternative D

Under Alternative D, 131,350 acres would be unavailable for livestock grazing (the number of unavailable acres shown in Table 4.28, with additional unavailable acres shown in Table 4.32). The same number of acres of federally listed wildlife species habitat would be closed to grazing under this alternative as under Alternative A. These closures would reduce the magnitude of the adverse impacts associated with livestock grazing in the Monticello PA, when compared to Alternative A, but would have more adverse impacts than Alternatives B, C, and E because fewer acres would be unavailable for grazing under this alternative.

4.3.15.2.5.5. Alternative E

Under Alternative E, the impacts of livestock grazing decisions on special status species would be the same as under Alternative B because the management decisions are the same, except for management of wilderness values protection within non-WSA lands with wilderness characteristics. Livestock grazing with the non-WSA wilderness characteristics lands would not be affected by the decision to protect wilderness values in these areas.

4.3.15.2.6. Impacts of Mineral Decisions on Special Status Species

4.3.15.2.6.1. Alternative A

In Tables 4.147–4.149 in Section 4.3.17, Vegetation, acres of each special status species habitat type in each leasing category are shown for each of the three RFD areas. Acreage figures under the standard stipulations (standard conditions) and timing and controlled surface use (special conditions) stipulations reflect the total BLM-administered areas within the Monticello PA open to surface-disturbing activities. The impacts of surface-disturbing oil and gas activities on native vegetation (special status species habitat) are discussed in Section 4.3.17.2.5, Impacts of Minerals Decisions on Vegetation. These are not estimates of the total area disturbed within the Monticello PA, but a comparison by alternative of the amount of area open to potential development within BLM-administered areas within the Monticello PA. All acreages provided in this document are approximations. Tables 4.108–4.111 include acres of select federally listed and BLM special status species habitat under each of the minerals leasing stipulations.

<u>Desert Shrub, Sagebrush, Perennial Grassland, Pinyon-Juniper Woodland, and Conifer/Mountain Shrub</u>

Potential direct, adverse impacts of oil and gas development on special status species include placement of facilities or roads within either occupied habitat or potential habitat necessary for recovery, resulting in an overall reduction in suitable and potentially suitable habitat and an increase in habitat fragmentation (see Table 4.217). Additionally, noise associated with construction and operation activities could potentially disturb special status wildlife species. Protective measures would be implemented to mitigate these impacts (see Appendix A). Further mitigation measures include native vegetation protection and restoration requirements discussed in Section 4.3.17.4, which would benefit potentially suitable special status wildlife habitat and special status plant individuals and habitat. Under Alternative A, no Gunnison sage-grouse habitat would be categorized as closed or NSO to minerals leasing.

<u>Riparian</u>

Oil and gas development would have both direct and indirect adverse impacts on riparian species. Although the riparian zone is listed as NSO, this stipulation could be waived if necessary for transmission lines, roads, and surface occupancy (Appendix A). Development of oil and gas wells requires approximately 2.4 acre feet of water for well drilling and extraction per well, which could adversely affect riparian habitat. Each contracting company would identify its own water source and disposal methods for waste products. One of the main factors in the listing of the Colorado River fishes was the cumulative impact of water depletion within the Colorado River system and their associated critical habitat. Because the Colorado and San Juan Rivers are designated as critical habitat for the 4 federally listed fish species, any water withdrawal would constitute a significant impact on these species. New depletions from these rivers or changes in the amount of water returned to the rivers would constitute an additional impact on the Colorado River fishes. Although stipulations would mitigate the adverse impacts of minerals development on water quality, the mineral development, including road construction, outlined for each alternative could result in indirect, adverse impacts to water quality due to sedimentation associated with soil compaction in areas adjacent to riparian areas and subsequent overland flow (Trimble and Mendel 1995).

Other special status species dependent on riparian habitat for survival could be adversely impacted by oil and gas development activities. These impacts include a potential reduction on available prey species (fish) for special status bird species. Under Alternative A, 24% of SWFL habitat, 16% of bald eagle habitat, and none of Colorado River fish habitat would be categorized as closed or NSO to minerals leasing.

Rocky Slopes and Canyons

Oil and gas maintenance activities would be allowed year-round in lands managed with standard stipulations and special conditions. The potential exists for the MSO to occupy the rocky slope/canyon habitat in the Monticello PA. Under Alternative A, 31% of MSO habitat would be closed or NSO to minerals leasing. Direct, adverse impacts include short-term disturbance of individual owls and other special status species resulting from construction and operation noise, and a long-term reduction in habitat from the installation of mineral development infrastructure. These impacts, however, would be partially mitigated by riparian habitat restoration requirements and seasonal disturbance restrictions. Temporary mineral development activities are not allowed during the owl breeding season (March 1–August 31) in habitat found to be occupied by owls. No permanent disturbing actions would be allowed within 0.5 miles of areas where MSO surveys have found nesting individuals.

Table 4.108 provides acres of special status species habitat located in areas of the Monticello PA designated as closed or NSO to minerals leasing for each alternative. The acres in Table 4.108 are carried forward from the 1991 RMP, which include acres from both locatable mineral entry and oil and gas RFD areas. Tables 4.109–4.123 provide acres of special status species habitat by RFD area acres only; therefore, they are not comparable. At the time of this analysis, spatially explicit habitat information is only available for these eight federally listed and BLM special status species.

Table 4.108. Acres of Special Status Species Habitat designated as Closed or NSO by Alternative

Species	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
MSO	117,424	166,131	116,648	112,101	300,489
Gunnison Sage-Grouse	0	0	0	119	0
Colorado River fish	0	1,670	1,670	1,397	1,668
SWFL	5,390	11,167	6,603	10,985	11,670
Bald Eagle	39,127	28,335	25,290	22,360	75,694

Tables 4.109 through 4.111 lists the number of acres of TES species habitat within each of the RFD areas by mineral leasing category. Section 4.3.17, Vegetation, provides acreage estimates of actual surface disturbance in each RFD for each alternative. Site-specific NEPA will take place for each oil and gas development once actual well locations are known.

Table 4.109. Acres of Special Status Species Habitat in the Blanding Sub-basin Under Alternative A

Special Status Species	Surface Use with Standard Conditions (acres)	Surface Use Limited by Special Conditions (acres)	NSO and Closed to Mineral Entry (acres)	NSO and Open to Mineral Entry (acres)	Closed to Leasing and Mineral Entry (acres)
MSO	0	0	0	0	0
Gunnison Sage-Grouse	122	0	0	0	0
Colorado River fish	423	0	190	0	0
SWFL	6,949	2,266	532	83	410
Bald Eagle	23,772	84,111	3,537	2,506	0

Table 4.110. Acres of Special Status Species Habitat in the Monument Upwarp Under Alternative A

Special Status Species	Surface Use with Standard Conditions (acres)	Surface Use Limited by Special Conditions (acres)	NSO and Closed to Mineral Entry (acres)	NSO and Open to Mineral Entry (acres)	Closed to Leasing and Mineral Entry (acres)
MSO	75,225	76,570	0	2,173	99,903
Gunnison Sage-Grouse	0	0	0	0	0
Colorado River fish	17	0	262	0	0
SWFL	1,386	1,377	357	964	2,433
Bald Eagle	7,598	31,506	4,759	16,204	7,731

Table 4.111. Acres of Special Status Species Habitat in the Paradox Fold and Fault Under Alternative A

Special Status Species	Surface Use with Standard Conditions (acres)	Surface Use Limited by Special Conditions (acres)	NSO and Closed to Mineral Entry (acres)	NSO and Open to Mineral Entry (acres)	Closed to Leasing and Mineral Entry (acres)
MSO	76,108	33,381	0	4,916	10,432
Gunnison Sage-Grouse	4,424	0	0	0	0
Colorado River fish	37	236	0	0	0
SWFL	2,145	1,185	0	294	317
Bald Eagle	14,326	46,379	0	1,723	2,667

4.3.15.2.6.2. Alternative B

Under Alternative B, the qualitative impacts on special status plant and animal species would be the same as described under Alternative A. See Tables 4.152–4.154 in Section 4.3.17, Vegetation for the acres of each vegetation type in each leasing category in each of the RFD areas.

Under Alternative B, 49% of SWFL habitat in the Monticello PA would be categorized as NSO or closed, which is 25% more than under Alternative A. Under Alternative B, 11% of bald eagle habitat in the Monticello PA would be categorized as NSO or closed, which is 5% less than under Alternative A. Under Alternative B, 99% of Colorado River fish habitat in the Monticello PA would be categorized as NSO or closed, which is 99% more than under Alternative A. This would protect other special status riparian plant and animal species, including the yellow-billed cuckoo. Under Alternative B, 44% of MSO habitat in the Monticello PA would be categorized as NSO or closed, which is 13% more than under Alternative A. This would protect MSO as well as other special status species in this cliff, desert shrub and sagebrush habitat. No Gunnison sage-grouse habitat would be closed or NSO to mineral entry. Overall, Alternative B would have fewer adverse impacts on special status species than Alternative A because more acres of habitat would be closed or NSO to oil and gas leasing. Tables 4.112 to 4.114 list the number of acres of TES habitat within each of the RFD areas.

Table 4.112. Acres of Special Status Species Habitat in the Blanding Sub-basin Under Alternative B

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	0	0	0	0	0	0
Gunnison Sage-Grouse	0	122	0	0	0	0
Colorado River fish	19	0	0	0	961	43
SWFL	2,997	0	2,660	2,444	4,573	284
Bald Eagle	9,664	0	2,921	94,306	7,019	506

Table 4.113. Acres of Special Status Species Habitat in the Monument Upwarp Under Alternative B

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	23,595	2,170	3	122,922	130	105,050
Gunnison Sage-Grouse	0	0	0	0	0	0
Colorado River fish	1	0	0	0	199	194
SWFL	680	27	75	1,727	1,318	2,836
Bald Eagle	2,814	3,580	5,762	41,523	3,119	11,410

Table 4.114. Acres of Special Status Species Habitat in the Paradox Fold and Fault Under Alternative B

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	2,806	40,582	25	20,375	49,354	11,597
Gunnison Sage-grouse	69	4,402	0	0	0	0
Colorado River fish	0	0	0	0	74	199
SWFL	96	1,286	7	405	1,686	470
Bald Eagle	853	16,630	35	41,373	2,688	3,593

4.3.15.2.6.3. Alternative C

Under Alternative C, the qualitative affects on special status plant and animal species would be the same as described under Alternative A.

Under Alternative C, 29% of SWFL habitat in the Monticello PA would be categorized as NSO or closed, which is 5% more than under Alternative A. Under Alternative C, 10% of bald eagle habitat in the Monticello PA would be categorized as NSO or closed, which is 6% less than under Alternative A. Under Alternative C, 99% of Colorado River fish habitat in the Monticello PA would be categorized as NSO or closed, which is 99% more than under Alternative A. Under Alternative C, 31% of MSO habitat in the Monticello PA would be categorized as NSO or closed, which is the same as under Alternative A. This would protect MSO as well as other special status species in this cliff, desert shrub, and sagebrush habitat. No Gunnison sage-grouse habitat would be closed or NSO to mineral entry. Overall, Alternative C would have fewer adverse impacts on special status species than Alternative A because more acres of habitat would be closed or NSO to oil and gas leasing. Tables 4.115–4.117 list the number of acres of MSO, Colorado River fishes, and sage-grouse habitat within each of the RFD areas. Spatially explicit protected habitat information is only available for these six special status species.

Table 4.115. Acres of Special Status Species Habitat in the Blanding Sub-basin Under Alternative C

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	0	0	0	0	0	0
Gunnison Sage-Grouse	0	122	0	0	0	0
Colorado River fish	19	0	0	0	961	43
SWFL	5,841	2	90	1,799	2,158	409
Bald Eagle	22,648	5	3,076	81,842	6,339	506

Table 4.116. Acres of Special Status Species Habitat in the Monument Upwarp Under Alternative C

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	53,934	1,790	387	92,711	0	105,050
Gunnison Sage-Grouse	0	0	0	0	0	0
Colorado River fish	1	0	0	0	199	194
SWFL	1,711	27	293	1,571	306	2,755
Bald Eagle	6,182	767	8,952	39,369	1,529	11,410

Table 4.117. Acres of Special Status Species Habitat in the Paradox Fold and Fault Under Alternative C

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	22,079	35,101	38,118	12,024	5,819	11,597
Gunnison Sage-Grouse	0	4,402	0	0	0	0
Colorado River fish	0	0	0	0	74	199
SWFL	636	1,073	1,112	154	505	470
Bald Eagle	8,514	13,362	1,882	35,909	1,913	3,593

4.3.15.2.6.4. Alternative D

Under Alternative D, the qualitative impacts on special status plant and animal species would be the same as described under Alternative A.

Under Alternative D, 48% of SWFL habitat in the Monticello PA would be categorized as NSO or closed, which is 24% more than under Alternative A. Under Alternative D, 9% of bald eagle habitat in the Monticello PA would be categorized as NSO or closed, which is 7% less than under Alternative A. Under Alternative D, 83% of Colorado River fish habitat in the Monticello PA would be categorized as NSO or closed, which is 83% more than under Alternative A. Alternative D is the only alternative to classify any sage-grouse habitat (119 acres) as NSO or closed to minerals development. This would provide more protection for sage-grouse and other special status sagebrush plant and animal species than Alternatives A, B, or C. Under Alternative D, 30% of MSO habitat in the Monticello PA would be categorized as NSO or closed, which is 1% less than Alternative A. This would provide less protection to MSO as well as other special status species in this cliff, desert shrub, and sagebrush habitat. Overall, Alternative D would have fewer adverse impacts on special status species than Alternative A because more acres of habitat would be closed or NSO to oil and gas leasing. Tables 4.118–4.120 list the number of acres of

MSO, Colorado River fishes, and sage-grouse habitat within each of the RFD areas. Spatially explicit protected habitat information is only available for these seven special status species.

Table 4.118. Acres of Special Status Species Habitat in the Blanding Sub-basin Under Alternative D

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	0	0	0	0	0	0
Gunnison Sage-Grouse	3	0	0	0	119	0
Colorado River fish	19	0	0	0	1,004	0
SWFL	409	0	0	2,158	6,596	1,136
Bald Eagle	13,342	0	0	94,233	6,841	0

Table 4.119. Acres of Special Status Species Habitat in the Monument Upwarp Under Alternative D

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	115,434	0	0	36,769	0	101,669
Gunnison Sage-Grouse	0	0	0	0	0	0
Colorado River fish	1	0	0	0	393	0
SWFL	3,354	0	0	371	504	2,432
Bald Eagle	11,760	0	0	43,596	4,947	7,905

Table 4.120. Acres of Special Status Species Habitat in the Paradox Fold and Fault Under Alternative D

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	55,259	0	0	59,046	0	10,433
Gunnison Sage-Grouse	1,713	2,758	0	0	0	0
Colorado River fish	0	0	0	273	0	0
SWFL	1,812	1	0	1,819	0	317
Bald Eagle	15,954	0	0	46,550	0	2,667

4.3.15.2.6.5. Alternative E

Under Alternative E, the qualitative impacts on special status plant and animal species would be the same as described under Alternative A. See Tables 4.164–4.166 in Section 4.3.17, Vegetation for acres of each vegetation type in each leasing category in each of the RFD areas.

Under Alternative E, 56% of SWFL habitat in the Monticello PA would be categorized as NSO or closed, which is 32% more than under Alternative A. Under Alternative E, 31% of bald eagle habitat in the Monticello PA would be categorized as NSO or closed, which is 15% more than under Alternative A. Under Alternative E, 99% of Colorado River fish habitat in the Monticello PA would be categorized as NSO or closed, which is 99% more than under Alternative A. This would protect other special status riparian plant and animal species including the yellow-billed cuckoo. No Gunnison sage-grouse habitat would be closed or NSO to mineral entry. Under Alternative E, 79% of MSO habitat in the Monticello PA would be categorized as NSO or closed, which is 48% more than under Alternative A. This would protect MSO as well as other special status species in this cliff, desert shrub, and sagebrush habitat. Overall, Alternative E would have fewer adverse impacts on special status species than Alternative A because more acres of habitat would be closed or NSO to oil and gas leasing. Tables 4.121–4.123 list the number of acres of TES habitat within each of the RFD areas.

Table 4.121. Acres of Special Status Species Habitat in the Blanding Sub-basin Under Alternative E

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No surface Occupancy	Closed
MSO	0	0	0	0	0	0
Gunnison Sage-Grouse	0	122	0	0	0	0
Colorado River fish	19	0	0	0	880	124
SWFL	2,997	0	0	2,444	4,573	284
Bald Eagle	9,442	0	2,921	94,306	5,246	2,501

Table 4.122. Acres of Special Status Species Habitat in the Monument Upwarp Under Alternative E

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	10,684	465	3	40,977	130	201,611
Gunnison Sage-Grouse	0	0	0	0	0	0
Colorado River fish	1	0	0	0	184	209
SWFL	656	27	75	1,331	1,318	3,255
Bald Eagle	2,243	686	3,749	14,894	2,479	44,157

Table 4.123. Acres of Special Status Species Habitat in the Paradox Fold and Fault Under Alternative E

Special Status Species	Standard Lease Terms	Controlled Surface Use	Controlled Surface Use and Timing Limitations	Timing Limitations	No Surface Occupancy	Closed
MSO	31	15,879	11	10,068	24,508	74,240
Gunnison Sage-Grouse	69	4,402	0	0	0	0
Colorado River fish	0	0	0	0	74	197
SWFL	96	1,231	2	381	1,663	577
Bald Eagle	209	10,266	15	33,370	80	21,231

4.3.15.2.7. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Special Status Species

4.3.15.2.7.1. Alternatives A–D

Under Alternatives A through D, no areas within the Monticello PA would be managed as non-WSA areas with wilderness characteristics.

4.3.15.2.7.2. Alternative E

Under Alternative E, approximately 582,357 acres of non-WSA lands wilderness characteristics would be managed to preserve their wilderness values. Proposed decisions to protect wilderness values would include managing the areas under VRM I objectives, closing the area to oil and gas leasing and locatable mineral development, closing the areas to off-route OHV use and new road construction, designating the areas as ROW exclusion areas, and closing the areas to woodland harvest and wood gathering. These proposed decisions would have long-term beneficial impacts on special status species and their habitat by reducing the potential for surface disturbances, noise, and alteration of habitat.

4.3.15.2.8. Impacts of Recreation Decisions on Special Status Species

4.3.15.2.8.1. Alternative A

Under Alternative A, the San Juan River SRMA would restrict visitor use by issuing a limited number of river permits each year. Also, the Indian Creek SRMA would limit some camping to designated sites, which would reduce the surface disturbance associated with dispersed camping. These restrictions would reduce the adverse impacts of visitor traffic on special status species. There would, however, be adverse surface disturbance associated with the potential trampling and crushing of special status plant species by humans, horses, and vehicles. The surface disturbance associated with foot and vehicle traffic could also lead to the introduction of invasive plant species, with long-term adverse impacts on special status plant and animal habitats as discussed in previous sections. Additional impacts on special status species and their habitat would include direct and indirect disturbance of individual wildlife species by human visitors.

Wildlife species, birds in particular, are directly impacted by vehicle traffic and other anthropogenic noise. Traffic noise has been shown to directly interfere with bird vocal communication, which affects territorial behavior and mating success (Reijnen and Foppen, 1994). The San Juan River SRMA (10,203 acres) would allow 40,000 user/days per year, and vehicle camping would not be restricted. These stipulations would allow potential surface and noise disturbances, which would have long-term adverse impacts on special status species in the SRMA, as discussed in previous sections. The acreage of each vegetation type included in the SRMA is listed for each alternative in Table 4.170 in Section 4.3.17, Vegetation.

The Cedar Mesa Cultural SRMA (375,734 acres) would require pets to be leashed, camping only at campsites, and a total of 196 overnight visitors per day. This would reduce the adverse impacts of surface and noise disturbance associated with visitors. In Table 4.167 in Section 4.3.17 Vegetation, the acreage of each vegetation type included in the SRMA is listed in that table.

Under Alternative A, the Dark Canyon SRMA (30,820 acres) and the Indian Creek SRMA (89,271) are managed as part of a larger Canyon Basins SRMA (214,390 acres). There would be no limit on group size, camping location, or vehicle use. This could result in short- and long-term adverse impacts on special status species from surface and noise disturbances. In Tables 4.168 and 4.169 in Section 4.3.17, Vegetation, the acreage of each vegetation type included in the SRMA is listed for each alternative.

The White Canyon SRMA (2,828) would have no limit on group size, camping location, or vehicle use. This could result in short- and long-term adverse impacts on special status species due to surface and noise disturbance. In Table 4.153 in Section 4.3.17, Vegetation, the acreage of each vegetation type included in the SRMA is listed. Table 4.124 includes acres of federally listed species habitat in each of the SRMAs under Alternative A. Gunnison sage-grouse is not included in the table because none of the SRMAs overlap with Gunnison sage-grouse habitat.

Table 4.124. Acres of Federally Listed Species Habitat in each of the SRMAs Under Alternative A

SRMA	Bald Eagle	Federally Listed Fish	MSO	SWFL
Canyon Basins SRMA	59,799	0	245,465	2,931
Cedar Mesa SRMA	8,928	0	21,268	5,768
Dark Canyon	0	0	0	0
Grand Gulch Plateau	0	0	0	0
Indian Creek	0	0	0	0
San Juan River SRMA	12,642	825	0	4,346
White Canyon	0	0	0	0

Under this alternative, 33% of bald eagle habitat, 70% of MSO habitat, 57% of SWFL habitat, 49% of the federally listed fish habitat, and none of the Gunnison sage-grouse habitat would lie within the boundaries of proposed SRMAs.

4.3.15.2.8.2. Alternative B

Under Alternative B, the impacts of recreation management decisions on special status species would include those outlined below, as well as those discussed in Impacts Common to All Alternatives.

The San Juan River SRMA would allow 30,000 user/days per year, which would be 25% fewer visitors allowed per year than under Alternative A. Vehicle camping would be restricted to designated areas. These management decisions would result in less surface and noise disturbances to habitat than Alternative A, but there would still be long-term, adverse impacts on special status species in the SRMA as discussed in previous sections.

The Cedar Mesa Cultural SRMA would be available for livestock use and vegetation treatments, pets would be allowed on leash, dispersed camping would be allowed, and a total of 144 overnight visitors per day would be permitted. This represents a 27% reduction in visitors permitted than under Alternative A. Under Alternative B, the Dark Canyon SRMA would have a 15-private visitor per day limit and camping would be allowed in designated areas only. This would be a reduction in permitted visitation when compared with Alternative A, which would allow unlimited visitation. Permitted visitation could result in short and long-term, adverse affects on special status species from surface and noise disturbance, but to a lesser degree than under Alternative A.

In the Indian Creek SRMA, dispersed camping would not be allowed. This alternative would result in short and long-term, adverse impacts on special status species due to surface and noise disturbance associated with visitors, but to a lesser extent than under Alternative A because of the camping restrictions.

The White Canyon SRMA would limit use through a permit system. This could still result in short and long-term, adverse affects on special status species due to surface and noise disturbance, but to a lesser degree than under Alternative A. Table 4.125 includes acres of federally listed species habitat in each of the SRMAs under Alternative B. Gunnison sage-grouse is not included in the table because none of the proposed SRMAs overlap with Gunnison sage-grouse habitat.

Table 4.125. Alternative B-Acres of Federally Listed Species Habitat in each of the SRMAs

SRMA	Bald Eagle	Federally Listed Fish	MSO	SWFL
Canyon Basins SRMA	0	0	0	0
Cedar Mesa SRMA	0	0	0	0
Dark Canyon	846	0	30,820	351
Grand Gulch Plateau	7,737	0	17,330	4,061
Indian Creek	19,243	0	83,203	2,195
San Juan River SRMA	11,217	793	0	3,556
White Canyon	571	0	0	17

Under this alternative, 16% of bald eagle habitat in the Monticello PA would be included within proposed SRMAs (17% less than under Alternative A). Forty-seven percent of federally listed fish habitat would be included within SRMA boundaries (2% less than under Alternative A; 35% of MSO habitat would lie within SRMAs, (35% less than under Alternative A); and 44% of SWFL habitat would be included in SRMAs (13% less than under Alternative A).

Overall, this alternative would be likely to have less adverse impacts on special status species in SRMAs than Alternative A because of the increased protection afforded species within the proposed SRMAs.

4.3.15.2.8.3. Alternative C

Under Alternative C, the impacts of recreation management decisions on special status species would include following impacts in addition to those discussed in Impacts Common to All Alternatives.

The San Juan River SRMA would allow 40,000 user/days per year, which is the same number of users permitted under Alternative A. Unlike Alternative A, camping would be restricted to designated areas under this alternative. These stipulations would allow for less surface and noise disturbance than Alternative A, but there would still be some long-term, adverse impacts on special status species in the SRMA as discussed in previous sections.

Under Alternative C, the Cedar Mesa Cultural SRMA would be managed the same as under Alternative B with the following exceptions: woodland harvesting would be allowed, and a total of 180 overnight visitors per day would be permitted. Under this alternative, 8% fewer visitors would be allowed per day than under Alternative A which would reduce adverse impacts, however, there could be an increased level of surface disturbance related to woodland gathering and harvesting and/or noise-related disturbance compared with Alternatives A and B. Under Alternative C, the Dark Canyon SRMA management decisions would limit visitation to 20 private visitors per day, and camping would be allowed in designated areas only. This would result in short and long-term adverse impacts on special status species due to surface disturbances, but to a lesser extent than under Alternative A.

In the Indian Creek SRMA, dispersed camping would not be allowed except in designated dispersed camping zones (see Summary Table of Alternatives). This alternative would result in short and long-term, adverse impacts on special status species due to surface and noise disturbance associated with visitors, but to a lesser extent than under Alternative A because of the camping restrictions.

Under Alternative C, the impacts in on special status species in the White Canyon SRMA would be the same as under Alternative B.

The same number of acres of federally listed species habitat would be included in SRMAs under this alternative as under Alternative B; therefore, there would be the same impacts on federally listed species and their habitat under this alternative.

4.3.15.2.8.4. Alternative D

Under Alternative D, the impacts of recreation management decisions on special status species resources would include the following impacts, in addition to those discussed previously in Impacts Common to All Alternatives.

The San Juan River SRMA would allow 40,000 user/days per year, and vehicle camping would be restricted to designated areas in specified portions of the SRMA. These stipulations would potentially result in a similar level of surface disturbance as Alternative A, which would include long-term adverse impacts on special status species and their habitat in the SRMA, as discussed in previous sections.

Under Alternative D, the Cedar Mesa Cultural SRMA would be managed the same as under Alternative C with the exception that a total of 216 overnight visitors per day would be permitted. This could result in an increased level of surface and noise disturbance compared with Alternatives A, B, and C. Under Alternative D, the Dark Canyon SRMA would have no limit on the number of private visitors per day, and dispersed camping would be allowed in some areas. This would result in short- and long-term adverse impacts on special status species and their habitat due to surface and noise disturbance, but to a lesser extent than under Alternative A.

Under Alternative D, the impacts on special status species and their habitat in the Indian Creek SRMA would be the same as under Alternative A. Under Alternative D, the impacts on special status species and their habitat in the White Canyon SRMA would be the same as under Alternative A. Table 4.126 includes acres of federally listed species habitat in each of the SRMAs under Alternative D. Gunnison sage-grouse is not included in the table because none of the SRMAs overlap with Gunnison sage-grouse habitat.

Table 4.126. Acres of Federally Listed Species Habitat in each of the SRMAs Under Alternative D

SRMA	Bald Eagle	Federally Listed Fish	MSO	SWFL
Canyon Basins SRMA	0	0	0	0
Cedar Mesa SRMA	0	0	0	0
Dark Canyon	846	0	30,820	351
Grand Gulch Plateau	7,737	0	17,330	4,061
Indian Creek	19,243	0	83,203	2,195
San Juan River SRMA	7,767	544	0	2,711
White Canyon	571	0	0	17

Under this alternative, 16% of bald eagle habitat in the Monticello PA would be included in an SRMA, which is 17% less than under Alternative A. Thirty-two percent of federally listed fish habitat would be included within proposed SRMA boundaries (17% less than under Alternative A). Thirty-five percent of MSO habitat would be included in an SRMA (35% less than under Alternative A), and 41% of SWFL habitat would be included within the SRMAs (16% less than under Alternative A). Overall, this alternative is likely to have more adverse impacts on special status species within the proposed SRMAs than Alternative A because of the increased number of permitted visitors in some of the SRMAs and the reduction in habitat protection within the SRMAs.

4.3.15.2.8.5. Alternative E

Under Alternative E, the same number of acres of federally listed species habitat would be included in each of the SRMAs as under Alternative B, so the impacts of recreation management decisions on special status species would be the same as those discussed under Alternative B.

4.3.15.2.9. Impacts of Riparian Decisions on Special Status Species

4.3.15.2.9.1. Alternative A

Under Alternative A, impacts would be the same as discussed under Impacts Common to All Alternatives.

4.3.15.2.9.2. Alternative B

Under Alternative B, the impacts of riparian management decisions on special status species and their habitat would include the impacts outlined below, in addition to those discussed in Alternative A.

OHV routes in selected riparian areas would be closed in riparian areas determined to be Functioning at Risk if site-specific analysis shows that OHV use is contributing to the degradation. In addition, some riparian areas would be unavailable for livestock grazing, while others would be subject to seasonal restrictions and forage utilization limits. These restrictions would lessen the number of acres of special status species habitat subject to the adverse impacts of surface disturbance in special status riparian areas. It would also reduce the adverse impacts of human presence and noise associated with OHV use in special status riparian habitat. This alternative would be more beneficial to special status species and their habitat than Alternatives A and D, and would have the same impacts as Alternative C.

4.3.15.2.9.3. Alternative C

Under Alternative C, the impacts of riparian management decisions on special status species and their habitat would be the same as for Alternative B. This alternative would be more beneficial to special status species and their habitat than Alternatives A and D, and would have the same impacts as Alternative B.

4.3.15.2.9.4. Alternative D

Alternative D would be less beneficial to special status species and their habitat than Alternatives B and C, and would have the same impacts as Alternative A.

4.3.15.2.9.5. Alternative E

Under Alternative E, the impacts of riparian management decisions on special status species and their habitat would be the same as for Alternative B because the management decisions are the same. This alternative would be more beneficial to special status species and their habitat than Alternatives A and D, and would have the same impacts as Alternative B.

4.3.15.2.10. Impacts of Soils and Watershed Decisions on Special Status Species

4.3.15.2.10.1. Alternative A

Under Alternative A, impacts would be the same as Impacts Common to All Alternatives.

4.3.15.2.10.2. Alternatives B and E

Under Alternatives B and E, the impacts of soils and watershed management decisions on special status species and their habitat would include the following impacts in addition to those discussed in Alternative A. Surface-disturbing activities would not be permitted on slopes greater than 40%. This would exclude 87,456 acres (approximately 5%) of land in the Monticello PA from surface disturbance, which would eliminate the adverse impacts associated with surface disturbance on special status plant and animal species living on slopes greater than 40%. If surface-disturbing activities cannot be avoided on slopes between 21 and 40%, a plan including an erosion-control strategy and a BLM-approved survey and design would be required. This would provide additional protection for special status plant and animal species on 218,296 acres of land in the Monticello PA. Therefore, the actions associated with these alternatives would have less adverse impact on special status species and their habitat than Alternatives A, C, and D. Table 4.127 provides the total number of acres of each vegetation type in the Monticello PA with slopes greater than 40%. Special status species in pinyon-juniper woodland habitat would benefit from the large number of acres protected from surface-disturbing activities due to slope use restrictions.

Table 4.127. Acres of Each Vegetation Type by Slope Steepness Category

Vegetation Type	Acres of slopes >40%	Acres of slopes 21-40%
Conifer/Mountain Shrub	1,323	2,662
Desert Shrub	6,391	27,473
Invasive Plants and Weeds	43	213
Pinyon-Juniper Woodland	77,332	180,954
Riparian/Wetland	683	1,461
Sagebrush/ Perennial Grassland	1,684	5,533
Total	**87,456**	**218,296**

4.3.15.2.10.3. Alternative C

Under Alternative C, the impacts of soils and watershed management decisions on special status plant and animal species would include impacts outlined below, in addition to those discussed in Alternative A.

Surface-disturbing activities would not be permitted on slopes greater than 40% unless it is determined that it would cause undue or unnecessary degradation to pursue other placement alternatives. Therefore, surface disturbance allowed under this alternative could cause direct and indirect adverse impacts on special status plant and animal species and their habitat on up to 87,456 acres of steep slopes in the Monticello PA. If surface-disturbing activities cannot be avoided on slopes between 21 and 40%, a plan including an erosion control strategy and a BLM-

approved survey and design would be required. Therefore, the actions associated with this alternative would have less adverse impact on special status plant and animal species and their habitat than Alternatives A, and D, but more than Alternative B.

4.3.15.2.10.4. Alternative D

Under Alternative D, the impacts of soils and watershed management decisions on special status plant and animal species and their habitat would require a plan including an erosion control strategy and a BLM-approved survey and design for development of land with a slope greater than 40%. This alternative would have greater adverse impacts on special status plant and animal species and their habitat than Alternative B and C. The required erosion and design plan would help mitigate the adverse impacts of surface disturbance on special status plant and animal species and their habitat, located in and down slope of steep development areas. Therefore this alternative would have less adverse impacts on special status plant and animal species and their habitat than Alternative A.

4.3.15.2.11. Impacts of Special Designations Decisions on Special Status Species

4.3.15.2.11.1. Alternative A

Under Alternative A, 488,616 acres of ACECs would be designated, and approximately 94.8 miles of river segments along the San Juan and Colorado Rivers were determined to be suitable for WSR eligibility determination (and protected until eligibility determinations were made). Of these acres 106,569 acres would be available for oil and gas leasing under Standard and Timing and Controlled Surface Use leasing stipulations. This is the second largest acreage that would be available within ACECs and WSRs of all the alternatives because numerous ACECs would be proposed under this alternative (see Table 4.102 for a comparison of ACEC designations by alternative). As noted above, ACEC and WSR designations would generally have beneficial impacts on special status species except in areas that are available for development. Specific impacts from oil and gas development to special designation areas are discussed above in Section 4.3.14, Special Designations.

The number of acres of each habitat type in each of the ACECs is shown in Tables 4.172–4.183 in Section 4.3.17, Vegetation. Table 4.128 below includes acres of federally listed species habitat in each of the ACECs under Alternative A. The Gunnison sage-grouse is not included in the table because none of the SRMAs overlap with the sage-grouse habitat.

Under this alternative, 22% of bald eagle habitat, 29% of MSO habitat, 25% of SWFL habitat, and none of the federally listed fish habitat would be included in an ACEC.

Table 4.128. Acres of Federally Listed Species Habitat in Each of the ACECs Under Alternative A

ACEC	Bald Eagle	Federally Listed Fish	MSO	SWFL
Alkali Ridge	25,072	0	0	357
Bridger Jack Mesa	135	0	6,260	3
Butler Wash	707	0	17,464	30
Cedar Mesa	1,327	0	13,390	3,615
Dark Canyon	3,351	0	61,660	354
Hovenweep	0	0	0	4
Indian Creek	4,260	0	8,510	577
Lavender Mesa	0	0	649	0
Lockhart Basin	0	0	0	0
San Juan River	0	0	0	0
Scenic Highway Corridor	16,328	0	1,719	517
Shay Canyon	2,897	0	0	247
Valley of the Gods	0	0	0	0
Total ACEC Acres	**54,077**	**0**	**109,652**	**5,704**

4.3.15.2.11.2. Alternative B

Under Alternative B, 521,141 acres of ACECs and approximately 92.4 miles of river segments were determined to be suitable for WSR recommendation. Of these acres, 147,706 acres would be available for oil and gas leasing. This is the largest number of acres that would be available within ACECs and along WSR segments of all the alternatives because this alternative (and Alternative E) proposes the most acreage for ACEC designation. Table 4.129 includes acres of federally listed species habitat in each of the ACECs under Alternative B. The Gunnison sage-grouse is not included in the table because none of the SRMAs overlap with sage-grouse habitat.

Under this alternative, 20% of bald eagle habitat in the Monticello PA would be included in an ACEC, which is 2% less than under Alternative A. There would be 48% of federally listed fish habitat included in ACECs under this alternative, which is 48% more than under Alternative A. Forty-two percent of MSO habitat would be included in an ACEC, which is 13% more than under Alternative A. Forty-one percent of SWFL habitat would be included in an ACEC, which is 16% more than under Alternative A. Overall, this alternative would be more beneficial to these federally listed species and their habitat than Alternative A because more acres of habitat would be subject to disturbance restrictions associated with ACECs.

Table 4.129. Acres of Federally Listed Species Habitat in Each of the ACECs Under Alternative B

ACEC	Bald Eagle	Federally Listed Fish	MSO	SWFL
Alkali Ridge	25,072	0	0	357
Bridger Jack Mesa	165	0	6,225	3
Butler Wash	707	0	17,365	28
Cedar Mesa	7,407	0	15,084	3,588
Dark Canyon	3,351	0	61,660	354
Hovenweep	0	0	0	4
Indian Creek	4,260	0	8,510	577
Lavender Mesa	0	0	649	0
Lockhart Basin	1,987	273	48,018	1,589
San Juan River	7,767	544	0	2,711
Scenic Highway Corridor	0	0	0	0
Shay Canyon	116	0	0	20
Valley of the Gods	0	0	0	81
Total ACEC acres	**50,832**	**817**	**157,511**	**9,312**

4.3.15.2.11.3. Alternative C

Under this alternative, 76,764 acres would be designated as an ACEC, which would be approximately 417,343 acres less than proposed under Alternative A. Approximately 18.4 miles of river segments were determined to be suitable for WSR recommendation under this alternative. Within proposed ACECs, 34,885 acres would be available for oil and gas leasing. The ACECs, their proposed acreages, and impacts to special status species are discussed below.

Alkali Ridge (39,196 acres): Under this alternative**,** the impacts of management decisions on special status species and habitat would be the same as those discussed for Alternative B.

Bridger Jack Mesa: Under this alternative**,** this area would not be managed as an ACEC. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on special status species and habitat than under this alternative.

Butler Wash North: Under this alternative**,** this area would not be managed as an ACEC. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on special status species and habitat than under this alternative.

Cedar Mesa: Under this alternative**,** this area would be managed as a 475,734-acre C-SRMA rather than an ACEC. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on special status species and habitat than under this alternative.

Dark Canyon: Under this alternative**,** this area would not be managed as an ACEC. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on special status species and habitat than under this alternative.

Hovenweep (2,439 acres): This ACEC would be managed with the same restrictions as under Alternative A. Therefore, the impacts of this alternative would be the same.

Indian Creek (3,905 acres): This ACEC would be managed with the same restrictions as under Alternative A. Therefore, the types of impacts of this alternative would be the same. However, under this alternative, the ACEC would be 9,192 acres smaller than under alternative A, resulting in less acres in the Monticello PA protected by the surface-disturbing restrictions prescribed under this alternative than under Alternatives A and B.

Lockhart Basin: Under this alternative**,** this area would not be managed as an ACEC. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on special status species and habitat than under this alternative.

Lavender Mesa (649 acres): This ACEC would be managed with the same restrictions as under Alternative A.

San Juan River (7,590 acres) *and* ***Shay Canyon (119 acres):*** These ACECs would be managed with the same restrictions as under Alternative B.

Valley of the Gods (22,863 acres): This ACEC would be managed with the same decisions and impacts to special status species as discussed under Alternative B.

Table 4.130 below includes acres of federally listed species habitat in each of the ACECs under Alternative C. The Gunnison sage-grouse is not included in the table because none of the SRMAs overlap with sage-grouse habitat.

Table 4.130. Acres of Federally Listed Species Habitat in Each of the ACECs Under Alternative C

ACEC	Bald Eagle	Federally Listed Fish	MSO	SWFL
Alkali Ridge	25,072	0	0	357
Bridger Jack Mesa	0	0	0	0
Butler Wash	0	0	0	0
Cedar Mesa	0	0	0	0
Dark Canyon	0	0	0	0
Hovenweep	0	0	0	4
Indian Creek	1,760	0	3,905	298
Lavender Mesa	0	0	649	0
Lockhart Basin	0	0	0	0
San Juan River	7,767	544	0	2,711
Scenic Highway Corridor	0	0	0	0
Shay Canyon	116	0	0	20
Valley of the Gods	0	0	0	81
Total ACEC acres	**34,715**	**544**	**4,554**	**3,471**

Under this alternative, 14% of bald eagle habitat in the Monticello PA would be included in an ACEC, which is 8% less than under Alternative A. Thirty-two percent of federally listed fish habitat would be included in ACECs under this alternative, which is 32% more than under Alternative A. One percent of MSO habitat would be included in an ACEC, which is 28% less than under Alternative A. Fifteen percent of SWFL habitat would be included in an ACEC, which is 10% less than under Alternative A. Overall, this alternative would be less beneficial to these federally listed species and their habitat than Alternative A because fewer acres of habitat would be subject to disturbance restrictions associated with ACECs.

4.3.15.2.11.4. Alternative D

Under this alternative, no ACECs would be proposed for designation and no river miles would be eligible for suitability determination or recommendation as WSR segments within the Monticello PA.

Alkali Ridge, Bridger Jack Mesa, Butler Wash North, Dark Canyon, Indian Creek, Cedar Mesa, Indian Creek, Hovenweep, San Juan River, Scenic Highway, Lockhart Basin, Lavender Mesa, Valley of the Gods, and Shay Canyon: Under this alternative**,** these areas would not be managed as ACECs. Therefore, the management decisions under Alternatives A, B, and C would have fewer adverse impacts on special status species and habitat than under this alternative.

Cedar Mesa (375,734 acres): Though not designated as an ACEC, this area would be managed with the same restrictions as under Alternative C (as a C-SRMA). Therefore, the management decisions under Alternative A would have fewer adverse impacts on special status species and habitat than under this alternative because more habitats would be protected under Alternative A. Alternative D would be the least beneficial for special status species and their habitat.

4.3.15.2.11.5. Alternative E

Under Alternative E, the impacts of special designations management decisions on special status species and their habitat would be the same those discussed under Alternative B.

4.3.15.2.12. Impacts of Special Status Species Decisions on Special Status Species

4.3.15.2.12.1. Alternative A

Under Alternative A, the impacts of special status species management decisions on special status species would include those discussed in Section 4.3.15.1, Impacts Common to All Alternatives.

4.3.15.2.12.2. Alternatives B and E

Under Alternatives B and E, the impacts of special status species management decisions on special status species and habitat would include the impacts outlined below in addition to those discussed in Section 4.3.15.1, Impacts Common to All Alternatives.

For the Gunnison sage-grouse, year-round crucial habitat would be designated on 4,524 acres of BLM land in the Monticello PA. This crucial habitat is 3% of estimated sagebrush habitat in the Monticello PA. In sage-grouse lek habitat (defined as the 2-mile radius of an active strutting ground), there would be no surface-disturbing geophysical activities, with the exception of seasonal grazing (closed from March 20 to May 15), allowed. These restrictions would help

mitigate the adverse impacts of surface disturbance on vegetation resources in lek habitat. Within six miles of lek habitat, sagebrush treatments, oil and gas leasing with standard stipulations, and seasonal grazing would be allowed. The construction of fences, power lines, wind-power turbines, or other tall structures would not be permitted. This would help reduce the predation of sage-grouse by raptors and the collision of sage-grouse with fences. The allowance of sagebrush treatments would help mitigate the adverse impacts of surface-disturbing activities on special status species and habitat within the 6-mile buffer of the center of the lek. Because of these restrictions, there would be fewer adverse impacts on Gunnison sage-grouse and other sagebrush special status species associated with these alternatives than with Alternative A.

Under this alternative, the habitat in Arch Canyon for MSO and the flannelmouth sucker would be closed to OHV use, and group size would be limited to 10 individuals and 2 groups per day. These restrictions would help mitigate the impacts of noise disturbance on MSO and other cliff-dwelling special status species in the closure area. The OHV closures would provide the opportunity for the reestablishment of riparian vegetation on closed OHV routes, and reduce the runoff, stream sedimentation, and erosion associated with OHV use that could adversely impact special status fish species habitat.

4.3.15.2.12.3. Alternative C

Under Alternative C, the impacts of special status species management decisions on special status species and habitat would be the same as those discussed in Alternative B except that disturbance would not be allowed within a 0.6-mile radius from the center of a lek. The potential disturbance associated with grazing in and around sage-grouse leks associated with this change in designation would result in this alternative having more adverse impacts on vegetation resources than Alternative B. The construction of fences, power lines, or other tall structures would be avoided. This could help reduce the predation of sage-grouse by raptors. Because of these restrictions, there would be fewer adverse impacts on special status plant and animal species in sagebrush habitat associated with this alternative than with Alternative A.

Under this alternative, portions of the habitat in Arch Canyon for MSO and the flannelmouth sucker would be closed to OHV use, and group size would be limited to 12 vehicles and 2 groups per day. This would provide more protection for cliff-dwelling wildlife species and special status fish than the management activities proposed under Alternative A.

4.3.15.2.12.4. Alternative D

Under Alternative D, the impacts of special status species management decisions on special status species in sagebrush habitat would include the impacts outlined below, in addition to those discussed in Section 4.3.15.1, Impacts Common to All Alternatives.

For Gunnison sage-grouse, year-round crucial habitat would be designated on 2,877 acres of BLM land in the Monticello PA. In lek habitat (defined as a 0.25-mile radius of an active strutting ground), there would be no surface-disturbing activities allowed, with the exception of seasonal grazing. These restrictions would help mitigate the adverse impacts of seasonal grazing on special status species and sagebrush vegetation communities in lek habitat. Within 6 miles of the lek center, sagebrush treatments, fence construction, and oil and gas leasing with standard stipulations and seasonal grazing would be allowed. The allowance of sagebrush treatments

would help mitigate the adverse impacts of surface-disturbing activities on special status species and habitat within the 6-mile buffer of the lek center.

Under this alternative, the habitat in Arch Canyon for MSO and the flannelmouth sucker would be open to OHV use on designated trails year-round, and commercial motorized group size would be limited to 12 vehicles and 2 trips per day. This would provide more protection for cliff-dwelling wildlife species and special status fish than the management activities proposed under Alternative A.

4.3.15.2.13. Impacts of Travel Decisions on Special Status Species

4.3.15.2.13.1. Alternative A

Under Alternative A, there are a total of 611,310 acres open to OHV use which is more than under any of the other alternatives. Under this alternative, there are 540,260 acres with seasonal restrictions on OHV use off of existing trails to protect bighorn sheep lambing and rutting areas. There are an additional 789,170 acres where OHV use is limited to existing trails. These restrictions would indirectly benefit special status wildlife species using the restricted areas. The number of acres of each habitat type classified as closed or limited OHV use by alternative is located in Tables 4.184–4.186 in Section 4.3.17, Vegetation.

This alternative has 276,430 acres closed to OHV use, which is more than alternative D, but less than Alternatives B, C, and E. These closures would decrease the adverse impacts of this alternative on special status species and their habitat in these protected areas by eliminating surface and noise disturbance associated with OHV use. A reduction in miles of available OHV trails would lead to a reduction in habitat fragmentation for special status wildlife species. A list of closed areas is located in the Summary Table of Alternatives. Closed areas include some ACECs and vegetation study areas. Table 4.131 provides acres of special status species habitat that are open to OHV use, closed to OHV use, or limited to designated trails under this alternative.

Table 4.131. Acres of Special Status Species Habitat by OHV Usage Status Under Alternative A

OHV Status	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
Closed	16,275	371	101,801	3,568	0
Limited	184,785	311	122,529	6,335	0
Open	50,134	483	154,610	13,473	4,593

Under this alternative, 7% of bald eagle habitat, 27% of MSO habitat, 16% of SWFL habitat, 22% of the federally listed fish habitat, and none of Gunnison sage-grouse habitat would be closed to OHV use.

4.3.15.2.13.2. Alternatives B and E

Under Alternatives B and E, the impacts of travel management decisions on special status species would include the following impacts in addition to those discussed in Alternative A. No

acres would be open to cross-country OHV travel under these alternatives, which is 100% less than under Alternative A. Under Alternative B, there would be 1,359,417 acres with OHV use limited to designated routes; Alternative E would designate 812,679 acres for limited to designated OHV routes. Compared to Alternative A, there would be a substantial increase in OHV restrictions under these two alternatives because Alternative A would propose 789,170 acres for OHV travel along designated and existing routes.

Alternative B would close 423,698 acres to OHV use, which would be 147,268 acres (1.5 times more acreage) than under Alternative A. Alternative E would close 970,436 acres to OHV use (694,006 acres or 3.5 times more acreage than Alternative A). These closures would decrease the adverse impacts of these alternatives on special status species and their habitat in these protected areas by eliminating noise and surface disturbance associated with OHV use. A list of closed areas is located in the Summary of Alternatives, Table 2.1. Designated OHV Closed areas include vegetation study areas, some SRMAs, some CSMAs and some WSAs. This action would protect more acres of ecologically important special status species habitat from the surface disturbance and weed spread associated with OHV use than Alternative A. Table 4.132 provides acres of special status species habitat that would be open to OHV use, closed to OHV use, or limited to designated routes under this alternative.

Table 4.132. Acres of Special Status Species Habitat by OHV Usage Status Under Alternatives B and E

OHV Status	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
Closed	15,347	117	116,645	4,020	4,593
Limited	235,163	1,018	262,107	18,949	0
Open	0	0	0	0	0

Under these alternatives, 6% of bald eagle habitat in the Monticello PA would be closed to OHV use, which is 1% less than under Alternative A. Seven percent of federally listed fish habitat would be closed, which is 15% less than under Alternative A. Thirty-one percent of MSO habitat would be closed to OHV use, which is 4% more than under Alternative A. Eighteen percent of SWFL habitat would be closed, which is 2% more than under Alternative A. One hundred percent of Gunnison sage-grouse habitat would be closed, which is 100% more than under Alternative A.

The impacts of these alternatives are comparable to Alternative C impacts. There are fewer acres of special status species habitat subject to adverse surface-disturbing impacts, which contribute to habitat fragmentation, under this alternative than under Alternative A or D.

4.3.15.2.13.3. Alternative C

Under Alternative C, the impacts of travel management decisions on special status species and their habitat would include the following impacts in addition to those discussed in Alternative A. There are a total of 2,311 acres open to OHV use under this alternative, which is 608,999 acres (99%) less than under Alternative A. Note that the proposed open OHV area would be in an existing OHV play area, already disturbed and impacted by previous and current use (see Section 4.3.10.3.16, Impacts of Travel Decisions on Recreation), so the impacts to special status species

would be minor. There would be 1,362,142 acres within which OHV use would be limited to designated routes. This would be a 58% increase in acreage, when compared to Alternative A.

This alternative would close 418,667 acres to OHV use, which is 142,237 acres (1.5 times more acreage) than Alternative A. These closures would decrease the adverse impacts of this alternative on native vegetation in these protected areas by eliminating surface disturbance associated with OHV use. A list of closed areas is located in the Summary Table of Alternatives, Table 2.1. Closed areas include vegetation study areas, some SRMAs, some CSMAs, and some WSAs. This action helps protect more acres of ecologically important special status species habitat from the surface disturbance and weed spread associated with OHV use than Alternative A. Table 4.133 below provides acreage of special status species habitat that is open to OHV use, closed to OHV use, or limited to designated trails under this alternative.

Table 4.133. Acres of Special Status Species Habitat by OHV Usage Status Under Alternative C

OHV Status	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
Closed	13,567	124	112,737	3,719	0
Limited	235,388	1,011	263,801	19,114	4,593
Open	1,555	0	2,214	135	0

Under this alternative, 5% of bald eagle habitat in the Monticello PA would be closed to OHV use, which is 2% less than under Alternative A. Seven percent of federally listed fish habitat would be closed, which is 15% less than under Alternative A. Thirty percent of MSO habitat would be closed to OHV use, which is 3% more than under Alternative A. Sixteen percent of SWFL habitat would be closed, which is the same as under Alternative A. None of the Gunnison sage-grouse habitat would be closed, which is the same as under Alternative A. There are fewer acres of special status species habitat subject to adverse surface-disturbing impacts under this alternative than under Alternative A or D.

4.3.15.2.13.4. Alternative D

Under Alternative D, the impacts of travel management decisions on special status species and their habitat would include the impacts outlined below, in addition to those discussed in Alternative A.

There are a total of 2,311 acres open to OHV use under this alternative (the same as discussed under Alternative C), which is 608,999 acres (99%) less than under Alternative A. Approximately 1,780,807 acres of the Monticello PA would limit OHV travel to designated routes. This would be an increase of 991,637 acres or over 2 times more acreage than under Alternative A.

Under this alternative, no acres within the Monticello PA would be closed to OHV use, which is 276,430 acres (100%) less than under Alternative A. Table 4.134 below provides acres of special status species habitat that are open to OHV use, closed to OHV use, or limited to designated trails under this alternative.

Table 4.134. Acres of Special Status Species Habitat by OHV Usage Status Under Alternative D

OHV Status	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
Closed	0	0	0	0	0
Limited	248,955	1,105	376,538	22,834	4,593
Open	1,555	0	2,214	135	0

Under this alternative, there would be no special status species habitat closed to OHV use, which is 34% less acreage than under Alternative A. The elimination of OHV closured areas under this alternative would have greater adverse impacts on special status species than the impacts under Alternatives A, B, and C.

4.3.15.2.14. Impacts of Vegetation Decisions on Special Status Species

4.3.15.2.14.1. Alternative A

Under Alternative A, 232,130 acres of land treatments per year would be continued. This treatment decision would be substantially greater than under any of the other alternatives. Impacts are discussed in Management Common to All. Vegetation treatments for each alternative by vegetation type are provided in Table 4.175 in Section 4.3.17, Vegetation.

4.3.15.2.14.2. Alternative B

Under Alternative B, there would be 7,600 acres of vegetation treatments per year, which is about 50% fewer acres of treatment per year than under Alternative A. In general, these treatment decisions would likely have more beneficial impacts on special status species and habitat than Alternative A because of the increased likelihood of successful vegetation treatments due to the concentration of efforts in specified vegetation communities.

4.3.15.2.14.3. Alternative C

Under Alternative C, the impacts of vegetation management decisions on vegetation resources would include the following impacts in addition to those discussed in Impacts Common to All Alternatives. There would be 9,300 acres of vegetation treatments per year under this alternative, which is 40% fewer acres of treatment per year than under Alternative A. The short-term, adverse impacts of trampling and crushing vegetation associated with treatment would be substantially reduced compared to Alternative A. There are fewer long-term beneficial impacts to special status species and habitat under this alternative than under Alternative A because fewer acres would receive vegetation treatments.

4.3.15.2.14.4. Alternative D

Under Alternative D, the impacts of vegetation management decisions on special status species would include the impacts outlined below, in addition to those discussed in Impacts Common to All Alternatives.

There would be 11,300 acres of vegetation treatments under this alternative, which is 27% fewer acres of treatment than under Alternative A.

There are fewer, short-term adverse impacts associated with this alternative than Alternative A because fewer acres are open to trampling and disturbance associated with vegetation treatments. There are more long-term beneficial impacts for special status species and habitat under this alternative than under Alternatives B or C because a greater number of acres would receive vegetation treatments.

4.3.15.2.14.5. Alternative E

Under Alternative E, the impacts to species would be the same as discussed under B, except that approximately 582,357 acres within the planning area would have restrictions on vegetation treatments in order to preserve non-WSA wilderness characteristics. These areas would be managed under VRM I objectives, which would limit the degree of treatment-related surface disturbances. The impacts of limiting vegetation treatments would be beneficial in the short- and long-term based on the reduced potential for trampling of species habitat, and the reduced potential for invasive species establishment and spread from treatment-related surface disturbances. Compared to Alternative A, this alternative would have more beneficial long term impacts on special status species because more potential habitat would be protected within the non-WSA wilderness characteristics areas.

4.3.15.2.15. Impacts of Visual Resource Decisions on Special Status Species

4.3.15.2.15.1. Alternative A

Alternative A would have the third largest area (726,687 acres) subject to VRM Class I or II resource objective restrictions. It would have the third largest area (1,054,681 acres) subject to VRM Class III or IV resource objectives restrictions (see Map 55 for Alternative A VRM class designations). Because very limited and limited changes to scenic quality would be allowed in areas designated as VRM Class I or II, this alternative would have the third most acres protected from activities that could adversely affect special status plant and wildlife individuals and their suitable habitat.

The number of acres of each habitat type in each of the VRM classes is located in Tables 4.190–4.193 in Section 4.3.17, Vegetation. Table 4.135 contains the number of acres of federally listed species habitat located in each VRM class under this alternative.

Table 4.135. Acres of Federally Listed Species Habitat by VRM Class Under Alternative A

VRM Class	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
I	34,773	435	95,389	4,823	0
II	50,266	592	121,354	9,148	44
III	92,278	0	69,586	6,135	21
IV	72,852	0	91,570	2,729	4,528

Under this alternative, 34% of bald eagle habitat, 57% of MSO habitat, 61% of SWFL habitat, 100% of the federally listed fish habitat, and 1% of Gunnison sage-grouse habitat would be in areas managed as VRM I or II.

4.3.15.2.15.2. Alternative B

Under Alternative B, the impacts of visual resource management decisions on special status species and habitat would include the impacts outlined below, as well as those discussed in Impacts Common to All Alternatives.

Some ACECs would also be managed under VRM Class I or II objectives. This alternative would have the second largest area (748,309 acres) subject to VRM I or II restrictions on impacts to scenic quality. It would have the second smallest area (1,034,813 acres) subject to VRM III or IV restrictions (see Map 56 for Alternative B VRM designations). Because very limited and limited management activities would be allowed in areas designated as VRM I or II, this alternative would have the second highest number of acres protected from activities that could adversely affect special status plant and wildlife individuals and their suitable habitat. Table 4.136 contains the number of acres of federally listed species habitat located in each VRM class under this alternative.

Table 4.136. Acres of Federally Listed Species Habitat by VRM Class Under Alternative B

VRM Class	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
I	20,385	612	165,817	5,978	0
II	58,908	273	67,740	6,811	44
III	98,276	221	63,607	7,463	21
IV	72,695	0	81,374	2,645	4,528

Under this alternative, 32% of bald eagle habitat in the Monticello PA would be in areas managed under VRM Class I or II objectives (2% less than under Alternative A); 80% of federally listed fish habitat would be included in VRM Class I or II designated areas (20% less than under Alternative A); 62% of MSO habitat would be included in be in areas managed under VRM Class I or II objectives (5% more than under Alternative A); and 56% of SWFL habitat would be included in VRM Class I or II designated areas (5% less than under Alternative A). One percent of Gunnison sage-grouse habitat would lie within areas managed under VRM I or II objectives, which would be the same as Alternative A. Overall, this alternative would be slightly less beneficial to these federally listed species and their habitat than Alternative A because fewer acres of potential habitat would lie within the more-protective VRM Class I and II designated areas.

4.3.15.2.15.3. Alternative C

Under Alternative C, the impacts of visual resource management decisions on special status species and habitat would include those discussed in Management Common to All, with additional impacts from specified ACECs managed as VRM class I or II. Alternative C would have the fourth largest area (557,180 acres) subject to VRM Class I or II restrictions. It would

have the second largest area (1,225,915 acres) subject to VRM III or IV restrictions (see Map 57 for VRM designations under Alternative C). Because VRM Class I and II objectives would limit surface-disturbance-related impacts to existing scenic quality, this alternative would have the fourth largest number of acres protected from activities that could adversely affect special status plant and wildlife individuals and their suitable habitat. Table 4.137 contains the number of acres of federally listed species habitat located in each VRM class under this alternative.

Table 4.137. Acres of Federally Listed Species Habitat by VRM Class Under Alternative C

VRM Class	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
I	19,609	538	121,198	4,381	0
II	32,928	342	51,846	5,527	0
III	81,207	225	124,146	8,894	65
IV	116,519	0	81,328	4,095	4,528

Under this alternative, 21% of bald eagle habitat in the Monticello PA would be in areas managed under VRM Class I or II objectives, which is 13% less than under Alternative A. Eighty percent of federally listed fish habitat would be included in VRM Class I or II designated areas under this alternative (20% less than under Alternative A). Forty-six percent of MSO habitat would be included in be in areas managed under VRM Class I or II objectives (11% less than under Alternative A). Forty-three percent of SWFL habitat would be included in VRM Class I or II designated areas (18% less than under Alternative A). None of the Gunnison sage-grouse habitat would be managed under VRM I or II objectives (1% less than under Alternative A). Overall, this alternative would be less beneficial to these federally listed species and their habitat than Alternative A because fewer acres of habitat would be subject to disturbance restrictions associated with VRM Class I and II objectives.

4.3.15.2.15.4. Alternative D

Under Alternative D, the impacts of visual resource management decisions on special status species and habitat would include those discussed in Impacts Common to All Alternatives. This alternative would have the smallest area (399,261 acres) subject to VRM Class I and II objective restrictions. It would have the largest area (1,383,860 acres) designated as VRM Class III or IV, with the most area managed to allow moderate to major surface disturbance impacts to visual resources and species habitat (see Map 58 for Alternative D VRM designations). This alternative would have the fewest acres protected (under VRM Class I and II objectives) from activities that could adversely affect special status plant and wildlife individuals and their suitable habitat.

Table 4.138 contains the number of acres of federally listed species habitat located in each VRM class under this alternative.

Table 4.138. Acres of Federally Listed Species Habitat by VRM Class Under Alternative D

VRM Class	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
I	10,686	0	115,708	3,159	0
II	10,501	823	0	3,593	0
III	114,650	236	181,364	12,381	65
IV	114,557	0	81,342	3,722	4,528

Under this alternative, 8% of bald eagle habitat in the Monticello PA would be in areas managed as VRM class I or II (1% more than under Alternative A). Seventy-four percent of federally listed fish habitat would be included in VRM I or II under this alternative, (26% less than under Alternative A). Thirty-one percent of MSO habitat would be included in be in areas managed as VRM I or II (26% less than under Alternative A). Thirty percent of SWFL habitat would be included in VRM I or II (31% less than under Alternative A). None of the Gunnison sage-grouse habitat would be managed as VRM I or II (1% less than under Alternative A). Overall, this alternative would be less beneficial to these federally listed species and their habitat than Alternatives A, B, or C because fewer acres of habitat would be subject to disturbance restrictions associated with VRM I and II.

4.3.15.2.15.5. Alternative E

Under Alternative E, approximately 582,357 acres of non-WSA lands with wilderness characteristics would be managed to preserve their wilderness values. Management would include designating these areas as VRM I and limiting surface disturbances to those allowed under this class objective. Table 4.139 shows the acres of special status species habitat by VRM class for Alternative E.

Table 4.139. Acres of Federally Listed Species Habitat by VRM Class Under Alternative E

VRM Class	Bald Eagle	Federally Listed Fish	MSO	SWFL	Gunnison Sage-Grouse
I	68,396	612	300,524	9,500	0
II	43,420	272	23,529	4,204	44
III	74,634	221	26,728	4,618	21
IV	59,737	0	27,523	2,081	4,528

Alternative E would have the most acreage managed under VRM Class I and II objectives (1,109,848), and the least area managed under VRM Class III and IV objectives (671,828 acres). This would have the greatest beneficial impact on special status species when compared to Alternative A and the other action alternatives, because of the likelihood for habitat preservation through restrictions on surface disturbances. Approximately 45% of bald eagle habitat would lie within VRM Class I and II designated areas, an increase of 11% when compared to Alternative

A. Also managed as VRM Class I and II would be approximately 80% of listed fish species habitat (a decrease of 20% compared to Alternative A), 86% of MSO habitat (a 29% increase compared to Alternative A), 67% of SWFL habitat (a 6% increase compared to Alternative A), and 1% of sage-grouse habitat (identical to Alternative A).

4.3.15.2.16. Impacts of Wildlife and Fisheries Decisions on Special Status Species

4.3.15.2.16.1. Alternative A

Under Alternative A, seasonal protection would be in place on 329,750 acres from April 1 through July 15 for bighorn sheep lambing, and again from October 15 through December 31 for rutting. There would be 12,960 acres of crucial pronghorn habitat closed to certain surface-disturbing activities from May 15 through June 15 for fawning. There would be 197,550 acres of crucial deer winter habitat closed to certain surface-disturbing activities from December 15 through April 30 (see Chapter 2 Summary Table of Alternatives 2.1 for a list of activities). These closures would also protect special status wildlife species on 279,786 acres of habitat. Alternative A provides a total of 184 days of protection for bighorn sheep, 32 days for pronghorn, 137 days for deer, and no protection for elk (see Table 4.201). These restrictions would protect special status species and their associated habitat from direct human disturbance, noise, and surface-disturbing activities during those seasonal protection times.

Table 4.140 contains the number of acres of special status species habitat located in areas with big game seasonal restrictions under each of the management alternatives.

Table 4.140. Acres of Special Status Species Habitat Located in Areas with Big Game Seasonal Restrictions

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Bald Eagle	218,937	218,868	165,997	158,550	218,868
Critical Fish	0	286	13	0	286
MSO	59,171	325,172	155,093	104,393	325,172
Gunnison Sage-Grouse	0	2,778	2,456	0	2,778
SWFL	1,679	10,937	3,340	2,301	10,937

4.3.15.2.16.2. Alternatives B and E

Under Alternatives B and E, the impacts of wildlife and fisheries management decisions on special status species resources would include those discussed in Management Common to All Alternatives, as well as the restrictions in place for wildlife habitat during parts of the year (see Table 4.195). Seasonal wildlife protection areas would have special conditions for all land use activities with the exception of woodland harvest. Seasonal protection would be in place on 453,388 acres from April 1 through July 15 for bighorn sheep lambing, and again from October 15 through December 31 for rutting. There would be 29,365 acres of crucial pronghorn habitat closed to certain surface-disturbing activities from May 1 through June 15 for fawning. In addition, spring grazing (April 15–June 15) would be eliminated in allotments within pronghorn habitat. There would be 785,921 acres of crucial deer winter habitat closed to certain surface-

disturbing activities from November 1 through May 15. The final restriction would be on 191,173 acres of elk habitat from November 1 through May 15. These closures would also protect special status wildlife species on 558,041 acres of habitat (99% more than under Alternative A). These special conditions include no oil and gas leasing activities, no geophysical work, and no permitted or commercial OHV use.

Alternatives B and E also provide for longer seasonal wildlife protection, which would benefit special status species by providing for a longer period of reduced human disturbances from noise and surface-disturbing activities. Seasonal protection would be the same for bighorn sheep, and it would last 15 days longer for pronghorn fawning areas and 60 days longer for deer winter range areas than in Alternative A. There is no protection for elk habitat in Alternative A, versus 196 days of special conditions in Alternatives B and E (see Table 4.201).

4.3.15.2.16.3. Alternative C

Under Alternative C, the impacts of wildlife and fisheries management decisions on special status species and associated habitat would include those discussed in Management Common to All Alternatives, as well as the restrictions in place for wildlife habitat during parts of the year (see Table 4.196). Seasonal wildlife protection areas would have the same special conditions as under Alternative A, with the exception of OHV restrictions. Under this alternative, the number of OHV users may be limited. In addition, there would be 326,898 acres subject to special wildlife conditions, which is 17% more than under Alternative A. Alternative C provides for different lengths of time for seasonal restrictions. Seasonal protection would be 30 days fewer for bighorn sheep, 15 days more for pronghorn, 15 days more for deer, and 150 days more for elk than Alternative A (see Table 4.201). Because of these differences, this alternative would be less likely to adversely affect special status species and associated habitat in the wildlife protection areas of the Monticello PA than Alternative A.

4.3.15.2.16.4. Alternative D

Under Alternative D, the impacts of wildlife and fisheries management decisions on special status species and associated habitat would include those discussed in Management Common to All Alternatives, as well as the restrictions in place for wildlife habitat during parts of the year (see Table 4.197). Seasonal wildlife protection areas would have the same special conditions as under Alternative A, with the exception of OHV restrictions. Under this alternative, OHV use would only be allowed on designated routes. Additionally, there 265,244 acres would be subject to special wildlife conditions, (5% less than under Alternative A). Seasonal protection would be 45 days fewer for bighorn sheep, 15 days more for pronghorn, the same for deer, and 136 days longer for elk than Alternative A (see Table 4.201). Because of limitation of OHV use to designated trails, this alternative would be less likely to adversely affect special status species and habitat in the wildlife protection areas of the Monticello PA than Alternative A.

4.3.15.2.17. Impacts of Woodlands Decisions on Special Status Species

4.3.15.2.17.1. Alternative A

Under Alternative A, 1,309,894 acres would be open to woodland harvest and wood gathering. Of the five alternatives, this would have the largest area open to woodland harvest and wood

gathering, and therefore the greatest potential risk of disturbance to special status species utilizing the pinyon-juniper woodland habitat (see Table 4.106).

4.3.15.2.17.2. Alternative B

Under Alternative B, 730,074 acres would be open to woodland harvest and wood gathering. This would be 579,820 fewer acres (32% less) than Alternative A.

In addition, limitations on off-road travel and wood product use in the deer and elk winter range from November 1 through May 15 would do more to mitigate the short-term adverse impacts of woodland product collection and harvest on special status species and habitat than Alternative A. This alternative would have fewer short- and long-term beneficial impacts on special status species and habitat than Alternative A.

4.3.15.2.17.3. Alternatives C and D

Under Alternatives C and D, the same number of acres would be available for harvesting (841,938 acres), and the impacts of woodlands management decisions on special status species and habitat would include those discussed in Alternative A. In the area open to harvesting, there would be 597,086 acres of pinyon-juniper vegetation available for woodland harvesting (26% fewer acres than under Alternative A). These alternatives would have fewer short- and long-term adverse impacts on special status species and habitat than Alternative A.

4.3.15.2.17.4. Alternative E

Under Alternative E, the impacts of woodlands management decisions on special status species and habitat would be the same as Alternative B, except that 582,357 acres of non-WSA lands with wilderness characteristics would also be closed to woodland harvesting, thereby giving additional long-term beneficial, surface-disturbance-related protection to special status species and their potential habitat. Under this alternative, 548,477 acres would be open to and available for woodland harvesting (40% fewer acres than under Alternative A). Within the areas open to harvesting, approximately 73,428 acres would have pinyon-juniper coverage.

4.3.15.3. Mitigation Measures

The Best Management Practices described in the Management Common to All section in Chapter 2 and Appendixes A and I would serve to avoid and/or minimize impacts to special status species and habitat in the Monticello PA.

4.3.15.4. Unavoidable Adverse Impacts

There will be unavoidable adverse impacts to special status species and habitat in the Monticello PA resulting from surface-disturbing activities, recreation, and resource development activities associated with the resource management decisions detailed in the RMP and this EIS. Potentially adverse impacts include reductions in native forage due to trampling and grazing by wildlife and livestock; trampling and weed introduction by human visitors (motorized and non-motorized); permanent alteration of special status species habitat due to clearing activities such as oil-well pad installation and woodland harvest; and noise disturbance of special status species individuals associated with human presence.

4.3.15.5. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

As discussed throughout this section, some of the short-term multiple uses of the Monticello PA are likely to impact or reduce special status species and/or their habitat. These uses include oil and gas development, ROW authorizations, livestock grazing, camping, off-road vehicle travel, and woodland harvest. These impacts, however, provide economic benefits, and will be partially mitigated by the actions discussed in the Management Common to All sections for each management decision. Implementation of conservation measures, as well as adherence to BLM requirements and the ESA, would prevent these short-term resource uses from significantly impacting the long-term productivity of special status species habitat in the planning area.

4.3.15.6. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Irretrievable impacts associated with surface-disturbing activities proposed throughout the planning area include the loss of special status species habitat value from mineral development, fire treatments, or grazing. These resource values would be lost until successful restoration/rehabilitation takes place. Management Common to All Alternatives detailed in the Summary Table of Alternatives (Table 2.1 in Chapter 2) requires reclamation of disturbed areas following completion of management actions (i.e., well-pad deconstruction and reseeding and weed eradication in overgrazed areas). Implementation of this reclamation/rehabilitation would prevent these impacts from being irreversible. Some decisions would have irretrievable impacts to special status species, which include loss of habitat from the placement of permanent structures, such as campgrounds and facilities.

4.3.16. TRAVEL MANAGEMENT

As the popularity of travel within the Monticello PA increases and greater numbers of on-road and off-road vehicles and visitors use the road and trail system within the PA, travel management issues are becoming an increasing concern (see the discussion of OHV resource use conflicts in Section 3.10.4.3 and 3.10.4.5, Recreation). These concerns include (and are not limited to) engine noise, air pollution from exhaust emissions, impacts to erodible soils, the potential for travel-related stream sedimentation and non-point source water pollution, potential impacts to federally listed and sensitive wildlife species habitats, and potential impacts to historic and prehistoric archaeological sites.

Two assumptions were used in the analysis of impacts to travel within the Monticello PA:

- Areas designated as open to cross-country OHV use, and areas managed as limited to Designated Routes and Trails would be beneficial to mechanized OHV travel, as these areas would allow access within the Monticello PA;
- Areas designated as closed would be adverse to mechanized travel because of the reduced opportunities for travel access. The number of acres designated as open, limited, or closed to OHV travel and the miles of designated routes along B-Class and D-Class roads [see below] were the indicators for analyzing the impacts to travel. (See Table 4.144 at the end of the section for a summary of travel data used in the analysis of impacts.) No assumptions were made for non-mechanized travel (i.e., equestrian, hiking, backpacking) because, as discussed in Section 4.3.16.2.11.2., Non-Mechanized Travel, none of the proposed alternatives would restrict these forms of travel within the PA except where necessary to protect specific resource values, and to maintain public health and safety.

Road classes are discussed and considered in the analysis of impacts to travel. The road classifications relevant to the analysis are as follows:

- Class B roads are those that are regularly maintained by the State of Utah within the Monticello FO planning area, with road surfaces that can be natural, paved, or gravel;
- Class C roads are roads within town or city municipal boundaries (e.g., Monticello, Blanding, Bluff);
- Class D roads are those with natural surfaces only, not on a regular maintenance schedule (though they may be maintained), and not funded for maintenance by the State of Utah (BLM 2005j).

4.3.16.1. Impacts Common to All Action Alternatives

After approval of the proposed RMP, management decisions under the action alternatives (Alternatives B, C, D, and E) would continue to analyze the impacts of limited to designated travel routes for all vehicles within the planning area, including mountain biking and motorized OHV routes, through adaptive management at the activity planning level. This would be beneficial to travel management in the long-term because travel-related resource-use conflicts would be identified and resolved through potential modification of these designated limited routes.

Through travel resource management, if the AO determines that OHV travel use would cause or have the potential to cause resource degradation, travel along the route would be prohibited or limited. This would be adverse to travel in the long-term because access opportunities within the planning area would be reduced.

4.3.16.2. Alternatives Impacts

The following resources would have negligible to minor impacts on travel, and will not be analyzed further in this section:

Health and Safety

Health and safety management decisions for all the alternatives that would identify and address abandoned minelands safety concerns, respond to hazardous waste releases, and protect public health and safety would have negligible impacts on travel management because these management decisions would not close routes or delay, restrict, or otherwise interfere with travel opportunities within the Monticello PA.

Livestock Grazing

Grazing management decisions for all alternatives would have negligible impacts on travel because grazing restrictions and exclusions, and authorized grazing use within the planning area would not prevent or limit travel.

Paleontology

Management decisions for paleontological resources would have negligible impacts on travel because the collection of fossils for personal, commercial, and scientific use, and the protection of these resources would not affect travel opportunities.

Soils and Watershed

Soils and watershed management decisions common to all of the alternatives would have negligible impacts on travel because none of the soil management decisions to protect sensitive soils, prevent soil erosion, and protect watershed resources would restrict access, prohibit travel, or affect travel opportunities.

Visual Resources

The proposed VRM management decision impacts on travel would be negligible because VRM designations and visual resource objectives within the planning area for all the alternatives would be consistent with other land management decisions, including travel. There are no specific VRM management decisions that would restrict or prohibit travel or access within the Monticello PA, beyond those required by law (e.g., IMP-related restrictions on motorized travel within VRM Class I WSAs).

4.3.16.2.1. Impacts of Air Quality Decisions on Travel

Air quality management decisions common to all of the alternatives would require compliance with Utah air conservation regulations (R307-5-7) prohibiting the use, maintenance, or construction of roads without fugitive dust-abatement measures. BLM policy requires monitoring and managing exhaust emissions to prevent deterioration of air quality within PSD Class I airsheds (e.g., Canyonlands, Arches, and Capitol Reef National Parks). The impacts on travel within the PA would be minor and short-term along unpaved travel routes (D-Class roads) that require road-surfacing-related dust-abatement measures, because travelers could experience some travel delays or re-routing around the affected road sections during maintenance.

4.3.16.2.2. Impacts of Cultural Resources Decisions on Travel

Under all of the alternatives, management decisions for the Comb Ridge and Beef Basin CSMAs would allow either open OHV cross-country travel (Alternative A only) or limited OHV travel along designated routes. This would be beneficial in the long-term to travel by allowing access to these cultural special management areas.

Management decisions under all of the alternatives for the Grand Gulch National Historic District would designate the area as closed to OHV use, which would have adverse, long-term impacts on travel because opportunities for OHV travel into the area would be prohibited. It should be noted that this area lies within a WSA and, as stipulated under the IMP, mechanized travel (other than along existing "ways") is prohibited within WSAs.

4.3.16.2.2.1. Alternative A

Under Alternative A, travel would be prohibited along a 500-foot segment of a spur road (D-Class road) that allows access to the McLoyd Canyon-Moon House CSMA. This would have long-term, adverse impacts on travel for those wishing to drive to the hiking access trailhead for this cultural site, as it would reduce the travel access opportunities for those visitors who either cannot walk or choose not to walk along the spur road to this site.

4.3.16.2.2.2. Alternatives B and E

Under these similar alternatives, the Tank Bench CSMA would be closed to OHV use, with impacts as discussed for the Grand Gulch National Historic District above. Compared to Alternative A, these two action alternatives would have more adverse impacts on travel opportunities because Alternative A would not impose travel restrictions in the area (the management decisions are unspecified).

Management decisions under these alternatives would close the D-Class access road to the McLoyd Canyon-Moon House cultural site, with impacts as described under Alternative A.

4.3.16.2.2.3. Alternative C

The management decisions for the Tank Bench CSMA would be the same as discussed under Alternatives B and E, with the same impacts comparison to Alternative A.

Management decisions on travel for the McLoyd Canyon-Moon House CSMA would be the same as discussed under Alternative A.

4.3.16.2.2.4. Alternative D

Under Alternative D, travel within the Tank Bench area would be managed under the same decisions as the surrounding areas, which would be beneficial for travel in the long-term because travel along designated routes would be allowed. Compared to Alternative A, the beneficial impacts on travel would be similar, but to a lesser degree, because this action alternative would limit travel to designated routes within the Tank Bench area while travel opportunities under Alternative A would be unspecified (and unlimited).

Travel management decisions under this alternative for the McLoyd Canyon-Moon House CSMA would permit travel along the D-Class road to the site, with long-term, beneficial impacts on travel because CSMA access opportunities would be available. Compared to Alternative A, this action alternative would be more beneficial to travel in the long-term because site access would be available, whereas under Alternative A, accessing the site by motorized vehicles would not be allowed.

4.3.16.2.3. Impacts of Fire Management Decisions on Travel

Fire management decisions would have negligible long-term impacts on travel because prescribed fire treatments, fuels treatments, fire prevention and mitigation, and wildland fire suppression would not prevent or impede travel within the Monticello PA. There could be short-term, minor, adverse impacts on travel if prescribed burns or wildland fires crossed travel routes that required temporary road or trail closure, or temporary re-routing around the fire management or suppression area for public safety reasons.

4.3.16.2.4. Impacts of Land and Realty Decisions on Travel

Under management decisions common to all alternatives, land and realty decisions would have negligible impacts on travel from granting filming permits for cinematography within the planning area because permit stipulations would require that these activities would not significantly restrict public access along routes. The granting of ROWs access within the planning area for oil and gas leases could have minor, beneficial impacts on travel in the long-

term by establishing routes for access in the planning area along spur roads to oil and gas well sites. The ROW impacts would be minor because 1) only production sites would have maintained access to well sites (exploration sites and access roads would be reclaimed), and 2) the RFD predictions for oil and natural gas well drilling throughout the planning area for the life of the proposed RMP ranges from a relatively small 54 to 76 wells.

4.3.16.2.5. Impacts of Minerals Decisions on Travel

The impacts of mineral resource management decisions on travel would be similar to those discussed above for Lands and Realty decisions because the decisions are similar. The granting of ROWs and the construction of minerals-related access roads would be permitted under all of the alternatives, but the predicted level of mineral resource development would result in a relatively small number and short length of additional spur-type access roads when compared with the existing and/or designated routes in the planning area. Accordingly, minerals decisions would have beneficial but minor impacts on opportunities for travel within the planning area.

4.3.16.2.6. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Travel

Alternative E would manage non-WSA areas with wilderness characteristics for protection of their wilderness values. Travel management decisions would prohibit all mechanized travel within the approximately 582,360 acres of lands inventoried as having non-WSA wilderness characteristics by designating existing routes through these areas as closed to OHV use (see Section 4.3.8.9.1, Off-Highway Vehicle (OHV) Travel Management, for OHV management and acreage closures). The impacts to travel would be substantial under this alternative, as mechanized travel opportunities (i.e., motorized OHV and mountain biking) would not be available within and through those areas (along approximately 179 miles of D-Class routes within non-WSA wilderness characteristics lands) where designated routes have been proposed under the Monticello Travel Plan. Compared to Alternative A, this alternative would have more adverse impacts on travel opportunities because no acres would be designated as open to OHV travel (with the same impacts as discussed above under Alternative B above), and 582,360 acres and 179 miles of OHV routes would be closed to OHV travel opportunities that would not be closed under Alternative A.

4.3.16.2.7. Impacts of Recreation Decisions on Travel

Recreational management decisions common to all of the alternatives would ensure that the Monticello FO coordinate and develop procedures, protocols, and permits with other federal agencies to provide reasonable access for non-recreational use of OHVs for search-and-rescue, military, emergency, and other non-specified uses. This would be beneficial in the long-term by developing plans and establishing routes for efficient travel within the planning area by federal, non-BLM personnel.

4.3.16.2.7.1. Alternative A

Under Alternative A, vehicle access would not be allowed within the San Juan River SRMA between Comb Wash and Lime Creek, which would be adverse in the long-term for travel because opportunities would not be available for recreational access along this stretch of the river.

Commercial-type travel (including motorized/mechanized recreational vehicle use) within the planning area would require an SRP, but the impacts on travel would be negligible because no restrictions or prohibitions are specified under this alternative.

4.3.16.2.7.2. Alternatives B and E

Under Alternatives B and E, vehicle access would not be allowed from Comb Wash to Lime Creek within the San Juan River SRMA, with adverse long-term impacts on travel, because of the reduced opportunities for travel and access to the river. Compared to Alternative A, these alternatives would have the same impacts to travel because Alternative A would also not allow vehicle access along this stretch of the river.

Commercial-type motorized or mechanized tours and events would be seasonally prohibited (i.e., SRPs would not be issued) for routes within pronghorn, bighorn sheep, deer, and elk crucial habitat, and lambing and rutting areas. Table 4.141 below shows the proposed times when travel routes would be closed or limited to designated routes in order to protect these wildlife species.

Table 4.141. Proposed Travel Closing or Travel Limitation Periods in Wildlife Areas

	Alternative A	Alternatives B and E	Alternative C	Alternative D
Bighorn Sheep	1 Apr– 5 Jul 15 Oct–31 Dec	1 Apr– 5 Jul 15 Oct–31 Dec	1 Apr–15 Jun 15 Oct–15 Dec	15 Apr–15 May 1 Nov–15 Dec
Pronghorn	15 May–15 Jun	15 Apr–30 Jun	1 May–15 Jun	15 May–15 Jun
Elk	Unspecified (no identified crucial habitat)	1 Nov–15 May	15 Nov–15 Apr	15 Dec–31 Mar
Deer	15 Dec–30 Apr	1 Nov–15 May	15 Nov–15 April	15 Dec–31 Mar
Affected Roads in Wildlife Habitat	Zero miles of travel routes seasonally closed to private, permitted, or commercial OHV travel.	512 miles of travel routes seasonally closed to permitted or commercial OHV travel, but open to private use.	135 miles of travel routes seasonally closed to permitted or commercial OHV travel, but open to private use.	Zero miles of travel routes seasonally closed to private, permitted, or commercial travel.

This would have short-term, adverse impacts on specific recreational travel-related activities during these times because the opportunities for permitted or commercial OHV travel and/or motorized events into or through crucial habitat would be prohibited along 512 miles of travel routes in order to protect wildlife species. The impacts on private motorized OHV and mountain biking travel opportunities would be negligible because no wildlife restrictions would be applicable. Compared to Alternative A, these alternatives would have more adverse impacts on travel because 512 miles of travel routes would be seasonally closed to some forms of commercial travel, with decreased opportunities for access and movement through the planning area.

Note that while the recreation management decisions under Alternative E would be very similar to those discussed under Alternative B, Alternative E would manage approximately 582,360 total acres for the protection of non-WSA lands with wilderness characteristics within the proposed SRMAs and the ERMA. The impacts on travel under this alternative would be more adverse to

recreation-related travel opportunities, as discussed in Section 4.3.16.2.6, because travel opportunities for OHVs along D-Class routes within lands with non-WSA wilderness characteristics would be prohibited.

4.3.16.2.7.3. Alternative C

Impacts on travel along the San Juan River from Comb Wash to Lime Creek would be the same as discussed under Alternative B because the management decisions are the same.

Under this alternative, there would be short-term, adverse impacts on travel from seasonal limitations in crucial pronghorn, deer, elk, and bighorn sheep habitat through closing approximately 135 miles of travel routes (26% of the routes closed under Alternative B) to some permitted or commercial OHV use or mechanized tours and events. Compared to Alternative A, this alternative would have more adverse impacts on travel because commercial-type recreational travel opportunities would be reduced.

4.3.16.2.7.4. Alternative D

Impacts on travel along the San Juan River from Comb Wash to Lime Creek would be the same as discussed under Alternatives B.

The impacts on travel from restricting OHV use to designated routes in crucial pronghorn, deer, elk, and bighorn sheep habitat would be negligible because private and commercial recreational travel restrictions would not impede or prevent travel through crucial wildlife habitat (no recreation-related roads would be seasonally closed to travel in crucial wildlife habitat). The impacts would be similar to those discussed for Alternative A.

4.3.16.2.8. Impacts of Riparian Management Decisions on Travel

4.3.16.2.8.1. Alternative A

The impacts on travel from riparian management decisions would be negligible under Alternative A. Management decisions under the current RMP would maintain water quality in streams to meet state and federal requirements, and preserve and restore riparian natural functioning conditions, but these decisions would not specifically restrict or prohibit travel within or through riparian areas.

4.3.16.2.8.2. Alternatives B and E

These alternatives would apply the same management decisions to riparian areas, resulting in short-term, adverse impacts on travel opportunities from potential temporary closures of Functioning at Risk riparian areas to dispersed motorized use. These areas would be closed until riparian Proper Functioning Condition (PFC) is restored. Management decisions under these alternatives would have long-term, adverse impacts on travel from closing selected riparian areas to vehicle traffic if site-specific analysis determines that OHV use is causing riparian degradation. At this RMP programmatic-level of analysis, the size of the at-risk riparian areas that would be closed to travel, and the length of time that they would be closed (and thus reduce the opportunities for travel) are unknown. The impacts on travel from riparian management decisions would be analyzed under NEPA at the site-specific level during project development and implementation. Compared to Alternative A, these alternatives would be more adverse to

travel in the short- and long-term because roads and travel routes within riparian areas could potentially be closed to travel opportunities in order to protect riparian resources.

4.3.16.2.9. Impacts of Special Designations Decisions on Travel

Management decisions related to impacts to travel access and restrictions within ACECs, WSAs, and along recommended eligible Wild and Scenic River segments are analyzed under Sections 4.3.16.2.7, 4.3.16.2.8 and 4.3.16.2.11 for OHV and other motorized vehicle use.

4.3.16.2.10. Impacts of Special Status Species Decisions on Travel

Management decisions related to impacts to travel access and restrictions within special status species habitat are analyzed under Sections 4.3.16.2.7 and 4.3.16.2.8.

4.3.16.2.11. Impacts of Travel Management Decisions on Travel

4.3.16.2.11.1. OHV Travel

Alternative A

Under Alternative A, OHV travel would be managed under open, limited, and closed travel designations. As shown in Table 4.142 below, current OHV designations under Alternative A would manage 611,310 acres as open for cross-country travel (Map 49). The limited category of OHV travel would be managed with 540,260 acres designated as limited use with season restrictions to protect important wildlife habitat; 570,390 acres would be managed as limited to existing roads and trails to protect cultural, scenic, and recreational values; and 218,780 acres would be managed as limited to designated roads and trails to protect resource values within ACECs, SRMAs, developed recreation sites, and riparian/floodplain areas. Approximately 276,430 acres would be managed as closed to OHV use to protect vegetation study areas, and ACEC resource values.

Table 4.142 OHV Acreage Designations by Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open	611,310	0	2,311	2,311	0
Limited – Seasonal Restrictions	540,260	-	3.8[1]	-	-
Limited – Existing Roads and Trails	570,390	-	-	-	-
Limited – Designated Roads and Trails	218,780	1,359,417	1,362,142	1,780,807	812,679
Closed	276,430	423,698	418,667	0	970,436
Total[2]	**2,217,170[3]**	**1,783,115**	**1,780,809**	**1,780,807**	**1,783,115**

[1]This acreage applies to Arch Canyon.

[2]Acreage figures may vary by alternative due to the changes in GIS technology and variances in shapefiles.

[3]Acres are not additive under this alternative because of overlap between limited use categories.

The impacts to travel under the open OHV category would be beneficial in the long-term because these areas would not impede or restrict OHV travel, continuing to allow unlimited, cross-country OHV travel in the designated open areas. Limited OHV use along designated roads and trails would also have beneficial impacts on OHV travel because travel along these routes would be unimpeded. Limited OHV use with seasonal restrictions would have short-term, adverse impacts on travel opportunities by prohibiting travel along these designated routes during specified times of the year. Areas designated as closed to OHV use would continue to adversely affect motorized OHV travel opportunities.

Alternative B

Alternative B would not designate any acreage under the open OHV travel category. Limited OHV use would be allowed on 1,359,417 acres, with 423,698 acres designated as closed to OHV travel (Map 50). The impacts on OHV travel would be adverse along routes designated as closed to travel because travel and access opportunities within these portions of the planning area would be prohibited. Compared to Alternative A, this alternative would be more adverse in the long-term on travel because 1) more area would be designated as closed to OHV travel (more than 53% more area), and 2) no area would be designated as open to cross-country OHV travel, with long-term, adverse impacts on this form of travel from the elimination of the 611,310 acres of open cross-country OHV travel opportunities allowed under Alternative A.

Arch Canyon would be closed to OHV use to protect special status species within the canyon (e.g., the Mexican spotted owl and flannelmouth sucker). The impacts to travel in the long-term would be adverse because opportunities for motorized OHV travel within the canyon would be eliminated. Compared to Alternative A, this alternative would be more adverse because Alternative A would not prohibit travel within the canyon.

Alternative C

This alternative would have impacts similar to those discussed under Alternatives B and E, except that a very small area would be designated as open to cross-country OHV travel opportunities (2,214 acres near Indian Creek within the Indian Creek SRMA, and 97 acres in Butler Wash [in the Comb Ridge CSMA]) (Map 51). The comparison of OHV travel under this alternative with Alternative A would be similar to the comparison under Alternatives B and E because the areas designated as limited and closed are similar: there would be a 5,031-acre difference for the closed category between Alternatives B/E and Alternative C, and a 2,725-acre difference under the limited OHV use category.

Under Alternative C, OHV use would be limited to designated routes within Arch Canyon, with some long-term adverse impacts on travel opportunities through partial closure of the canyon to OHV travel. The impacts would be more adverse when compared to Alternative A because there would be fewer opportunities for travel within the canyon.

Alternative D

Similar to Alternative C, Alternative D would designate a small 2,311-acre area as open to cross-country OHV travel, but none of the planning area would be designated as closed to OHV travel access along designated routes (Map 52). Under this alternative, the travel opportunities for open unlimited, cross-country OHV travel would be adversely impacted in the long-term, when compared to Alternative A, as approximately 609,000 acres (99% of the area designated as open

under Alternative A) would have prohibitions on cross-country OHV travel, with a substantial reduction in opportunities for this form of travel. The opportunities for travel along designated routes and trails would not be restricted, except for the seasonal restrictions on commercially permitted mechanized tours or events as discussed above under Section 4.3.16.2.7. Compared to Alternative A, this alternative would have more beneficial impacts on OHV travel because 276,430 fewer acres would be designated as closed to OHV travel, which would increase the OHV-related travel opportunities within the planning area along designated routes. This alternative would also have more adverse impacts to travel, when compared to Alternative A, from the loss of practically all of the opportunities for cross-country OHV travel.

Under this alternative, OHV use within Arch Canyon would be limited to the designated route along the D-class road that allows access to the canyon. The impacts on travel opportunities within the canyon would be minor because canyon travel opportunities would not be restricted along the designated route. The impacts on travel under this alternative, when compared to Alternative A, would be similar.

Alternative E

Alternative E travel decisions would designate no acres as open to cross-country OHV travel and travel within Arch Canyon (the same as Alternative B), with impacts as discussed under that alternative. Approximately 970,436 acres would be closed to OHV travel (582,360 acres and 179 miles of routes within non-WSA lands with wilderness characteristics, and the remainder throughout the Monticello PA) (Map 53). As discussed above in Section 4.3.16.2.6, the impacts of closing more than 54% of the Monticello PA to OHV travel would have substantially adverse impacts on mechanized travel opportunities. The impacts on non-mechanized travel would be negligible, as these forms of travel (hiking, backpacking, and equestrian) would not be affected by route closures except where public safety and resource protection would be a concern. The designation of 812,679 acres as limited to designated routes would have impacts on travel opportunities, as discussed under Alternative B, but to a lesser degree because fewer acres would be designated for under this travel route category.

Compared to Alternative A, this alternative would have substantially more adverse impacts on travel opportunities because: 1) 611,310 acres (100% of the area designated under Alternative A) would be closed to cross-country OHV travel, and 2) 694,006 more acres would be closed to OHV travel opportunities (with a total acreage closure of 970,436 acres or over 3.5 times more acres than designated under Alternative A) under this alternative than under Alternative A.

4.3.16.2.11.2. Non-Mechanized Travel (Hiking, Backpacking, Equestrian)

Management decisions for all alternatives would provide opportunities for non-mechanized travel on all routes open to mechanized uses, and would manage routes that exclude motorized OHV and mountain bikers to reduce user conflicts, and provide travel opportunities independent of motorized OHV and mountain biking routes. Management would not restrict non-mechanized travel within the Monticello PA, except in areas where specific resource values would need protection or for public health and safety reasons. All of the alternatives would have long-term beneficial impacts to non-mechanized travel because travel opportunities would only be limited for the reasons just mentioned, if the health and safety of the traveler would be put at risk, or where natural and cultural resources have been degraded and need to be rehabilitated or preserved.

4.3.16.2.11.3. Road Travel

Alternative A

Under Alternative A, no D-Class roads would be closed because of resource use conflicts, restrictions to authorized users only, proposed management decisions, purpose and need review, or crucial wildlife habitat. As shown in Table 4.143, 890 miles of B-Class roads would be open within the planning area, with approximately 2,179 miles of D-Class roads open within the planning area. The impacts on travel under this alternative would be negligible because travel opportunities to access the Monticello PA would not be prohibited or restricted along these roads.

Table 4.143. B-Class and D-Class Roads in the Monticello Planning Area (Miles)

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open B-Class Roads	890	875	873	873	875
Open D-Class Roads	2,179	1,521	1,947	2,205	1,342
Closed D-Class Roads	0	780	316	45	959

Source: BLM 2006d.

[1]The D-Class closed roads include those routes seasonally closed to protect wildlife crucial habitat (see Section 4.3.16.2.13).

Alternative B

Under these alternatives, 15 miles of B-Class roads (fewer than 2%) would be closed, with 780 miles of D-Class roads (34% of the total number of D-Class roads) proposed for closing because of resource use conflicts, restrictions to authorized users only, proposed management decisions under this alternative, purpose and need review, or crucial wildlife habitat needs. Of the proposed 780 miles of D-Class closures, 258 miles would be closed because of crucial deer habitat needs, 155 miles because of resource designations under this alternative, 75 miles because of crucial elk habitat needs, 136 miles because of crucial bighorn sheep habitat needs, 34 miles because of authorized use only along designated roads, and 30 miles because of purpose and need review of road use. Other reasons for closure would include 47 miles because of riparian vegetation conflicts and 6 miles due to law enforcement conflicts. (See the Monticello Travel Plan [Appendix N] for a description of the route designation process.) The remainder of the proposed closures would be for cultural resource, seasonal, and other wildlife habitat and vegetation conflicts. These proposed road closures would have long-term adverse impacts on travel because of the reduction in planning area travel and access opportunities. Compared to Alternative A, these alternatives would be more adverse to travel because 780 more miles (34% more D-Class routes) would be closed to travel than under Alternative A, which would not close any D-Class roads.

Alternative C

Alternative C would propose to close 17 miles of B-Class roads (fewer than 2%), and 316 miles of D-Class roads (14% of the total number of D-Class roads under this alternative) within the planning area. Of the proposed 316 miles of road closures, the majority of closures would be for the following reasons: 109 miles for crucial deer habitat needs; 38 miles for WSA intrusions/resource designations under this alternative; 58 miles for resource designations; 33

miles for road purpose and need review; 17 miles for authorized use only along specified roads; and 31 miles for bighorn sheep habitat needs. The impacts of these proposed closures would be similar to those discussed under Alternative B because the affects on travel opportunities would be similar. However, the degree of impact on travel would be roughly half of that disclosed under Alternative B because road closures under this alternative would be 46% of those proposed under Alternative B. Compared to Alternative A, this alternative would have more adverse impacts on travel for the same reasons as discussed under Alternative B.

Alternative D

Alternative D would propose to close 17 miles of B-Class roads (the same as under Alternative C) and 45 miles of D-Class roads. The proposed D-Class closures would be because of WSA intrusions. The impacts of these road closures on travel under this alternative would be minor because 1) the total number of road closures is small, compared to the total miles of B- and D-Class road within the planning area (2% of B-Class roads, 2% of D-Class roads), and 2) the D-Class road closures within WSAs would be for reasons required under the IMP to limit trails and routes to those existing prior to the time that the WSA was established (i.e., to eliminate unauthorized routes within the WSA). Compared to Alternative A, this alternative would be more beneficial to travel along D-Class roads because 26 more miles of D-Class roads would be open for travel than under Alternative A. This would provide more opportunities for planning area travel and access along these roads. The impacts on B-Class roads would be the same as discussed under Alternative B.

Alternative E

Travel decisions for Alternative E would be the same as those discussed under Alternative B, except that the 582,360 acres within non-WSA lands with wilderness characteristics would be closed to OHV travel. Closing these areas would not affect travel opportunities along B-Class routes because these are state-administered and maintained routes, beyond the jurisdiction of BLM land management; however, 179 miles along D-Class roads would be closed to OHV travel opportunities within non-WSA lands with wilderness characteristics. Compared to Alternative A, this alternative would have more adverse impacts on D-Class OHV travel because fewer OHV travel opportunities would be available under Alternative E.

4.3.16.2.11.4. Scenic Byways and Backways

Under all of the alternatives, scenic byways would be maintained along the Indian Creek Corridor, along the Bicentennial–Trail of the Ancients National Scenic Byway, and along Monument Valley. Scenic backways would be maintained along the Lockhart Basin Road, the Trail of the Ancients (Backway), Elk Ridge Road, and the Abajo Loop Road. These management decisions would have long-term, beneficial impacts on travel by providing scenic-quality-related travel opportunities within the PA.

4.3.16.2.12. Impacts of Vegetation Decisions on Travel

The impacts of vegetation treatments for ecosystem restoration, fire management, and exotic vegetation control on travel are similar to those discussed under Section 4.3.16.2.3, Impacts of Fire Management Decisions on Travel, because the treatments and resultant impacts are similar.

4.3.16.2.13. Impacts of Wildlife and Fisheries Decisions on Travel

4.3.16.2.13.1. Alternative A

Under Alternative A, management decisions for the protection of bighorn sheep, pronghorn, and deer would have impacts similar to those discussed in Section 4.3.10, Recreation, i.e., the impacts would be negligible to minor on travel. No restrictions or limitations would be placed on travel except cross-country OHV travel within bighorn sheep crucial habitat (personal communication between Tammy Wallace, Monticello FO, and Thomas Sharp, SWCA, 2006).

4.3.16.2.13.2. Alternatives B and E

Under these alternatives, permitted and commercial OHV travel would be prohibited within bighorn sheep, pronghorn, deer, and elk crucial habitat. The impacts would be short-term, but adverse, on travel opportunities for these activities, as approximately 512 miles of routes would be seasonally closed to protect wildlife. It should be noted that private motorized OHV and mountain biking travel along designated routes would be permitted within these areas, so there would be negligible impacts on opportunities for private travel. Compared to Alternative A, these alternatives would be more adverse to commercial and permitted types of travel because of the prohibitions on OHV access into crucial wildlife habitat.

4.3.16.2.13.3. Alternative C

The impacts of crucial wildlife habitat restrictions on travel would be similar to those discussed under Alternatives B and E, but to a lesser degree, as some travel limitations would be placed on the extent and duration of commercial and permitted OHV use within crucial wildlife habitat. Approximately 135 miles of travel routes would be closed to protect wildlife species under this alternative (26% of the acres closed to travel under Alternatives B and E), which would reduce travel opportunities. It should be noted for Alternatives B and E, that private OHV/mechanized travel along designated routes would be permitted within these areas, so the impacts on opportunities for this type of travel would be negligible. Compared to Alternative A, this alternative would be more adverse to travel because more roads would be closed, and thus the opportunities for travel would be reduced.

4.3.16.2.13.4. Alternative D

The impacts of crucial wildlife habitat restrictions on travel would be similar to those discussed under Alternative A because the management decisions would be similar.

4.3.16.2.14. Impacts of Woodlands Decisions on Travel

4.3.16.2.14.1. Alternative A

Alternative A woodlands decisions would have negligible impacts on travel because there are no specific management decisions that would reduce or limit travel access opportunities within the Monticello PA.

4.3.16.2.14.2. Alternative B

Alternative B would have short-term, adverse impacts on travel by managing the East Canyon, Harts Draw, Salt Creek Mesa, Dark Canyon, White Canyon, South Cottonwood, and Montezuma Watershed woodland zones with seasonal restrictions on woodland harvesting access to elk, deer, pronghorn, and bighorn sheep crucial habitat in order to protect these wildlife species, as discussed under Section 4.3.10, Recreation, and Section 4.3.19, Wildlife (and shown in Table 4.141). Compared to Alternative A, the short-term restrictions and route closures on travel under Alternative B would be more adverse because travel would be seasonally restricted or prohibited in these zones.

4.3.16.2.14.3. Alternative C

The impacts to travel under Alternative C would be similar to Alternative A because, though woodland decisions under this alternative would impose travel restrictions to protect site-specific cultural and other sensitive resources, private and/or commercial woodland harvesting activities would be permitted to travel off-road to harvest and collect wood.

4.3.16.2.14.4. Alternative D

The impacts on travel under this alternative would be similar to Alternative A because there would be no OHV woodland harvesting decisions that would restrict or prohibit travel access to harvest and collect wood, except site-specific restrictions in harvesting areas to protect cultural and other sensitive resources.

4.3.16.2.14.5. Alternative E

Under Alternative E, all lands with non-WSA wilderness characteristics within the proposed woodland harvesting zones would be managed to protect wilderness values. Woodland decisions to protect these characteristics would include closure to OHV use, scenic quality management under VRM I objectives, and firewood gathering and harvesting prohibitions. These management decisions would have short-term and long-term adverse impacts on OHV travel, as 1) OHV travel (including OHV travel to harvest and collect wood) would not be allowed within the approximately 582,357 acres of lands with non-WSA wilderness characteristics, and 2) the same short-term seasonal restrictions applied to protect wildlife within woodland harvesting zones (as discussed under Alternative B) would restrict travel opportunities. Compared to Alternative A, this alternative would have more adverse impacts on OHV travel because more acreage would be closed to travel or seasonally restricted.

4.3.16.3. Summary of Travel Analysis Data

The following table (Table 4.144) summarizes acres of OHV designations, miles of proposed travel routes, and proposed travel restrictions under each alternative, the purpose of which is to provide the reader with a concise description of the data used in this impacts analysis.

Table 4.144. Travel Data Summary Table

	Alternative A	Alternatives B	Alternative C	Alternative D	Alternative E
Open B-Class Roads	890 miles	875 miles	873 miles	873 miles	875 miles
Open D-Class Roads	2,179 miles	1,521 miles	1,947 miles	2,205 miles	1,342 miles
Closed D-Class Roads	0	780 miles	316 miles	45 miles	959 miles
OHV Open	611,310 acres	0 acres	2,311 acres	2,311 acres	0 acres
OHV Limited – Seasonal Restrictions	540,260 acres	-	3.81 acres	-	-
OHV Limited – Existing Roads and Trails	570,390 acres	-	-	-	-
OHV Limited – Designated Roads and Trails	218,780 acres	1,359,417 acres	1,362,142 acres	1,780,807 acres	812,679 acres
OHV Closed	276,430 acres	423,698 acres	418,667 acres	0 acres	970,436 acres
Bighorn Sheep Travel Restrictions	Closed to OHV cross-country travel from 1 Apr–15 Jul 15 Oct–31 Dec	1 Apr–15 Jul 15 Oct–31 Dec	1 Apr–15 Jun 15 Oct–15 Dec	15 Apr-15 May 1 Nov-15 Dec	1 Apr–15 Jul 15 Oct–31 Dec
Pronghorn Travel Restrictions	15 May-15 Jun	15 Apr–30 June	1 May–15 Jun	15 May-15 Jun	15 Apr–30 June
Elk Travel Restrictions	Unspecified (no identified crucial habitat)	1 Nov–15 May	15 Nov–15 Apr	15 Dec-31 Mar	1 Nov–15 May
Deer Travel Restrictions	15 Dec-30 Apr	1 Nov– 15 May	15 Nov–15 Apr	15 Dec-31 Mar	1 Nov– 15 May
Affected Roads in Wildlife Habitat	Zero miles of travel routes closed to private, permitted, or commercial OHV travel.	512 miles of travel routes closed to permitted or commercial OHV travel, but open to private use.	135 miles of travel routes closed to permitted or commercial OHV travel, but open to private use.	Zero miles of travel routes closed to private, permitted, or commercial OHV travel.	512 miles of travel routes closed to permitted or commercial OHV travel, but open to private use.

4.3.16.4. Summary of Impacts on Travel

See Table 2.2 of Chapter 2 for a summary of impacts to travel.

4.3.16.5. Mitigation

There are no mitigation measures to reduce the impacts to access or increase the opportunities for travel within the planning area, except as discussed in Section 4.3.1, Air Quality and Climate for dust abatement.

4.3.16.6. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts to travel would be caused by temporary seasonal road or route closures in crucial fawning, lambing, and crucial winter habitat for wildlife along routes where vehicles could impact deer, elk, bighorn sheep, pronghorn, and special status wildlife species.

4.3.16.7. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Short-term use of resources in the planning area would have no impact on the long-term productivity of travel.

4.3.16.8. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

All route or road closures described above are irretrievable in that the use of that travel resource would be irretrievably lost until the routes are reopened. However, none of these closures are irreversible in that it is possible to reopen any of these closed areas or routes subject to additional analysis.

4.3.17. VEGETATION RESOURCES

The following resources are not discussed in this section because their management decisions would have negligible impacts on vegetation resources: Air Quality, Health and Safety, Non-WSA lands with wilderness characteristics, and Socioeconomics.

4.3.17.1. IMPACTS COMMON TO ALL ALTERNATIVES

Sagebrush habitat would be managed as required by the BLM Special Status Species Management – Manual 6840 (BLM 2001c), which requires the BLM to use the methods and procedures necessary to improve the condition of special status species and their habitats to the point where special status recognition is no longer warranted. In addition, BLM's National Sage Grouse Habitat Conservation Strategy 1.3.1 guidance (BLM 2004d) would be followed to ensure land use plans and plan amendments adequately address sage-grouse habitat conservation needs. Harts Draw, Beef Basin, Black Mesa, Alkali, Mustang, Cedar Point, Shay Mesa, and all areas with Gunnison sage-grouse habitat would be prioritized for treatment. These management actions would have beneficial impacts on native plant species in sagebrush vegetation communities because improved sage-grouse habitat necessitates the maintenance of large areas of native sagebrush communities (Crawford et al. 2004).

The Monticello FO would incorporate vegetation treatments from the Utah Record of Decision (ROD) for Vegetation Treatment on BLM Lands in Thirteen Western States EIS (BLM 1991b as amended). Restoration treatments would include biological, chemical, manual, mechanical, and prescribed burning. These treatments would have long-term, beneficial impacts on all native vegetation communities by reducing competition from noxious weeds and exotic, invasive plant species (BLM 1991b).

The spread of noxious, invasive, and non-native weed species would be controlled by implementing the principles in BLM weed management policies and action plans (see Table 3.56 Invasive and Noxious Weeds of San Juan County). In addition, restoration activities and stock animal feed would be required to use certified weed-free seed mixes, mulch, and feed. Restoration treatments to help slow and/or halt the spread of weed species in the Monticello PA

would reduce the adverse impacts of surface disturbances associated with improper livestock management, minerals development, motorized OHV travel in designated open areas, and other activities that result in disturbances to native vegetation. Greasewood would be treated in Comb Wash, Butler Wash, Montezuma, East Canyon, Indian Creek, South and North Cottonwood Wash, and Cross Canyon to improve ground cover, biodiversity, and water quality. This could have short-term, adverse impacts on native vegetation in the treatment areas from surface disturbances and loss of productivity, but would have long-term, beneficial impacts on the treated, native vegetation community as a whole by removing undesirable, non-native plant species, thereby allowing the establishment of a diverse, native vegetation community.

Under all alternatives, seed gathering and plant collection would be allowed in all areas meeting Utah's Rangeland Health Standards. This could have short-term, direct, adverse impacts on native vegetation due to pedestrian trampling, as well as minor potential for loss in reproductive success due to seed/plant removal.

4.3.17.2. ALTERNATIVES IMPACTS

4.3.17.2.1. IMPACTS OF CULTURAL RESOURCE DECISIONS ON VEGETATION

4.3.17.2.1.1. Alternative A

Under Alternative A, there would be no designated Cultural Special Management Areas (CSMAs) and the cultural areas identified in Table 4.131 would be managed according to 1991 RMP Prescriptions. Butler Wash East of Comb Ridge would be managed with no allocation limit and no size limit on private or commercial groups, with camping, OHV use, dogs, fires and grazing permitted within the area. Under this alternative, potential direct adverse impacts from increased trampling of native vegetation by visitors to cultural sites would be reduced or eliminated. However, there would be adverse impacts associated with surface disturbing vegetation treatments, and direct disturbance to vegetation and introduction of noxious and invasive weed species from recreationists, vehicles, and livestock. The level of cultural resource protection (that indirectly results in vegetation resource protection) varies by alternative. Because the extent and location of these surface disturbances are not known at this time, the quantitative differences in vegetation impacts between alternatives cannot be determined.

Under all alternatives, adverse impacts of cultural resource decisions on vegetation would be reduced due to the closure of the Grand Gulch National Historic District (37,388 acres) to private and/or commercial use for woodland products, mineral leasing, OHV use, and mechanized or mechanical surface disturbance (including vegetation treatments). This would decrease the number of native trees removed from this area. It would also decrease the amount of surface disturbance caused by foot/vehicle traffic in the area. Under Alternative A, the only surface disturbance restrictions would be in the Grand Gulch National Historic District. See Table 4.145 for the acreages of each vegetation type within the Grand Gulch National Historic District.

Table 4.145. Acreage of Vegetation Type by Cultural Area

Vegetation Type	Comb Ridge	Tank Bench	Beef Basin	McLoyd Canyon-Moon House	Grand Gulch National Historic District
Conifer/mountain shrub	15,884	0	20	0	13
Desert shrub	0	858	181	0	7,154
Invasive species and weeds	4	0	0	0	24
Pinyon-juniper woodland	17,576	1,564	15,796	1,408	26,902
Riparian and wetland	3,378	225	17	3	860
Sagebrush and perennial grassland	1,147	0	4,285	196	2,434
Total Vegetated Acres	**37,989**	**2,647**	**20,299**	**1,607**	**37,387**

[1] Acres of each vegetation type were determined using the Southwest ReGAP terrestrial ecological classification system (USGS 2004). Because vegetation types may overlap or be overestimated in the SWReGAP coverages, total acres of vegetation may exceed the total acres of the area being analyzed.

4.3.17.2.1.2. Alternative B

Under Alternative B, the qualitative impacts of cultural resource decisions on vegetation resources would be the same as those discussed under Alternative A. Under this alternative, Comb Ridge, Tank Bench, Beef Basin, and McLoyd Canyon-Moon House would be managed as CSMAs. The Comb Ridge CSMA (38,012 acres) would be closed to woodland product collection, closed to oil and gas surface occupancy and mineral entry, and would only be available for non-surface disturbing vegetation treatments. Camping would be limited to designated campgrounds and hiking and OHV use would be limited to designated trails. The Tank Bench CSMA (2,646 acres) would have the same surface disturbance restrictions as the Comb Ridge CSMA, but would be closed to OHV use. The Beef Basin CSMA (20,302 acres) and the McLoyd Canyon-Moon House CSMA (1,607 acres) would have the same surface disturbance restrictions as Comb Ridge CSMA with the exception of mineral leasing, which would be allowed subject to standard terms. Under all alternatives, the Grand Gulch National Historic District (37,388 acres) would be closed to all surface disturbances, with the exception of designated trails and camping areas.

There would be a considerable difference in impacts between Alternative B and the No Action Alternative due to the designation of four CSMAs and associated restrictions on surface disturbing activities. Adverse impacts to vegetation from surface disturbance under Alternative B would be considerably reduced from Alternative A due to restrictions on surface disturbances within 62,567 acres of designated CSMAs and the 37,388 acres Grand Gulch National Historic District.

4.3.17.2.1.3. Alternative C

Under Alternative C, the qualitative impacts of cultural resource decisions on vegetation resources would be the same as those discussed under Alternative B. The Comb Ridge CSMA would be managed the same as under Alternative B, except that woodland product collection and

surface disturbing vegetation treatments would be allowed. The Tank Bench CSMA would be managed the same as under Alternative B, except for the following: it would be open to oil and gas leasing and mineral entry under standard lease terms, hiking would be allowed off trails, and surface disturbing land activities would be permitted. The Beef Basin CSMA and the McLoyd Canyon-Moon House CSMA would be managed the same as under Alternative B. The Grand Gulch National Historic District would be managed the same as under Alternative B, but would allow non-motorized vegetation treatments.

There would be a considerable difference in impacts between Alternative C and the No Action Alternative due to the designation of four CSMAs and associated restrictions on surface disturbing activities. Adverse impacts to vegetation from surface disturbance under Alternative C would be greater than under Alternative B due to more acres of native vegetation in the CSMAs subject to adverse impacts from surface disturbance. Adverse impacts under Alternative C would be less than under Alternative A.

4.3.17.2.1.4. Alternative D

Under Alternative D, the qualitative impacts of cultural resource decisions on vegetation resources would be similar to those discussed under Alternative A, as Comb Ridge, Tank Bench, and Beef Basin would not be managed as CSMAs, but would be managed with similar management prescriptions as under Alternative C. These areas would be available for livestock use, surface disturbing vegetation treatments, and OHV use on designated routes. Tank Bench would be open to locatable mineral entry and disposal of mineral materials and geophysical work, campfires, and private and commercial use of woodland products. Beef Basin would be managed as closed to private or commercial use of woodland products. McLoyd Canyon-Moon House would be managed the same as under Alternative C, with the following exceptions: 24 visitors and two commercial groups would be allowed each day. The Grand Gulch National Historic District would be managed the same as under Alternative C; however, if the WSA is released by Congress, it would be open to oil and gas leasing with no surface occupancy and casual geophysical exploration.

Alternative D would have similar impacts as Alternative A due to the designation of only one CSMA and the Grand Gulch National Historic District, and allowances for surface disturbances associated with livestock grazing, vegetation treatments, OHV use, and mineral entry in the other cultural areas. Adverse impacts to vegetation from surface disturbance under Alternative D would be greater than under Alternatives B and C due to more acres of native vegetation subject to adverse impacts from surface disturbance.

4.3.17.2.1.5. Alternative E

Under Alternative E, impacts of cultural decisions on vegetation resources would be the same as those described under Alternative B with the exception that OHV use would be closed in non-WSA lands with wilderness characteristics and vegetation disturbances would be restricted to protect wilderness characteristics in these areas. This would result in long-term, beneficial impacts to vegetation, as well as adverse impacts from restrictions on vegetation treatments to improve vegetation communities and control the spread of invasive species. The Comb Ridge and Beef Basin CSMAs would allow maintenance for existing improvements to wildlife habitat, but no new improvements would be allowed. This would limit direct impacts associated with surface-disturbing improvements. However, it would also reduce long-term, indirect, beneficial

impacts from vegetation and wildlife habitat improvements. Due to the designation of four CSMAs and protections in place for non-WSA lands with wilderness characteristics, Alternative E would have considerably fewer direct adverse impacts than Alternative A. This alternative would also have fewer direct adverse impacts and indirect beneficial impacts to vegetation than any of the other management alternatives.

4.3.17.2.2. IMPACTS OF FIRE MANAGEMENT DECISIONS ON VEGETATION

4.3.17.2.2.1. Alternative A

Under Alternative A, the Reasonable and Prudent Measures and Terms and Conditions identified in consultation with the USFWS for the Utah Land Use Plan Amendment for Fire and Fuels Management would be implemented in fire-related actions (see Appendix B). Maintenance of existing healthy ecosystems is one of the criteria for establishing fire management priorities and would have beneficial impacts on vegetation resources in the Monticello FO. Wildland fire use would not be authorized in the following areas unless reasonable Resource Protection Measures were in place: areas that are known to be highly susceptible to post-fire cheatgrass or other weed invasion, important terrestrial and aquatic habitats, and non-fire adapted vegetation communities. These measures would have beneficial impacts on vegetation by reducing the spread of weeds and exotic, invasive species into native vegetation communities.

Under all alternatives, fuels management actions would include surface-disturbing treatments on 5,000 to 10,000 acres annually. These actions include: mechanical and manual treatments, prescribed fire, chemical or biological vegetation control, and aerial/ground seeding. These treatments would have long-term beneficial and short-term adverse impacts on vegetation communities in treated areas. Fuels treatments that thin vegetation and reduce or eliminate weeds benefit native vegetation communities by removing competition from weedy native and invasive species. Once competition from weedy or non-native species is removed, a diverse native community has the potential to establish itself in the area (Stevens and Monsen 2004). Adverse impacts associated with fuels management actions include trampling and crushing of vegetation, and thinning or removal of rare or ecologically-desirable species. Fuels management actions potentially result in a short-term, adverse reduction in native species diversity. However, in the long-term fuels treatments allow native and desirable non-native species to become established and promote more varied species composition and habitat structure (e.g., forests with multiple age classes and canopy openings for groundcover establishment).

4.3.17.2.2.2. Alternatives B, C, D and E

Under Alternatives B, C, D, and E, the impacts of fire management decisions on vegetation resources would be the same as those discussed under Alternative A.

4.3.17.2.3. IMPACTS OF LANDS AND REALTY DECISIONS ON VEGETATION

4.3.17.2.3.1. Alternative A

Lands and realty decisions include the following issues: access, easements, leases and permits, utility/transportation systems, exchanges, disposals, and withdrawals. The Monticello FO AMS Chapter 7 contains a complete list of common realty issues the Monticello FO can expect. Withdrawals and excluded areas under Alternative A would help preserve and protect sensitive

environmental resources and areas. Other land and realty management decisions that would protect vegetation resources include the acquisition and retention of any TES species habitat, quality riparian areas, and key productive ecosystems.

The Monticello FO AMS Chapter 7 contains a list of ACECs and SRMAs closed to ROWs in the Monticello FO. These closures would benefit vegetation in these areas. However, all areas not identified as avoidance or exclusion will be available for ROWs and could be subject to multiple-use terms on a case-by-case basis (BLM 2005c). ROW corridors are presently used for electric transmission facilities, pipelines 10 inches and larger, communication lines, federal and state highways, and major county road systems. The permanent installation of utility and communication infrastructure in ROWs could have direct, long-term, adverse impacts on native vegetation due to vegetation removal and trampling by workers and vehicles during construction activities.

Applications for filming permits for work on existing roads include the following criteria for approval: project would not impact sensitive species habitat, would not involve the use of exotic species, and would not adversely impact relict environments or riparian areas. Applications for filming permits for work in WSAs, WSR corridors, NRHP Eligible Sites, and Native American Sacred Sites would include the following additional criteria for approval: no significant livestock use and a maximum of 15 vehicles and 75 people in the sensitive area. Trampling and vegetation removal associated with filming operations could result in short- and long-term adverse impacts on vegetation resources. Adverse impacts would be reduced by these required avoidance and/or minimization criteria for sensitive habitats, and by restrictions on the use of exotic species.

In addition, the impacts of lands and realty decisions on vegetation resources would include the disposal of 5,911 acres of land as specified in the AMS, Table 7.3 (BLM 2005c). These data are not available in a spatially explicit format; therefore, acres of impacts by TES species habitats are not available for this analysis. Nevertheless, land disposal decisions could result in impacts to all vegetation types.

4.3.17.2.3.2. Alternative B

Under Alternative B, the impacts of lands and realty decisions on vegetation resources would include the qualitative impacts discussed in Alternative A, with the disposal of an additional 2,968 acres more than under Alternative A (an approximately 50% increase).

This alternative would include the authorization of ROWs for wind or solar energy development in the Monticello FO with the following exceptions: WSAs; VRM class I, II, and III areas; wild and scenic river corridors; ACECs; raptor and migratory bird habitat; and special status species habitat. Development associated with wind and solar energy could have direct, long-term, negative impacts on native vegetation due to removal associated with construction. Long-term, indirect, adverse impacts could result from the potential introduction of invasive plant species by construction equipment and building personnel. The magnitude of adverse impacts would be reduced by the development of surface disturbance restrictions in sensitive and high-value vegetation types. Overall, this alternative would have fewer adverse impacts on vegetation than Alternative A.

4.3.17.2.3.3. Alternative C

Under Alternative C, the impacts of lands and realty decisions on vegetation resources would be the same as under Alternative B, except there would be an increase in surface disturbance due to the allowance of ROWs in ACECs, VRM Class II and III areas, and non-federally listed sensitive species habitats. As a result, there would be an increase in the number of acres potentially adversely impacted by surface disturbance under this alternative. Overall, Alternative C would have fewer adverse impacts on vegetation than Alternatives A or D, but greater impacts than Alternatives B or E.

4.3.17.2.3.4. Alternative D

Under Alternative D, the impacts of lands and realty decisions on vegetation resources would be the same as under Alternative C, except there would be an increase in surface disturbance due to the allowance of ROWs in wild and scenic river corridors. As a result, there would be an increase in the number of acres potentially adversely impacted by surface disturbance under this alternative. Overall, Alternative D would have fewer adverse impacts on vegetation than Alternative A, but greater impacts than Alternatives B, C, or E.

4.3.17.2.3.5. Alternative E

Under Alternative E, the impacts of lands and realty decisions on vegetation resources would be the same as the impacts discussed under Alternative B, with the exception that authorization of ROWs for wind or solar energy development would not be permitted in non-WSA lands with wilderness characteristics. Alternative E would have less adverse impacts on vegetation than the other alternatives because fewer surface disturbances would be allowed due to protection of non-WSA lands with wilderness characteristics.

4.3.17.2.4. IMPACTS OF LIVESTOCK GRAZING DECISIONS ON VEGETATION

4.3.17.2.4.1. Alternative A

Under Alternative A, livestock grazing would be managed according to the Guidelines for Grazing Management to achieve the Standards for Rangeland Health (Appendix D). Grazing would continue to be excluded from 125,356 acres in the areas identified in the Summary Table of Alternatives (Table 2.1) (see also Table 4.28). The allotments and their seasons of use would be the same as in the San Juan RMP (BLM 1991) with the exceptions listed in the Summary Table of Alternatives. New allotments would be added in South Vega, Upper Mail Station, and Big Westwater. In areas where utilization levels have not been established the targeted level of use would be 50% to meet the objectives of this plan. In addition, 17,300 acres would be excluded from livestock use for wildlife objectives (i.e., managed for wildlife use) on parts of the slopes of Peter's Canyon and East Canyon, which would help maintain native vegetation in those areas. In total, approximately 9% of the Monticello FO planning area would be unavailable for livestock grazing under Alternative A (Map 10). Because the intensity and exact location of grazing activities are not known at this time, the quantitative differences in vegetation will instead be analyzed by comparing the acres of each vegetation type unavailable for grazing under each alternative (Table 4.146).

Table 4.146. Acreage of Each Vegetation Type Unavailable for Grazing by Alternative

Vegetation type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	785	800	800	785
Desert shrub	8,411	8,967	8,992	8,420
Invasive species and weeds	99	99	99	99
Pinyon-juniper woodland	121,317	129,641	129,641	121,504
Riparian/wetland	2,380	2,816	2,816	2,394
Sagebrush/perennial grass	5,362	5,434	5,434	5,362
Total	**138,354**	**147,757**	**147,782**	**138,564**

There is the potential for direct and indirect adverse impacts on vegetation resources associated with grazing-related surface disturbance in 91% of the Monticello PA. Livestock grazing, when done at proper levels, would not have adverse impacts on the native plant species in an area. However, when grazing occurs in sensitive riparian areas or at higher levels than the native vegetation can support, adverse impacts to native vegetation are inevitable. In all vegetation types in the Monticello PA, if native vegetation is grazed beyond the point of natural regeneration, non-native, weedy species such as cheatgrass are able to colonize an area and inhibit the future restoration of native species (Sparrow et al. 2003, Young and Evans 1973). Under all alternatives, adaptive management would be applied to livestock grazing in areas where the native vegetation appears to be overburdened, in order to mitigate adverse impacts to vegetation.

4.3.17.2.4.2. Alternatives B and E

Under Alternatives B and E, the impacts of livestock grazing decisions on vegetation resources would include those discussed in Alternative A, with additional impacts from the closure of Slickhorn Canyon (Perkins Brother's Allotment), Rone Bailey Mesa (Upper Mail Station Allotment), Dodge Canyon Allotment, Mule Canyon (including North and South Forks north of U-95), Arch Canyon, Fish and Owl Canyon, Road Canyon, Rogers Allotment, Portions of West Butler Wash Canyons, and Horsehead Canyon within the Montezuma Canyon allotment (Map 11). These closures would have either beneficial or adverse impacts on native vegetation depending on the success of revegetation and weed control efforts following the removal of grazing livestock. Removing livestock from an area without immediate implementation of a weed control plan could lead to the establishment of weedy plant species in place of less competitive natives (BLM 1991b, Monsen 2004). When done properly, as described in the Standards for Rangeland Management, grazing exclosures could be managed to encourage the dominance of native vegetation. In the long-term, Alternatives B and E would likely have fewer adverse impacts on native vegetation in the Monticello FO than Alternative A because of the closure of 9,403 additional acres to livestock grazing. Under Alternatives B and E, 6.6% more acres of the desert shrub vegetation type, 6.9% more pinyon-juniper woodland, 18.3% more

riparian/wetland, and 1.3% more sagebrush/perennial grassland would be closed to grazing than under Alternative A, with more potentially beneficial impacts as discussed above.

4.3.17.2.4.3. Alternative C

Under Alternative C, the impacts of livestock grazing decisions on vegetation resources would be the same as discussed for Alternatives B and E, with the exception that Mule Canyon south of U-95 would be unavailable for grazing, and the North and South Forks north of U-95 would be open (Map 12). As discussed above, these closures would have either beneficial or adverse impacts on native vegetation depending on the success of revegetation and weed control efforts following the removal of grazing livestock. In the long-term, Alternative C would likely have fewer adverse impacts on native vegetation in the Monticello FO than Alternative A due to the closure of 9,428 additional acres to livestock grazing. Under Alternative C, 6.9% more acres of the desert shrub vegetation type, 6.9% more pinyon-juniper woodland, 18.3% more riparian/wetland, and 1.3% more sagebrush/perennial grassland would be closed to grazing than under Alternative A, with only slightly greater acres of desert shrub.

4.3.17.2.4.4. Alternative D

Under Alternative D, the impacts of livestock grazing decisions on vegetation resources would include those discussed under Alternative A, with the additional closures of Slickhorn Canyon (Perkins Brother's Allotment), Rone Bailey Mesa (Upper Mail Station Allotment), Mule Canyon below U-95, Arch Canyon, Fish and Owl Canyon, Road Canyon, Rogers Allotment, and portions of West Butler Wash Canyons (Map 13). Due to the closure of 210 additional acres to livestock grazing, Alternative D is likely to have slightly less severe adverse impacts on native vegetation in the long-term than Alternative A. Under Alternative D, 0.1% more acres of the desert shrub vegetation type, 0.2% more pinyon-juniper woodland, and 0.6% more riparian/wetland would be closed to grazing than under Alternative A.

4.3.17.2.5. Impacts of Minerals Decisions on Vegetation

In Tables 4.147–4.149, the number of acres of each vegetation type in each leasing category is shown for each of the RFD areas. Acreage figures under the Standard Stipulations and Timing and Controlled Surface Use reflect the total BLM administered areas within the Monticello PA open to surface disturbing activities. These are not estimates of the total area disturbed within the Monticello PA, but a comparison by alternative of the amount of area open to potential development within BLM administered areas within the Monticello PA. All acreages provided in the vegetation sections are approximations.

Table 4.147. Alternative A–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulation In the Blanding Sub-basin RFD Area

Vegetation type	Surface use with standard conditions (acres)	Surface use limited by special conditions (acres)	NSO and closed to mineral entry (acres)	NSO and open to mineral entry (acres)	Closed to leasing and mineral entry (acres)
Conifer/mountain shrub	549	11	0	1	0
Desert shrub	81,663	17,530	2,167	1,120	5,744
Invasive species and weeds	584	224	0	31	2
Pinyon-juniper woodland	146,689	87,504	2,204	2,526	9,284
Riparian/wetland	6,949	2,266	532	83	410
Sagebrush/ perennial grass	31,096	18,454	3	311	97
Totals	**267,530**	**125,989**	**4,906**	**4,072**	**15,537**

Table 4.148. Alternative A–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulation In the Monument Upwarp RFD Area

Vegetation type	Surface use with standard conditions (acres)	Surface use limited by special conditions (acres)	NSO and closed to mineral entry (acres)	NSO and open to mineral entry (acres)	Closed to leasing and mineral entry (acres)
Conifer/mountain shrub	5,002	3,008	0	76	1,008
Desert shrub	21,459	120,633	2,179	53,429	52,554
Invasive species and weeds	30	545		250	228
Pinyon-juniper woodland	101,907	286,930	2,506	78,949	275,201
Riparian/wetland	1,386	1,377	357	964	2,433
Sagebrush/ perennial grass	12,997	25,681	0	7,595	27,847
Totals	**142,781**	**438,174**	**5,042**	**141,263**	**359,271**

Table 4.149. Alternative A–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulations In the Paradox Fault and Fold Belt RFD Area

Vegetation type	Surface use with standard conditions (acres)	Surface use limited by special conditions (acres)	NSO and closed to mineral entry (acres)	NSO and open to mineral entry (acres)	Closed to leasing and mineral entry (acres)
Conifer/mountain shrub	1,088	37	0	9	14
Desert shrub	45,187	12,159	0	2,098	3,839
Invasive species and weeds	1,366	170	0	1	0
Pinyon-juniper woodland	90,093	54,756	0	2,340	6,191
Riparian/wetland	2,145	1,185	0	294	317
Sagebrush/ perennial grass	21,091	20,506	0	174	71
Totals	**160,970**	**88,813**	**0**	**4,916**	**10,432**

4.3.17.2.5.1. Alternative A

Potential direct adverse impacts from oil and gas production and mineral materials entry and disposal would occur as various forms of surface disturbance. Of the three oil and gas RFD areas within the Monticello FO (see Map 48), vegetation in the Blanding Sub-basin RFD area is expected to be the most impacted by minerals decisions, because it has the highest predicted levels of oil and gas well development (42 wells over the life of the plan). In addition, there are nine wells expected in the Monument Upwarp area and 25 wells expected in the Paradox fault and fold belt over the life of the Monticello FO RMP. On average, a well pad disturbs 9.6 acres, so oil and gas development would result in the direct removal of native vegetation from approximately 701 acres (73 wells total) in the Monticello FO over the life of the plan. Site specific analysis will be necessary to determine the vegetation types impacted by oil and gas development.

In addition to the 1,399,454 acres managed for oil and gas leasing in the Monticello FO, there are 530,000 acres of managed coal resources in the San Juan Coal Field, 10,000 acres of tar sand resources in the White Canyon Special Tar Sand Area, two Known Potash Leasing Areas of unspecified size, and 16,320 acres in the Warm Springs canyon geothermal area. Site specific analysis will be necessary to determine the vegetation types impacted by coal, tar sand, and potash development.

Surface disturbance associated with well, pipeline, and road construction would result in both short- and long-term adverse impacts on vegetation, beyond the life of the well. In the short-term, loss of vegetation associated with surface disturbance would increase the potential for invasion of undesirable plant species, including noxious weeds (Piemeisel 1951). Surface disturbance would also have long-term impacts on vegetation resources. Following completion of oil and gas activities, native seeding and weed management would occur at each site. Initial

establishment of sagebrush and other native species following seeding is estimated to take three to four years. Successful establishment is dependent on the exclusion or reduction of livestock and control of weedy annuals on the restoration site during this time (Monsen and Stevens 2004). Revegetation is especially difficult in desert shrub vegetation because soils are shallow and highly saline and moisture availability is relatively low (Stevens and Monsen 2004). Introduction of undesirable plant species, notably cheatgrass, is likely in the sagebrush/perennial grass types due to the species' ability to out-compete native plant species in disturbed areas and to thrive in arid conditions (Morrow and Stahlman 1984, Piemeisel 1951).

Adverse impacts of minerals decisions on vegetation resources would be partially mitigated by the implementation of Management Common To All outlined in Table 2.1. This management would include no surface occupancy (NSO) in riparian vegetation, required revegetation of oil and gas well sites upon project completion, and land management that meets or moves towards meeting Utah's Standards for Rangeland Health (Appendix D).

Under this alternative, there would be 41 wells drilled in the Blanding Sub-basin over the life of the plan. This would result in approximately 393.6 acres of surface disturbance. This disturbance could occur in any of the vegetation types except for riparian.

Under this alternative, there would be 7 wells drilled in the Monument Upwarp over the life of the plan. This would result in approximately 67.2 acres of surface disturbance. This disturbance could occur in any of the vegetation types except for riparian.

Under this alternative, there would be 25 wells drilled in the Paradox Fault and Fold Belt over the life of the plan. This would result in approximately 240.0 acres of surface disturbance. This disturbance could occur in any of the vegetation types except for riparian.

Weed Dispersal Associated with Roads

Under all alternatives, new roads would be created to access oil and gas wells in the three RFD areas. In addition, traffic on existing roads is likely to increase due to construction and operation of new and existing oil and gas facilities in the Monticello FO. The number of acres of roadside vegetation that may be invaded by weeds introduced during road construction and traffic was calculated using data from the literature (Gelbard and Belnap 2003). The minimum number of miles of road required to connect future well pads to existing roads was calculated. This number was then converted to meters and multiplied by 100 meters, which is the width of potential weed infestation due to road disturbance. The resulting number of acres of roadside vegetation subject to the introduction and/or spread of noxious weeds and invasive species is provided in Table 4.150.

Table 4.150. Acres of Roadside Vegetation Subject to Weed Invasion

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	1,010	0	977	1,014
Desert shrub	34,272	29,069	32,768	35,056
Invasive species and weeds	459	428	463	468
Pinyon-juniper woodland	59,451	46,126	55,156	59,682
Riparian/wetland	2,384	1,898	2,252	2,541
Sagebrush/perennial grass	24,182	19,465	21,689	24,254
Total	**121,758**	**96,986**	**113,305**	**123,015**

Lands Available for Mineral Material Disposal

Under Alternative A, 584,270 acres of land in the Monticello FO are available for disposal of mineral materials subject to standard terms and conditions, or approximately 33% of the 1,784,724 acres in the Monticello FO. There are currently 821,070 acres (approximately 46% of Monticello FO lands) subject to special conditions under Alternative A. Currently, there are 373,850 acres (approximately 21% of Monticello FO lands) closed to disposal of mineral materials.

Lands Available for Mineral Entry

Under Alternative A, 1,652,743 acres of land in the Monticello FO are open to mineral entry, or approximately 93% of the 1,784,724 acres in the Monticello FO. This area is potentially subject to the impacts described above. There are currently 132,380 acres (approximately 7% of Monticello FO lands) withdrawn from mineral entry. These acres would not be subject to the risks of surface disturbance associated with open pit mining activities.

Geophysical Activity

Under all alternatives, geophysical activity would be permitted in the Monticello FO. Under Alternative A, approximately 886 acres of vegetation would be temporarily impacted by geophysical exploration. Impacts associated with exploration on existing roads would include crushing of individual plants and the potential spread of invasive and weedy plant species along existing roadways in the Monticello FO. There would be short-term, negative impacts associated with removal and/or displacement of native vegetation. Areas disturbed by geophysical activity would be completely reclaimed within 10 years. It is not known exactly where the geophysical activity would take place; therefore, the acreage of disturbance by vegetation type is not available. Site-specific NEPA analysis will take place on a project-by-project basis to quantify the impacts by vegetation type. Table 4.151 presents the predicted acres of surface disturbance associated with geophysical exploration by RFD area.

Table 4.151. Acres of Surface Disturbance Associated with Geophysical Exploration by RFD Area

RFD Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Blanding	271	249	271	271	237
Monument	120	137	143	149	53
Paradox	495	408	489	504	301
Total Acres	**886**	**794**	**904**	**924**	**591**

4.3.17.2.5.2. Alternative B

Under Alternative B, the qualitative impacts of minerals decisions on vegetation resources would be the same as those discussed under Alternative A because the impacts from minerals development would be the same. The major differences in impacts between this alternative and the No Action Alternative would be 1,367,015 acres available for management of oil and gas leasing (2.3% fewer acres than under Alternative A), and 365,170 acres available for mineral material disposal with standard stipulations (38% fewer acres than under Alternative A). Acres available for oil and gas leasing by vegetation type in each of the RFD areas are shown in Tables 4.152–4.154. The acres and location of predicted surface disturbance are similar for each alternative.

Under this alternative, there would be 38 wells drilled in the Blanding Sub-basin over the life of the plan. This would result in approximately 364.8 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 3 (7%) fewer wells and 28.8 (7%) fewer acres of disturbance than would occur under Alternative A.

Table 4.152. Alternative B–Acreage of Each Vegetation Type by Oil and Gas Leasing Category in the Blanding Sub-basin RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	519	0	0	43	0	0
Desert shrub	70,846	0	752	13,817	16,843	5,019
Invasive species and weeds	367	0	32	432	4	2
Pinyon-juniper woodland	59,056	71	2,660	159,258	17,518	9,579
Riparian/wetland	2,997	0	0	2,444	4,573	284
Sagebrush/ perennial grass	14,142	21	141	35,133	402	96
Totals	**147,927**	**92**	**3,585**	**211,127**	**39,340**	**14,980**

Table 4.153. Alternative B–Acreage of Each Vegetation Type by Oil and Gas Leasing Category in the Monument Upwarp RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	4,879	2	0	3,030	56	1,126
Desert shrub	85,051	315	9,617	75,456	5,224	74,623
Invasive species and weeds	94	0	7	671	53	227
Pinyon-juniper woodland	92,198	10,721	9,373	325,073	25,242	282,993
Riparian/wetland	680	27	75	1,727	1,318	2,836
Sagebrush/ perennial grass	8,285	579	270	33,259	3,760	27,967
Totals	**191,187**	**11,644**	**19,342**	**439,216**	**35,653**	**389,772**

Table 4.154. Alternative B–Acreage of Each Vegetation Type by Oil and Gas Leasing Category in the Paradox Fault and Fold Belt RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	611	73	0	438	11	14
Desert shrub	1,954	24,693	1	6,600	25,955	4,080
Invasive species and weeds	495	16	0	868	125	0
Pinyon-juniper woodland	14,092	24,454	29	86,580	21,365	6,708
Riparian/wetland	96	1,286	7	405	1,686	470
Sagebrush/ perennial grass	6,863	4,534	0	30,037	295	71
Totals	**24,111**	**55,056**	**37**	**124,928**	**49,437**	**11,343**

Under this alternative, there would be 8 wells drilled in the Monument Upwarp over the life of the plan. This would result in approximately 76.8 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 1 (14%) more well and 9.6 (147%) more acres of disturbance than would occur under Alternative A.

Under this alternative, there would be 20 wells drilled in the Paradox Fault and Fold Belt over the life of the plan, resulting in approximately 192.0 acres of surface disturbance, which could

occur in any of the vegetation types except for riparian. This is 5 (20%) fewer wells and 48 (20%) fewer acres of disturbance than would occur under Alternative A. Across the three RFD areas, there would be 7 (9.6%) fewer wells and 67.2 (9.6%) fewer acres of disturbance under Alternative B than would occur under Alternative A.

Weed Dispersal Associated with Roads

Under Alternative B, there would be fewer acres of all vegetation types subject to invasion by noxious weeds and invasive species than under Alternative A due to a reduction in new roads for oil and gas activity. Alternative B would have fewer negative impacts to vegetation than Alternative A, because there would be fewer acres subject to weed infestation. Table 4.155 provides the percent difference in acres of roadside vegetation subject to weed infestation between Alternatives A and B by vegetation type.

Table 4.155. Percent Difference in Acres of Roadside Vegetation Subject to Weed Infestation

Vegetation Type	Percent Difference Compared with Alternative A
Conifer and mountain shrub	15% less
Desert shrub	15% less
Invasive species and noxious weeds	7% less
Pinyon-juniper woodland	12% less
Riparian and wetland	10% less
Sagebrush and perennial grassland	20% less
Total	**20% less**

Lands Available for Mineral Material Disposal

Under Alternative B, 365,170 acres of land in the Monticello FO would be available for disposal of mineral materials subject to standard terms and conditions. That is 219,100 acres (37%) fewer than are currently subject to standard terms and conditions for mineral materials disposal under Alternative A.

There would be 876,736 acres subject to special conditions. That is 55,666 acres (7%) more than are currently subject to special conditions for disposal of mineral materials under Alternative A.

There would be 542,402 acres closed to disposal of mineral materials. That is 168,552 acres (45%) more than would be closed to disposal under Alternative A.

Lands Available for Mineral Entry

Under Alternative B, 1,521,656 acres of land in the Monticello FO would be open to mineral entry. That is 8% fewer acres than would be open under Alternative A.

There would be 263,467 acres recommended to be withdrawn from mineral entry. That is 131,087 acres (99%) more than would be withdrawn from mineral entry under Alternative A.

Geophysical Activity

Under Alternative B, the qualitative impacts of geophysical activity on vegetation resources would be the same as those discussed under Alternative A. There would be approximately 794 acres of surface disturbance associated with geophysical exploration under this alternative. This is approximately 10% fewer acres of disturbance than would be expected under Alternative A, which could result in slightly reduced impacts overall due to the decreased acreage open to exploration.

4.3.17.2.5.3. Alternative C

Under Alternative C, the qualitative impacts of minerals decisions on vegetation resources would be the same as those discussed under Alternative A. The major difference in impacts between this alternative and the No Action Alternative is the reduction in acres available for management of oil and gas leasing and mineral material disposal with standard stipulations. Acres available for oil and gas leasing by vegetation type in each of the RFD areas are provided in Tables 4.156–4.158.

Under both Alternatives A and C, there would be 41 wells drilled in the Blanding Sub-basin over the life of the plan. This would result in approximately 393.6 acres of surface disturbance, which could occur in any of the vegetation types except for riparian.

Under this alternative, there would be 9 wells drilled in the Monument Upwarp over the life of the plan. This would result in approximately 86.4 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 2 (29%) more wells and 19.2 (29%) more acres of disturbance than would occur under Alternative A.

Table 4.156. Alternative C–Acreage of Each Vegetation Type by Oil and Gas Leasing Category In the Blanding Sub-basin RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	544	0	0	18	0	0
Desert shrub	90,330	6	1,341	7,571	2,227	5,803
Invasive species and weeds	490	0	32	313	0	2
Pinyon-juniper woodland	128,580	72	3,041	103,630	3,132	9,686
Riparian/wetland	5,841	2	90	1,799	2,158	409
Sagebrush/ perennial grass	26,746	21	230	22,615	227	96
Totals	**252,531**	**101**	**4,734**	**135,946**	**7,744**	**15,996**

Table 4.157. Alternative C–Acreage of Each Vegetation Type by Oil and Gas Leasing Category In the Monument Upwarp RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	7,101	43	15	808	0	1,126
Desert shrub	87,707	166	12,831	73,966	21,811	53,806
Invasive species and weeds	94	0	14	671	46	227
Pinyon-juniper woodland	179,233	4,434	35,318	242,232	2,773	281,611
Riparian/wetland	1,711	27	293	1,571	306	2,755
Sagebrush/ perennial grass	14,465	134	3,536	27,971	61	27,954
Totals	**290,311**	**4,804**	**52,007**	**347,219**	**24,997**	**367,479**

Table 4.158. Alternative C–Acreage of Each Vegetation Type by Oil and Gas Leasing Category In the Paradox Fault and Fold Belt RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	995	61	13	54	11	14
Desert shrub	12,655	20,392	18,312	4,804	3,040	4,080
Invasive species and weeds	1,148	16	86	245	8	0
Pinyon-juniper woodland	52,674	20,348	21,710	49,591	2,197	6,708
Riparian/wetland	636	1,073	1,112	154	505	470
Sagebrush/ perennial grass	11,807	4,233	349	25,200	141	71
Totals	**79,915**	**46,123**	**41,582**	**80,048**	**5,902**	**11,343**

Under this alternative, there would be 24 wells drilled in the Paradox Fault and Fold Belt over the life of the plan. This would result in approximately 230.4 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 1 (4%) fewer wells and 9.6 (4%) fewer acres of disturbance than would occur under Alternative A. Across the three RFD areas, there would be 1 (1.4%) more well and 9.6 (1.4%) more acres of disturbance under Alternative C than would occur under Alternative A.

Weed Dispersal Associated with Roads

Under Alternative C, there would be fewer acres of all vegetation types subject to invasion by noxious weeds and invasive species than under Alternative A due to a reduction in new roads for oil and gas activity. Alternative C would have fewer negative impacts to vegetation than Alternative A because there would be fewer acres subject to weed infestation. Table 4.159 provides the percent difference in acres of roadside vegetation subject to weed infestation between Alternatives A and C by vegetation type.

Table 4.159. Percent Difference in Acres of Roadside Vegetation Subject to Weed Infestation

Vegetation Type	Percent Difference Compared with Alternative A
Conifer and mountain shrub	3% less
Desert shrub	4% less
Invasive species and noxious weeds	1% more
Pinyon-juniper woodland	7% less
Riparian and wetland	6% more
Sagebrush and perennial grassland	10% more
Total	**7% less**

Lands Available for Mineral Material Disposal

Under Alternative C, 629,472 acres of land in the Monticello FO would be available for disposal of mineral materials subject to standard terms and conditions. That is 45,202 acres (8%) more than are currently subject to standard terms and conditions for mineral materials disposal under Alternative A.

There would be 729,567 acres subject to special conditions. That is 91,503 fewer acres (11%) than are currently subject to special conditions for disposal of mineral materials under Alternative A.

There would be 435,338 acres closed to disposal of mineral materials. That is 61,488 acres (16%) more than currently closed to disposal under Alternative A.

Lands Available for Mineral Entry

Under Alternative C, 1,637,688 acres of land in the Monticello FO would be open to mineral entry. That is 15,055 fewer acres (1%) than are currently open under Alternative A.

There would be 147,435 acres recommended to be withdrawn from mineral entry. That is 15,055 acres (11%) more than are currently withdrawn from mineral entry under Alternative A.

Geophysical Activity

Under Alternative C, the qualitative impacts of geophysical activity on vegetation resources would be the same as those discussed under Alternative A. There would be approximately 904 acres of surface disturbance associated with geophysical exploration under this alternative. This

is approximately 2% more acres of disturbance than would be expected under Alternative A, which would result in a slightly greater impacts overall, due to the increased acreage open to exploration.

4.3.17.2.5.4. Alternative D

Under Alternative D, the qualitative impacts of minerals decisions on vegetation resources would be the same as those discussed under Alternative A. The major difference in impacts between this alternative and the No Action Alternative is a reduction in acres available for management of oil and gas leasing and mineral materials disposal with standard stipulations. Acres available for oil and gas leasing by vegetation type in each of the RFD areas are provided in Tables 4.160–4.162.

Under Alternatives A, C, and D, there would be 41 wells drilled in the Blanding Sub-basin over the life of the plan. This would result in approximately 393.6 acres of surface disturbance, which could occur in any of the vegetation types except for riparian.

Under Alternatives C and D, there would be 9 wells drilled in the Monument Upwarp over the life of the plan. This would result in approximately 86.4 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 2 (29%) more wells and 19.2 (29%) more acres of disturbance than would occur under Alternative A.

Under Alternatives A and D, there would be 25 wells drilled in the Paradox Fault and Fold Belt over the life of the plan. This would result in approximately 240.0 acres of surface disturbance. This disturbance could occur in any of the vegetation types except for riparian. Across the three RFD areas, there would be 2 (29%) more wells and 19.2 (29%) more acres of disturbance than under Alternative A, and more wells and disturbance than would occur under any of the other management alternatives.

Table 4.160. Alternative D–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulations In the Blanding Sub-basin RFD Area

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	0	0	0	0	555	7
Desert shrub	5,721	0	0	1,726	94,363	5,468
Invasive species and weeds	2	0	0	0	604	231
Pinyon-juniper woodland	9,271	0	0	3,614	165,414	69,842
Riparian/wetland	409	0	0	2,158	6,596	1,136
Sagebrush/ perennial grass	96	0	0	247	32,585	17,008
Totals	**15,499**	**0**	**0**	**7,745**	**300,117**	**93,692**

Table 4.161. Alternative D–Acreage of Each Vegetation Type by Oil and Gas Leasing Category In the Monument Upwarp RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	7,597	0	0	459	0	1,037
Desert shrub	145,976	0	0	49,886	1,895	52,530
Invasive species and weeds	606	0	0	220	0	227
Pinyon-juniper woodland	312,464	0	0	153,795	2,550	276,791
Riparian/wetland	3,354	0	0	371	504	2,432
Sagebrush/ perennial grass	30,300	0	0	15,990	0	27,830
Totals	**500,297**	**0**	**0**	**220,721**	**4,949**	**360,847**

Table 4.162. Alternative D–Acreage of Each Vegetation Type by Oil and Gas Leasing Category In the Paradox Fault and Fold Belt RFD

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	1,105	24	0	5	0	14
Desert shrub	35,128	0	0	24,315	0	3,840
Invasive species and weeds	1,245	2	0	256	0	0
Pinyon-juniper woodland	90,119	440	0	56,476	0	6,191
Riparian/wetland	1,812	1	0	1,819	0	317
Sagebrush/ perennial grass	21,233	2,096	0	18,401	0	71
Totals	**150,642**	**2,563**	**0**	**101,272**	**0**	**10,433**

Weed Dispersal Associated with Roads

Under Alternative D, there would be more acres subject to invasion by noxious weeds and invasive species than under Alternative A due to an increase in new roads for oil and gas activity. Alternative D would have greater negative impacts to vegetation than Alternative A because there would be more acres subject to weed infestation. Table 4.163 provides the percent difference in acres of roadside vegetation subject to weed infestation between Alternatives A and D by vegetation type.

Table 4.163. Percent Difference in Acres of Roadside Vegetation Subject to Weed Infestation

Vegetation Type	Percent Difference Compared with Alternative A
Conifer and mountain shrub	0%
Desert shrub	2% more
Invasive species and noxious weeds	2% more
Pinyon-juniper woodland	0%
Riparian and wetland	7% more
Sagebrush and perennial grassland	0%
Total	**1% more**

Lands Available for Mineral Material Disposal

Under Alternative D, 962,283 acres of land in the Monticello FO would be available for disposal of mineral materials subject to standard terms and conditions. That is 378,013 acres (65%) more than are currently subject to standard terms and conditions for mineral materials disposal under Alternative A.

Under this alternative, there would be 420,998 acres subject to special conditions. This is 400,072 fewer acres (49%) than would be subject to special conditions for disposal of mineral materials under Alternative A.

Under this alternative, there would be 401,027 acres closed to disposal of mineral materials. That is 27,177 acres (7%) more than would be closed to disposal under Alternative A.

Lands Available for Mineral Entry

Under Alternative D, 1,737,999 acres of land in the Monticello FO would be open to mineral entry. That is 85,256 acres (5%) more than would be open to mineral entry under Alternative A.

Under Alternative D, it would be recommended that 47,124 acres be withdrawn from mineral entry. That is 85,256 fewer acres (64%) than would be withdrawn under Alternative A.

Geophysical Activity

Under Alternative D, the qualitative impacts of geophysical activity on vegetation resources would be the same as those discussed under Alternative A. There would be approximately 924 acres of surface disturbance associated with geophysical exploration under this alternative. This

is approximately 38 acres (4%) more disturbance than would occur under Alternative A, which would result in a slightly greater impact overall due to the increased acreage open to exploration.

4.3.17.2.5.5. Alternative E

Under Alternative E, the qualitative impacts of minerals decisions on vegetation resources would be the same as those discussed under Alternative A. The major difference in impacts between this alternative and the No Action Alternative would be the reduction in acres available for management of oil and gas leasing and mineral materials disposal due to minerals leasing restrictions within the 582,357 acres of non-WSA lands with wilderness characteristics. These lands would be closed to minerals leasing and mineral materials disposal, closed to off-route OHV use, closed to new road construction to protect non-WSA lands with wilderness characteristics, and surface disturbance impacts would be limited to VRM Class objectives. These restrictions on minerals-related surface disturbance would have long-term, beneficial impacts on vegetation resources within the planning area. Nevertheless, RFD predictions of oil and gas development within the planning area under Alternative E would be approximately 74% of the RFD-predicted level of development under Alternative A (see below). Acres available for oil and gas leasing by vegetation type in each of the RFD areas are provided in Tables 4.164–4.166. The acres and location of predicted surface disturbance is similar for each alternative.

Under this alternative, there would be 36 wells drilled in the Blanding Sub-basin over the life of the plan. This would result in approximately 345 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 5 (12%) fewer wells and 48.6 (12%) fewer acres of disturbance than would occur under Alternative A.

Under this alternative, there would be 3 wells drilled in the Monument Upwarp over the life of the plan. This would result in approximately 30 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 4 (57%) fewer wells and 37.2 (55%) fewer acres of disturbance than would occur under Alternative A.

Table 4.164. Alternative E–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulations In the Blanding Sub-basin RFD Area

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	519	0	0	43	0	0
Desert shrub	59,650	0	752	13,813	9,744	23,319
Invasive species and weeds	366	0	32	432	1	6
Pinyon-juniper woodland	52,377	71	2,660	159,248	7,097	26,688
Riparian/wetland	2,935	0	0	2,444	3,140	1,780
Sagebrush/ perennial grass	13,816	21	141	35,133	312	512
Totals	**129,663**	**92**	**3,585**	**211,113**	**20,294**	**52,305**

Table 4.165. Alternative E–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulation In the Monument Upwarp RFD Area

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	4,652	2	0	1,680	43	2,716
Desert shrub	18,125	302	2,021	31,560	1,272	197,006
Invasive species and weeds	5	0	1	86	9	951
Pinyon-juniper woodland	32,825	914	2,783	135,607	4,923	568,548
Riparian/wetland	327	1	39	787	694	4,814
Sagebrush/ perennial grass	4,428	323	119	14,532	850	53,867
Totals	**60,362**	**1,542**	**4,963**	**184,252**	**7,791**	**827,902**

Table 4.166. Alternative E–Acreage of Each Vegetation Type by Oil and Gas Leasing Stipulation In the Paradox Fault and Fold Belt RFD Area

Vegetation Type	Standard lease terms	Controlled surface use	Controlled surface use and timing limitations	Timing limitations	No surface occupancy	Closed
Conifer/mountain shrub	611	53	0	425	0	59
Desert shrub	1,787	11,068	0	5,942	12,225	32,261
Invasive species and weeds	495	9	0	868	89	42
Pinyon-juniper woodland	11,570	8,071	13	69,380	11,598	52,625
Riparian/wetland	33	982	2	278	487	2,167
Sagebrush/ perennial grass	6,841	3,116	0	29,038	123	2,682
Totals	**21,337**	**23,299**	**15**	**105,931**	**24,522**	**89,836**

Under this alternative, there would be 15 wells drilled in the Paradox Fault and Fold Belt over the life of the plan. This would result in approximately 143 acres of surface disturbance, which could occur in any of the vegetation types except for riparian. This is 10 (40%) fewer wells and 97 (40%) fewer acres of disturbance than would occur under Alternative A. Compared to the Alternative A RFD areas, this represents a 26% reduction in expected oil and gas development

over the lifetime of the Plan and the lowest level of disturbance that would occur under any of the management alternatives.

Lands Available for Mineral Materials Disposal

Under this alternative, areas with non-WSA lands with wilderness characteristics would be closed to disposal of mineral materials, which would encompass approximately 1,025,378 acres (58% of the planning area). Under Alternative E, 37% more acreage would be closed to disposal than under Alternative A.

Lands Available for Mineral Entry

Non-WSA lands with wilderness characteristics (582,360 acres) would be recommended for withdrawal from mineral entry.

Under Alternative E, 1,521,656 acres of land in the Monticello FO would be open to mineral entry. That is 8% fewer acres than are currently open under Alternative A. There would be 263,467 acres recommended to be withdrawn from mineral entry, which is 131,087 acres (50%) more than would be withdrawn from mineral entry under Alternative A.

Geophysical Activity

Non-WSA lands with wilderness characteristics would be closed for geophysical exploration.

Under Alternative E, the qualitative impacts of geophysical activity on vegetation resources would be the same as those discussed under Alternative A. There would be approximately 591 acres of surface disturbance associated with geophysical exploration under this alternative. That is approximately 33% fewer acres of disturbance than would be expected under Alternative A, which could result in reduced impacts to vegetation resources from the decreased acreage open to this form of minerals exploration.

4.3.17.2.6. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Vegetation

4.3.17.2.6.1. Alternatives A–D

Under Alternatives A to D, the Monticello FO would not manage the planning area for the preservation of non-WSA lands with wilderness characteristics.

4.3.17.2.6.2. Alternative E

Under Alternative E, approximately 582,357 acres of non-WSA lands with wilderness characteristics would be managed to preserve their wilderness values. The impacts on vegetation resources would be beneficial in the long-term because surface disturbance related impacts to vegetation communities would be limited. There would be short-term and long-term indirect impacts to vegetation resources from preservation of non-WSA lands with wilderness characteristics because of prohibitions on vegetation treatments, fire treatments, and woodland harvesting that would maintain the risks of wildland fire and the spread of invasive species.

4.3.17.2.7. Impacts of Paleontological Resources Decisions on Vegetation

4.3.17.2.7.1. Alternative A

Under Alternative A, paleontology decisions that could impact vegetation resources include increased visitor use associated with fossil collection, which could have short-term adverse impacts on vegetation due to trampling. It is BLM policy that only non-mechanized tools are allowed for use by fossil hunters and that any surface disturbances caused by fossil collecting activities have negligible impacts on planning area resources. These requirements would minimize the adverse impacts on vegetation caused by paleontology-related surface disturbances.

4.3.17.2.7.2. Alternatives B, C, D and E

Because the BLM's fossil collecting policy and resource protection stipulations would be applicable to all of the proposed alternatives, the impacts of paleontology management decisions on vegetation resources under the action alternatives would be the same as those discussed under Alternative A.

4.3.17.2.8. Impacts of Recreation Decisions on Vegetation

4.3.17.2.8.1. Alternative A

Under Alternative A, all developed recreation sites would be recommended for withdrawal from mineral entry, closed to disposal of mineral materials, and open for oil and gas leasing subject to NSO. In addition, grazing would be unavailable in developed sites and collection of woodland products would not be allowed. These requirements would decrease the intensity of long-term impacts on vegetation in the project area by decreasing the amount of surface disturbance in the SRMAs compared to other areas in the Monticello FO. There would, however, still be surface disturbance associated with trampling and crushing of vegetation by humans, horses, and vehicles. In addition, there is potential for introduction of weed seeds by visitors bringing clothing and equipment to the area from around the country. This disturbance could lead to the introduction of invasive plant species as discussed in previous sections. The adverse impacts of recreation decisions would be partially mitigated by the required reclamation of disturbed areas to meet Utah's Rangeland Health Standards (Appendix D).

The Cedar Mesa Cultural SRMA (375,734 acres) would require pets to be leashed, camping only at campsites, and a maximum of 196 overnight visitors per day. This would reduce adverse impacts from surface disturbance associated with visitors. The White Canyon SRMA (2,828 acres) would have no limit on group size, camping location, or vehicle use. This could result in short- and long-term, adverse impacts to vegetation from surface disturbance. Table 4.167 lists the acreage of each vegetation type included in the Cedar Mesa Cultural SRMA and White Canyon SRMA. The size of these SRMAs would be the same under all management alternatives.

Table 4.167. Acreage of Each Vegetation Type in the Cedar Mesa Cultural and White Canyon SRMAs Under All Alternatives

Vegetation Type	Cedar Mesa Cultural SRMA	White Canyon SRMA
Conifer/mountain shrub	213	0
Desert shrub	105,904	289
Invasive species and weeds	111	1
Pinyon-juniper woodland	230,453	2,521
Riparian/wetland	4,061	17
Sagebrush/ perennial grassland	32,482	0
Total	**373,224**	**2,828**

Under Alternative A, the Dark Canyon SRMA (30,820 acres) and the Indian Creek SRMA (89,271 acres) would be managed as part of a larger Canyon Basins SRMA (214,390 acres). There would be no limit on group size or vehicle use, but camping would be prohibited within the Indian Creek riparian corridor and limited to designated sites outside the corridor. These restrictions would lessen the adverse impacts of visitor traffic on native vegetation as explained in the above sections. However, this management would result in short- and long-term, adverse impacts to vegetation from surface disturbance. The size of the Dark Canyon and Indian Creek SRMA would not differ under Alternatives B, C, and D. In Tables 4.168 and 4.169, the acreage of each vegetation type included in each SRMA is listed for each alternative.

Under Alternative A, the San Juan River SRMA (15,100 acres) would allow 40,000 user days per year and vehicle camping would not be restricted. These stipulations allow for surface disturbance, which could have long-term, adverse impacts on vegetation in the SRMA as discussed in previous sections. In Table 4.170, the total acreage of each type of vegetation for the San Juan River SRMA is listed for each alternative.

Table 4.168. Acreage of Each Vegetation Type in the Dark Canyon SRMA for All Alternatives

Vegetation Type	Alternative A (Canyon Basins SRMA)	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	2,254	391	391	391
Desert shrub	43,765	908	908	908
Invasive species and weeds	56	3	3	3
Pinyon-juniper woodland	190,473	28,587	28,587	28,587
Riparian/wetland	2,931	351	351	351
Sagebrush/ perennial grass	17,562	577	577	577
Total	**257,041**	**30,817**	**30,817**	**30,817**

Table 4.169. Acreage of Each Vegetation Type in the Indian Creek SRMA for All Alternatives

Vegetation Type	Alternative A (Canyon Basins SRMA)	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	2,254	198	198	198
Desert shrub	43,765	40,818	40,818	40,818
Invasive species and weeds	56	26	26	26
Pinyon-juniper woodland	190,473	42,278	42,278	42,278
Riparian/wetland	2,931	2,195	2,195	2,195
Sagebrush/ perennial grass	17,562	3,741	3,741	3,741
Total	**257,041**	**89,256**	**89,256**	**89,256**

Table 4.170. Acreage of Each Vegetation Type in the San Juan River SRMA for each Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	0	0	0	0
Desert shrub	3,733	3,268	3,082	1,650
Invasive species and weeds	0	0	0	0
Pinyon-juniper woodland	4,134	4,117	3,979	2,604
Riparian/wetland	2,508	2,117	2,097	1,640
Sagebrush/ perennial grass	3	3	3	3
Total	**10,378**	**9,505**	**9,161**	**5,897**

4.3.17.2.8.2. Alternative B

Under Alternative B, the impacts of recreation management decisions on vegetation resources would include following impacts in addition to the qualitative impacts discussed under Alternative A.

Under Alternative B, the San Juan River SRMA would include 12.5% less of the desert shrub vegetation type, 0.4% less pinyon-juniper woodland, and 15.6% less riparian/wetland vegetation than under Alternative A. There would be 30,000 user days permitted per year, which is 25% fewer visitors allowed per year than under Alternative A. Vehicle camping would be restricted to designated areas. These stipulations would allow for less surface disturbance than Alternative A, but there would still be long-term, adverse impacts on vegetation in the SRMA, as discussed in previous sections.

The Cedar Mesa Cultural SRMA would be available for livestock use and vegetation treatments, pets would not be allowed in canyons requiring permits, hiking and overnight camping permits would be limited to 25 visitors per day, and the area would be managed as VRM III and IV.

These actions would result in a decreased level of surface disturbance compared with Alternative A, depending on the level of disturbance resulting from livestock use and vegetation treatments. Under Alternative B, the Dark Canyon SRMA would limit group sizes to 10 and 12 people (private and commercial, respectively), would allow 15 private visitors per day, camping would be allowed in designated areas only, and collection of woodland products, including deadwood for campfires, would be prohibited. Visitor use would result in short- and long-term, adverse impacts on vegetation due to surface disturbance, but to a lesser extent than under Alternative A.

Dispersed camping would not be allowed in the Indian Creek riparian corridor and would be limited to designated sites elsewhere. This would result in short- and long-term, adverse impacts on vegetation from surface disturbance associated with visitors, but to a lesser extent than under Alternative A because of limited visitor and camping permits and other restrictions.

The White Canyon SRMA would limit use through a backcountry permit system. This would result in short- and long-term, adverse impacts on vegetation due to surface disturbance, but to a lesser degree than under Alternative A due to resource protection measures.

4.3.17.2.8.3. Alternative C

Under Alternative C, the impacts of recreation management decisions on vegetation resources would include the following impacts in addition to the qualitative impacts discussed under Alternative A.

Under Alternative C, the San Juan River SRMA (see Table 4.170) would include 17.5% less of the desert shrub vegetation type, 3.8% less pinyon-juniper woodland, and 16.4% less riparian/wetland vegetation than under Alternative A. There would be 40,000 user days per year permitted, which is the same level of visitation allowed under Alternative A. Vehicle camping would be restricted to designated areas. These stipulations would allow for less surface disturbance than Alternative A, but there would still be long-term, adverse impacts on vegetation in the SRMA as discussed in previous sections.

Under Alternative C, the Cedar Mesa Cultural SRMA would be managed the same as under Alternative B with the following exceptions: commercial and private use of woodland products would be allowed and campfires would only be allowed on mesa tops. This would result in an increased level of surface disturbance compared with Alternatives A and B, depending on the level of disturbance resulting from livestock use and vegetation treatments.

Under Alternative C, the Dark Canyon SRMA would be managed the same as Alternative B, except there group size would be limited to 15 people and 20 private visitors per day, which is 25% more than would be permitted under Alternative B. Camping would be allowed in designated areas only if and where necessary, and leashed pets would be allowed. This would result in reduced short- and long-term, adverse impacts on vegetation due to surface disturbance compared to Alternative A, but greater impacts than under Alternative B.

In the Indian Creek SRMA, dispersed camping would be allowed in the Indian Creek Corridor and in designated dispersed camping zones (see Summary Table of Alternatives). Because of these camping restrictions, this alternative would have fewer short- and long-term, adverse impacts on vegetation due to surface disturbance associated with visitors than under Alternative A.

Under Alternative C, the impacts in on vegetation in the White Canyon SRMA would be the same as under Alternative B.

4.3.17.2.8.4. Alternative D

Under Alternative D, the impacts of recreation management decisions on vegetation resources would include following impacts in addition to the qualitative impacts discussed under Alternative A.

Under Alternative D, the San Juan River SRMA would include 55.8% less of the desert shrub vegetation type, 37.0% less pinyon-juniper woodland, and 34.6% less riparian/wetland vegetation than under Alternative A. There would be 45,000 user days per year permitted, which is an increase of 5,000 user days from Alternative A. Vehicle camping would not be restricted within the SRMA except for the bench above Sand Island Recreation Area, which would be closed to camping, and camping would be closed within one-half mile of designated campsites area wide. These stipulations would allow for a slightly reduced amount of surface disturbance as would occur under Alternative A, including long-term, adverse impacts on vegetation in the SRMA as discussed in previous sections.

Under Alternative D, the Cedar Mesa Cultural SRMA would be managed the same as under Alternative C with the following exception: a total of 216 overnight visitors per day would be permitted, which is 20 (10%) more overnight visitors than under Alternative A. This could result in an increased level of surface disturbance compared with Alternatives A, B, and C, depending on the level of disturbance resulting from livestock use and vegetation treatments.

Under Alternative D, the Dark Canyon SRMA would have no limit on the number of private visitors per day and dispersed camping would be allowed in some areas. This would result in short- and long-term, adverse impacts on vegetation due to surface disturbance, but to a lesser extent than under Alternative A.

Under Alternative D, management of the Indian Creek SRMA would be the same as under Alternative C. The White Canyon SRMA would be managed the same as under Alternative C, except that campfires would be allowed and there would be no permit system. There would be fewer short- and long-term, adverse impacts on vegetation due to surface disturbance than under Alternative A.

4.3.17.2.8.5. Alternative E

Under Alternative E, the impacts of recreation management decisions on native vegetation would include the following impacts in addition to those discussed under Alternative B.

Non-WSA lands with wilderness characteristics within proposed SRMAs would be closed to mineral leasing, closed to new road construction, managed under VRM I objectives, closed to woodland harvesting, closed to OHV use, closed to disposal of mineral materials, and proposed for withdrawal from mineral entry. Lands without wilderness characteristics would be managed as VRM III and IV. These stipulations would result in less surface disturbance than under the other four alternatives, but there would still be potential for long-term, adverse impacts on native vegetation within the SRMAs as discussed in previous sections.

In the Cedar Mesa Cultural SRMA, there would be special conditions on livestock use on non-WSA lands with wilderness characteristics. In addition, no new vegetation treatments or wildlife

habitat improvements would be allowed in non-WSA lands with wilderness characteristics. Finally, non-WSA lands with wilderness characteristics would be managed as VRM class I. These additional protections would result in less surface disturbance in this SRMA compared with the other four alternatives.

Vegetation resources within all of the proposed SRMAs would be impacted by the above mentioned stipulations to protect non-WSA lands with wilderness characteristics. The non-WSA lands with wilderness characteristics affected within each SRMA would be: San Juan SRMA (4,124 acres or 40% of the SRMA); Cedar Mesa Cultural SRMA (109,700 acres or 29% of the SRMA); Dark Canyon (2,522 acres or 8% of the SRMA); Indian Creek SRMA (47,393 acres or 53% of the SRMA); and White Canyon SRMA (2,092 acres or 74% of the SRMA).

Overall, Alternative E would have fewer adverse impacts on native vegetation in SRMAs than Alternative A and the other action alternatives because of increased protections to limit surface disturbances in non-WSA lands with wilderness characteristics.

4.3.17.2.9. Impacts of Riparian Decisions on Vegetation

4.3.17.2.9.1. Alternative A

Under Alternative A, riparian areas would be managed as NSO for oil and gas leasing. They would, however, be open to mineral entry and disposal of mineral materials, but not in active floodplains or within 100 m of riparian areas. Woodland product collection would be prohibited. In addition, riparian areas would be grazed according to the Guidelines for Grazing Management to achieve the Standards for Rangeland Health, which require proper riparian functioning condition (Appendix D). The BLM would avoid degradation of habitats that could result in the loss of riparian vegetation. The reduction in surface disturbance associated with these restrictions would help decrease the establishment of noxious weeds and invasive plant species in riparian areas in the Monticello FO. Because livestock grazing would be allowed, there would continue to be indirect, potentially adverse impacts from surface disturbance of riparian soils and vegetation associated with cattle hooves and grazing (Dobson 1973, Kauffman et al. 1983). Reduced surface disturbance in riparian vegetation allows the establishment of native vegetation, which facilitates proper riparian functioning. Vegetation treatments, including the use of mechanized or motorized equipment, would be allowed in riparian areas. These treatments would have both beneficial and adverse impacts on vegetation in riparian vegetation. Beneficial impacts would include reduction of weed populations and the restoration of diverse native vegetation. Adverse impacts would include crushing and inadvertent removal of native vegetation during the treatment process.

4.3.17.2.9.2. Alternatives B and C

Under Alternatives B, C, and E, the impacts of riparian management decisions on vegetation resources would include the following impacts in addition to those discussed in Alternative A. OHV routes in selected riparian areas would be closed in Functioning At Risk riparian areas if site-specific analysis indicates that OHV use is contributing to riparian degradation. Some riparian areas would be unavailable for livestock grazing, while others would be subject to seasonal restrictions and forage utilization limits if they are found to be Functioning At Risk. These restrictions would reduce the number of acres of native vegetation subject to potentially adverse impacts from surface disturbance in sensitive riparian areas. These alternatives would be more beneficial to vegetation resources when compared to Alternative A.

4.3.17.2.9.3. Alternative D

Under Alternative D, the impacts on vegetation resources from riparian decisions would be the same as those discussed under Alternative A because the management decisions would be the same.

4.3.17.2.9.4. Alternative E

Under Alternative E, the impacts of riparian management decisions on vegetation resources would include the following impacts in addition to those discussed under Alternative B. Non-WSA lands with wilderness characteristics would be managed as closed to mineral leasing, closed to OHV use, proposed for withdrawal from mineral entry, ROW exclusion areas, closed to private and commercial woodland harvest, and managed as VRM I. These restrictions would reduce the number of acres of native vegetation subject to potentially adverse impacts from surface disturbance in sensitive riparian areas. Alternative E would be more beneficial to vegetation resources when compared to any of the management alternatives.

4.3.17.2.10. Impacts of Soils and Watershed Decisions on Vegetation

4.3.17.2.10.1. Alternative A

Under Alternative A, soils and watershed decisions would comply with maintenance of riparian preferred future condition and Guidelines for Grazing Management to achieve the Standards for Rangeland Health. In addition, activities in the Monticello FO would be managed to minimize and mitigate damage to soils, and activities located in areas with sensitive soils (i.e., saline, gypsiferous, or highly erodible) would be subject to site-specific NEPA (see Table 4.81 and 4.82 in Section 4.3.13, Soils and Water Resources). These restrictions would decrease the number of acres in the Monticello FO subject to adverse impacts on vegetation resources associated with surface-disturbing activities. There would not be any slope restrictions on allowable disturbance under this alternative.

4.3.17.2.10.2. Alternatives B and E

Under Alternatives B and E, the impacts of soils and watershed management decisions on vegetation resources would include the following in addition to impacts discussed under Alternative A. Surface-disturbing activities would not be permitted on slopes greater than 40%. This would exclude 87,456 acres (approximately 5%) of land in the Monticello FO from potential development, which would eliminate adverse impacts from surface disturbance on vegetation growing on slopes greater than 40%. As a result, actions associated with this alternative would have fewer adverse impacts on vegetation resources than Alternatives A, C, and D. If surface-disturbing activities cannot be avoided on slopes between 21% and 40%, a plan including an erosion control strategy and a BLM-approved survey and design would be required. The acres of each vegetation type located in areas where the slopes are greater than 40% or 21% to 40% are provided in Table 4.171.

Table 4.171. Acres of Each Vegetation Type by Slope Steepness Category

Vegetation Type	Acres of slopes >40%	Acres of slopes 21–40%
Conifer/mountain shrub	1,323	2,662
Desert shrub	6,391	27,473
Invasive species and weeds	43	213
Pinyon-juniper woodland	77,332	180,954
Riparian/wetland	683	1,461
Sagebrush/ perennial grassland	1,684	5,533
Total	**87,456**	**218,296**

4.3.17.2.10.3. Alternative C

Under Alternative C, the impacts of soils and watershed management decisions on vegetation resources would include the following impacts in addition to those discussed under Alternative A. Surface disturbing activities would not be permitted on slopes greater than 40% unless it is determined that it would cause undue or unnecessary degradation to pursue other placement alternatives. Therefore, surface disturbance allowed under this alternative could cause direct and indirect adverse impacts on native vegetation on up to 87,456 acres of steep slopes in the Monticello FO. If surface-disturbing activities cannot be avoided on slopes between 21% and 40%, a plan including an erosion control strategy and a BLM-approved survey and design would be required. Therefore, the actions associated with this alternative would have fewer adverse impacts on vegetation resources than Alternatives A and D, but greater adverse impacts than Alternative B.

4.3.17.2.10.4. Alternative D

Under Alternative D, the impacts of soils and watershed management decisions on vegetation resources would require a plan including an erosion control strategy and a BLM-approved survey and design for development of land with slopes greater than 40%. The required erosion and design plan would help mitigate the adverse impacts of surface disturbance on vegetation resources located in and downslope of steep development areas. Therefore, this alternative would have fewer adverse impacts on vegetation resources than Alternative A, but greater adverse impacts than Alternatives B and C.

4.3.17.2.11. Impacts of Special Designations Decisions on Vegetation

Under all alternatives, Wilderness Study Areas (WSAs) would be managed according to the Interim Management Policy and Guidelines for Lands Under Wilderness Review. All WSAs would be managed under VRM Class I objectives, which would indirectly minimize the adverse impacts of surface disturbing activities on vegetation resources by preserving high scenic quality and prohibiting surface disturbances and structures that would degrade VRM I scenic quality (see Section 4.3.18, Visual Resources).

4.3.17.2.11.1. Alternative A

Alkali Ridge (39,202 acres)

Under Alternative A, this ACEC would be open for mineral leasing with special conditions, open for geophysical work, available for mineral materials disposal, and open to mineral entry. It would also be available for woodland product collection, surface disturbing land treatments, range and wildlife habitat improvements, livestock grazing, and OHV use on existing roads and trails. The allowance of these surface disturbing activities in the ACEC would have both beneficial and adverse impacts on vegetation resources. Land and vegetation treatments would have adverse impacts on vegetation in the short-term due to trampling or removal of individual plants. In the long-term, however, these treatments would help to reestablish native vegetation communities in the ACEC. As discussed in Section 4.3.17.1, Impacts Common to All Alternatives, other surface disturbing activities allowed in the ACEC would have adverse impacts on vegetation resources. The acres of each vegetation type in Alkali Ridge by alternative are presented in Table 4.172.

Table 4.172. Acreage of Each Vegetation Type in Alkali Ridge by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	1	1	1	N/A
Desert shrub	864	864	864	N/A
Invasive species and weeds	24	24	24	N/A
Pinyon-juniper woodland	31,766	31,760	31,760	N/A
Riparian/wetland	357	357	357	N/A
Sagebrush/perennial grass	5,153	5,153	5,153	N/A
Total	**38,165**	**38,159**	**38,159**	**N/A**

Bridger Jack Mesa (6,260 acres)

Bridger Jack Mesa ACEC, which is managed for near relict vegetation value, would be open for mineral leasing with NSO, geophysical work, and mineral entry, and closed to mineral disposal, livestock grazing, OHV use, woodland product collection, and land and vegetation treatments. Surface disturbing activities would adversely impact vegetation resources due to crushing or removal of individual plants and soil disturbance and compaction. The restricted surface disturbing activities listed above would help to mitigate adverse impacts from authorized surface disturbance. The acres of each vegetation type in Bridger Jack Mesa by alternative are presented in Table 4.173.

Table 4.173. Acreage of Each Vegetation Type in Bridger Jack Mesa by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	134	133	N/A	N/A
Desert shrub	9	8	N/A	N/A
Invasive species and weeds	0	0	N/A	N/A
Pinyon-juniper woodland	5,969	5,934	N/A	N/A
Riparian/wetland	3	3	N/A	N/A
Sagebrush/perennial grass	147	71	N/A	N/A
Total	**6,262[1]**	**6,149**	**N/A**	**N/A**

[1] Acres of each vegetation type were determined using the Southwest ReGAP terrestrial ecological classification system (USGS 2004). Because vegetation types may overlap or be overestimated in the SWReGAP coverages, total acres of vegetation may exceed the total acres of the area being analyzed.

Butler Wash North (17,463 acres)

This ACEC would be managed with the same restrictions as Bridger Jack Mesa; therefore, impacts would be the same. The acres of each vegetation type in Butler Wash North by alternative are presented in Table 4.174.

Table 4.174. Acreage of Each Vegetation Type in Butler Wash North by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	46	46	N/A	N/A
Desert shrub	61	61	N/A	N/A
Invasive species and weeds	0	0	N/A	N/A
Pinyon-juniper woodland	16,602	16,506	N/A	N/A
Riparian/wetland	30	28	N/A	N/A
Sagebrush/perennial grass	725	725	N/A	N/A
Total	**17,464[1]**	**17,366**	**N/A**	**N/A**

[1] Acres of each vegetation type were determined using the Southwest ReGAP terrestrial ecological classification system (USGS 2004). Because vegetation types may overlap or be overestimated in the SWReGAP coverages, total acres of vegetation may exceed the total acres of the area being analyzed.

Cedar Mesa (295,337 acres)

This ACEC would be managed with the same restrictions as Alkali Ridge; therefore, impacts would be the same. The acres of each vegetation type in Cedar Mesa by alternative are presented in Table 4.175.

Table 4.175. Acreage of Each Vegetation Type in Cedar Mesa by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	211	212	N/A	N/A
Desert shrub	79,672	55,874	N/A	N/A
Invasive species and weeds	95	109	N/A	N/A
Pinyon-juniper woodland	183,115	212,775	N/A	N/A
Riparian/wetland	3,615	3,588	N/A	N/A
Sagebrush/perennial grass	26,949	31,679	N/A	N/A
Total	**293,657**	**304,237**	**N/A**	**N/A**

Dark Canyon (61,659 acres)

This ACEC would be managed with the same restrictions as Bridger Jack Mesa, except that mineral leasing would not be permitted. Therefore, surface disturbance impacts on vegetation resources would be slightly less than for Bridger Jack Mesa ACEC. The acres of each vegetation type in Dark Canyon by alternative are presented in Table 4.176.

Table 4.176. Acreage of Each Vegetation Type in Dark Canyon by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	543	543	N/A	N/A
Desert shrub	1,892	1,892	N/A	N/A
Invasive species and weeds	9	9	N/A	N/A
Pinyon-juniper woodland	56,966	56,966	N/A	N/A
Riparian/wetland	354	354	N/A	N/A
Sagebrush/perennial grass	1,896	1,896	N/A	N/A
Total	**61,660[1]**	**61,660[1]**	**N/A**	**N/A**

[1] Acres of each vegetation type were determined using the Southwest ReGAP terrestrial ecological classification system (USGS 2004). Because vegetation types may overlap or be overestimated in the SWReGAP coverages, total acres of vegetation may exceed the total acres of the area being analyzed.

Hovenweep (1,796 acres)

Hovenweep ACEC would be open for mineral leasing (NSO), geophysical work, mineral entry, livestock grazing, OHV use on roads and trails, and vegetation treatments in most areas. It would be closed to mineral materials disposal and vegetation treatments in the 880 acre visual protective zone. The surface disturbing activities allowed in this ACEC would have adverse impacts on vegetation resources as discussed in Section 4.3.17.1, Impacts Common to All Alternatives. Restrictions on mineral materials disposal and vegetation treatments would have beneficial impacts on vegetation resources in this ACEC, and would help mitigate adverse impacts from authorized surface disturbing activities. The acres of each vegetation type in Hovenweep by alternative are presented in Table 4.177.

Table 4.177. Acreage of Each Vegetation Type in Hovenweep by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	0	0	0	N/A
Desert shrub	305	392	392	N/A
Invasive species and weeds	2	2	2	N/A
Pinyon-juniper woodland	486	813	813	N/A
Riparian/wetland	4	4	4	N/A
Sagebrush/perennial grass	998	1,198	1,198	N/A
Total	**1,795**	**2,409**	**2,409**	N/A

Indian Creek (8,511 acres)

This ACEC would be managed with the same restrictions as Bridger Jack Mesa with one exception: livestock use would be allowed. Therefore, surface disturbance impacts on vegetation resources would be greater than in the Bridger Jack Mesa ACEC. The acres of each vegetation type in Indian Creek by alternative are presented in Table 4.178.

Table 4.178. Acreage of Each Vegetation Type in Indian Creek by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	0	0	0	N/A
Desert shrub	4,710	4,710	4,710	N/A
Invasive species and weeds	0	0	0	N/A
Pinyon-juniper woodland	3,222	3,222	3,222	N/A
Riparian/wetland	577	577	577	N/A
Sagebrush/perennial grass	0	0	0	N/A
Total	**8,509**	**8,509**	**8,509**	N/A

Lockhart Basin (0 acres)

This area is not managed as an ACEC under Alternative A. The acres of each vegetation type in Lockhart Basin by alternative are presented in Table 4.179.

Table 4.179. Acreage of Each Vegetation Type in Lockhart Basin by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	N/A	0	N/A	N/A
Desert shrub	N/A	25,317	N/A	N/A
Invasive species and weeds	N/A	125	N/A	N/A
Pinyon-juniper woodland	N/A	20,340	N/A	N/A
Riparian/wetland	N/A	1,556	N/A	N/A

Table 4.179. Acreage of Each Vegetation Type in Lockhart Basin by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Sagebrush/perennial grass	N/A	154	N/A	N/A
Total	N/A	**47,492**	N/A	N/A

Lavender Mesa (649 acres)

This ACEC would be managed with the same restrictions as Bridger Jack Mesa; therefore, impacts would be the same. The acres of each vegetation type in Lavender Mesa by alternative are presented in Table 4.180.

Table 4.180. Acreage of Each Vegetation Type in Lavender Mesa by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	11	11	0	N/A
Desert shrub	0	0	11	N/A
Invasive species and weeds	0	0	0	N/A
Pinyon-juniper woodland	499	499	499	N/A
Riparian/wetland	0	0	0	N/A
Sagebrush/perennial grass	139	139	139	N/A
Total	**649**	**649**	**649**	N/A

Shay Canyon (3,561 acres)

This ACEC would be managed with the same restrictions as Alkali Ridge with one exception: woodland product collection would not be allowed. This would reduce the adverse impacts of permitting surface disturbing activities in the ACEC. The acres of each vegetation type in Shay Canyon by alternative are presented in Table 4.181.

Table 4.181. Acreage of Each Vegetation Type in Shay Canyon by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	11	0	0	N/A
Desert shrub	1	0	0	N/A
Invasive species and weeds	0	0	0	N/A
Pinyon-juniper woodland	3,057	98	98	N/A
Riparian/wetland	247	20	20	N/A
Sagebrush/perennial grass	245	2	2	N/A
Total	**3,561**	**120**	**120**	N/A

San Juan River (0 acres)

Under Alternative A, this area is managed as a SRMA. The acres of each vegetation type in San Juan River by alternative are presented in Table 4.182.

Table 4.182. Acreage of Each Vegetation Type in San Juan River by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	N/A	0	0	N/A
Desert shrub	N/A	1,650	1,650	N/A
Invasive species and weeds	N/A	0	0	N/A
Pinyon-juniper woodland	N/A	2,604	2,604	N/A
Riparian/wetland	N/A	1,640	1,640	N/A
Sagebrush/perennial grass	N/A	3	3	N/A
Total	N/A	**5,897**	**5,897**	N/A

Valley of the Gods (0 acres)

This area is not managed as an ACEC under Alternative A. The acres of each vegetation type in Valley of the Gods by alternative are presented in Table 4.183.

Table 4.183. Acreage of Each Vegetation Type in Valley of the Gods by Alternative

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	N/A	0	0	N/A
Desert shrub	N/A	21,383	21,383	N/A
Invasive species and weeds	N/A	0	0	N/A
Pinyon-juniper woodland	N/A	1,395	1,395	N/A
Riparian/wetland	N/A	81	81	N/A
Sagebrush/perennial grass	N/A	0	0	N/A
Total	N/A	**22,859**	**22,859**	N/A

4.3.17.2.11.2. Alternative B

Alkali Ridge (39,196 acres)

Under Alternative B, this ACEC would be 4 acres (0.01%) smaller than under Alternative A. It would be open for mineral leasing with standard stipulations and livestock grazing, but it would not be open to woodland product collection or surface disturbing land treatments. The adverse impacts of this alternative on vegetation resources would be less than those under Alternative A because of the reduction in allowable surface disturbing activities.

Bridger Jack Mesa (6,219 acres)

Under Alternative B, this ACEC would be 41 acres (0.7%) smaller than under Alternative A. As a result, the impacts of management decisions pertaining to surface disturbance would be approximately the same as those discussed for Alternative A.

Butler Wash North (17,365 acres)

Under Alternative B, this ACEC would be 98 acres (0.7%) smaller than under Alternative A. There would be 1 less acre of desert shrub vegetation, 94 fewer acres of pinyon-juniper woodland vegetation, and 2 fewer acres of riparian vegetation than under Alternative A. Because the acreage is slightly reduced between Alternatives A and B, the impacts of management decisions pertaining to surface disturbance would be slightly greater than those discussed for Alternative A.

Cedar Mesa (306,743 acres)

Under Alternative B, this ACEC would be 11,406 acres (3.9%) larger than under Alternative A. There would be 1 additional acre of conifer/mountain shrub vegetation, 23,799 fewer acres of desert shrub vegetation, 14 additional acres of invasive species and weeds vegetation, 26,660 additional acres of pinyon-juniper woodland vegetation, and 4,731 additional acres of riparian vegetation than under Alternative A. This ACEC would be managed with the same restrictions as under Alternative A with the following exceptions: it would be closed to dispersed camping and collection of woodland products. These surface disturbance restrictions, plus the increased size of the ACEC under this alternative, would decrease the magnitude and extent of adverse impacts on vegetation resources compared to Alternative A. One exception would be the loss of 23,799 acres of desert shrub vegetation, which would lead to an increased risk of surface disturbing, adverse impacts on native vegetation in this vegetation type compared to Alternative A.

Dark Canyon (61,659 acres)

This ACEC would be the same size and be managed with the same restrictions as under Alternative A with the following exceptions: vegetation treatments with minimal surface disturbance would be allowed. The allowance of vegetation treatments would have beneficial impacts on native vegetation in the ACEC.

Hovenweep (2,412 acres)

Under this alternative, this ACEC would be 616 acres (34%) larger than under Alternative A. There would be 87 more acres of desert shrub vegetation, 327 more acres of pinyon-juniper woodland vegetation, and 200 more acres of riparian vegetation than under Alternative A. This ACEC would be managed with the same restrictions as under Alternative A except that vegetation treatments would not be allowed. This would reduce beneficial impacts on native vegetation by failing to improve vegetation resources in the ACEC. The larger size of the ACEC, however, would provide protection for more acres of native vegetation than under Alternative A. Overall, this alternative would have fewer negative impacts on vegetation resources than Alternative A.

Indian Creek (8,510 acres)

Under Alternative B, this ACEC would be approximately the same size as under Alternative A. The ACEC would be managed with the same restrictions as under Alternative A except that

dispersed camping would not be allowed. This would help mitigate adverse impacts of camping on native vegetation in the ACEC. Overall, this Alternative would have fewer negative impacts on vegetation resources in Indian Creek than Alternative A because of the decreased level of surface disturbance associated with the prohibition of dispersed camping.

Lockhart Basin (47,783 acres)

This ACEC would be open for mineral leasing with NSO, geophysical work, and livestock grazing. It would be closed to mineral disposal and woodland product collection. These restrictions on surface disturbing activities would reduce adverse impacts on vegetation resources in this ACEC. Because this area would not be designated as an ACEC under Alternative A, Alternative B would have fewer adverse impacts on vegetation resources because of restrictions to surface disturbing activities with ACEC designation.

Lavender Mesa (649 acres)

Under Alternative B, this ACEC would be the same size and managed with the same restrictions as under Alternative A except that vegetation treatments with minimal surface disturbance would be allowed. Overall, the allowance of vegetation treatments would have beneficial impacts on native vegetation in the ACEC because treatments would reduce the cover of weedy species and restore native plant species diversity.

Shay Canyon (119 acres)

Under Alternative B**,** this ACEC would be 3,442 acres (97%) smaller than under Alternative A. There would be 11 fewer acres of conifer/mountain shrub habitat, 1 less acre of desert shrub habitat, 2,959 fewer acres of pinyon-juniper woodland vegetation, 227 fewer acres of riparian vegetation, and 243 fewer acres of sagebrush/perennial grassland vegetation than under Alternative A. This ACEC would be managed with the same restrictions as under Alternative A with the following exceptions: no surface disturbing vegetation treatments, NSO oil and gas management, grazing on trails only, and closed to mineral materials disposal. These restrictions on surface disturbing activities would reduce adverse impacts on vegetation resources and would help mitigate adverse impacts from authorized surface disturbing activities. Overall, this alternative would adversely impact more acres of vegetation resources in Shay Canyon than would occur under Alternative A.

San Juan River (7,540 acres)

Under this alternative**,** the San Juan River area would be managed as an ACEC and would be open for mineral leasing with NSO, seasonal livestock use, vegetation treatments, and OHV use on roads and trails. The surface disturbing activities allowed in the ACEC would have adverse impacts on vegetation resources as discussed under Alternative A. San Juan River would be closed to mineral disposal, mineral entry, and woodland product collection. Restrictions on surface disturbance would reduce adverse impacts on vegetation resources and would help mitigate adverse impacts from authorized surface disturbing activities. Although this ACEC would be smaller than the San Juan River SRMA proposed under Alternative A, there would be fewer adverse impacts on vegetation resources resulting from increased restrictions on surface disturbing activities associated with ACEC designation.

Valley of the Gods (22,863 acres)

Under this alternative**,** the Valley of the Gods area would be managed as an ACEC. It would be managed as VRM I, closed for mineral leasing and disposal of mineral materials, available for livestock use and vegetation treatments, and closed to woodland product use. These surface disturbing activities would have adverse impacts on vegetation resources as discussed under Alternative A. Restrictions on surface disturbance would reduce adverse impacts on vegetation resources and would help mitigate adverse impacts from authorized surface disturbing activities. Although this ACEC would be smaller than the special emphasis area within the Cedar Mesa ACEC proposed under Alternative A, there would be fewer adverse impacts on vegetation resources resulting from increased restrictions on surface disturbing activities under this alternative.

Summary

Overall, there would be fewer adverse impacts on vegetation resources in ACECs under Alternative B than under Alternative A. This is because of the increase in the number of acres designated as ACECs and a reduction in allowable surface disturbing activities.

4.3.17.2.11.3. Alternative C

Alkali Ridge, Hovenweep, Indian Creek, Shay Canyon, and Valley of the Gods

Under this alternative, these ACECs would be the same size as under Alternative B and the impacts of management decisions pertaining to surface disturbance would be the same as those discussed for Alternative B.

Bridger Jack Mesa, Butler Wash North, Dark Canyon, and Lockhart Basin

Under Alternative C**,** these areas would not be managed as ACECs. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on fewer acres of native vegetation than under this alternative.

Cedar Mesa (306,742 acres)

Under Alternative C**,** this area would not be managed as an ACEC. Cedar Mesa would be managed as a C-SRMA, which provides fewer protective measures for soil and vegetation. Therefore, the management decisions under Alternatives A and B would have fewer adverse impacts on fewer acres of native vegetation than under this alternative.

Lavender Mesa (649 acres)

Under this alternative**,** these ACECs would be the same size as under Alternative A, and would be managed with the same restrictions. Therefore, impacts under this alternative would be the same as those discussed in Alternative A.

San Juan River (7,590 acres)

Under Alternative C, the San Juan River ACEC would be 50 acres (0.7%) larger than under Alternatives B and E. Impacts of management decisions pertaining to surface disturbance would be the same as those discussed for Alternative B.

Summary

Overall, there would be greater adverse impacts on vegetation resources in the ACECs and other areas under Alternative C than under Alternative A. This is because of the decrease in the number of acres designated as ACECs and the increase in allowable surface disturbing activities compared to Alternative A.

4.3.17.2.11.4. Alternative D

Alkali Ridge, Bridger Jack Mesa, Butler Wash North, Cedar Mesa, Dark Canyon, Hovenweep, Indian Creek, Lockhart Basin, Lavender Mesa, Shay Canyon, San Juan River, and Valley of the Gods

Under this alternative**,** these areas would not be managed as ACECs. Therefore, management decisions under Alternatives A, B, and C would have fewer adverse impacts on fewer acres of native vegetation than under Alternative D.

Overall, there would be greater adverse impacts on vegetation resources in ACECs and other areas under this alternative than under Alternative A. This is because of the decrease in the number of acres designated as ACECs and the increase in allowable surface disturbing activities compared to Alternative A.

4.3.17.2.11.5. Alternative E

Under Alternative E, the impacts of special designations management decisions on native vegetation would be the same those discussed under Alternative B with the following exceptions. Non-WSA lands with wilderness characteristics would be managed to preserve their wilderness values. Preservation stipulations would include management under VRM I objectives, no minerals leasing, no off-route OHV travel, no new road construction, no mineral materials disposal, and no firewood gathering or harvesting. These stipulations would have additional long-term, beneficial impacts on vegetation resources by restricting surface disturbances to a greater degree than those discussed under Alternative B. The areas of vegetation resources within the proposed ACECs that would be beneficially affected include: 0.1% of Bridger Jack Mesa, 0.2% of Butler Wash, 20% of Cedar Mesa, 0.5% of Dark Canyon, 46% of Indian Creek, 100% of Lavender Mesa, 45% of Lockhart Basin, 28% of San Juan River, 83% of Shay Canyon, and 91% of the Valley of the Gods.

Management of these non-WSA lands with wilderness characteristics would decrease surface disturbance within the above ACECs, which would provide more beneficial protection to vegetation resources when compared to Alternative A and the other action alternatives.

4.3.17.2.12. Impacts of Special Status Species Decisions on Vegetation

4.3.17.2.12.1. Alternative A

Compliance with the Endangered Species Act and BLM Manual 6840 requires avoiding and/or minimizing surface disturbing activities in Threatened and Endangered species habitat. In addition, both the BLM's Guidance for the Management of Sagebrush Plant Communities for Sage-grouse Conservation and BLM's National Sage-grouse Habitat Conservation Strategy would be implemented in suitable habitat in the Monticello FO (4,546 acres of sagebrush vegetation). An additional 320 acres of suitable Gunnison sage-grouse habitat would be managed

as a conservation easement to protect and enhance their habitat. Adherence to these plans would have beneficial impacts on vegetation resources in the Monticello FO.

There would be no ground disturbing activities allowed within a 0.5 mile radius of known bald eagle or Mexican spotted owl (MSO) nests, which would have long-term beneficial impacts on sagebrush vegetation in those buffer zones. MSO Protected Activity Centers (PACs) would be protected as outlined in the MSO Recovery Plan (USFWS 1995). MSO Designated Critical Habitat and suitable habitat would be avoided or use restrictions would be implemented. Within suitable habitat, these would include staying on designated routes or revegetating access routes created by a project, which would help mitigate the adverse impacts of surface disturbance associated with road construction and/or use on vegetation.

In Southwestern willow flycatcher, yellow-billed cuckoo, and endangered Colorado River fishes riparian habitat, there would be no surface disturbing activities within 300 feet of riparian habitat, which would have long-term beneficial impacts on riparian vegetation in those buffer zones. If oil and gas operations require stream crossing, Utah Oil and Gas Pipeline Crossing Guidance would be followed to help mitigate negative impacts on vegetation and wildlife associated with pipeline crossing (Appendix F).

If California condors nest in the Monticello FO, there would be no surface disturbing activities allowed within 1 mile of the nest, which would have long-term beneficial impacts on vegetation in those buffer zones.

4.3.17.2.12.2. Alternative B

Under Alternative B, the impacts of special status species management decisions on vegetation resources would include the following management in addition to that discussed under Alternative A. For Gunnison sage-grouse, year-round critical habitat would be designated on 4,524 acres of the sagebrush vegetation on BLM land in the Monticello FO (see Map 66). In lek habitat (2.0 mile radius of an active strutting ground), there would be no surface disturbing activities allowed, with the exception of seasonal grazing. These restrictions would help mitigate the adverse impacts of seasonal grazing on vegetation resources in lek habitat. Within 6 miles of lek habitat, sagebrush treatments, oil and gas leasing with standard stipulations, and year-round grazing would be allowed (except seasonally in Sage Flat, Upper East Canyon, Sage Grouse, and Dry Farm). Sagebrush treatments would mitigate the adverse impacts of surface disturbing activities on vegetation resources within the 6 mile lek habitat buffer.

Under this alternative, MSO and flannelmouth sucker habitat in Arch Canyon would be closed to OHV use and have a maximum group size of 10 people per day. These restrictions would reduce the surface disturbance in Arch Canyon associated with human visitation more than under Alternative A.

4.3.17.2.12.3. Alternative C

Under Alternative C, the impacts of special status species management decisions on vegetation resources would be the same as those discussed under Alternative B, except lek habitat would be defined as within 0.60 miles of an active strutting ground. Grazing would be permitted year-round. Construction of power lines would be permitted within year-round Gunnison sage-grouse habitat. The potential increase in grazing in and around sage-grouse leks and other potential

surface disturbing activities within year-round habitats would result in greater adverse impacts on vegetation resources than under Alternative B but fewer impacts than under Alternative A.

Under this alternative, MSO and flannelmouth sucker habitat in Arch Canyon would have OHV use limited to designated routes to the end of the State Section (closed from there to the end of the National Forest boundary), and have a maximum group size of 12 people per day. These restrictions would reduce surface disturbance in Arch Canyon associated with human visitation more than under Alternative A.

4.3.17.2.12.4. Alternative D

Under Alternative D, special status species management decisions on vegetation resources would include the following impacts in addition to those discussed in Alternative A. For Gunnison sage-grouse, year-round critical habitat would be designated on 2,877 acres of BLM land in the Monticello FO (see Map 68). In lek habitat (within 0.25 miles of an active strutting ground), there would be no surface disturbing activities allowed, with the exception of seasonal grazing. These restrictions would help mitigate the adverse impacts of seasonal grazing on vegetation resources in lek habitat. Within 6 miles of lek habitat, sagebrush treatments, fence construction, oil and gas leasing with standard stipulations, and year-round grazing would be allowed (except seasonally in Sage Flat, Upper East Canyon, Sage Grouse, and Dry Farm). Sagebrush treatments would help mitigate the adverse impacts of surface disturbing activities on vegetation resources within the 6 mile lek habitat buffer. The reduced area of protected habitats and allowances for surface disturbing activities would result in greater adverse impacts on vegetation resources under Alternative D than would occur under any of the other alternatives.

Under this alternative, MSO and flannelmouth sucker habitat in Arch Canyon would have OHV use limited to designated routes and have a maximum group size of 12 people per day. These restrictions would reduce surface disturbance in Arch Canyon associated with human visitation more than under Alternative A but less than Alternatives B and C.

4.3.17.2.12.5. Alternative E

Under Alternative E, the impacts of special status species management decisions on vegetation resources would be the same as discussed under Alternative B with the following additions. Non-WSA lands with wilderness characteristics would be managed as closed to mineral leasing, closed to OHV use, proposed for withdrawal from mineral entry, ROW exclusion area, closed to disposal of mineral materials, closed to private and commercial woodland harvest, and managed as VRM I. Management of these non-WSA lands with wilderness characteristics would decrease surface disturbance to vegetation within these areas, and would thereby provide more beneficial protection to vegetation resources than any of the other management alternatives.

4.3.17.2.13. Impacts of Travel Decisions on Vegetation

4.3.17.2.13.1. Alternative A

Under Alternative A, any new trail designations would consider sensitive species habitat, which would reduce surface disturbing activities in critical native vegetation. In addition, National Scenic Byways and Backways would be designated in the Monticello FO. These roads already

exist, so there is not likely to be an appreciable impact on vegetation resources resulting from these designations.

A number of trails would be managed for non-mechanized travel (see Summary Table of Alternatives). Because these trails are already established, there is not likely to be an appreciable impact on vegetation resources resulting from trail maintenance. There would also be trails and areas open to OHV use under all alternatives. OHV use can cause an increased level of surface disturbance because of the weight of the machines and speed of travel. This surface disturbance would have short- and long-term direct and indirect impacts on vegetation resources in the Monticello FO, as discussed in previous sections.

Under Alternative A, travel management decisions on vegetation resources would include the following additional impacts: There are a total of 1,940,740 acres open to OHV use under this alternative, which is more than under any of the other alternatives.

This alternative would have 276,430 acres closed to OHV use, which is more than Alternative D, but less than Alternatives B, C, and E. These closures would reduce adverse impacts on native vegetation in these protected areas by eliminating surface disturbance associated with OHV use. A list of closed areas is located in the Summary Table of Alternatives. Closed areas include some ACECs and vegetation study areas. This action helps protect ecologically important vegetation communities from surface disturbance and weed introduction associated with OHV use. In Tables 4.184–4.186, the acreage closed to OHV, acreage of limited OHV use, and acres open to OHV use are listed by vegetation type for each alternative.

Table 4.184. Acreage Closed to OHV Use for All Alternatives

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	856	1,074	1,074	0
Desert shrub	53,097	69,957	67,238	0
Invasive species and weeds	159	236	235	0
Pinyon-juniper woodland	218,188	317,500	315,524	0
Riparian/wetland	3,524	3,977	3,676	0
Sagebrush/perennial grass	12,256	30,838	30,802	0
Total	**288,080[1]**	**423,582**	**418,549**	**0**

[1] Acres of each vegetation type were determined using the Southwest ReGAP terrestrial ecological classification system (USGS 2004). Because vegetation types may overlap or be overestimated in the SWReGAP coverages, total acres of vegetation may exceed the total acres of the area being analyzed.

Table 4.185. Acreage of Limited OHV Use for All Alternatives

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	3,236	9,728	9,728	10,802
Desert shrub	218,564	350,720	351,592	418,829
Invasive species and weeds	1,284	3,154	3,154	3,390
Pinyon-juniper woodland	572,435	828,766	830,534	1,145,957
Riparian/wetland	6,302	16,458	16,623	20,300
Sagebrush/perennial grass	88,073	134,739	134,770	165,571
Total	**889,894**	**1,343,565**	**1,346,401**	**1,764,849**

Table 4.186. Acres Open to OHV Use for All Alternatives

Vegetation Type	Alternative A	Alternatives B and E	Alternative C	Alternative D
Conifer/mountain shrub	6,709	0	0	0
Desert shrub	150,188	0	1,847	1,847
Invasive species and weeds	1,986	0	0	0
Pinyon-juniper woodland	356,773	0	321	321
Riparian/wetland	10,870	0	135	135
Sagebrush/perennial grass	65,782	0	6	6
Total	**592,308**	**0**	**2,309**	**2,309**

4.3.17.2.13.2. Alternatives B and E

Under Alternatives B and E, the impacts of travel management decisions on vegetation resources would include the following in addition to the qualitative impacts discussed in Alternative A. There are no acres open to OHV use under these alternatives, which is 100% less (592,308 acres) than under Alternative A.

In total, there are 453,671 more acres of OHV use limited to designated routes under Alternative B than under Alternative A. Under Alternatives B and E, 210% more conifer/mountain shrub vegetation, 60% more desert shrub, 146% more invasive weed vegetation, 45% more pinyon-juniper woodland, 161% more riparian/wetland vegetation, and 53% more sagebrush/perennial grassland vegetation would have OHV use limited to designated routes.

Alternatives B and E have 423,582 acres closed to OHV use, which is 135,502 acres (47%) more than under Alternative A. Table 4.187 provides the percent difference in acres closed to OHV use in each vegetation type between Alternatives A and B/E.

Table 4.187. Percent Difference Acres Closed to OHV Use between Alternatives A and B/E

Vegetation Type	Percent difference Compared with Alternative A
Conifer and mountain shrub	25%
Desert shrub	32%
Invasive species and noxious weeds	48%
Pinyon-juniper woodland	46%
Riparian and wetland	13%
Sagebrush and perennial grassland	152%

These closures and limitations would decrease the adverse impacts of this alternative on native vegetation by reducing surface disturbance associated with OHV use. A list of closed areas is located in the Summary Table of Alternatives. Closed areas include vegetation study areas, some SRMAs, some CSMAs, and some WSAs. These closures would protect more acres of ecologically important vegetation communities from the surface disturbance and weed spread associated with OHV use than Alternative A. The impacts of management decisions under these alternatives are comparable to the impacts of Alternative C. There are fewer acres of native vegetation subject to adverse surface disturbing impacts under these alternatives than under Alternative D.

4.3.17.2.13.3. Alternative C

Under Alternative C, the impacts of travel management decisions on vegetation resources would include the following impacts in addition to the qualitative impacts discussed in Alternative A. There are a total of 2,309 acres open to OHV use under this alternative, which is 589,999 acres less than under Alternative A. Under Alternative C, approximately 99% to 100% less of each vegetation type would be open to OHV use than under Alternative A.

In total, there are 456,507 more acres of OHV use limited to designated routes under Alternative C than under Alternative A. When quantified by vegetation type, this difference breaks down as follows: 201% more conifer/mountain shrub vegetation, 61% more desert shrub, 146% more invasive weed vegetation, 45% more pinyon-juniper woodland, 164% more riparian/wetland and 53% more sagebrush/perennial grassland vegetation would have OHV use limited to designated routes.

This alternative would have 418,549 acres closed to OHV use, which is 130,469 acres (45%) more than under Alternative A. Table 4.188 provides the percent difference in acres closed to OHV use in each vegetation type between Alternative A and C.

Table 4.188. Percent Difference Acres Closed to OHV Use between Alternatives A and C

Vegetation Type	Percent Difference Compared with Alternative A
Conifer and mountain shrub	25%
Desert shrub	27%
Invasive species and noxious weeds	48%
Pinyon-juniper woodland	45%
Riparian and wetland	4%
Sagebrush and perennial grassland	151%

These closures would decrease the adverse impacts of this alternative on native vegetation by eliminating surface disturbance associated with OHV use. A list of closed areas is located in the Summary Table of Alternatives. Closed areas include vegetation study areas, some SRMAs, some CSMAs, and some WSAs. These closures would protect more acres of ecologically important vegetation communities from the surface disturbance and weed introduction associated with OHV use than Alternative A. Impacts under this alternative are comparable to impacts under Alternatives B and E. There are fewer acres of native vegetation subject to adverse surface disturbing impacts under this alternative than under Alternative D.

4.3.17.2.13.4. Alternative D

Under Alternative D, the impacts of travel management decisions on vegetation resources would include the following in addition to the qualitative impacts discussed in Alternative A. There are a total of 2,309 acres open to OHV use under this alternative, which is 589,999 acres less than under Alternative A.

In total, there are 874,955 more acres of OHV use limited to designated routes under Alternative D than under Alternative A. When quantified by vegetation type, this difference breaks down as follows: 234% more conifer/mountain shrub vegetation, 92% more desert shrub vegetation, 164% more invasive weed vegetation, 100% more pinyon-juniper woodland, 222% more riparian/wetland vegetation, and 88% more sagebrush/perennial grassland vegetation would have OHV use limited to designated routes.

This alternative has no acres closed to OHV use, which is 288,080 acres less than under Alternative A. Because of the lack of closures, adverse impacts associated with this alternative would be greater than under Alternatives A, B, C, and D.

4.3.17.2.14. Impacts of Vegetation Decisions on Vegetation

4.3.17.2.14.1. Alternative A

Under Alternative A, the impacts of vegetation management decisions on vegetation resources would be the same as those discussed in Section 4.3.17.1 Impacts Common to All Alternatives. There would be 232,130 acres open to vegetation treatments each year under this alternative. This is significantly greater than under any of the other alternatives. Due to the cost of vegetation

treatments, it is likely that only a small portion of this area would be treated in a given year. The numbers of acres of vegetation treatments in each vegetation type for each alternative are provided in Table 4.189.

Table 4.189. Acres of Vegetation Treatment per Year by Vegetation Type for Each Alternative

Vegetation Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Sagebrush		1,000	1,500	2,000	1,000
Weed treatments		3,000	3,000	3,000	3,000
Pinyon-juniper woodland		2,000	3,000	4,000	2,000
Riparian		500	100	100	500
Greasewood		100	200	200	100
Unspecified	15,475	1,000	1,500	2,000	1,000
Total	**15,475**	**7,600**	**9,300**	**11,300**	**7,600**

4.3.17.2.14.2. Alternative B

Under Alternative B, the impacts of vegetation management decisions on vegetation resources would include the following impacts in addition to those discussed in Section 4.3.17.1 Impacts Common to All Alternatives. There would be 7,600 acres of vegetation treatments per year under this alternative, including an estimated 1,000 acres/year of existing unspecified land treatments, which is 51% fewer acres of treatment per year than under Alternative A. This alternative would have fewer long-term, beneficial impacts on vegetation resources than Alternative A due to considerably fewer acres of vegetation treatments. The adverse impacts of trampling and crushing of vegetation associated with treatment would be substantially reduced under this alternative compared with Alternative A.

4.3.17.2.14.3. Alternative C

Under Alternative C, the impacts of vegetation management decisions on vegetation resources would include the following impacts in addition to those discussed in Section 4.3.17.1 Impacts Common to All Alternatives. There would be 9,300 acres of vegetation treatments per year under this alternative, including an estimated 1,500 acres/year of existing unspecified land treatments, which is 40% fewer acres of treatment per year than under Alternative A. Compared to Alternative B, there would be 500 additional acres of sagebrush treatment, 1,000 additional acres of pinyon-juniper woodland treatment, 400 fewer acres of riparian vegetation treatment, and 100 additional acres of greasewood (desert shrub) vegetation treatment (see Table 4.189). Overall, this alternative would provide greater long-term beneficial impacts for sagebrush, pinyon-juniper woodland, and greasewood vegetation types than Alternative B. It would provide fewer long-term beneficial impacts for riparian vegetation than under Alternative B and for all vegetation types under Alternative A. However, this alternative would limit potentially severe short-term adverse impacts associated with vegetation treatments.

4.3.17.2.14.4. Alternative D

Under Alternative D, the impacts of vegetation management decisions on vegetation resources would include the following impacts in addition to those discussed in Section 4.3.17.1 Impacts Common to All Alternatives. There would be 11,300 acres of vegetation treatments per year under this alternative, including an estimated 2,000 acres/year of existing unspecified land treatments, which is 27% fewer acres of treatment per year than under Alternative A. Compared to Alternative B, there would be 1,000 additional acres of sagebrush treatment, 2,000 additional acres of pinyon-juniper woodland treatment, 400 fewer acres of riparian treatment, and 100 additional acres of greasewood (desert shrub) treatment under this alternative (see Table 4.189). Overall, this alternative would provide greater long-term beneficial impacts for sagebrush, pinyon-juniper woodland, and greasewood (desert shrub) vegetation than Alternatives B and E, as well as for sagebrush and pinyon-juniper woodland vegetation than Alternative C. It would provide fewer long-term beneficial impacts for riparian habitat than would occur under Alternative B. This alternative would have fewer potentially severe short-term adverse impacts associated with vegetation treatments than would occur under Alternative A.

4.3.17.2.14.5. Alternative E

Under Alternative E, the impacts of vegetation management decisions on vegetation resources would be the same as discussed under Alternative B with the following additions. Non-WSA lands with wilderness characteristics would be managed to decrease surface disturbance to vegetation within these areas, and would thereby provide more beneficial protection to vegetation resources than any of the other management alternatives.

4.3.17.2.15. Impacts of Visual Resource Decisions on Vegetation

4.3.17.2.15.1. Alternative A

Under Alternative A, lands in the Monticello FO would be managed as one of four visual resource management classes (see VRM Section 3.18). All WSAs and Wild and Scenic River segments would be managed as VRM I or II. Very limited and limited management activities, respectively, would be allowed in areas designated as VRM classes I or II. Short-term vegetation treatments and other surface disturbing activities designed to enhance native vegetation would be allowed in VRM classes I or II areas. These types of disturbances could have minor, short-term, adverse impacts on native vegetation in the Monticello FO.

In areas designated as VRM classes III or IV, changes to the landscape could be moderate or major, respectively. Most types of vegetation treatments and other surface disturbing activities would be allowed in VRM classes III or IV areas. These types of disturbances could have long-term adverse impacts on native vegetation in the Monticello PA, but long-term benefits in restoration of native and other desired vegetation communities. Alternative A, the No Action Alternative, also describes the acreages assessed under the Monticello FO VRM inventory, which represents the level of scenic quality within the planning area.

Of the five alternatives, Alternative A would have the smallest area subject to VRM class I, but the largest area subject to VRM class II restrictions (see Map 55 for VRM locations). Tables 4.190–4.193 show the acres of each vegetation type in VRM Classes I, II, III, and IV for each alternative.

Table 4.190. Acreage of Each Vegetation Type in VRM Class I by Alternative

Vegetation Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Conifer/Mountain shrub	767	1,156	1,144	14	2,778
Desert shrub	97,493	115,751	88,711	62,131	266,378
Invasive species and weeds	187	360	230	229	1,088
Pinyon-juniper woodland	252,374	342,926	302,084	295,521	659,983
Riparian/Wetland	4,749	5,888	4,320	3,159	9,500
Sagebrush/Perennial grass	14,714	30,985	28,126	28,110	57,162
Total	**370,284**	**497,066**	**424,615**	**389,164**	**996,889**

Table 4.191. Acreage of Each Vegetation Type in VRM Class II by Alternative

Vegetation Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Conifer/Mountain shrub	1,629	1,376	104	0	622
Desert shrub	86,234	54,896	47,496	2,681	23,150
Invasive species and weeds	569	449	171	0	214
Pinyon-juniper woodland	238,942	176,060	83,447	3,304	76,553
Riparian/Wetland	7,485	5,342	4,259	2,137	4,204
Sagebrush/Perennial grass	15,274	11,267	6,186	0	5,505
Total	**350,133**	**249,390**	**141,663**	**8,122**	**110,248**

Table 4.192. Acreage of Each Vegetation Type in VRM Class III by Alternative

Vegetation Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Conifer/Mountain shrub	392	503	1,787	1,892	470
Desert shrub	92,977	109,609	132,231	204,910	53,913
Invasive species and weeds	761	743	1,084	1,258	665
Pinyon-juniper woodland	250,688	245,913	321,699	409,884	152,560
Riparian/Wetland	5,400	6,530	7,730	11,365	4,618
Sagebrush/Perennial grass	62,667	57,055	51,657	57,601	46,860
Total	**412,885**	**420,353**	**516,188**	**686,910**	**259,086**

Table 4.193. Acreage of Each Vegetation Type in VRM Class IV by Alternative

Vegetation Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Conifer/Mountain shrub	7,888	7,764	7,765	7,766	6,929
Desert shrub	143,623	140,930	152,747	151,574	76,899
Invasive species and weeds	1,872	1,893	1,962	1,961	1,421
Pinyon-juniper woodland	402,812	381,012	438,681	437,266	256,424
Riparian/Wetland	2,729	2,645	4,095	3,722	2,081
Sagebrush/Perennial grass	71,160	66,355	79,679	79,947	55,984
Total	**630,084**	**600,599**	**684,929**	**682,236**	**399,738**

4.3.17.2.15.2. Alternative B

Under Alternative B, the impacts of visual resource management decisions on vegetation resources would be more beneficial than under Alternative A in the long-term, as more vegetation acreage would be managed as VRM I and protected from surface disturbances in order to preserve scenic qualities. Alternative B would protect more vegetation resources than any of the other alternatives except Alternative E, which would manage nearly twice as many acres as VRM class I (see Table 4.190).

4.3.17.2.15.3. Alternative C

Under Alternative C, the impacts of visual resource management decisions on vegetation resources would include the qualitative impacts discussed in Alternative A, as well as the following additions: some ACECs would also be managed as VRM class I or II. Of the five alternatives, Alternative C would have the second smallest area subject to both VRM class I and II restrictions. It would have the second largest area subject to VRM class III restrictions, and the largest area subject to class IV restrictions (see Map 57 for VRM locations). Because more acres would be classified as VRM I, this alternative would do more to reduce negative impacts on vegetation resources than Alternative A, and would have greater impacts than Alternatives B and E.

4.3.17.2.15.4. Alternative D

Under Alternative D, the impacts of visual resource management decisions on vegetation resources would include the qualitative impacts discussed in Alternative A. Of the five alternatives, Alternative D would have the second smallest area subject to VRM class I restrictions and the smallest area subject to VRM class II restrictions. It would have the largest area subject to VRM class III restrictions and the second largest area subject to class IV restrictions (see Map 58 for VRM locations). Because more acres would be classified as VRM I, this alternative would do more to reduce negative impacts on vegetation resources than Alternative A.

4.3.17.2.15.5. Alternative E

Under Alternative E, approximately 582,357 additional acres would be managed as VRM I to protect non-WSA lands with wilderness characteristics. As shown in Table 4.156, 996,889 acres of vegetation resources would receive protection from surface disturbances under this alternative (56% of the planning area or 270% more VRM I area than under Alternative A). Compared to Alternative A, this alternative would have greater beneficial impacts because more area would be protected from the adverse impacts of minerals development, access road construction, OHV use, and woodland harvesting; however, these areas would also be protected from vegetation treatments and fire treatments, which would have adverse impacts on vegetation resources because of increased risks of wildland fire from fuel loading and invasive species encroachment. Overall, this alternative would have greater direct beneficial impacts from protection of non-WSA lands and greater indirect adverse impacts from exclusion of vegetation treatments than any of the alternatives.

4.3.17.2.16. Impacts of Wildlife and Fisheries Decisions on Vegetation

4.3.17.2.16.1. Alternative A

In occupied priority migratory bird habitat, no surface disturbance would be allowed from May 1–July 30. Maintenance and improvement of lowland riparian habitats, wetlands, and low and high desert scrub communities would be prioritized in the Monticello FO. In addition, the spread of invasive plant species would be prevented in these four vegetation types. These three requirements would benefit both migratory birds and native vegetation communities. These actions would have long-term beneficial impacts on native vegetation in lowland riparian, wetland, and desert scrub communities in the Monticello FO.

Bighorn sheep habitat on the five mesa tops (56,740 acres) would be prioritized for habitat improvement because of potential loss of habitat caused by surface disturbance in these areas. On-site mitigation would be required for projects that disturb or remove forage and browse species used by desert bighorn sheep. These requirements would help mitigate the adverse impacts of surface disturbing activities on vegetation resources critical to bighorn sheep survival.

There would be 17,300 acres allotted as wildlife habitat on slopes of Peter's Canyon and East Canyon under all alternatives.

Under Alternative A, specific restrictions would be in place for wildlife habitat during parts of the year. This alternative would have the least amount of wildlife habitat subject to special wildlife conditions of any of the management alternatives.

Tables 4.194–4.197 provide acreage comparisons of wildlife habitat subject to special conditions in each vegetation type for each alternative.

Table 4.194. Alternative A–Acres of Wildlife Habitat by Vegetation Type Subject to Special Conditions

Vegetation Type	Bighorn Sheep	Pronghorn	Deer	Elk
Conifer/mountain shrub	356	0	226	0
Desert shrub	66,103	2,548	6,041	0
Invasive species and weeds	346	0	387	0
Pinyon-juniper woodland	168,890	2,880	139,178	0
Riparian/wetland	435	0	1,244	0
Sagebrush/perennial grass	11,808	8,526	33,013	0
Total	**247,938**	**13,954**	**180,089**	**0**

4.3.17.2.16.2. Alternatives B and E

Under Alternatives B and E, the impacts of wildlife and fisheries management decisions on vegetation resources would include those discussed in Alternative A, as well as the restrictions in place for wildlife habitat during parts of the year. Seasonal wildlife protection areas would have special conditions for all land use activities with the exception of woodland harvest. These special conditions include: no oil and gas leasing activities, no geophysical work, and no OHV use. These seasonal wildlife protection area designations, however, can be overturned by the Field Manager if it can be shown that legal rights would be curtailed, animals are not present in the specific project location, or the activity can by conducted so as not to adversely affect wildlife species. In addition, maintenance and operation activities for mineral production and hunting would be allowed during seasonal restrictions. Therefore, these restrictions would offer only minor mitigation potential for the adverse impacts of surface disturbing activities on vegetation resources allowed in wildlife habitat. Under these alternatives, there would be 205,070 (83%) more acres subject to bighorn sheep special wildlife conditions, 15,401 (110%) more acres of protected pronghorn habitat, 594,165 (330%) more acres of protected deer habitat, and 184,248 more acres of elk habitat subject to special conditions than under Alternative A (see Table 4.195).

Table 4.195. Alternatives B and E–Acres of Wildlife Habitat by Vegetation Type Subject to Special Conditions

Vegetation Type	Bighorn Sheep	Pronghorn	Deer	Elk
Conifer/mountain shrub	211	1	4,379	9,168
Desert shrub	139,069	4,359	32,058	1,882
Invasive species and weeds	996	17	1,377	702
Pinyon-juniper	289,494	10,434	636,489	155,866
Riparian/wetland	3,627	14	7,011	1,380
Sagebrush/perennial grass	19,611	14,530	92,940	15,250
Total	**453,008**	**29,355**	**774,254**	**184,248**

4.3.17.2.16.3. Alternative C

Under Alternative C, the impacts of wildlife and fisheries management decisions on vegetation resources would include those discussed in Alternative A, as well as the restrictions in place for wildlife habitat during parts of the year. Seasonal wildlife protection areas would have the same special conditions as under Alternative A, with the exception of OHV restrictions in which the number of OHV users may be limited. Under this alternative, there would be 52,218 (21%) more acres subject to bighorn sheep special wildlife conditions, 15,401 (110%) more acres of protected pronghorn habitat, 80,242 (45%) more protected deer habitat, and 93,104 more acres of elk habitat subject to special conditions than under Alternative A (see Table 4.196). Because of these differences, this alternative would provide greater protection for vegetation resources in the wildlife protection areas of the Monticello FO than Alternative A, but would be more likely to adversely affect vegetation resources than Alternatives B and E.

Table 4.196. Alternative C–Acres of Wildlife Habitat by Vegetation Type Subject to Special Conditions

Vegetation Type	Bighorn Sheep	Pronghorn	Deer	Elk
Conifer/mountain shrub	125	1	825	6,915
Desert shrub	95,466	4,359	6,085	774
Invasive species and weeds	777	17	452	693
Pinyon-juniper woodland	186,181	10,434	206,807	74,103
Riparian/wetland	1,427	14	1,581	319
Sagebrush/perennial grass	16,180	14,530	44,581	10,300
Total	**300,156**	**29,355**	**260,331**	**93,104**

4.3.17.2.16.4. Alternative D

Under Alternative D, the impacts of wildlife and fisheries management decisions on vegetation resources would include those discussed in Alternative A, as well as the restrictions in place for wildlife habitat during parts of the year. Seasonal wildlife protection areas would have the same special conditions as under Alternative A with the exception of OHV restrictions. Under this alternative, OHV use would only be allowed on designated routes. Additionally, there would be 65,179 (26%) fewer acres subject to bighorn sheep special wildlife conditions, the same number of acres of protected pronghorn habitat, 30,826 (17%) fewer acres of protected deer habitat, and 60,103 more acres of elk habitat subject to special conditions than under Alternative A (see Table 4.197). Because of these differences, this alternative would be more likely to adversely affect vegetation resources in the wildlife protection areas of the Monticello FO than Alternatives B, C, and E, but less likely to adversely impact vegetation resources than Alternative A.

Table 4.197. Alternative D–Acres of Wildlife Habitat by Vegetation Type Subject to Special Conditions

Vegetation Type	Bighorn sheep	Pronghorn	Deer	Elk
Conifer/mountain shrub	111	0	185	6,155
Desert shrub	54,511	2,548	3,711	116
Invasive species and weeds	256	0	358	0
Pinyon-juniper	117,798	2,880	114,742	47,845
Riparian/wetland	895	0	1,092	313
Sagebrush/perennial grass	9,188	8,526	29,175	5,674
Total	**182,759**	**13,954**	**149,263**	**60,103**

4.3.17.2.17. Impacts of Woodlands Decisions on Vegetation

4.3.17.2.17.1. Alternative A

The Healthy Forest Initiative and the Healthy Forest Restoration Act of 2003 would be implemented under all alternatives. In addition, numerous sites would be excluded from wood product use except for limited on-site collection of deadwood for campfires (see Summary Table of Alternatives). These actions would help mitigate the adverse impacts of woodland product use on vegetation resources in areas of the Monticello FO open to wood harvesting. Short-term, adverse impacts include trampling and removal of native trees. Long-term, indirect impacts include the potential introduction of weedy, non-native species during wood harvesting operations. Under this alternative, all 1,147,407 acres of the pinyon-juniper woodland vegetation type would be open to woodland harvest.

4.3.17.2.17.2. Alternative B

Under Alternative B, the impacts of woodlands management decisions on vegetation resources would include those discussed in Alternative A. There would be 504,666 acres of pinyon-juniper woodland vegetation open to woodland product harvest, which is 56% fewer acres open to harvest than under Alternative A. In addition, limitations on off-road travel and seasonal restrictions on wood collection would help mitigate the adverse impacts of woodland product collection and harvest on vegetation resources.

4.3.17.2.17.3. Alternatives C and D

Under Alternatives C and D, the impacts of woodlands management decisions on vegetation resources would include those discussed in Alternative A. There would be 597,086 acres of pinyon-juniper woodland vegetation open to woodland product harvest, which is 48% fewer acres open to harvest than under Alternative A. There would not be any seasonal restrictions on wood collection, as would occur under Alternative B.

4.3.17.2.17.4. Alternative E

Under Alternative E, the impacts of woodlands management decisions on vegetation resources would be the same as those outlined under Alternative B with the following differences: Under

this alternative, non-WSA lands with wilderness characteristics would not be available for woodland product use. This would close all pinyon-juniper woodland areas with non-WSA wilderness characteristics to surface disturbing activities associated with woodland harvest. Compared to Alternative A, this alternative would have fewer adverse impacts to native vegetation resources because more area would be protected.

4.3.17.3. Summary of Impacts

Table 2.2 of Chapter 2 contains a summary of impacts of management decisions on vegetation resources.

4.3.17.4. Mitigation Measures

The protective measures for vegetation described in the management common to all sections in Chapter 2 and Appendices A and I would serve to avoid and/or minimize impacts to native vegetation resources in the Monticello FO.

4.3.17.5. Unavoidable Adverse Impacts

There will be unavoidable adverse impacts to vegetation resources in the Monticello FO resulting from surface disturbing activities associated with the resource management decisions detailed in the RMP and this EIS. Adverse impacts include temporary damage to individual native plants due to trampling and grazing by wildlife and livestock, trampling and weed introduction by human visitors (motorized and non-motorized) and vegetation treatment crews, and permanent removal of native plants due to clearing activities such as oil well pad installation and woodland harvest.

4.3.17.6. Short-term Use versus Long-term Productivity

Impacts to vegetation occurring in the MFO's arid to semi-arid climate could affect long-term productivity due to the limited annual growth of many of the plants found in this ecosystem. Recovery periods of up to 50 years may be required to return desert vegetation communities to their original vegetation cover and species composition following disturbance (Guo 2004). A period of 75 to 100 years may be required for reestablishment of mature pinyon-juniper woodlands. The recovery of cryptobiotic soil communities and associated vegetation is extremely slow (up to 250 years) following soil disturbance (BLM 2001b). Changes in other vegetation community compositions, and the resulting productivity and forage value, may also take decades.

As discussed throughout this section, some of the short-term multiple uses of the Monticello FO would adversely impact the short- and long-term productivity of native vegetation. These uses include oil and gas development, improper livestock grazing, camping, off-road vehicle travel, and woodland harvest. These activities, however, provide economic benefits, and would be partially mitigated by the protective measures discussed in the Management Common to All sections for each management decision. Effective implementation of these protective measures would prevent these uses from substantially impacting the long-term productivity of vegetation resources in the planning area.

4.3.17.7. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

The protective measures detailed in the Summary Table of Alternatives and Chapter 2 require that disturbed areas be reclaimed following completion of the management action (i.e., well pad deconstruction, reseeding, and weed eradication in disturbed areas). Because vegetation resources would be restored or rehabilitated after proposed disturbance and/or development, there would be no anticipated irreversible impacts on native vegetation resources associated with the management decisions proposed for the Monticello FO. There would, however, be irretrievable impacts associated with surface disturbing activities proposed throughout the planning area. Native vegetation removed or disturbed when roads or trails are cut, oil pads installed, or other surface disturbance is implemented, is an irretrievable loss until successful restoration takes place. The acreage of this irretrievable disturbance would be identical to that described above for unavoidable adverse impacts.

4.3.18. VISUAL RESOURCES

The assumptions for analyzing the impacts to visual resources are 1) that the greater the size and/or severity of surface disturbance and/or degree of air quality degradation, the greater the impact there would be to scenic quality, and 2) that all Monticello PA resources with management decisions that would permit surface disturbances or degrade air quality would have adverse impacts on visual resources to some degree. Surface disturbances would introduce new, potentially noticeable, visual elements onto the landscape or intensify existing visual elements that would alter the line, form, color, and/or texture that characterize the existing landscape. Changes in air quality, either from smoke, dust, or other pollutants, could potentially reduce or degrade scenic quality by obscuring distant views in the short-term or long term.

Visual Resource Management (VRM) class designations are defined in Section 3.18.2. While reviewing the analysis of impacts, it should be noted that under VRM Class I visual resource objectives, landscape scenic quality would be maintained in its pristine, undeveloped, and natural state, permitting very minor changes to the landscape that should not be noticeable. Visual objectives under VRM Class II would also retain scenic quality within the natural landscape, but would allow minor man-made changes to the landscape, though these changes should not be noticeable to the casual viewer. The VRM Class III objectives would allow a moderate degree of man-made change to the landscape that would be visible, but the changes and contrasts with the natural should not dominate the natural landscape. Under VRM Class IV, major modifications of the natural landscape would be permitted and allowed to dominate the natural landscape. So, based on the above range of allowed changes to scenic quality, the visual resources analysis of impacts assumes that areas designated for management under VRM Class I objectives would receive the highest level of visual resource protection, that areas designated and managed under VRM Class II objectives would receive a high level of visual resources protection, and that VRM Class III and IV-designated areas would receive less visual resources protection. Thus, the analysis logically assumes that areas managed under VRM classes III and IV would allow more surface-disturbing impacts and potentially have greater adverse impacts on visual resources than those areas managed under VRM Class I and II objectives.

The BLM's VRM class objectives (see Section 3.18.2 and above) were used in analyzing surface disturbance and air quality impacts on visual resources. These objectives provide a consistent basis for determining how much a particular action would affect scenic quality, as well as

determining the level of disturbance an area could support while still meeting designated visual resource objectives.

Before VRM classes were designated under the proposed RMP, a visual resource inventory was conducted in order to assess current scenic quality and viewer sensitivity to viewscapes within the Monticello PA. This inventory process assists the Monticello FO in considering visual values in the RMP process. The inventory does not provide management direction and would not be used to limit or constrain surface-disturbing activities within the planning area. For the Monticello PA, the acreage results of the visual resource inventory are the same as the VRM class designation acreages under the current RMP (i.e., Alternative A). That is, there have been no substantial changes in viewer sensitivity or scenic quality since VRM class designations were assigned during the 1991 RMP process.

The determination and assignment of VRM class designations are based on the management decisions made during the RMP process. Once the RMP is completed and the VRM class designations are approved, the VRM class objectives are applicable to all land management actions; that is, once a VRM class designation has been assigned to an area, resource management and planning decisions that could impact visual quality are required to consider and to comply with the designated VRM class objectives of that area. Thus, analyses of the impacts of management decisions for other resources on visual resources were not discussed in this visual resources section because all potential impacts to visual resources that would be produced by the RMP management decisions would be required to comply with the designated and approved VRM class objectives.

It should be noted that, during the RMP process, other proposed land management objectives and management decisions affect the assignment of VRM class designations. For example, WSAs would be managed as VRM Class I in order to maintain their pristine and undeveloped landscapes, and their suitability for designation by Congress as wilderness; areas considered eligible for recommendation under the NWSRS would be managed as VRM Class I, II, or III depending on the resources considered for protection (wild, scenic, or recreation, respectively); areas with high mineral resources potential may be designated as VRM Class III or IV to allow surface-disturbing minerals exploration and development. Therefore, the VRM class designations that are proposed under the RMP are the result of a synthesis and balance of other proposed resource and land management actions (e.g., livestock grazing, minerals, recreation, special designations) with the visual resource inventory of scenic quality, visual resource values, and viewer sensitivity within the Monticello PA.

In this analysis of impacts of proposed management decisions on visual resources, a "macro" and "micro" approach was taken to analyze impacts to visual resources. At the macro scale, the acres of proposed VRM classes under the action alternatives were compared to Alternative A to determine the increase or decrease of acres proposed for protection of scenic quality under VRM Classes I and II. At the micro scale of analysis, representative visually sensitive areas with high scenic quality were selected within the Monticello PA and were analyzed for the impacts of the proposed management decisions on visual resources and scenic quality. These were areas where the proposed DRMP/DEIS alternatives varied in their VRM class designations, and they include Lockhart Basin, Indian Creek, and Valley of the Gods. The analytical methodology of determining the impacts to these areas was a comparison of the area's visual resource inventory

class (Alternative A) with the proposed VRM class designation for the area under each action alternative (Alternatives B–E).

Table 4.198 below shows the proposed VRM acreages managed under each VRM class designation for each of the alternatives, and the combined acreages of VRM classes III and IV.

Table 4.198. VRM Class Designation Acreages by Alternative

VRM Class	Alternative A (Visual Resource Inventory)	Alternative B	Alternative C	Alternative D	Alternative E
VRM Class I	371,575	497,668	425,179	390,424	998,370
VRM Class II	355,112	250,641	132,001	8,838	111,478
VRM Class III	416,806	426,350	531,920	692,741	264,369
VRM Class IV	637,875	608,463	693,995	691,119	407,459
Subtotal Classes III and IV	1,054,681	1,034,813	1,225,915	1,383,860	671,828
Total*	**1,781,368**	**1,783,122**	**1,783,095**	**1,783,122**	**1,781,676**

Source: BLM 2007d.

*Acreage figures may vary by alternative due to the changes in GIS technology and variances in GIS shapefiles.

4.3.18.1. Impacts Common to All Alternatives

Under all alternatives, VRM class objectives would be applicable to all land management decisions within the Monticello PA. Specifically, all VRM Class I areas would apply NSO stipulations, Controlled Surface Use stipulations would include requirements to meet VRM Class II objectives, eligible Wild and Scenic River segments would be managed as VRM Class I or VRM Class II, and all WSAs and lands with non-WSA wilderness characteristics would be managed as VRM Class I. These specific management actions would be generally beneficial because they would maintain and/or protect scenic quality to the extent allowable under the designated VRM class objectives.

4.3.18.2. Alternatives Impacts

4.3.18.2.1. Alternative A

As mentioned above, the Monticello FO visual resource inventory resulted in visual inventory classes that are the same as the current VRM class designations under Alternative A. Under this alternative, 371,575 acres (21% of the planning area) would be designated for the highest level of visual resource protection under VRM Class I, 355,112 (20% of the planning area) would be designated for a high level of protection under VRM Class II, and 1,054,681 acres (the remaining 59% of the area) would be designated for lower levels of visual resource management under VRM Class III and IV objectives.

4.3.18.2.2. ALTERNATIVE B

Alternative B would designate 497,668 acres for management under VRM Class I objectives (28% of the planning area would be managed for pristine, very high quality natural landscapes), 250,641 acres would be designated for management under VRM Class II objectives (14% of the planning area would be managed for high-quality, natural landscapes). Approximately 1,034,813 acres (the remaining 58% of the planning area) would be designated for management under VRM Class III and Class IV objectives that would permit moderate to major changes to the landscape. Compared to Alternative A, this alternative would designate 126,093 more acres as VRM Class I, 104,471 fewer acres as VRM Class II (a decrease of 6%), and 19,868 fewer acres as VRM Class III and IV (a decrease of 1%). This would have more direct, beneficial, long-term impacts on scenic resources and fewer potentially adverse surface-disturbance-related impacts on the resource than Alternative A because 7% more acreage under VRM I objectives would be managed for higher levels of visual resource protection and preservation than indicated by the visual resource inventory. Also, this alternative would designate fewer acres for management under VRM Class III and IV objectives, a 1% reduction in acreage managed for visual resource modification than indicated by the visual resource inventory.

4.3.18.2.3. ALTERNATIVE C

Under Alternative C, 425,179 acres would be designated and managed under VRM Class I objectives to maintain 24% of the planning area as undeveloped, pristine landscape, and 132,001 acres would be designated and managed under VRM Class II objectives (with 7% of the Monticello PA managed for high-quality landscapes).Visual resource designation and management under VRM Class III and IV objectives would include 1,225,915 acres (69% of the planning area permitted for moderate to high levels of visual resource impacts). Compared to the Alternative A, this alternative would manage 53,604 more acres for the highest level of visual resource preservation under VRM Class I than indicated by the visual resource inventory (an increase of 3%), and 223,111 fewer acres of high-visual quality protection under VRM Class II objectives (a decrease of 13%). Management under VRM Class III and VRM Class IV objectives for this alternative would increase the number of acres under these management classes by 171,234 (a 10% increase, when compared to the visual resource inventory). This would result in greater adverse impacts to visual resources than Alternative A because, while there would be long-term, beneficial impacts on visual resources by managing more acres at the highest level of resource protection under VRM Class I than indicated by the visual resource inventory, fewer acres within the planning area would be managed to preserve high-quality scenic landscapes under VRM Class II and more acres within the Monticello PA would be managed to permit surface disturbances, development, and man-made alterations of the existing landscape under VRM Class III and VRM Class IV than indicated by the visual resource inventory.

4.3.18.2.4. ALTERNATIVE D

Alternative D would designate and manage 390,424 acres under VRM Class I objectives (22% of the Monticello PA) and 8,838 acres under VRM Class II objectives (0.5% of the planning area), and 1,383,860 acres (the remaining 77.5% of the planning area) under VRM Class III and IV objectives. Compared to Alternative A, Alternative D would manage 18,849 more acres (an increase of 1%) under VRM Class I objectives for preservation of pristine, very high quality visual resources, but 346,274 fewer acres would be managed under VRM Class II objectives (a

reduction in acreage of 19.5% for landscapes inventoried as having high scenic quality), and manage 329,179 more acres under VRM Class III and IV objectives (an increase of 18.5%) than indicated by the visual resource inventory. Under this alternative, there would be long-term, adverse impacts to visual resources because more acres would be managed at lower levels of resource protection and fewer acres within the planning area would be managed at the higher levels of visual resource protection and preservation under this alternative than under Alternative A.

4.3.18.2.5. ALTERNATIVE E

Under Alternative E, approximately 998,370 acres would be designated and managed under VRM Class I objectives in order to preserve scenic quality and visual resources, including 582,357 acres of non-WSA lands with wilderness characteristics. This would result in 56% of the planning area being managed as VRM Class I (an increase in VRM Class I-designated and managed acreage of 268% when compared to Alternative A). Approximately 111,478 acres would be designated and managed under VRM Class II objectives (a decrease of 69% when compared to Alternative A), and a combined acreage of 671,828 under VRM Class III and IV objectives (a 36% decrease when compared to Alternative A). Under Alternative E, over 62% of the planning area would receive the highest levels of visual resource protection under VRM Class I and II objectives, with long-term, beneficial impacts to the resource and more beneficial, long-term, preservation-related impacts to scenic quality than under Alternative A.

4.3.18.3. VISUALLY SENSITIVE AREAS

4.3.18.3.1. LOCKHART BASIN

The area proposed as the Lockhart Basin ACEC was visually inventoried as VRM Class II and is currently designated as VRM Class III, with an objective of partially retaining the existing character of the landscape, permitting a moderate level of change to the landscape that does not dominate the view of the casual observer.

Management decisions under Alternative A would have visual resource-related impacts on the area because surface-disturbing activities and viewscape changes would be allowed. Under this alternative, the RFD of mineral resources, based on geophysical surveys of the Paradox Fold and Fault Belt that includes Lockhart Basin, predicts that an average of 25 natural gas exploration wells could be drilled within the belt during the lifetime of the RMP. If natural gas exploration and/or other mineral resource development projects were conducted within Lockhart Basin, then the VRM objectives that permit moderate levels of change to the landscape would have long-term, adverse impacts to visual resources from surface disturbance and visual resource degradation for those viewing Lockhart Basin within the Monticello PA. The impacts would include short-term surface-disturbance-related impacts to visual resources caused by drilling rigs, seismic exploration lines, and natural gas or oil exploration well pads. Long-term impacts would include increased visual contrasts caused by soil and vegetation surface disturbances, and visual contrasts from pipelines, well pad access roads, exploration and/or production well pads, natural gas extraction and compression infrastructure and facilities, and minerals-related vehicle traffic.

When viewed from the points of view looking down into the basin (from Island in the Sky in Canyonlands National Park, from Dead Horse Point in Dead Horse Point State Park, and from the Canyon Rims SRMA in the Moab FO planning area), the potentially adverse short-term and

long-term impacts to visual resources from minerals-related surface disturbances would be the same as when viewed from within the Basin, but to a greater degree. The impacts to scenic quality would be greater because of: 1) the likelihood that standard BLM visual resource impacts mitigation and minerals BMPs (e.g., camouflaged and/or low profile structures, edge feathering, topographically hidden disturbances or visual intrusions, reclamation of well drilling pads and roads) would not be effective when viewed from above the Basin; 2) the angle of view looking down into the Basin would likely show more adverse, surface-disturbance impacts and visual contrasts than when viewed from ground-level within the Basin; and 3) the high level of scenic quality within Lockhart Basin (as determined by the visual resource inventory), when viewed from the surrounding elevated points of view, would likely heighten the potential surface-disturbance-related contrasts created by minerals development.

Under Alternatives B and E, Lockhart Basin would be managed as a 47,783-acre ACEC for protection of scenic values under VRM Class I designation, with the objective of preserving the existing character of the landscape. A very low level of visual change would be permitted under this VRM management objective, and the level of change would be to a degree that would not attract casual viewer attention. The impacts on scenic quality under these alternatives would be beneficial in the long-term because surface-disturbing activities, visual intrusions, and potential visual contrasts would be greatly restricted or prohibited. Any proposed natural gas well drilling and minerals resource development within the Paradox Fold and Fault Belt area would likely not impact the Lockhart Basin because of the VRM restrictions placed on potential changes to the existing scenic quality of the area. From points of view within the Basin and above the Basin, the impacts on visual resources would be negligible to minor. Compared to Alternative A, these similar alternatives would be more beneficial to visual resources within Lockhart Basin because of the increased protection of visual resources (comparable to visual resource inventory Class I even though the area was visually inventoried as having a Class II level of scenic quality).

It should be noted that under Alternative E, approximately 21,298 acres of area managed under VRM Class I objectives as non-WSA lands with wilderness characteristics would lie within the proposed ACEC boundary, but because the area would be protected as VRM Class I under Special Designation Area management decisions for both alternatives, the impacts to visual resources would the same.

Management decisions under Alternative C would not designate Lockhart Basin as an ACEC for protection of scenic values. This alternative would designate the area that abuts the Moab FO planning area as VRM Class II (10,573 acres or approximately 22% of the basin) and the rest of the basin as VRM Class III. The VRM Class II management objectives would retain the existing character of the landscape, permitting a low level of change to the landscape that should not attract the attention of the casual observer. The impacts on visual resources in the area managed under VRM II would be beneficial in the short-term and long-term because visual resource objectives would maintain scenic quality at levels consistent with the area's inventoried scenic quality and viewer sensitivity. The impacts to visual resources in the area designated as VRM Class III would be similar to those described under Alternative A.

Under this alternative (Alternative C), the area would be open for mineral leasing, subject to Standard and Timing and Controlled Surface Use lease stipulations. An estimated 24 natural gas exploration wells could be drilled within the Paradox Fold and Fault Bent during the lifetime of the RMP. If natural gas exploration and/or development activities were conducted within

Lockhart Basin, then there would be the likelihood of short-term and long-term surface-disturbance and visual intrusion-related impacts to visual resources within the designated VRM Class III areas of the basin the same as those described under Alternative A. The designated VRM Class II areas would require more impacts mitigation in order to meet the VRM Class II objectives, so the impacts to visual resources would be minor. For those viewing the Basin from within the Monticello PA and at points looking down into the basin, the impacts within the designated VRM Class III area would be the same as those discussed under Alternative A because the VRM objectives would be the same. For viewers looking into the designated VRM Class II area of the Basin from the Monticello PA perspective, there would be minor impacts to visual resources from minerals-related surface disturbances because a small degree of visual contrasts and visual degradation would be permitted. For those viewers looking down into the Basin from elevated points of view within the VRM Class II area, the short-term and long-term, adverse impacts to scenic quality (as discussed under Alternative A) would be reduced because of the reduced level of permitted disturbances to scenic quality, but the impacts would be visible to the viewers for the same reasons as discussed under Alternative A: the angle of view would more clearly expose surface disturbances and contrasts, and mitigation would not likely be effective at reducing visual contrasts and intrusions. Compared to Alternative A, this alternative would be similarly adverse to visual resources in the VRM Class III area because the proposed VRM Class III objectives would allow scenic quality within the Basin to be degraded to a greater level than indicated by the visual inventory's VRM Class II rating. The area designated as VRM Class II would be more beneficial to visual resources because it would be managed for greater scenic quality protection, consistent with the visual resource inventory.

Alternative D would not designate Lockhart Basin as an ACEC. The area would be designated as VRM Class III, with the same impacts as those discussed under Alternative A because the management decisions are similar. Under this alternative, the area would be open for mineral leasing, subject to Standard and Timing and Controlled Surface Use lease stipulations. An estimated 25 natural gas exploration wells could be drilled within the Paradox Fold and Fault Bent during the lifetime of the RMP, with short-term and long-term impacts on visual resources as discussed under Alternative A.

4.3.18.3.2. INDIAN CREEK

Under Alternative A, the Indian Creek ACEC was visually inventoried and is currently designated as VRM Class I, with visual resource impacts similar to those discussed under Lockhart Basin Alternative B: the visual resource class objectives of preserving the existing character (and high scenic quality) of the landscape would limit impacts to visual resources to a very low level. Alternatives B, C, and E would also manage the proposed ACEC as VRM I, with negligible impacts to visual resources, comparable to Alternative A. Note that for Alternative E, approximately 3,887 acres designated as non-WSA lands with wilderness characteristics would be managed under VRM Class I objectives; however, the impacts to visual resources would not change as the proposed ACEC would be managed under VRM Class I management objectives through Alternative E special designation management decisions.

Management decisions under Alternative D would not designate Indian Creek as an ACEC. The area would be designated as VRM Class III, allowing moderate changes to the characteristic landscape from activities that attract attention but do not dominate the landscape, and with the objective of partially retaining the landscape's existing character. Portions of the area would be

open to mineral leasing under Timing stipulations, with minerals RFD in the Paradox Fold and Fault Belt the same as discussed under Alternative D for Lockhart Basin. The potential short-term and long-term impacts to visual resources would be similar to those discussed under Lockhart Basin, except that there would be no distinction between points of view looking down versus across the area of disturbance.

Compared to Alternative A, there would be more adverse, long-term impacts to visual resources under Alternative D within the Indian Creek area because a 1) a higher degree of surface disturbances and visual contrasts would be allowed under VRM Class III management objectives, and 2) the proposed VRM Class III objectives would permit scenic quality to be degraded to a greater level than indicated by the visual resource inventory Class I level for the area.

4.3.18.3.3. VALLEY OF THE GODS

Under Alternative A, the area proposed as the Valley of the Gods ACEC was visually inventoried and is designated as VRM Class I, with surface disturbance impacts required to be compatible with the very low degree of visual resource change allowed under this class objective. Valley of the Gods lies within the Monument Upward mineral resources survey area, and the predicted RFD average number of natural gas exploration wells within this survey area for this alternative during the lifetime of the proposed RMP would be 9 wells. Visual resource values are high in this area, and the Open minerals leasing category would require NSO stipulations. Any exceptions to these stipulations would require that visual mitigation measures reduce impacts to meet the current VRM I Class objectives. Thus, the impacts to visual resource values under this alternative would be negligible. The impacts under Alternatives B, C, and E would be the same as those discussed for Alternative A because the VRM Class I objectives would also be applied under these alternatives.

As noted above for Lockhart Basin regarding lands with non-WSA wilderness characteristics, the Valley of the Gods under Alternative E would contain approximately 20,743 acres of non-WSA lands with wilderness characteristics. However, as previously discussed, Special Designation Area management decisions would apply VRM Class I objectives to the area under Alternative E, so management of these VRM Class I non-WSA wilderness characteristics areas would not affect visual resource management because VRM Class I objectives would be applied to all of the proposed ACEC.

Under Alternative D, the Valley of the Gods area would not be designated as an ACEC and the VRM Class III designation and management objectives would be applied, as described under Lockhart Basin Alternatives C and D above. Under this alternative, the area would be open to mineral leasing with standard stipulations; however, as discussed above, the average predicted RFD of mineral resources would be 9 natural gas exploration wells within the Monument Upwarp minerals survey area for the lifetime of the proposed RMP. If mineral resource development was conducted within the Valley of the Gods area, the short-term and long-term impacts from mineral development would be similar to those discussed for Lockhart Basin Alternatives C and D, with the exception that there would be no distinction between points of view looking down versus across the area of disturbance.

4.3.18.4. SUMMARY OF IMPACTS

The visual resources analysis assumed that VRM Class I and II areas would receive the highest level of visual resources protection, and that VRM Class III and IV areas would receive less visual resources protection. So, VRM classes III and IV would allow more surface-disturbing impacts and potentially have greater adverse impacts on visual resources than those areas managed under VRM classes I and II. Table 2.2 of Chapter 2 shows the impacts to visual resources in terms of acreages affected for each alternative.

The impacts to visual resources within selected visually sensitive areas within the Monticello PA would be as follows.

4.3.18.4.1. LOCKHART BASIN

Under Alternative A the visual impacts from potential surface disturbances and visual intrusions would be moderately adverse in the long-term when viewed within and from areas surrounding the basin because of the current VRM Class III designation and management objectives for the area that would permit visible surface disturbances to and degradation of visual resources that have been inventoried as having VRM Class II scenic quality. Alternatives B and E would permit minor to negligible changes to visual quality under proposed VRM Class I designation and management objectives, thus retaining the existing scenic quality when viewed from within and from surrounding points of view. Alternatives C and D would designate and manage the area under VRM Class III objectives, which would allow moderate change to the characteristic landscape, with permitted changes to visual resources from potential oil and gas activities. The impacts to visual quality under Alternatives C and D would be the most adverse, when compared to Alternatives A, B, and E by permitting substantial visual quality degradation within an area of high scenic quality.

4.3.18.4.2. INDIAN CREEK

Under Alternative A, the visual resource class objectives of preserving the existing character (and high scenic quality) of the landscape would limit impacts to visual resources to a very low level. Alternatives B, C, and E would also designate the proposed ACEC as VRM Class I, with negligible to very minor impacts to visual resources, comparable to Alternative A. Alternative D would designate the area as VRM Class III Class, with management objectives that would allow moderate changes to the characteristic landscape, with a greater degree of permitted degradation of visual resources than the other alternatives.

4.3.18.4.3. VALLEY OF THE GODS

Under Alternative A, this highly scenic ACEC was visually inventoried and is designated as VRM Class I, with surface disturbance impacts required to be compatible with the very low degree of permitted visual resource change. Alternatives B, C, and E would have impacts similar to those for Alternative A because the VRM Class I designation and resource objectives would be applied under these alternatives. Alternative D would not designate the area as an ACEC and VRM Class III designation and class objectives would be applied, with permitted impacts to and potential degradation of the area's visual resources.

4.3.18.5. Mitigation Measures

Based on visual resource mitigation techniques described in BLM Manual H-8431-1, mitigation to minimize visual impacts resulting from facility development would include (but are not limited to):

- modifying facility design to reduce profile or height;
- applying appropriate coloring to facilities and structures as camouflage;
- planning and placement of roads and facilities to take advantage of local landscape features to hide these man-made features; and
- using local topography to hide surface-disturbing impacts or reduce visual contrasts.

All surface-disturbing activities would be subject to the VRM class objectives of the area where surface-disturbing activities would be proposed. The VRM visual contrast rating system would be used to assess the potential site-specific impacts of project surface disturbances, and to guide facility placement and facility design to mitigate the impacts to visual resources.

4.3.18.6. Unavoidable Adverse Impacts

Woodland harvesting, vegetation treatments for control of exotic species and fire management, the development of energy and communication sites, cross-country (open) OHV travel, and minerals resources exploration and development would likely cause short-term and long-term, unavoidable, adverse impacts on visual resources that would not be completely mitigated by camouflage coloring, facility placement or design, topographic screening of construction-related surface disturbance impacts or structures, or other site-specific visual resources mitigation techniques.

4.3.18.7. Short-term Use versus Long-term Productivity

Disturbance due to vegetation treatments for fire management, facility/campground construction, range improvements, mineral development and exotic species control would have short-term impacts on visual resources. However, some of these activities, such as vegetation treatments, exotic species control, and fire management would also have long-term, beneficial impacts on visual resources and scenic quality by reducing the potential for visual quality degradation from wildland fire, or by producing variations in vegetation communities that would create a more diverse (and a potentially more visually interesting) landscape. Accordingly, these short-term resource uses would not result in a loss in the long-term productivity of visual resources in the planning area.

The short-term impacts of exploratory well pad and associated access road construction would also likely cause a long-term loss or degradation of scenic quality in those areas where vegetation re-growth and establishment is slow or difficult. Additionally, the bulk of this development and its associated impacts to visual resources would remain during the life of the plan. However, the relatively small amount of predicted oil and gas drilling is unlikely to result in a loss of the long-term productivity of visual resources in the Monticello PA.

4.3.18.8. Irreversible and Irretrievable Impacts

Irreversible impacts to visual resources would be produced if visual resource-related cultural resources, such as pictographs, petroglyphs, and prehistoric and historic structures were damaged

or destroyed by other resource use activities (e.g., minerals exploration and development, recreation, OHV cross-country travel, fire management). However, substantial impacts of this type are unlikely due to the protection afforded these resources by Section 106 of the National Historic Preservation Act. Irretrievable impacts to visual resources would also be produced by surface disturbances such as mineral development, access road construction, facility construction, fire management, and vegetation treatments. This irretrievable loss would be most apparent in those areas of particular visual sensitivity noted above and under those alternatives that propose lower visual protections for those areas. The visual resources impacted by such developments would be irretrievably lost until those areas are rehabilitated or restored. However, because they can be restored, these impacts would not be irreversible.

4.3.19. WILDLIFE AND FISHERIES

This chapter provides the scientific and analytic basis for the comparisons of alternatives. The probable consequences of each alternative on wildlife resources are discussed in this section, beginning with impacts common to all alternatives and proceeding to a discussion of each alternative's impact on wildlife and fisheries resources. All acreages and percentages reported in this Wildlife and Fisheries section are approximations.

Table 4.199 summarizes where wildlife species are found in the Monticello PA by habitat type. These representative species were chosen for their high public interest, such as deer and elk, or because they represent an important ecological group, such as Neotropical birds. The Wildlife and Fisheries section in Chapter 3 (Section 3.20) explains the connection between specific habitat types and associated wildlife in more detail. The quantitative analyses in this section reflect impacts by habitat type, since the wildlife species in the PA are too numerous to analyze for individual species.

Table 4.199. Grouping of Wildlife Species by Native Habitat Type

Vegetation/ Habitat Type	Wildlife Associations
Aquatic*	Amphibians, fish.
Cliff/Rock*	Raptors, desert bighorn sheep, reptiles.
Conifer/Mountain shrub	Mule deer, elk, mountain lion, black bear (primarily old growth), neotropical birds, upland game birds, reptiles.
Desert scrub	Pronghorn, desert bighorn sheep, elk (winter), raptors, neotropical birds, upland game birds, reptiles.
Pinyon-juniper	Mule deer, elk, pronghorn, mountain lion, neotropical birds, upland game birds, reptiles.
Riparian/Wetland*	Mule deer, elk, mountain lion, neotropical birds, upland game birds, amphibian and fish species, reptiles.
Sagebrush/Perennial grass	Mule deer, elk, mountain lion, neotropical birds, upland game birds, reptiles.

* Aquatic and Cliff / Rock habitats are not generally discussed in subsequent analyses. Most impacts to wildlife species are terrestrially-based, and there are only a few acres of cliff/rock habitat in the Monticello PA.

4.3.19.1. Impacts Common to All Alternatives

Under all alternatives, the BLM would continue to cooperate with the UDWR to benefit native and naturalized fish and wildlife species in the long term by introducing, transplanting, augmenting, or reintroducing the species to historic or suitable ranges. Wildlife would benefit from guzzler installation and/or spring development in areas lacking proper water distribution or natural water sources. Habitat objectives would be considered in all reclamation activities, and priority given to meeting Standards for Healthy Rangelands (BLM 1997). The BLM would continue to allot 17,300 acres to wildlife, which would include parts of the slopes of Peter's Canyon and East Canyon. In addition, BLM would adhere to fence standards to allow wildlife movement when fences are being developed or maintained and adhere to BLM Habitat Management Guidelines for the American Pronghorn Antelope (BLM 1981 as revised). Predator management would continue to be coordinated with APHIS-Wildlife Services and UDWR under the existing MOU with APHIS-Wildlife Services.

In seasonal wildlife protection areas wildlife would benefit from special conditions regulating use during certain seasons. These special conditions would not affect maintenance and operation activities for mineral production or hunting during recognized hunting seasons.

Most of the acreages listed describe areas to be protected with timing stipulations. These protections will benefit the four big game species for which the protections are designed by reducing surface disturbance and other human-related disturbances; they will also benefit other wildlife species such as birds, small mammals, and reptiles that use the same habitats.

Under all alternatives, protections for deer and elk habitat occur primarily in sagebrush/perennial grass and pinyon-juniper woodlands, while those in pronghorn habitat occur primarily in desert shrubland. Land protected for desert bighorn is dominated by both desert shrub and pinyon-juniper woodland. Therefore, wildlife species that occur in sagebrush perennial grass, pinyon-juniper, and desert shrub habitats (see Table 4.199 at the beginning of this section) would be likely to benefit most from the special protection of big game habitats.

The BLM would pursue appropriate NRHP designation of eligible sites under current policy and guidelines as management decisions for cultural resources under all alternatives. New field inventories would be identified based upon probability for unrecorded significant cultural resources. In all land and resource use authorizations, the BLM would comply with Section 106 of the NHPA, the Native American Graves Protection and Repatriation Act (NAGPRA), and other federal and state laws specific to cultural resource management. In so doing BLM would consult with the State Historic Preservation Officer (SHPO), Tribes, and other interested parties. Any impacts to NRHP-eligible cultural resources would be mitigated. Sites, structures, objects, and traditional use areas that are important to Tribes would be protected to maintain the viewshed, intrinsic values, and the auditory, visual, and esthetic settings of the resources. Finally, since McLoyd Canyon-Moon House CSMA and Grand Gulch National Historic District are within WSAs these areas would be managed under the IMP though management prescriptions for cultural resource protection vary between alternatives. All these management decisions would have long-term beneficial impacts on wildlife since they generally result in avoidance or mitigation of surface-disturbing activities in potential habitat. Impacts common to all alternatives

related to the Cedar Mesa Cultural SRMA are discussed in Section 4.3.19.2.6 Impacts of Recreation Decisions on Wildlife and Fisheries.

The following lands and realty decisions would impact wildlife and fisheries in the Monticello PA: access, easements, leases and permits, utility/transportation systems, exchanges, disposals, and withdrawals. The Monticello FO AMS Chapter 7 contains a complete list of common realty issues the Monticello FO can expect (BLM 2005c). Under all alternatives, lands adjacent to Recapture Lake and land for two water treatment facilities and two airports would be identified for disposal in the Monticello PA. Total acreage of the land disposal would be approximately 8,879 acres. Because of the proposed uses of the areas identified for disposal, there is the potential for adverse impacts on wildlife resources on these lands due to loss of habitat. These adverse impacts would be reduced by required revegetation and/or minimization of surface disturbance in sensitive habitats. In addition, this disposal would lead to the potential acquisition of sensitive species habitat and relict vegetation areas as part of the exchange program, which would decrease the magnitude of the adverse impacts associated with the loss of native habitat in the Monticello PA. The implementation of the lands and realty program would have both short- and long-term adverse impacts on wildlife resources in the Monticello PA due to the surface-disturbing activities associated with land and realty decisions. Some adverse impacts would be reduced because of the many withdrawals and excluded areas that help preserve and protect sensitive environmental resources and areas. Other protection measures that would help to reduce the adverse impacts of this program on wildlife resources would include the acquisition and retention of any TES habitat, quality riparian areas, and key productive ecosystems.

Applications for lands and realty-related filming permits would have to meet the following criteria for approval: no impact to sensitive species habitat, no use of exotic species, no use of pyrotechnics or explosives, no more than temporary impacts to land, air, and water, and no adverse impact on relict environments or riparian areas. Applications for filming permits for acitivities in WSAs, WSR corridors, NRHP-eligible sites, and Native American sacred sites would have to meet additional criteria for approval (no significant use of livestock and a maximum of 15 vehicles and 75 people in the sensitive area). The increased human traffic, with attendant trampling of habitat and vegetation removal associated with filming operations could result in short- and long-term adverse impacts on vegetation resources and consequently, wildlife habitat. Filming operations also result in noise and visual disturbance to wildlife from the presence of humans. Adverse impacts would be reduced by adherence to the minimum impact criteria listed above.

For all alternatives' impacts from lands and realty decisions, Monticello FO AMS Chapter 7 contains a list of ACECs and SRMAs closed to ROWs in the Monticello PA. These closures would benefit wildlife by reducing human traffic and habitat disturbance. However, all areas not identified as avoidance or exclusion would be available for ROWs and could be subject to multiple-use terms on a case-by-case determination (BLM 2005c). The use of ROWs for utility and communication infrastructure could have direct, short- and long-term adverse impacts on wildlife due to loss of habitat, habitat fragmentation, and short-term human disturbance during construction activities.

Under all alternatives, livestock grazing would be managed according to the Guidelines for Grazing Management to achieve the Standards for Rangeland Health, which would benefit wildlife by maintaining or restoring the proper functioning condition (PFC) of riparian and

wetland wildlife habitat, maintaining desired species (including native and special status species) at a level appropriate to the site and conditions, and maintaining or improving aquatic habitat by ensuring that all state and federal water quality standards are met. Grazing would continue to be unavailable on 125,356 acres (specific areas identified in Table 2.1) and 17,300 acres in Peter's Canyon and East Canyon would continue to be allotted to wildlife. Management decisions common to all alternatives would make livestock grazing unavailable on certain allotments, directly benefiting big game by making more forage available. Alternatives that make fewer areas unavailable to livestock grazing would expose big game to the adverse impacts of competition for forage and cover. Livestock grazing in riparian areas could have adverse impacts on riparian-associated wildlife species (see Table 4.199). Direct adverse impacts would include competition with wildlife for forage, and possible trampling of individual animals or nests. Indirect adverse impacts of livestock use of riparian areas include an increased susceptibility to invasion by noxious weeds, which reduce the value of forage, and reduction of cover species for sensitive wildlife (Popolizio et al. 1994; Kauffman et al. 1983; Sarr et al. 1996). Bird species that rely on native riparian trees for nesting and roosting sites and protection from predators would be adversely affected by the replacement of native vegetation with introduced species (Saab et al. 1995). Fish, amphibian, and other aquatic species would be adversely impacted if improper livestock grazing caused erosion in saline soils. This would contribute to increased salinity in surface waters in the Monticello PA, which could modify species composition within an ecosystem (Galindo-Bect and Glenn 1999; Hart et al. 1998) and cause mortality of freshwater species (Nelson and Flickinger 1992). Sedimentation can have similarly adverse impacts. Soil compaction due to grazing in riparian areas would result in less rainwater infiltration into soils and more overland flow. The result would be large, short-lived flows rather than small, perennial flows (Trimble and Mendel 1995). This would reduce the duration of seasonal water availability for a wide range of wildlife species.

Under all alternatives adverse long-term impacts from minerals decisions on wildlife and their habitats would include habitat loss and fragmentation and subsequent occupation of areas for oil and gas well pads, open pit mines, and associated roads and infrastructure. These long-term impacts would also result in wildlife avoidance of these areas, reducing their value as habitat. Many species of wildlife avoid areas with high or inconsistent levels of noise, roads with frequent automobile/truck traffic, areas that are brightly lit at night, and areas surrounding human-built structures. Adverse short-term impacts include degradation resulting from the removal of vegetation (surface disturbance) and wildlife avoidance of disturbed areas. Surface disturbance would also increase the potential for invasion of undesirable plant species, including noxious weeds (Piemeisel 1951). The loss of native vegetation would result in long-term adverse impacts on wildlife by decreasing the amount of available habitat and degrading existing habitat. Wildlife species that use pinyon-juniper habitat would likely be the most heavily impacted by surface disturbance and related impacts due to oil and gas well development since pinyon-juniper habitat is the most common habitat type in the Monticello PA. Wildlife species that use desert scrub would likely be the next most heavily impacted by surface disturbance related impacts since desert scrub is the next most common habitat type in the Monticello PA (see Table 4.200).

Table 4.200. Percentages of Vegetation/Habitat Types that Occur in the Monticello PA

Vegetation Types	Monticello PA
Agriculture	0.3%
Conifer and Mountain Shrub	0.6%
Desert Scrub	23.6%
Developed	0.0%*
Disturbed	0.4%
Invasive Species / Noxious Weeds	0.2%
Pinyon-Juniper	64.3%
Riparian / Wetland	1.2%
Sagebrush / Perennial Grasslands	9.3%
Water	0.1%
Total	**100.0%**

*Values have been rounded to the nearest tenth of a percent. A value of 0.0% does not necessarily indicate that there are no acres of that vegetation type on the land – only that they are less than 0.1% of the total acres.

Adverse impacts of minerals decisions on wildlife resources would be reduced by the implementation of BMPs outlined in Section 2.1 and Appendix O. These include NSO stipulations in riparian habitat, required revegetation of oil and gas well sites upon project completion, and land management decisions that meet or move toward meeting Utah's Standards for Rangeland Health. In addition, the implementation of BMPs for the benefit of wildlife and their habitats (e.g., centralization of drill rigs and storage tanks, reduction of the number of access roads, and interim and final reclamation practices) would also reduce some of the short- and long-term adverse impacts listed above. Interim reclamation occurs during the operational phase of a project and consists of revegetating all areas surrounding wells and roads that are not actively used during oil or gas production. Final reclamation occurs when a well has been decommissioned and includes the practices of recontouring soil surfaces to match surrounding landforms, replacing topsoil, and reseeding with native plant species. The number of years required for successful final reclamation would depend on the habitat type; grasslands recover more quickly than sagebrush or desert shrub, which recover more quickly than forested areas such as pinyon-juniper or conifer habitat. A commonly used average value and goal for reclamation across the project is 10 years. Following the successful reclamation of a well site or road, the long-term adverse impacts to wildlife species would be largely eliminated.

The amount of land that is open to oil and gas leasing or other mineral use is not necessarily indicative of the number of acres that will be directly disturbed. Areas managed under Standard or Timing and/or Controlled Surface Use stipulations allow minerals development, but all of those acres would not be subjected to surface disturbance. Areas categorized as NSO or Closed exclude all surface-disturbing minerals development. Riparian and wetland habitat, lands with a slope greater than 40%, and VRM Class I areas have been excluded from analysis because they have been assigned the leasing category of NSO, which excludes them from all surface disturbance. The impacts of minerals decisions are analyzed for the entire Monticello PA rather than for each individual RFD area for the purposes of comparison. Impacts may be concentrated in particular RFD areas, however. Depending on the distribution of wildlife habitat across

particular RFD areas with high levels of disturbance, the amount of particular habitats disturbed may not match the composition of vegetation in the Monticello PA. The Blanding Sub-basin and Paradox Fold and Fault Belt RFD areas are projected to experience the greatest minerals development-related disturbances, and therefore impacts to wildlife and their habitat. These RFD areas contain predominantly pinyon-juniper habitat with desert scrub habitat as the second most common habitat. Of the three oil and gas development areas within the Monticello PA, wildlife habitat in the Blanding Sub-basin RFD area is expected to be most intensely impacted by minerals decisions because it has the highest predicted levels of oil and gas well development (41 wells over the life of the RMP under Alternative A). Site-specific analysis would be necessary to determine the exact impacts to wildlife from oil and gas development.

Under all alternatives the primary impacts of recreation on wildlife would include surface disturbance of wildlife habitat by vehicles and non-motorized recreationists, the introduction and spread of noxious weeds, and direct mortality through wildlife collisions with motor vehicles, and crushing of eggs or nests. In addition, many wildlife species (birds in particular) are sensitive to traffic and other human-caused noise. Traffic noise has been shown to directly interfere with bird vocal communication, which affects territorial behavior and mating success (Reijnen and Foppen 1994). Increased road traffic also increases the risk of direct mortality of wildlife species due to vehicle impacts; carrion-eating raptors and mule deer attempting to cross roads are especially vulnerable. Where designated, Special Recreation Management Areas (SRMAs) would reduce adverse impacts on wildlife by restricting recreation and reducing dispersed recreational activities in some habitat areas. In general, the impact of recreation decisions on wildlife and fisheries are expected to be minimal since areas used by recreationists are generally previously disturbed and recreationists are limited to and have a tendency to use established routes. Also, adverse impacts of recreation decisions would be partially mitigated by the required reclamation of disturbed areas to meet the Utah Standards for Public Land Health and Guidelines for Recreation Management and protective measures outlined for federally listed species under Impacts Common to All Alternatives. In addition, careful recreation management through decisions on woodland harvesting and gathering, permit number limits, camping and travel controls, implementation of fees, alternation of when use takes place, group size limits, pet regulations, designated camping sites, and other similar decisions would help to mitigate some impacts.

Though the Comprehensive Travel Plan and OHV Area Designations are discussed under Recreation (Table 2.1) the impacts of recreation decisions on wildlife and fisheries resources are discussed in Section 4.3.19.2.11 Impacts of Travel Management Decisions on Wildlife and Fisheries. The impacts of general policy for issuance and management of Special Recreation Permits (SRPs) are not discussed as these impacts would be negligible. The impacts of recreation decisions dealing with the ERMA also are not discussed. Assuming that recreationists in the ERMA use established routes and either camp in previously disturbed areas only or stay within 150–300 feet of these routes (as specified under each alternative) the difference between alternatives in terms of the impacts of recreation decisions on wildlife and fisheries would be negligible. The impacts of recreation decisions regarding SRMAs are discussed below.

Under all alternatives, riparian areas would be managed as NSO for oil and gas leasing. They would be open to mineral entry and disposal of mineral materials, but not in active floodplains or within 100 meters of riparian areas. Woodland product collection would be prohibited in all riparian areas. In addition, the Utah Standards for Rangeland Health and Guidelines for Grazing

and Recreation would be followed to achieve proper functioning condition (PFC). The BLM would avoid degradation of habitats that could result in the loss of riparian vegetation, and would implement the Southwestern Willow Flycatcher (SWFL) Recovery Plan where appropriate. These restrictions would decrease the intensity of surface disturbance in riparian habitat, which would benefit wildlife species that are found in riparian areas in the Monticello PA. However, because livestock grazing would be allowed in riparian areas under all alternatives, there would be some direct and indirect adverse impacts to riparian-dependent wildlife resulting from trampling and knocking nests out of shrubs and trees, and impacts to riparian vegetation, soils, and water quality. Improper livestock grazing has been shown to have adverse impacts on riparian ecosystems (Armour et al. 1994) and it may be necessary to remove livestock from an area if it is determined that the site is "Functioning at Risk."

Soils and watershed decisions under all of the alternatives would comply with Utah's Standards for Rangeland Health and Guidelines for Grazing and Recreation. In addition, all floodplains and riparian/wetlands would be managed in accordance with Executive Order 11988, which would protect the quality of stream water and federally listed species habitat. Uses in the Monticello PA would be managed to minimize and mitigate damage to soils, and activities located in areas with sensitive soils would be subject to site-specific NEPA analysis. These restrictions would decrease the number of acres in the Monticello PA subject to the adverse impacts of surface-disturbing activities on wildlife habitats, including surface water contamination and sedimentation by runoff from disturbed soils.

For impacts common to special designation areas under all alternatives, special designation areas, such as ACECs, WSRs, and WSAs would generally have long-term beneficial impacts on the wildlife and fisheries that occur within their boundaries by limiting or preventing surface disturbance, human activities, and associated habitat degradation and fragmentation. Possible adverse impacts to wildlife that are associated with special designations decisions include restrictions on or the exclusion of habitat improvements, watershed improvements, and vegetation treatments in wildlife habitats included within ACECs, WSRs, or WSAs. The restriction of these decisions could adversely impact wildfire prevention practices (e.g., by preventing the thinning of young, fire-ladder trees) or the adversely affect the ability to provide high value forage in a steep part of an eroding watershed. These restrictions could also potentially prevent the effective management of an area for wildlife habitat (e.g., preventing the encroachment of pinyon-juniper forest on sagebrush or grassland habitat). However, not all vegetation treatments would be beneficial to all wildlife species, as some species prefer woodlands while others depend on more open habitat for their survival. So, the exclusion of vegetation treatments in special designations areas would benefit some wildlife and adversely affect others. ACECs designated specifically to protect wildlife and vegetation would directly benefit wildlife species and their habitats. ACECs designated to preserve historic, cultural, and scenic values (as opposed to wildlife or vegetation) would indirectly benefit wildlife by limiting human and surface disturbance, preserving habitat or preventing noise. All ACECs are assumed to be beneficial to wildlife. Like ACECs, WSAs are assumed to beneficially impact wildlife resources through focused management. Under all alternatives, WSAs would be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (IMP), and are designated as VRM Class I. Also, 2,155 acres of non-WSA lands with wilderness characteristics contiguous to the Butler Wash WSA would be managed so as to maintain their wilderness values. Where ACECs overlap WSAs, WSA management would take precedence.

The designation of a river as suitable for WSR status would beneficially impact wildlife that utilize habitats directly associated with the river (e.g., riparian, wetlands, open water) by mandating the protection of the river's "free-flowing character" and applying an NSO stipulation within 1/4 mile of the river.

For impacts common to all alternatives pertaining to special status species decisions, no activities would be permitted on public lands that would jeopardize the continued existence of plant or animal species that are listed, officially proposed, or candidates for listing as Threatened and Endangered (T&E). The BLM would commit to current and future conservation agreements, management plans, and recovery plans specific to T&E and BLM Sensitive Species, as described in Table 2.1. Although meant to protect and conserve special status species, the decisions would also benefit other wildlife species that share habitat with the targeted special-status species.

Under all travel alternatives, non-mechanized travel would be limited to designated routes and would continue to be managed under the 1991 San Juan RMP and under closure and restriction notices published in the Federal Register. Also under all alternatives, three National Scenic Byways and three National Scenic Backways would be established (Table 2.1). These management prescriptions are not likely to result in appreciable impacts on wildlife or wildlife habitat since they are existing routes already in use.

Under vegetation decisions impacts common to all alternatives, seed gathering and plant collection would be allowed in all areas meeting Utah's Rangeland Health Standards. This could have short-term, direct, adverse impacts on wildlife species and habitat due to trampling and human disturbance during collection activities, and in some cases depletion of food sources for some species. The spread of noxious, invasive, and non-native weed species would be controlled through implementation of the BLM weed management policies and action plans and by requiring pack stock and riding stock users to use certified weed-free feed. Restoration/rehabilitation activities would also be required to use certified weed-free seed mixes, mulch, fill, etc. Actions taken to help slow/stop the spread of weeds in the Monticello PA would help reduce the adverse impacts of surface disturbance associated with stock use, oil and gas development, and other activities that result in an adverse alteration of wildlife habitat. Sagebrush habitat would be managed under the Sage Grouse Habitat Conservation Strategy (BLM 2004d), which would have long-term beneficial impacts on wildlife species that utilize sagebrush habitat (Monsen 2004).

Under all alternatives for decisions related to visual resources, lands in the Monticello PA would be managed under one of four visual resource management classes (described in Section 3.18). All WSAs would be designated and managed as VRM Class I. Limited and very limited management activities would be allowed in these areas including non-mechanized short-term vegetation treatments and other surface-disturbing activities designed to enhance wildlife habitat. Similar restrictions on surface disturbances apply in designated VRM Class II areas. These types of disturbances could have minor short-term adverse impacts on wildlife habitats due to human traffic and temporary habitat disruption, but in the long-term these impacts benefit wildlife. Some areas that are classified as VRM Class I or II may be late succession areas with a monoculture of plant species. Not allowing vegetation treatments in these areas would have a long-term adverse impact on some wildlife species that benefit from a mid-succession habitat type with more understory or varying types of plant species. In areas designated as VRM Class III or IV, changes to the landscape could be moderate or high. Most types of vegetation

treatments and other surface-disturbing activities would be allowed in these areas. These types of disturbances could have long-term adverse or beneficial impacts on wildlife habitats in the Monticello PA, depending on the extent or type of treatment.

Under all alternatives for woodlands, the Healthy Forest Initiative and the Healthy Forest Restoration Act of 2003 would be implemented. In addition, National BLM Forest Health and Forest Management Guidelines would be followed. These decisions would partially mitigate the adverse impacts of woodland harvesting on wildlife species and their habitats in areas of the Monticello PA open to wood harvesting. Woodland treatments would be prioritized in high value/high risk areas including FRCC III, Wildland Urban Interface (WUI), and developed recreation facilities. These projects would allow for harvest of woodland products. Further, live woodland harvest would be allowed in areas with pinyon pine and juniper encroachment with a focus on creating sagebrush steppe communities. This action would result in short-term adverse impacts on mule deer and elk summer habitats due to temporary human disturbances, but in creating sagebrush steppe communities, it would have long-term beneficial impacts on mule deer and elk winter habitats. Finally, all non-WSA lands with wilderness characteristics would be closed to woodland product use, with long term beneficial impacts on habitat from reduced human disturbance.

Under all alternatives adherence to the Migratory Treaty Bird Act and Executive Order 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds" would have beneficial impacts on migratory birds including priority species identified on the current USFWS Birds of Conservation Concern list (2002 and as updated) and the Partners-in-Flight priority species list (as updated). The use of adaptive management strategies would more effectively conserve habitat and avoid impacts to these species. Avoidance of surface-disturbing activities and vegetation-altering projects, including broad-scale use of pesticides, during nesting season (May 1-July 30) would reduce adverse impacts on birds and their nesting habitats in the Monticello PA in the short-term. In the long-term vegetation-altering projects may improve habitat by providing more food sources and/or cover for birds or by helping to reduce fire risk. Further, the prioritization of habitat types most commonly used by migratory birds (lowland riparian, wetlands, and low and high desert shrub) for maintenance and improvement would increase the availability of high-quality habitat and reduce the adverse impacts of invasive plants (e.g., cheatgrass, tamarisk, Russian olive). Finally, in the Coordinated Implementation Plan for Bird Conservation in Utah, several Bird Habitat Conservation Areas were identified that would receive priority bird habitat conservation projects through cooperative funding initiatives that would benefit bird species (Martinsen et al. 2005).

Under all alternatives raptors would benefit from the use of "Best Management Practices for Raptors and Their Associated Habitats in Utah" (BLM 2006c; see also Appendix M) and from adherence to USFWS Guidelines for Raptor Management. Seasonal and spatial buffers, as well as mitigation, would be used to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses. BLM would also cooperate with utility companies, UDWR, and USFWS to prevent raptor electrocution, and close areas near raptor nests to recreational and other activities if those activities might result in nest abandonment.

Under all alternatives bighorn sheep would benefit primarily from prioritized habitat improvement projects on the five mesa tops (56,740 acres) within crucial habitat where potential conflict occurs between bighorn sheep and surface-disturbing activities. Further, livestock

grazing and associated range improvement projects would not be allowed in these areas and mitigation to replace lost forage would be required for projects that disturb or remove forage and browse species used by bighorn sheep. Domestic sheep would not be allowed to replace cattle in crucial bighorn habitat to prevent disease transmission and competition for forage. Bighorn sheep would benefit from BLM adherence to the recommendations of the BLM Bighorn Sheep Rangeland Management Plan (BLM 1993b, as revised) and the 1996 (as revised) Utah BLM Statewide Desert Bighorn Sheep Management Plan.

4.3.19.2. Impacts Common to All Action Alternatives

Management decisions for all action alternatives for cultural resources would implement specific plans, Cultural Resource Management Plans (CRMPs), and a plan for the Cedar Mesa Cultural SRMA (discussed in Section 4.3.19.2.6, Impacts of Recreation Decisions on Wildlife and Fisheries) would be developed. These plans would include protective measures; Native American consultation; regulatory compliance; cultural monitoring systems; identification of sites needing stabilization and protective measures; development of research designs; designation of sites for interpretive/educational development; identification of areas for cultural inventory; and development of specific mitigation measures. Plans would also designate sites, districts, landmarks, and landscapes that would be nominated for inclusion on the NRHP. These management efforts would result in beneficial long-term impacts on wildlife as they would help prevent disturbance-causing activities.

Also under all cultural resources action alternatives, BLM would: proactively manage wildlife risk around susceptible archaeological and cultural sites, reduce or eliminate threats from natural or human-caused deterioration or conflict with other resource use, and promote collaborative partnerships to help meet management goals and objectives for cultural resources. Further, identified at-risk cultural properties would be off limits to visitors with pets, climbing aids would be prohibited for access to ruins/cultural sites (except for emergencies or administrative needs), and cultural sites may be closed to visitation if they are at risk or pose visitor safety hazards.

Under all action alternatives decisions for lands and realty, new avoidance and exclusion areas and transportation and utility corridors would be established (see Table 2.1). Avoidance and exclusion areas would have a long-term beneficial impact on wildlife by preventing surface disturbance in these areas. Transportation and utility corridors, on the other hand, would have short- and long-term adverse impacts on wildlife by allowing surface disturbance, associated noise and disruption during surface-disturbing activities, and from habitat fragmentation.

Under all action alternatives, livestock grazing season of use changes would be implemented on several allotments (specific areas are identified in Table 2.1) throughout the Monticello PA. Also, desired utilization levels for key forage species would be identified, as needed, to achieve desired future conditions (DFC). In areas where utilization levels are not established, the level of use would be consumption of 50% of the current year's forage production.

Recreation decisions, under all action alternatives, would not allow camping within 200 feet of springs, Benefits Based Management (BBM) goals would be in effect for each SRMA, and selected recreation sites would be developed or improved on a prioritized basis (see Table 2.1). Further, all SRMAs would be designated as *special areas* under the Land and Water Conservation Fund definition, which could translate into permit requirements and fee payments for use of these areas. Long-term, beneficial impacts to wildlife would result from each of these

decisions from habitat preservation, except the recreation site development and improvements decisions, whereby further surface disturbance and loss of habitat would be expected from development and use of these sites.

Under all action alternatives for special designation areas, cultural resource management plans would be written for Alkali Ridge, Cedar Mesa, Hovenweep, and Shay Canyon ACECs. These management plans would result in long-term benefits to wildlife since they would focus on protection of the cultural resources in these areas resulting in additional protection of wildlife resources by avoidance of surface disturbance and other disrupting activities.

Under all action alternatives for travel, designated routes would be categorized for type of travel and adjustments to these categories would be made based on recreational demand and potential conflict. Impacts of adjustments would be analyzed and disclosed on the activity planning level. All non-motorized travel would be allowed on designated routes, and OHV travel would be allowed on the same routes unless otherwise designated. Routes in riparian areas classified as Functioning At Risk would be closed based on site-specific analysis of OHV impacts. A number of trails (Table 2.1) would be managed for non-mechanized use including foot travel, stock overnight use, and stock day use. These management prescriptions are likely to result in minor impacts to wildlife or wildlife habitat because they pertain to existing routes already in use.

Under vegetation action alternatives, 30,000 to 50,000 acres of vegetation treatments in FRCC III areas would occur over a 15-year period. Certain sagebrush communities (Table 2.1) would be prioritized for treatment. These treatments would have short-term adverse impacts on wildlife by removing forage and cover and by causing noise and other human disturbance during treatment activities, but long-term beneficial impacts on wildlife by re-establishing the historic fire regime in treated areas. Also under all action alternatives, greasewood would be removed in a number of areas (Table 2.1), which would have short-term adverse impacts on wildlife habitats in the treatment areas, but long-term beneficial impacts as a whole by removing undesirable, non-native plant species, and allowing the establishment of a diverse native vegetation community.

For visual resources, areas open to oil and gas leasing would be managed as VRM Class III or IV. Wild and scenic segments of WSRs would be managed as VRM Class I and II, respectively, while recreation segments would be managed under the same VRM Class as the surrounding lands.

Under all action alternatives for woodlands, numerous sites (listed in Table 2.1) would be excluded from woodland harvesting except for limited onsite collection of dead wood for campfires. These exclusions would mitigate the adverse impacts of woodland product use on wildlife resources in areas of the Monticello PA open to woodland harvesting (see alternative analysis below for a discussion of these adverse impacts).

4.3.19.3. Alternatives Impacts

Impacts varying between alternatives would primarily result from varying temporal and spatial restrictions on oil and gas leasing activities, geophysical work, and permitted or commercial OHV use in BLM designated wildlife habitats. These protections would benefit big game species by reducing surface disturbance and other human-related disturbances in critical locations and during critical times of the year. They would also benefit other wildlife species such as birds, small mammals, and reptiles that use the same habitats for the same reasons.

Management decisions related to air quality, health and safety, and paleontology would have a negligible impact on wildlife and fisheries and are excluded from the following analyses. The impacts would be negligible because protecting air quality by monitoring and maintaining constituent pollutants within established air quality standards, protecting public health and safety by reclaiming AML sites and managing hazardous materials within the PA, and allowing recreational and scientific fossil collecting would not affect wildlife species habitat protection and/or management.

4.3.19.3.1. ALTERNATIVE A

Under Alternative A varying acreages of crucial habitat would be closed to oil and gas leasing activities, geophysical work, and OHV use during certain times of the year for mule deer, pronghorn, and desert bighorn sheep (Table 4.201; Maps 65 and 73). These decisions would benefit these species by preventing disturbance in crucial habitat during critical use periods. For mule deer and desert bighorn sheep, portions of crucial habitat fall within ROS P-Class (recreation primitive areas) or SPNM-Class (semi-primitive non-motorized recreation areas) designated areas, which impose stricter conditions that take precedence over the temporal closures described. These conditions would benefit these species by further restricting surface-disturbing activities in crucial habitat. Additional measures affecting each species are discussed on a species by species basis below. Overall, Alternative A would provide the least amount of wildlife habitat subject to special wildlife conditions (540,260 acres) and therefore would benefit wildlife and fisheries the least.

Table 4.201. Acreage Closed and Season of Closure for Mule Deer, Elk, Pronghorn, and Desert Bighorn Sheep By Alternative

Species	Special Conditions	Alternatives				
		A	B	C	D	E
Mule Deer	Acres Closed	197,550	785,921	266,406	182,315	785,921
	Timing	12/15-4/30	11/1-5/15	11/15-4/15	12/1-4/15	11/1-5/15
	Days Closed	137	196	152	136	196
Elk	Acres Closed	N/A	191,173	97,471	62,484	191,173
	Timing	N/A	11/1-5/15	11/15-4/15	12/1-4-15	11/1-5/15
	Days Closed	N/A	196	152	136	196
Pronghorn	Acres Closed	12,960	29,365	29,365	13,961	29,365
	Timing	5/15-6/15	5/1-6/15	5/1-6/15	5/1-6/15	5/1-6/15
	Days Closed	32	46	46	46	46
Desert Bighorn Sheep	Acres Closed[1]	329,750	453,388	453,390	299,009	453,388
	Timing	a. 4/1-7/15 b. 10/15-12/31	a. 4/1-7/15 b. 10/15-12/31	a. 4/1-6/15 b. 10/15-12/15	a. 4/1-6/15 b. 10/15-12/15	a. 4/1-7/15 b. 10/15-12/31
	Days Closed	a. 106 b. 78	a. 106 b. 78	a. 76 b. 62	a. 76 b. 62	a. 106 b. 78

1 The letter “a” denotes the acreage and timing for lambing and the letter “b” is for rutting.

4.3.19.3.1.1. Mule Deer

Proposed land treatments would be considered on a case-by-case determination on approximately 9,800 acres of sagebrush parks within crucial deer winter range. These sagebrush parks have been identified as providing a concentrated food source for wintering deer and land treatments in these areas would benefit deer by maintaining this food source.

4.3.19.3.1.2. Elk

Under Alternative A no crucial elk habitat is identified. Excluding elk habitat considerations from management decisions would have an adverse impact on elk since there would be no consideration given to the species' minimum requirements for healthy herds and individuals.

4.3.19.3.1.3. Desert Bighorn Sheep

Under Alternative A competition for forage and transmission of disease from domestic to wild sheep would be prevented by denying changes in kind of livestock from cattle to sheep in crucial desert bighorn sheep habitat. Desert bighorn sheep would benefit from these measures through increased forage and decreased incidence of disease within the population.

4.3.19.3.2. ALTERNATIVES B AND E

Under Alternatives B and E seasonal wildlife protection areas would have special conditions for all land use activities except woodland harvest. All seasonal wildlife protection areas would be closed to oil and gas leasing activities, geophysical work, permitted or commercial OHV use, and low-flying aircraft during the established season. Noise impacts from pyrotechnics, shooting and similar activities during permitted filming would also not be allowed. Acreages subject to these special conditions vary by species, as do seasons of closure (see Table 4.201; Maps 66 and 74). All species would benefit from special conditions by protecting habitat during critical use periods. Additional measures affecting pronghorn are further discussed below. Total acreage subject to special wildlife conditions would be greater under Alternatives B and E than under Alternative A (Table 4.202).

Table 4.202. Total Acres Subject to Special Wildlife Conditions by Alternative

	Alternatives				
	A	B	C	D	E
Acres	540,260	1,459,847	808,637 and 846,632	557,769	1,459,847

4.3.19.3.2.1. Mule Deer

Alternatives B and E would have more beneficial impacts on mule deer than Alternative A because of greater forage availability given the expanded seasonal wildlife protection area and the lengthened season of closure. The length of timing stipulations are of particular importance because mule deer migration timing may vary each season due to weather severity and seasonal changes in the energy needs of the animal (Garrott et al. 1987).

4.3.19.3.2.2. Elk

Alternatives B and E would have greater beneficial impacts on elk than Alternative A because Alternatives B and E establish seasonal wildlife protection areas and timing stipulations for elk whereas Alternative A contains no prescriptions for elk.

4.3.19.3.2.3. Pronghorn

Alternatives B and E would be more beneficial to pronghorn than Alternative A since the seasonal protection area for pronghorn would be more than doubled under this alternative. Also, the pronghorn timing stipulations are lengthened by 14 days, a 43.75% increase, over the stipulations under Alternative A, benefiting pronghorn during fawning season. Additionally, spring grazing (April 15 – June 15) would be eliminated in the Mail Station, Upper Mail Station, Dry Valley/Deer Neck, Lone Cedar, Tank Draw, and Hart Draw grazing allotments within pronghorn habitat. This would benefit pronghorn by increasing available coverage for new born fawns in these areas and providing more forage for pregnant and lactating females, thereby increasing fawn survival.

4.3.19.3.2.4. Desert Bighorn Sheep

Alternatives B and E would have greater beneficial impacts on desert bighorn sheep than Alternative A by expanding the seasonal wildlife protection area for desert bighorn sheep thereby allowing more area for foraging, reducing habitat fragmentation caused by disturbance and reducing disturbance to sheep and lambs during the sensitive times of their life cycles. These alternatives would also provide more food for pregnant and lactating females, which would be expected to increase recruitment. Singer et al. (2001) concluded that management with goals to restore or increase bighorn sheep populations should focus on large habitat patches located at least 23 km from domestic sheep herds. By adding acreage to the bighorn seasonal wildlife protection area Alternatives B and E are consistent with this conclusion.

4.3.19.3.3. ALTERNATIVE C

Alternative C is the same as Alternatives B and E except that Alternative C allows for a limited number of permitted or commercial OHV users. Permitted or commercial OHV use in seasonal wildlife protection areas would have an adverse impact on wildlife due to habitat fragmentation and increased noise. Also, under Alternative C pronghorn would be impacted by the continuation of current livestock-grazing prescriptions. Where opportunities exist livestock-grazing would be adjusted to enhance forb production on pronghorn ranges including the grazing allotments listed under Alternative B. However, this method of forb enhancement does not ensure that habitat would be improved for pronghorn since cattle have been shown to eat forbs during times of grass dormancy (McCollum and Galyean 1985).

In terms of the acreage of seasonal wildlife protection areas Alternative C is more beneficial than Alternative A for mule deer, elk, pronghorn, and desert bighorn sheep since these areas are larger under Alternative C (see Table 4.202; Maps 67 and 75).

In terms of timing stipulations Alternative C is more beneficial than Alternative A for mule deer elk, and pronghorn since the timing stipulations are longer under this alternative. For desert bighorn sheep Alternative C is less beneficial than Alternative A because the timing stipulations are shorter under Alternative C (see Table 4.202).

Total acreage subject to special wildlife conditions is less under Alternative C than Alternative B but greater than Alternative A (see Table 4.202).

4.3.19.3.4. ALTERNATIVE D

Alternative D decisions would be the same as Alternatives B and E with the exception of OHV restrictions (Maps 68 and 76). Under this alternative, permitted or commercial OHV use would be restricted to designated routes. Restricting OHV use to designated routes would be beneficial to wildlife by concentrating surface disturbance and noise in these locations. However, OHV use in general would have an adverse impact on wildlife by increasing noise disturbance and human presence in seasonal wildlife protection areas and fragmenting habitat. Also, under Alternative D pronghorn would be beneficially impacted by the use of prescriptive livestock grazing to favor forb production on pronghorn ranges in grazing allotments identified under Alternatives B and C.

In terms of acreage of seasonal wildlife protection areas Alternative D is less beneficial than Alternative A for mule deer and desert bighorn sheep because it would provide the smallest area. For elk Alternative D would provide more area than Alternative A and therefore would be more beneficial. Pronghorn would benefit from 1,001 acres more seasonal wildlife protection area under Alternative D than Alternative A.

With respect to timing stipulations Alternative D and Alternative A are similar for mule deer (136 compared to 137 days) and identical for desert bighorn sheep. For elk and pronghorn Alternative D is more beneficial than Alternative A.

4.3.19.3.5. IMPACTS OF CULTURAL RESOURCE DECISIONS ON WILDLIFE AND FISHERIES

Impacts varying between alternatives primarily involve the establishment of Cultural Special Management Areas (CSMAs) where identified cultural resources can be protected over the long-term from potentially destructive practices such as minerals extraction, geophysical activities, permitted or commercial OHV use, and uncontrolled visitation. Decisions to establish or expand CSMAs are generally directly beneficial to wildlife as they prevent some or many of these activities, which are also detrimental to wildlife habitat integrity and population viability.

Though human visitation to cultural sites would likely deter wildlife from using these areas, impacts on wildlife are expected to be negligible since visitation would be controlled through management prescriptions and/or sites are already being impacted by visitation. Other possible adverse impacts to wildlife that are associated with cultural resource decisions include restrictions on or the exclusion of habitat improvements, watershed improvements, and vegetation treatments in wildlife habitats included within CSMAs. While helping to preserve an area's cultural resources, the restriction of these decisions could adversely impact wildfire prevention practices (by preventing the thinning of young, fire-ladder trees) or the ability to provide high value forage in a steep part of an eroding watershed. These restrictions could also potentially prevent the effective management of an area for wildlife habitat (e.g., preventing the encroachment of pinyon-juniper forest on sagebrush or grassland habitat). However, not all vegetation treatments would be beneficial to all wildlife species, as some species prefer woodlands while others depend on more open habitat for their survival. So, the exclusion of vegetation treatments in CSMAs would benefit some wildlife and adversely affect others.

Impacts varying between alternatives resulting in notable differences in impacts to wildlife and fisheries are described below by proposed CSMA, the Grand Gulch National Historic District,

and Historic Trails. Habitat types by CSMA and the Grand Gulch National Historic District are described in Table 4.203 to provide an indication of which species would be most affected by management decisions.

Table 4.203 Acreage of each Cultural Area by Vegetation Cover Type and Associated Wildlife

Vegetation Type	Wildlife Associations	Comb Ridge CSMA	Tank Bench CSMA	Beef Basin CSMA	McLoyd Canyon-Moon House CSMA	Grand Gulch National Historic District
Conifer/ mountain shrub	Mule deer, elk, mountain lion, neotropical birds, upland game birds.	15,884	0	20	0	13
Desert scrub	Pronghorn, desert bighorn, elk (winter), raptors, neotropical birds, upland game birds.	0	858	181	0	7,154
Pinyon-juniper	Mule deer, elk, mountain lion, neotropical birds, upland game birds.	17,576	1,564	15,796	1,408	26,902
Riparian and wetland	Mule deer, elk, mountain lion, neotropical birds, upland game birds, amphibian and fish species.	3,378	225	17	3	860
Sagebrush and perennial grassland	Mule deer, elk, pronghorn, desert bighorn, mountain lion, neotropical birds, upland game birds.	1,147	0	4,285	196	2,434
Total Vegetated Acres		**37,985**	**2,647**	**20,299**	**1,607**	**37,363**

4.3.19.3.5.1. Comb Ridge CSMA

Alternative A

Under Alternative A, there would be no specific management restrictions at Butler east of Comb Ridge limiting or mitigating against the adverse impacts of visitation as described above. Further, the area would be open to permitted or commercial OHV use and grazing. OHV use and grazing would have adverse impacts on wildlife as described in Section 4.3.19.2.11, Impacts of Travel Management Decisions on Wildlife and Fisheries, and Section 4.3.19.2.4, Impacts of Livestock Grazing on Wildlife and Fisheries, respectively.

Alternative B

Under Alternative B, the Comb Ridge CSMA would be managed as a CSMA for heritage tourism and traditional cultural values. It would be closed to woodland product collection and geophysical work, disposal of mineral materials and locatable mineral entry. It would be open to oil and gas leasing subject to NSO and would only be available for non-surface-disturbing vegetation treatments. The area would also be available for range, wildlife habitat, and watershed

improvements. Camping would be limited to designated campgrounds and hiking and permitted or commercial OHV use would be limited to designated trails with group size limits. Alternative B would be more beneficial to wildlife than Alternative A since Alternative A would allow for more surface-disturbing activities than Alternative B.

Alternative C

Alternative C is the same as Alternative B except that woodland product collection and surface-disturbing vegetation treatments would be allowed under Alternative C. Vegetation treatments could be either adverse or beneficial for wildlife, depending on the treatment under discussion and which habitat a species primarily uses. Alternative C would be more beneficial for wildlife than Alternative A because of greater restrictions on surface-disturbing activities than Alternative A.

Alternative D

Under Alternative D Comb Ridge would not be managed as a CSMA. Instead, the area would be managed with the same prescriptions as surrounding lands. Compared to Alternative A, the management of Comb Ridge under Alternative D would be more beneficial for wildlife, since the impacts related to OHV use would be reduced by limiting OHVs to designated trails.

Alternative E

Alternative E is the same as Alternative B except that under Alternative E Comb Ridge CSMA would be closed to oil and gas leasing and OHV use and range, wildlife habitat, and watershed improvements could be maintained with no new improvements permitted. In general Alternative E would be more beneficial to wildlife than all other alternatives since it places the greatest restrictions on surface-disturbing activities. For some species this alternative would have mixed benefits since new range, wildlife habitat, and watershed improvements would not be permitted.

4.3.19.3.5.2. Tank Bench CSMA

Alternative A

Under Alternative A, there would be no specific management prescriptions for Tank Bench CSMA.

Alternatives B and E

Under Alternatives B and E, the Tank Bench CSMA would be managed as a CSMA and would have the same surface disturbance restrictions as the Comb Ridge CSMA under Alternative B, except that campfires, OHV use, domestic pets, and pack animals would not be allowed. Prohibiting campfires would reduce fire risk for wildlife habitat and prohibiting OHV use would protect more intact habitat for wildlife species while reducing noise disturbance. Disallowing pets would reduce wildlife harassment and noise disturbance caused by these animals. People using pack animals are required to bring their own weed-free hay as animal feed so there would be no discernable difference in forage availability and therefore no impact on wildlife from prohibiting pack animals. Alternatives B and E would be more beneficial to wildlife than all other alternatives since these alternatives place greater restrictions on surface-disturbing activities.

Alternative C

Alternative C is the same as Alternative B except that the following surface-disturbing activities would be allowed: oil and gas leasing under standard lease terms; locatable mineral entry, disposal of mineral materials, and geophysical work; hiking off trail; and surface-disturbing land treatments. However, in comparison to Alternative A, the management of Tank Bench CSMA under Alternative C would be more beneficial to wildlife and their habitats, since Alternative C would still allow fewer surface-disturbing activities.

Alternative D

Under Alternative D the Tank Bench area would not be managed as a CSMA. There would be no restrictions on surface-disturbing activities as in other alternatives; therefore Alternative D would result in greater adverse impacts on wildlife than all other alternatives.

4.3.19.3.5.3. Beef Basin CSMA

Alternative A

Under Alternative A, there would be no specific management restrictions at Beef Basin CSMA. Impacts would be of the nature described above under Alternative Impacts.

Alternative B

Under Alternative B, Beef Basin CSMA would be managed as a CSMA for heritage tourism, traditional cultural values, and scientific research of prehistoric cultural landscapes. Under this alternative, Beef Basin would be subject to a number of human disturbance restrictions. These restrictions would have beneficial impacts on wildlife resources in the area by reducing human disturbances. Alternative B would be more beneficial to wildlife than Alternative A.

Alternative C

Alternative C is the same as Alternative B except that groups could be up to 20 people, open campfires would be allowed (fire pan required), and additional areas for primitive car camping would be established as needed. This alternative would be more beneficial to wildlife than Alternative A due to increased restrictions on surface-disturbing activities.

Alternative D

Under Alternative D Beef Basin would not be managed as a CSMA. It would be managed the same as under Alternative A except that it would be closed to woodland products harvest. The fact that Beef Basin would not be managed as a CSMA under Alternative D should have no bearing on impacts to wildlife if the logistics of management remain the same as Alternative A.

Alternative E

Alternative E is the same as Alternative B except that additional restrictions would be in place to avoid impacts in areas with non-WSA wilderness characteristics. Alternative E would be more beneficial to wildlife than all other alternatives since it would result in the fewest surface-disturbing activities.

4.3.19.3.5.4. McLoyd Canyon-Moon House CSMA

Alternative A

Under Alternative A, no public travel would be allowed on the northern section of spur road D4798 except for the purpose of BLM site maintenance. This decision would affect very little habitat area and likely would have very little impact on wildlife resources in the area. Under this alternative there are no additional management prescriptions for protection of cultural resources.

Alternatives B–E

Under Alternatives B–E, McLoyd Canyon-Moon House CSMA would be subject to a number of surface disturbance restrictions which vary slightly between each alternative. Further, Utah State Section 2, Township 39S Range 19E, would be acquired. Under each of these alternatives surface disturbance restrictions and the acquisition of the aforementioned land area would have long-term beneficial impacts on wildlife resources in the area by reducing human disturbances. Though management prescriptions do vary this variation is minor and is therefore not expected to result in appreciable differences between alternatives in terms of impacts on wildlife.

4.3.19.3.5.5. Grand Gulch National Historic District

Alternative A

Under Alternative A, the Grand Gulch National Historic District would be closed to mineral leasing and disposal of mineral materials, and excluded from commercial use of woodland products except for limited on-site collection of deadwood for campfires. No motorized or mechanized equipment would be allowed, including OHVs. Because the site would be managed as an ROS P, only primitive recreation opportunities would be allowed, and even primitive recreation could be limited if cultural resources or scenic values become impacted. The area would be open to livestock use except for 9,000 acres in and around Grand Gulch Canyon and its tributaries. With the possible exception of the livestock use provision, these management decisions would have beneficial impacts to wildlife by limiting surface-disturbing activities.

Alternatives B and E

Under Alternatives B and E, the Grand Gulch National Historic District would be closed to all surface disturbances with the exception of designated trails and camping areas. These restrictions would beneficially impact wildlife species and their habitats in the area by reducing human disturbances. The greater restrictions associated with Alternatives B and E would have more beneficial impacts to wildlife than Alternative A.

Alternative C

Alternative C is the same as Alternatives B and E except that non-motorized habitat improvements, watershed improvements, and vegetation treatments as well as pack animals would be permitted and secretarial withdrawal for mineral entry would not be requested. As stated above vegetation treatments would have short-term adverse impacts to wildlife (during the active phase of removing vegetation—though impacts would be less with non-motorized techniques than motorized) though wildlife would benefit in the long-term. The presence of pack animals would have a negligible impact on most wildlife species, since horses and mules are not known to harass wildlife, and since they would feed on weed-free hay rather than forage. In

comparison to Alternative A, the management of Grand Gulch National Historic District under Alternative C would be more beneficial to wildlife and their habitats.

Alternative D

Alternative D is the same as Alternative C except that the area would be open to oil and gas leasing subject to NSO and open to "casual use" geophysical exploration if the WSA is released by Congress. Provided Congress releases the WSA, Alternative D would impose more harmful impacts on wildlife than all other alternatives.

4.3.19.3.5.6. Historic Trails

Alternatives A–E

Under all alternatives the Old Spanish National Historic Trail would be managed to protect the resource values for which it was designated. Protection of these resource values would result in beneficial impacts to wildlife since surface-disturbing activities would be prevented or curtailed.

4.3.19.3.6. Impacts of Fire Management Decisions on Wildlife and Fisheries

The impacts of fire management on wildlife would be the same under all alternatives, with all decisions guided by the Utah Land Use Plan Amendment (LUP Amendment) for Fire and Fuels Management (BLM 2005g). Adherence with the LUP Amendment (which mandates the maintenance of existing healthy ecosystems and the protection of threatened, endangered, and special status species) would have beneficial impacts on wildlife habitat in the Monticello PA wherever wildlife habitat overlaps with that of protected special status species, and would ensure that healthy ecosystems are not adversely impacted by fire management and fuels reduction. Wildland fire use would not be authorized in areas that are known to be highly susceptible to post-fire cheatgrass or other weed invasion, important terrestrial and aquatic habitats, and non-fire adapted vegetation communities unless reasonable Resource Protection Measures (RPMs) were in place. These RPMs would have beneficial impacts on wildlife habitat by reducing the spread of weeds and preserving native plant species, thereby maintaining suitable wildlife forage, cover, and habitat.

Fuels management decisions include fuels-reduction treatments on 5,000 to 10,000 acres annually. These fuels-reduction treatments include: mechanical and manual treatments, prescribed fire, chemical or biological vegetation control, and aerial/ground seeding. These fuels management decisions would likely have a beneficial long-term impact on wildlife and fish populations by helping to restore the natural fire regime, which would improve habitat health (Lewis and Harshbarger 1976), forage, nesting opportunities, and cover. Restoring the natural fire regime would also reduce the chance of wildland fire, and the subsequent loss of major ecosystem components. In the short-term, vegetation treatments could result in trampling or removal of wildlife forage and/or habitat, and human-caused wildlife disturbance.

4.3.19.3.6.1. Terrestrial Species

Short-term adverse impacts to terrestrial wildlife from fire management decisions include mortality, habitat destruction, and habitat displacement. Fire management decisions would likely affect habitat used by raptors, migratory birds, small mammals, amphibians, reptiles, and big game species. Direct impacts from wildfire suppression could include habitat corruption from

fire retardant and aviation fuel, soil erosion from fireline construction on steep slopes, and damaged vegetation and soils from heavy equipment and fire camps.

The adverse impacts of fuels management decisions include the short-term disturbance of wildlife habitat while it regenerates and the thinning and removal of ecologically desirable species. Short-term impacts of treatments would include the mortality of non-target plants due to herbicide use and from seeding methods that cause soil surface disturbance. These decisions could result in a reduction of native species diversity and consequently a reduction in wildlife habitat.

However, managed wildfire and prescribed burns provide long-term benefits to wildlife and wildlife habitat. Fire produces a varied mosaic of habitats and results in the regeneration of old and decadent vegetation, which can be favorable to big game. Fuel reduction treatments also reduce the risk of catastrophic fire, which otherwise could cause the long-term loss of wildlife habitat.

4.3.19.3.6.2. Aquatic and Amphibious Species

Adverse impacts to fish, amphibians, and other aquatic species would include an increase risk of contaminating water sources with fire retardant or vehicle fluids; soil erosion following surface-disturbing fire suppression measures; damage to riparian vegetation and soils by heavy equipment; and reduced stream flow where water for fire suppression is drawn directly from streams and water bodies. Erosion would increase the sedimentation of surface waters, which affects water temperature, turbidity, and chemistry. These changes in water quality would generally have adverse impacts on aquatic species. In the long-term, fish, amphibians, and other aquatic species would benefit from fire management decisions by an overall reduction in erosion and soil loss and sedimentation of surface waters, and an increase in ground cover.

4.3.19.3.7. Impacts of Lands and Realty Decisions on Wildlife and Fisheries

Impacts that vary between alternatives largely result from variation in the types of areas where ROWs for wind and solar energy development would be considered. Development associated with wind and solar energy would have direct, long-term, adverse impacts on wildlife where installation occurs. These impacts would result from loss of wildlife habitat, habitat fragmentation, human disturbance during construction and maintenance, and the potential introduction of invasive plant species by construction equipment and construction and maintenance personnel. Under alternatives that exclude more areas from consideration for ROWs the short- and long-term benefits would be greater to wildlife species since less surface disturbance and habitat loss would occur under these alternatives.

4.3.19.3.7.1. Alternative A

Impacts associated with Alternative A are the same as impacts common to all alternatives. Alternative A does not include prescriptions for permitting ROWs for wind and solar energy development.

4.3.19.3.7.2. Alternative B

Alternative B would authorize ROWs for wind or solar energy development in the Monticello PA except in WSAs; WSR corridors; ACECs; all areas managed as open to leasing with major constraints, such as NSO; VRM Class I, II, and III areas; migratory bird habitats and raptor nesting complexes in riparian habitats and sagebrush and aspen; and special status species habitats.

4.3.19.3.7.3. Alternative C

Alternative C is the same as Alternative B except that Alternative C would allow ROWs for wind and solar energy development in ACECs, VRM Class II and III areas, and special status species habitat. These additional ROW allowances would result in more short- and long-term adverse impacts on wildlife compared to Alternative B since more land would be subject to surface-disturbing activities associated with wind and solar energy development.

4.3.19.3.7.4. Alternative D

Alternative D is the same as Alternative C except that Alternative D would also allow ROWs for wind and solar energy development in WSR corridors, migratory bird habitats, and raptor nesting complexes in riparian habitats, sagebrush, and aspen. Under this alternative, adverse impacts to wildlife in the short- and long-term would be greater than under all other alternatives since more allowances are made for ROWs for wind and solar energy related activities.

4.3.19.3.7.5. Alternative E

Management decisions under Alternative E would be the same as Alternative B except that Alternative E would also exclude non-WSA wilderness characteristics lands from consideration for ROWs for wind and solar energy development. This alternative offers greater benefits to wildlife than any other alternative since it would withdraw the most land from consideration for ROWs.

4.3.19.3.8. Impacts of Livestock Grazing Decisions on Wildlife and Fisheries

Impacts that vary between alternatives result from variation in the number of areas that would be unavailable for grazing for the life of the RMP. Impacts would be the same in nature as those common to all alternatives. Alternatives that would designate more areas as unavailable for grazing would have fewer adverse impacts on wildlife, while alternatives that designate fewer areas as unavailable for grazing would have more adverse impacts on wildlife.

4.3.19.3.8.1. Alternative A

Under Alternative A, the Comb Wash Allotment side canyons including Mule Canyon below U-95, Arch, Fish, Owl, and Road Canyons are currently unavailable (and would remain unavailable for grazing under all of the proposed alternatives) based on an Interior Board of Land Appeals (IBLA) court decision. A portion of Comb Wash's 73,614 acres are included in this closure (side canyon acreages are not available). These closures would decrease the magnitude of the potential adverse impacts associated with livestock grazing in the Monticello PA by removing acreage available for livestock grazing.

4.3.19.3.8.2. Alternatives B and E

Under Alternatives B and E, Slickhorn Canyon (146,144 acres), Rone Bailey Mesa (1,162 acres), Dodge Canyon Allotment (1,638 acres), Mule Canyon (1,984 acres), Arch Canyon (2,562 acres), Fish and Owl Canyon (7,252 acres), Road Canyon (4,801 acres), Rodgers Allotment (40 acres), portions of West Butler Wash Canyons, and Horsehead Canyon (4,904 acres) within the Montezuma Canyon allotment would be unavailable for grazing. Additional areas (Moki Canyon, Lake Canyon, Harts Canyon, and Indian Creek from Kelly Ranch vicinity to the USFS boundary) would be restricted to livestock trailing only. Also, under these alternatives the BLM would develop seasonal restrictions, closures, and/or forage utilization limits on grazing in riparian areas functioning at risk. The closures and restrictions associated with these alternatives would decrease the magnitude of the potentially adverse impacts associated with livestock grazing decisions more than under all other alternatives.

4.3.19.3.8.3. Alternative C

Alternative C is the same as Alternatives B and E, except that Mule Canyon would only be unavailable for grazing south of U-95. Consequently, Alternatives B and E would be slightly more beneficial to wildlife and wildlife habitats than Alternative C.

4.3.19.3.8.4. Alternative D

Alternative D is the same as Alternatives B and E except that Horsehead Canyon within Montezuma Canyon allotment, Dodge Canyon allotment, and Mule Canyon north of U-95 would be available for grazing and no areas would be restricted to livestock trailing only. The unavailability of these areas to livestock grazing that would be in effect under Alternative D would decrease the magnitude of the potentially adverse impacts associated with livestock grazing in the Monticello PA compared with Alternative A, but would still allow for more adverse impacts related to habitat disturbance than Alternatives B and E.

4.3.19.3.9. Impacts of Minerals Decisions on Wildlife and Fisheries

The impacts of minerals decisions on wildlife resources would be of the same nature under all alternatives but would vary in the acreage over which those decisions would impact wildlife and wildlife habitat (Tables 4.204–4.207).

Table 4.204. Estimated Surface Disturbance (in acres) for Oil and Gas Well Development, by Vegetation (Wildlife Habitat) Type

Habitat Type	Associated Wildlife	Alternatives				
		A	B	C	D	E
Conifer and Mountain Shrub	Mule deer, elk, mountain lion, black bear (primarily old growth), neotropical birds, upland game birds, reptiles.	4	4	4	4	3
Desert Scrub	Pronghorn, desert bighorn sheep, elk (winter), raptors, neotropical birds, upland game birds, reptiles.	165	150	168	170	122
Pinyon-Juniper	Mule deer, elk, pronghorn, mountain lion, neotropical birds, upland game birds, reptiles.	449	409	457	464	333
Sagebrush/ Perennial Grasslands	Mule deer, elk, mountain lion, neotropical birds, upland game birds, reptiles.	65	59	66	67	48
Invasive Species/ Noxious Weeds	N/A	1	1	1	1	1
Total Acres of Disturbance*		**699**	**636**	**710**	**721**	**518**

*Acreages do not add up to the Total Acres of Disturbance in any category because agriculture, disturbed, developed, riparian/wetlands and water categories were removed from the analysis since they represent a small percentage of the total lands that are not relevant to this analysis.

Table 4.205. Estimated Surface Disturbance (in Acres) on BLM Lands Associated with Geophysical Exploration by Vegetation (Wildlife Habitat) Type

Habitat Types	Associated Wildlife	Alternatives				
		A	B	C	D	E
Conifer and Mountain Shrub	Mule deer, elk, mountain lion, black bear (primarily old growth), neotropical birds, upland game birds, reptiles.	5	5	5	6	4
Desert Shrub	Pronghorn, desert bighorn sheep, elk (winter), raptors, neotropical birds, upland game birds, reptiles.	209	187	213	218	139
Pinyon-Juniper	Mule deer, elk, pronghorn, mountain lion, neotropical birds, upland game birds, reptiles.	570	511	581	594	380
Sagebrush/ Perennial Grasslands	Mule deer, elk, Rocky Mountain bighorn sheep, mountain lion, neotropical birds, upland game birds, reptiles.	82	74	84	86	55
Invasive Species/ Noxious Weeds	N/A	2	2	4	4	1
Total Acres of Disturbance*		**886**	**794**	**903**	**924**	**591**

*Acreages do not add up to the Total Acres of Disturbance in any category because agriculture, disturbed, developed, riparian/wetlands and water categories were removed from the analysis since they represent a small percentage of the total lands that are not relevant to this analysis.

Table 4.206. Acreage of Each Vegetation Cover Type (and Associated Wildlife) Open and Closed to Surface Disturbance by Alternative.

Vegetation Type	Associated Wildlife	Alternatives									
		A		B		C		D		E	
		Open*	Closed**	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Pinyon-juniper	Mule deer, elk, pronghorn, mountain lion, neotropical birds, upland game birds, reptiles	767,879	379,201 (33%)	783,564	363,405 (32%)	840,861	306,107 (27%)	848,550	298,417 (26%)	475,518	671,449 (59%)
Desert scrub	Pronghorn, desert bighorn sheep, elk (winter), raptors, neotropical birds, upland game birds, reptiles	298,661	125,306 (30%)	289,102	131,744 (31%)	330,081	90,817 (22%)	355,136	64,712 (15%)	145,021	275,826 (66%)
Sagebrush/ Perennial grassland	Mule deer, elk, Rocky Mountain bighorn sheep, mountain lion, neotropical birds, upland game birds, reptiles	137,420	36,098 (21%)	98,131	67,724 (41%)	137,325	28,323 (17%)	137,613	28,244 (17%)	107,510	58,346 (35%)

Table 4.206. Acreage of Each Vegetation Cover Type (and Associated Wildlife) Open and Closed to Surface Disturbance by Alternative.

Vegetation Type	Associated Wildlife	Alternatives									
		A		B		C		D		E	
		Open*	Closed**	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Conifer/ Mountain shrub	Mule deer, elk, mountain lion, black bear (primarily old growth), neotropical birds, upland game birds, reptiles	9,695	1,108 (10%)	9,595	1,207 (11%)	9,652	1,151 (11%)	9,752	1,606 (14%)	7,985	2,817 (26%)
Totals		**1,213,655**	**541,713 (31%)**	**1,180,392**	**564,080 (32%)**	**1,317,919**	**426,762 (24%)**	**1,351,051**	**392,979 (22%)**	**736,034**	**1,008,438 (58%)**

*"Open" includes Standard, Timing, Controlled Surface Use and CST lease stipulations.

**"Closed" includes NSO and Closed leasing stipulations. The percent of the total designated habitat closed is listed in parentheses.

Table 4.207. Acres of Big Game Habitat (UDWR Designated vs. BLM Managed) Open and Closed to Surface Disturbance by Alternative.

Big Game Species	Agency Designating / Managing Habitat	Alternatives									
		A		B		C		D		E	
		Open*	Closed**	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Mule Deer	UDWR Designated	783,267	302,785 (28%)	784,574	300,860 (28%)	816,326	269,108 (25%)	820,374	265,060 (24%)	588,793	496,638 (46%)
	BLM Managed	170,630	11,685 (6%)	607,035	178,886 (23%)	264,312	2,101 (1%)	150,496	961 (1%)	431,504	354,417 (45%)
Elk	UDWR Designated	234,233	57,457 (20%)	244,139	47,393 (16%)	244,296	47,236 (16%)	246,647	44,885 (15%)	151,688	139,846 (21%)
	BLM Managed	N/A	N/A	169,140	22,028 (12%)	39,478	11,093 (22%)	4,491	0 (0%)	125,816	65,357 (34%)
Pronghorn	UDWR Designated	29,363	0 (0%)	29,368	37 (0.1%)	29,405	0 (0%)	29,404	0 (0%)	26,581	2,823 (10%)
	BLM Managed	13,961	0 (0%)	29,328	37 (0.1%)	29,365	0 (0%)	13,961	0 (0%)	26,541	2,823 (10%)
Desert Bighorn Sheep	UDWR Designated	135,977	31,213 (19%)	140,689	26,479 (16%)	146,198	20,971 (13%)	147,965	19,204 (11%)	42,661	124,507 (74%)
	BLM Managed	155,149	92,833 (37%)	257,358	196,122 (43%)	297,706	1,497 (1%)	228,946	70,063 (23%)	90,900	362,486 (80%)

*"Open" includes Standard, Timing, Controlled Surface Use and CST lease stipulations.

**"Closed" includes NSO and Closed leasing stipulations. The percent of the total designated habitat closed is listed in parentheses.

4.3.19.3.9.1. Alternative A

Leasable Minerals

Under Alternative A, 40 wells (approximately 699 acres of surface disturbance) are expected in the Monticello PA over the life of the RMP. Further, approximately 379,201 acres of pinyon-juniper habitat would be managed as either NSO or Closed, while approximately 125,306 acres of desert scrub would be managed under the same designations. A total of 547,713 acres (of all habitat types) would be managed as NSO or Closed.

Mule Deer. Under Alternative A, UDWR designated mule deer habitat that would fall under Closed leasing types (302,785 acres) would comprise 28% of the total designated deer habitat established by UDWR. Six percent (11,685 acres) of BLM managed mule deer habitat would be considered Closed to leasing.

Elk. Under Alternative A, the BLM would not specifically manage habitat for elk. Approximately 57,457 acres (20%) of UDWR designated elk habitat would fall under Closed leasing types.

Pronghorn. Under Alternative A, all of the UDWR designated and BLM managed pronghorn habitat would fall under Open leasing types.

Desert Bighorn Sheep. Under Alternative A approximately 19% (31,213 acres) of UDWR designated habitat and 37% (92,833) of BLM managed habitat would fall under Closed leasing types.

Geophysical Activity

Under Alternative A, approximately 886 acres (59 acres per year for the life of the RMP) of wildlife habitat would be temporarily impacted by geophysical exploration. Impacts to wildlife habitat associated with exploration would include short-term impacts such as noise and disturbance from people working in the area to long-term impacts such as the potential spread of invasive and weedy plant species within the areas directly disturbed by geophysical drilling.

Salable Minerals

The exploration and development of salable minerals would have similar impacts to wildlife as other development described above. Under Alternative A, 584,270 acres of land in the Monticello PA would be available for disposal of mineral materials subject to standard terms and conditions. That is approximately 33% of the 1,784,724 acres in the Monticello PA. There are 821,070 acres (approximately 46% of the Monticello PA) subject to special conditions under Alternative A and 373,850 acres (approximately 21% of the Monticello PA) closed to disposal of mineral materials.

Locatable Minerals

Under Alternative A, 1,652,743 acres (approximately 93%) of land in the Monticello PA would be open to mineral entry. There are currently 132,380 acres (approximately 7% of the Monticello PA) recommended to Congress for withdrawal from mineral entry. Because withdrawals require congressional approval and are extremely difficult to obtain, these areas only have the potential to be exempt from impacts related to open pit mining activities. Impacts resulting from locatable mineral exploration and development would be similar to those discussed above.

4.3.19.3.9.2. Alternative B

Leasable Minerals

Under Alternative B 66 wells (approximately 636 acres of surface disturbance) are expected in the Monticello PA over the life of the RMP. Alternative B would result in 63 (9%) fewer acres of oil- and gas-related surface disturbance than Alternative A. Overall, Alternative B would include fewer oil- and gas-related adverse impacts to wildlife than would Alternative A, since less surface disturbance would mean more intact habitat, fewer roads, and a lower level of human presence.

Under Alternative B across the Monticello PA approximately 363,405 acres of pinyon-juniper habitat would be managed as either NSO or Closed, while approximately 131,744 acres of desert scrub would be managed under the same designations. The total number of acres (of all habitat types) to be managed under NSO or Closed designations would be approximately 564,080 under Alternative B. Approximately 5% more land would be managed under Closed designations under Alternative B than Alternative A.

Mule Deer. There is less than 1% difference between Alternatives B and A in terms of the acreage of UDWR designated deer habitat falling under Closed leasing types. BLM managed deer habitat falling under Closed leasing types would increase by 167,201 acres (93%) under Alternative B. Alternative B would be more beneficial for mule deer than Alternative A.

Elk. Under Alternative B 47,393 acres (16%) of UDWR designated elk habitat would fall under closed leasing types. This is 4% less than under Alternative A. Approximately 22,028 acres (12%) of BLM managed elk habitat would fall under Closed leasing types. This is an improvement over Alternative A since no elk habitat is identified by BLM under that alternative.

Pronghorn. Alternative B would be more beneficial to pronghorn than Alternative A since the BLM would manage more than two times as much pronghorn habitat under this alternative than under Alternative A. In terms of UDWR designated pronghorn habitat there is a 5-acre difference between Alternatives B and A. Approximately 37 acres of BLM managed and UDWR designated pronghorn habitat would fall under Closed leasing types under Alternative B, compared to zero acres under Alternative A.

Desert Bighorn Sheep. Under Alternative B, more than twice as much BLM managed desert bighorn sheep habitat (196,122 acres compared to 92,833 acres) would fall under Closed leasing types as under Alternative A. Fewer acres of UDWR designated desert bighorn sheep habitat would fall under these leasing stipulations under Alternative B (26,479) than Alternative A (31,213). Overall, there are more beneficial impacts to desert bighorn sheep under Alternative B than Alternative A since considerably more BLM managed habitat falls under Closed leasing types.

Geophysical Activity

Under Alternative B there would be approximately 794 acres of surface disturbance associated with geophysical exploration. This is approximately 12% fewer acres of disturbance than would be expected under Alternative A, which could result in a slightly smaller impact overall due to the decreased acreage open to exploration.

Salable Minerals

Under Alternative B, 219,102 (38%) fewer acres would be open to mineral disposal subject to standard terms and conditions than under Alternative A. Overall, more land would be protected under special conditions (876,736 acres vs. 821,070 acres) or closed altogether (542,402 acres vs. 373,850 acres) to mineral disposal under Alternative B than under Alternative A, which would beneficially impact wildlife species by protecting more of their habitats from potential surface disturbing activities and their associated impacts.

Locatable Minerals

Under Alternative B, 1,521,656 acres of land in the Monticello PA would be open to mineral entry. That is 8% less than under Alternative A. Also, under Alternative B 263,467 acres would be recommended to Congress for withdrawal from mineral entry (50% more than under Alternative A).

4.3.19.3.9.3. Alternative C

Leasable Minerals

Under Alternative C, 74 oil and gas wells are expected across the Monticello PA over the life of the RMP. Oil and gas development under Alternative C would result in the direct removal of wildlife habitat from approximately 710 acres. Compared to Alternative A, Alternative C plans for 11 (2%) more acres of oil- and gas-related surface disturbance. This translates into more adverse impacts to wildlife than under Alternative A.

Under Alternative C across the Monticello PA, approximately 306,107 acres of pinyon-juniper habitat would be managed as either NSO or Closed, while approximately 90,817 acres of desert scrub would be managed under the same designations. The total number of acres (of all habitat types) to be managed under NSO or Closed designations approximate 426,762 under Alternative C. This is more than 115,000 fewer acres than under Alternative A.

Mule Deer. Less UDWR designated and BLM managed mule deer habitat falls under Closed leasing types under Alternative C than under Alternative A. Because fewer acres of mule deer habitat fall under Closed leasing types under this alternative it would be more adverse to mule deer than Alternative A, which protects more habitat from surface disturbance through Closed leasing type designations.

Elk. Under Alternative C, 47,236 acres (16%) of UDWR designated elk habitat would fall under closed leasing types. This is 4% less than under Alternative A. Approximately 11,093 acres (22%) of BLM managed elk habitat would fall under Closed leasing types. This is an improvement over Alternative A since no elk habitat is identified by BLM under that alternative. However, under Alternative C only 50,571 acres of elk habitat would be managed by BLM compared to 191,168 acres under Alternative B. Also, 22,028 acres (12%) of BLM managed elk habitat would fall under Closed leasing types under Alternative B. Overall, the prescriptions include in Alternative C would be more beneficial to elk than Alternative A but less beneficial than Alternative B.

Pronghorn. Under Alternative C neither BLM managed nor UDWR designated pronghorn habitat fall under Closed leasing types. Total acres of BLM managed pronghorn habitat are the

same as Alternative B. There is a negligible difference between Alternatives C and A in terms of impacts to pronghorn.

Desert Bighorn Sheep. Under Alternative C, 1,497 acres (1%) of BLM managed and 20,971 acres (13%) of UDWR designated desert bighorn sheep habitat fall under Closed leasing types. For desert bighorn sheep, Alternative C would result in more adverse impacts than Alternative A since 91,336 (98%) fewer acres of BLM managed and 10,242 (33%) fewer acres of UDWR designated desert bighorn sheep habitat would fall under Closed leasing types.

Geophysical Activity

Under Alternative C, there would be approximately 903 acres of surface disturbance associated with geophysical exploration. This is approximately 2% more acres of disturbance than under Alternative A. Therefore, compared to Alternative A, Alternative C would likely result in a larger adverse impact to wildlife overall due to the increased acreage open to exploration.

Salable Minerals

Under Alternative C, 35,131 (6%) more acres would be available for disposal of mineral materials subject to standard terms and conditions than Alternative A. Acreage available for mineral disposal subject to special conditions would be 12% (91,503 acres) less than under Alternative A. Finally, acreage closed to mineral disposal would be 14% (61,488 acres) more than under Alternative A. This would beneficially impact wildlife species by protecting more of their habitats from potential surface-disturbing activities and their associated impacts. Though Alternative C would close more acres to mineral disposal than Alternative A, overall, Alternative C would be less beneficial to wildlife species than Alternative A because it would protect fewer habitats with special stipulations for disposal and open more acres to disposal under standard stipulations.

Locatable Minerals

Under Alternative C, 1,637,688 acres of land in the Monticello PA would be open to mineral entry. That is 15,055 fewer acres (14%) than under Alternative A. Under this alternative approximately 147,435 acres would be recommended to Congress for withdrawal from mineral entry. That is 15,055 acres (10%) more than are recommended for withdrawal from mineral entry under Alternative A. Alternative C would be more beneficial to wildlife than Alternative A, because Alternative C would open fewer acres to mineral entry, thereby avoiding the adverse impacts associated with surface disturbance and related activities, and recommends more acres for withdrawal.

4.3.19.3.9.4. Alternative D

Leasable Minerals

Under Alternative D, 75 oil and gas wells are expected in the Monticello PA over the life of the RMP. Oil and gas development under Alternative D would result in the direct removal of wildlife habitat from approximately 721 acres. This is 22 (3%) more acres of oil- and gas-related surface disturbance than under Alternative A. Overall, Alternative D would include the most oil- and gas-related adverse impacts to wildlife when compared to Alternatives A, B, C, and E since more surface disturbance translates to less intact habitat, more roads, and a higher level of human presence.

Under Alternative D across the Monticello PA, approximately 298,417 acres of pinyon-juniper habitat would be managed as either NSO or Closed, while approximately 64,712 acres of desert scrub would be managed under the same designations. The total number of acres (of all habitat types) to be managed under NSO or Closed designations approximate 392,979 under Alternative D. Alternative D would set aside approximately 149,000 fewer acres of habitat for management under NSO and Closed designations than Alternative A.

Mule Deer, Elk, and Pronghorn. Less UDWR designated and BLM managed mule deer, elk, and pronghorn habitat falls under Closed leasing types under Alternative D than under any other alternative. Alternative D would be the most adverse to these species of all alternatives because less habitat would be protected under Closed leasing types.

*Desert Bighorn Sheep***.** Less UDWR designated desert bighorn sheep habitat falls under Closed leasing types under Alternative D than under any other alternative. BLM managed desert bighorn sheep falling under Closed leasing types is greater under Alternative D than Alternative C but less than all other alternatives. Desert bighorn sheep, like mule deer, elk, and pronghorn, would be subject to more adverse impacts from oil and gas leasing under Alternative D than under all other alternatives.

Geophysical Activity

Under Alternative D, there would be approximately 924 acres of surface disturbance associated with geophysical exploration. This is approximately 4% more acres of disturbance than would be expected under Alternative A, 16% more than Alternative B, 2% more than Alternative C, and 56% more than Alternative E. Compared to all other alternatives, Alternative D would likely result in the largest impact overall due to the increased acreage open to exploration.

Salable Minerals

Under Alternative D, 378,009 (39%) more acres would be open to mineral disposal subject to standard stipulations than under Alternative A. Approximately 400,072 (49%) fewer acres would be open to mineral disposal subject to special conditions and 27,177 (7%) more acres would be closed to mineral disposal than under Alternative A. Though Alternative D would close slightly more acres to mineral disposal than Alternative A, overall, Alternative D would be less beneficial to wildlife species than Alternative A as it would protect fewer habitats with special stipulations for disposal and open more acres to disposal under standard stipulations.

Locatable Minerals

Under Alternative D, 1,737,999 acres of land in the Monticello PA would be open to mineral entry. That is 85,256 acres (5%) more than would be open under Alternative A. Under this alternative, approximately 47,124 acres would be recommended to Congress for withdrawal from mineral entry. This is 85,256 acres (5%) less than would be recommended for withdrawal from mineral entry under Alternative A. Alternative D would also recommend fewer acres for withdrawal from mineral entry than Alternatives B, C, or E. Therefore, Alternative D would be the least beneficial for wildlife and their habitats of all alternatives as it opens more acres to mineral entry and recommends fewer for withdrawal.

4.3.19.3.9.5. Alternative E

Leasable Minerals

Under Alternative E, 54 wells (approximately 518 acres of surface disturbance) are expected to be drilled in the Monticello PA over the life of the RMP. This alternative would result in about 118 (23%) fewer acres of oil- and gas-related surface disturbance than Alternative B, and between 181 and 203 (35%–39%) fewer acres of surface disturbance than any other alternative, resulting in fewer adverse impacts to wildlife since less surface disturbance translates to more intact habitat, fewer roads, and a lower level of human presence.

Under Alternative E, throughout the Monticello PA approximately 617,449 acres of pinyon-juniper habitat would be managed as either NSO or Closed, while approximately 275,826 acres of desert scrub would be managed under the same designations. The total number of acres (of all habitat types) to be managed under NSO or Closed designations (1,008,439 acres) is greater under Alternative E than under all other alternatives.

*Mule Deer, Elk, and Desert Bighorn Sheep***.** Under Alternative E more UDWR designated and BLM managed mule deer, elk, and desert bighorn sheep habitat falls under Closed leasing types than under any other alternative, offering these species more protection from adverse impact than other alternatives.

*Pronghorn***.** The acreage of UDWR designated and BLM managed pronghorn habitat that would be closed to leasing or NSO (2,823 acres) is greater under Alternative E than under any other alternative. This alternative would be more beneficial to pronghorn than other alternatives due to the protection from disturbance offered by closed and NSO designations.

Geophysical Activity

There would be approximately 591 acres of surface disturbance associated with geophysical exploration under Alternative E. This is approximately 34% fewer acres of disturbance than would be expected under Alternative B, which is the next most beneficial alternative in terms of expected wildlife impacts due to geophysical exploration. All other alternatives would result in more surface disturbance (between 50% and 56% more than Alternative E) associated with geophysical exploration than Alternative E.

Salable Minerals and Locatable Minerals

Alternative E impacts would be the same as Alternative B in terms of prescriptions and impacts associated with salable and locatable minerals.

4.3.19.3.10. Impacts of Recreation Decisions on Wildlife and Fisheries

Impacts varying between alternatives result primarily from variations in the level of mineral exploration and development allowed and specific recreation prescriptions for SRMAs. Assuming that recreationists in SRMAs use established routes and, where dispersed camping is allowed, either camp in previously disturbed areas only or stay within 150–300 feet of these routes, the difference between alternatives in terms of the impacts of these recreation decisions on wildlife and fisheries would be negligible. Impacts would generally be of the nature described above and would vary slightly depending on the specific management prescriptions in each alternative. Key differences between alternatives resulting in notable differences in impacts to wildlife and fisheries are described below by proposed SRMA.

4.3.19.3.10.1. San Juan River SRMA

Alternative A

Under Alternative A, the San Juan River SRMA would encompass 10,203 acres. Motorized boating would be allowed downstream while upstream travel would only be allowed for emergency purposes. Approximately 40,000 user/days (private and commercial trips combined) per year would be permitted with groups no larger than 25 people for private trips and 25 people plus 8 crew for commercial trips. Commercial use would be allowed up to 50% of total use while administrative and research use would not be included in launch limits. Camping would be allowed in 9 designated campsites (available for reservation) in the Slickhorn Canyon to Clay Hills area. Camping in this area would be limited to 1 or 2 nights depending on the season. Vehicle camping in the SRMA would not be restricted. Grazing prescriptions for this area would remain as in the current RMP (see Table 2.1 Livestock Grazing). No management prescriptions would be in place for minerals or watersheds.

Alternative B

Under Alternative B the total acreage of the San Juan River SRMA would remain 10,203 acres (same as Alternative A). No motorized boating would be allowed except in emergency situations. Approximately 30,000 user/days per year would be allowed with a trip size limit of 20 people (including crew for commercial trips). Commercial use would be restricted to up to 30% of total use and administrative and research use would be limited to that which can be accommodated within the launch limits. Camping would be allowed per Memorandum of Understanding between the NPS/GCNRA and the Navajo Nation. Vehicle camping in the SRMA would be limited to areas upstream of Comb Wash except along Lime Creek Road, the Mexican Hat Rock area, and the Mexican Hat Boat Ramp. The area would be open to oil and gas leasing subject to NSO and closed for mineral entry and disposal. Seasonal grazing restrictions would be in place not to exceed PFC. Watershed prescriptions would include surface restrictions for watershed control structures to protect bighorn sheep lambing and rutting areas and vehicle access would be limited to designated routes. OHV use would be limited to designated roads and trails throughout the SRMA. These management prescriptions would place further restrictions on surface disturbance and visitor generated noise and visual disturbance than under Alternative A; therefore, Alternative B would be more beneficial to wildlife than Alternative A.

Alternative C

Under Alternative C the total acreage of the San Juan River SRMA would be about 9,859 acres, or 344 fewer acres than Alternatives A or B. Management prescriptions related to motorized boating and administrative and research use would be the same as Alternative A. Management prescriptions related to designated campsites, vehicle camping, minerals, grazing, and OHV use would be the same as Alternative B. Launch limits would be the same as Alternative A except that the commercial trip size limit of 25 people would include crew members. Commercial use would be restricted to up to 40% of total use. In general, Alternative C would be more beneficial to wildlife than Alternative A, as Alternative C would more closely limit visitor numbers and minerals-related activities.

Alternative D

Under Alternative D the total acreage of the San Juan River SRMA would be about 6,365 acres, or 3,838 fewer acres than Alternatives A or B. Management prescriptions related to motorized boating and administrative and research use would be the same as Alternative A. Management prescriptions related to designated campsites, minerals, and grazing would be the same as Alternative B. All other management prescriptions would be less restrictive of disturbance-generating activities than any other alternative. Alternative D would be less beneficial to wildlife than any other alternative due to the decreased SRMA acreage proposed under this alternative, and fewer restrictions on visitors groups and group sizes.

Alternative E

Alternative E is the same as Alternative B except that non-WSA lands with wilderness characteristics would be closed to oil and gas leasing and OHV use. Alternative E would be more beneficial to wildlife than all other alternatives since it places the greatest restrictions on use.

4.3.19.3.10.2. Cedar Mesa Cultural SRMA

The proposed Cedar Mesa Cultural SRMA would include the Grand Gulch Plateau Mesa Top Day Use, Grand Gulch Plateau Mesa Top Camping, Grand Gulch Plateau In-canyon Private/Commercial Day Use, and Grand Gulch Plateau In-Canyon Permitted Overnight Camping areas. While management prescriptions for these areas vary between alternatives these variations represent negligible impacts on wildlife and only negligible differences between alternatives. All management prescriptions are intended to limit or curtail disturbance-causing activities. Management prescriptions for the area as a whole are discussed below by alternative.

Alternative A

Under Alternative A the proposed Cedar Mesa Cultural SRMA would remain the Grand Gulch SRMA. Management prescriptions (see Table 2.1) for camping, campfires, areas for day use only, pets, stock use, group size, and disposal of human waste would be implemented to allow for private and commercial use of the area while protecting resource values. Impacts to wildlife would be the same as those discussed under Impacts Common to All Alternatives.

Alternative B

Alternative B is the same as Alternative A except that further restrictions would be placed on pets and stock as well as camping activities. Also, watershed, range, and wildlife improvements and vegetation treatments would be allowed. Alternative B would be more beneficial to wildlife than Alternative A due to the increased restrictions on disturbance-causing activities and the potential for watershed, range, and wildlife improvements and vegetation treatments.

Alternative *C*

In terms of pets and stock Alternative C is the same as Alternative A except that restrictions on pets and stock would be greater under Alternative C. In terms of other activities Alternative C is the same as Alternative B except that campfires would be allowed on mesa tops only (with fire pans) and commercial and private use of woodland products would be allowed. Impacts associated with Alternative C would be less than Alternative A due to increased restrictions but greater than Alternative B.

Alternative D

Alternative D is the same as Alternative C except that pets or stock may be limited or prohibited if resources or the visitor experience are adversely affected. Stock limitations would be the same as Alternative A. In general, Alternative D places the fewest restrictions on disturbance-causing activities and therefore would be the least beneficial to wildlife of all alternatives.

Alternative E

Alternative E is the same as Alternative B except that non-WSA lands with wilderness characteristics would be managed to protect wilderness values. Alternative E would be the most beneficial to wildlife of all alternatives since it places the greatest restrictions on disturbance-causing activities.

4.3.19.3.10.3. Dark Canyon SRMA

Alternatives A–E

Under all alternatives the Dark Canyon SRMA would be managed to limit recreational impacts and protect resource values, though under Alternative A Dark Canyon would remain part of the Canyon Basins SRMA. Variations between alternatives relate to:

- group size limits (range from no limit to 15 people per group);
- commercial trips allowed per week (range from no limit to 7 commercial trips per week);
- camping restrictions (range from open dispersed camping in any location to camping only in designated campsites);
- campfire restrictions (range from no restrictions to allowed on mesa tops only);
- limits on collection of woodland products (range from no restrictions to prohibiting collection of woodland products); and
- pet restrictions (range from no pets allowed to pets allowed without restrictions).

Variations in pet restrictions are the main difference between alternatives in terms of impacts on wildlife. Pets create additional noise disturbance that can result in avoidance behavior amongst wildlife. Also, pets off leash wander from designated routes creating additional surface disturbance and potentially threatening individual animals. Alternatives B and E would be most beneficial to wildlife as they would prohibit pets. Alternatives C and D would allow pets on leash and under control, which would limit pet-created disturbance but not prevent it. Finally, Alternative A would allow pets without further restrictions. This alternative would result in the greatest pet-caused wildlife disturbances.

Remaining variations between alternatives are negligible and would result in negligible impacts to wildlife since all prescriptions would limit or curtail disturbance-causing activities.

4.3.19.3.10.4. Indian Creek SRMA

Alternatives A–E

Under all alternatives the Indian Creek SRMA would be managed to limit recreational impacts and protect resource values. Alternative A is unique in that the Indian Creek SRMA would remain part of the Canyon Basins SRMA. Other variations between alternatives relate to restrictions on camping (i.e., allowing dispersed camping versus limiting camping to designated

camp sites). In terms of impacts on wildlife there is little difference between alternatives since recreationists tend to use designated (or previously disturbed) campsites rather than disturbing new sites. Impacts to wildlife associated with management prescriptions in the Indian Creek SRMA would be minimal since these management prescriptions are designed to limit or curtail disturbance-causing activities.

4.3.19.3.10.5. White Canyon SRMA

Alternative A

Under Alternative A, White Canyon SRMA would be managed using minimal management prescriptions. Permits would be required for commercial use but activities related to private use would be unrestricted.

Alternatives B–E

Under Alternatives B–E, White Canyon SRMA would be managed to limit recreational impacts. Management prescriptions vary by alternative though these variations would not result in appreciable differences between alternatives nor appreciable impacts on wildlife since all alternatives would implement prescriptions designed to limit or curtail disturbance-causing activities.

4.3.19.3.11. Impacts of Riparian Decisions on Wildlife and Fisheries

4.3.19.3.11.1. Alternatives A and D

Under Alternatives A and D BLM would manage riparian areas to reduce resource loss from floods and erosion; maintain water quality; and preserve, protect, and restore natural functions. All lands would be managed in accordance with laws, executive orders, and regulations on floodplains and wetlands. These decisions would mitigate some of the adverse impacts caused by mineral leasing (discussed in Section 4.3.19.2.5), grazing (discussed in Section 4.3.19.2.4), and recreation (discussed in Section 4.3.19.2.6) on wildlife species that utilize riparian habitat.

Alternatives A and D would provide no additional restrictions on actions in riparian areas outside of management common to all alternatives. These alternatives would be less beneficial to wildlife than all other alternatives.

4.3.19.3.11.2. Alternatives B, C, and E

Under Alternatives B, C, and E OHV routes in selected riparian areas would be closed where site-specific analysis determines that OHV use is contributing to these areas Functioning At Risk. In addition, some riparian areas would be closed to livestock grazing, while others would be subject to seasonal restrictions and forage utilization limits if areas are found to be Functioning At Risk. Riparian areas identified as Functioning At Risk would be closed to motorized camping until PFC is restored. These restrictions would decrease the amount of wildlife habitat subject to the adverse impacts of surface disturbance in sensitive riparian areas and therefore these alternatives would be more beneficial to wildlife than Alternatives A and D.

4.3.19.3.12. Impacts of Soils/Watershed Decisions on Wildlife and Fisheries

4.3.19.3.12.1. Alternative A

Under Alternative A, the impacts of soils and watershed management decisions on wildlife resources would be the same as impacts common to all alternatives.

4.3.19.3.12.2. Alternatives B and E

Under Alternatives B and E if surface-disturbing activities could not be avoided on slopes between 21 and 40%, a plan would be required which would include an erosion control strategy. No surface disturbance would be allowed on slopes greater than 40%, excluding 87,601 total acres of land in the Monticello PA from surface disturbance and preventing the adverse impacts associated therewith. Though surface-disturbing activities may still occur on slopes between 21 and 40% (218,790 acres) erosion control strategies and approved survey and design would be expected to mitigate adverse impacts. Pinyon-juniper habitat makes up 88% of slopes greater than 40% and 83% of slopes between 21 and 40%. The species associated with this habitat would benefit from the large number of acres protected from surface-disturbing activities (Table 4.208). The decisions associated with Alternatives B and E would have less adverse impacts on wildlife than Alternative A.

Table 4.208. Acreage and Percentage of Slopes by Cover Type and Associated Wildlife

Vegetation Type	Wildlife Associations	Slope > 40%	% of Total acres	Slope 21-40%	% of Total acres
Pinyon-juniper	Mule deer, elk, mountain lion, neotropical birds, upland game birds.	77,331	88.3	180,954	82.7
Desert Scrub (Saltbush and Blackbrush)	Pronghorn, desert bighorn, elk (winter), raptors, neotropical birds, upland game birds.	6,390	7.3	27,473	12.6
Sagebrush and Grassland	Mule deer, elk, pronghorn, mountain lion, neotropical birds, upland game birds.	1,684	1.9	5,534	2.5
Riparian	Mule deer, elk, mountain lion, neotropical birds, upland game birds, amphibian and fish species.	683	0.8	1,461	0.7
Conifer/mountain shrub	Mule deer, elk, mountain lion, neotropical birds, upland game birds.	1,323	1.5	2,662	1.2
Other cover types		188	0.2	708	0.3
	Total Acres	87,599	100	218,792	100

4.3.19.3.12.3. Alternative C

Alternative C is the same as Alternatives B and E except that for slopes greater than 40% surface disturbance would still be allowed if other placement alternatives would cause undue or unnecessary degradation. Alternative C would have greater adverse impacts on wildlife resources than Alternative B because it would not rule out surface disturbance on 87,601 acres of habitat.

4.3.19.3.12.4. Alternative D

Alternative D would only require a plan for slopes greater than 40%, and would not rule out surface disturbance on slopes of any grade. Among all alternatives, Alternative D would be the most adverse to wildlife because of the increased potential for erosion and habitat destruction.

4.3.19.3.13. Impacts of Special Designation Decisions on Wildlife and Fisheries

Within the Monticello PA, there are 12 proposed ACECs and 12 reviewed WSR segments. Not every proposed ACEC or WSR segment would be designated under each alternative (Table 4.209 and Table 4.210). Other than stipulating that WSAs would be managed according to IMP and as VRM Class I there are no blanket management prescriptions within proposed ACECs, so the impacts to wildlife and fisheries resources from ACEC designations would vary depending on the management stipulations for each area under each alternative.

Table 4.209. Proposed ACECs Acreage by Alternative

ACEC	Alternatives				
	A	B	C	D	E
Alkali Ridge	40,302	39,196	39,196	0	39,196
Bridger Jack Mesa	6,306	6,225	0	0	6,225
Butler Wash North	16,985	17,365	0	0	17,365
Cedar Mesa	320,078*	306,742	0	0	306,742
Dark Canyon	61,735	61,660	0	0	61,660
Hovenweep	1,818	2,439	1,818	0	2,439
Indian Creek	13,100	8,510	3,908	0	8,510
Lockhart Basin	8,642**	47,783	0	0	47,783
Lavender Mesa	649	649	649	0	649
Shay Canyon	1,770	119	119	0	119
San Juan River	15,100***	7,590	7,590	0	7,590
Valley of the Gods	31,387****	22,863	0	0	22,863
Totals	**517,872**	**521,141**	**53,280**	**0**	**521,141**

*Acreage includes Cedar Mesa ACEC (296,425) and Pine and Step Canyons (23,653).

**Lockhart Basin is not currently an ACEC. A portion of the potential Lockhart Basin ACEC area includes the existing Indian Creek ACEC accompanied by current management prescriptions for this area.

***The proposed San Juan River ACEC would continue to be managed under SRMA status under Alternative A.

****Under Alternative A, the Valley of the Gods is a Special Emphasis Area for Scenic Value within the Cedar Mesa ACEC.

Table 4.210. Acreage of WSR Segment Recommended for Designation by Alternative

WSR Segment	Alternatives				
	A	B	C	D	E
Colorado River Segment 1 (Recreational)	No evaluation	352	0	0	352
Colorado River Segment 2 (Scenic)	Suitable, acreage not specified	880	880	0	880
Colorado River Segment 3 (Scenic)	Suitable, acreage not specified	1,040	1,040	0	1,040
Indian Creek (Recreational)	No evaluation	1,536	0	0	1,536
Fable Valley (Scenic)	No evaluation	2,176	0	0	2,176
Dark Canyon (Wild)	No evaluation	2,048	2,048	0	2,048
San Juan River Segment 1 (Recreational)	No evaluation	1,360	0	0	1,360
San Juan River Segment 2 (Recreational)	Suitable, acreage not specified	1,600	0	0	1,600
San Juan River Segment 3 (Wild)	Suitable, acreage not specified	2,128	0	0	2,128
San Juan River Segment 4 (Recreational)	Suitable, acreage not specified	672	0	0	672
San Juan River Segment 5 (Wild)	Suitable, acreage not specified	2,768	0	0	2,768
Arch Canyon (Recreational)	No evaluation	2,208	0	0	2,208
Totals	**N/A**	**18,768**	**3,968**	**0**	**18,768**

4.3.19.3.13.1. Alternative A

Ten of the 12 proposed ACECs would continue to be managed as ACECs under Alternative A (approximately 502,772 acres in total). This includes Valley of the Gods, which would be a Special Emphasis Area for scenic value within the Cedar Mesa ACEC as well as Pine and Step Canyons, which would be managed with the same prescriptions as Cedar Mesa ACEC. The proposed Lockhart Basin ACEC is not currently an existing ACEC but a portion of it includes the Indian Creek ACEC (8,642 acres). This portion would continue to be managed as an ACEC and is included in the total acreage above. The proposed San Juan River ACEC would continue to be managed under SRMA status (15,100 acres). Approximately 25% of the land under ACEC designation would be managed as open to mineral leasing, while approximately 75% would be managed as closed.

Under Alternative A, 6 of the 12 river segments reviewed for WSR status would be designated as suitable for WSR status. The remaining six segments were not evaluated for WSR eligibility in the 1991 San Juan RMP.

4.3.19.3.13.2. Alternatives B and E

Under Alternatives B and E, all 12 of the proposed ACECs (approximately 521,141 acres in total) would be designated and managed as ACECs. Alternatives B and E would designate more

land as ACECs than all other alternatives, which would indirectly benefit wildlife by providing protections from surface disturbance. Approximately 28% of the land under ACEC designation would be managed as open to mineral leasing, while approximately 72% would be managed as closed. Under Alternatives B and E approximately 3% fewer acres would be closed to mineral leasing than under Alternative A. This is a negligible difference between alternatives given the larger acreage managed as ACECs under Alternatives B and E.

Under Alternatives B and E, all 12 of the river segments reviewed for WSR status would be recommended as suitable for WSR status (18,768 acres in total). Management prescriptions vary from river segment to river segment (see Table 2.1 for specific prescriptions by segment) but this variation does not represent a notable difference between alternatives in terms of the impacts of WSR designation since Alternatives B and E recommend more river segments for WSR status than all other alternatives.

4.3.19.3.13.3. Alternative C

Under Alternative C, six of the proposed ACECs (approximately 53,280 acres in total) would be recognized and managed as ACECs. Alternative C would designate less land as ACECs than Alternative A, limiting protections from surface disturbance compared to Alternative A. Under Alternative C approximately 37% of the land under ACEC designation would be open to minerals leasing, while approximately 63% would be managed as closed. Approximately 12% more land would be open to mineral leasing under Alternative C than Alternative A.

Three of the 12 river segments reviewed for WSR status would be designated as suitable for WSR status under Alternative C (3,968 acres in total). The remaining segments would be recommended as not suitable for WSR status. Alternative C would include half as many WSR recommended river segments as Alternative A.

4.3.19.3.13.4. Alternative D

Under Alternative D, none of the 12 proposed ACECs would be designated and approximately 43% of the land within the areas proposed for ACEC designation would be managed as open to mineral leasing, while approximately 57% would be managed as closed. Fewer acres would be closed to surface-disturbing activities under Alternative D than under all other alternatives.

Under Alternative D, none of the river segments reviewed for WSR status would be recommended as suitable for WSR status. This is fewer than all other alternatives.

4.3.19.3.14. Impacts of Special Status Species Decisions on Wildlife and Fisheries

Alternatives vary in terms of the acreage of crucial year-round habitat that would be established for Gunnison sage-grouse as well as specific management prescriptions for Gunnison sage-grouse, Mexican spotted owl, and flannelmouth sucker. Under Alternative A, the impacts of special status species management decisions on wildlife would be the same as impacts common to all alternatives. Alternatives B and E would provide more protection for special status species than all other alternatives, and indirectly other wildlife and fish populations. Alternative D would provide the least protection for these species.

4.3.19.3.15. Impacts of Travel Management Decisions on Wildlife and Fisheries

The impacts of travel management decisions on wildlife would primarily depend on the number of acres open and closed to OHV use and where OHV use is limited to designated roads and/or trails under each alternative. Table 4.211 details acres open, closed, and limited to designated roads and/or trails for OHV use by vegetation type and in total for each alternative. Areas that are classified as developed, disturbed, characterized by invasive/noxious weeds, or characterized as water are not included since their acreages are small.

Table 4.211. Wildlife Habitat (acres) Open, Limited, and Closed to OHV Use by Vegetation Type and Alternative*

Vegetation Type	Status	Alternatives				
		A	B	C	D	E
Conifer/Mountain Shrub	Open	6,709	0	0	0	0
	Limited	3,236	9,728	9,728	10,802	8,029
	Closed	856	1,074	1,074	0	2,774
Desert Shrub	Open	150,188	0	1,847	1,847	0
	Limited	218,564	350,720	351,592	418,829	168,996
	Closed	53,096	69,957	67,238	0	250,403
Pinyon-Juniper	Open	356,773	0	321	321	0
	Limited	572,435	828,766	830,534	1,145,957	498,214
	Closed	218,188	317,500	315,524	0	648,062
Riparian/Wetland	Open	10,870	0	135	135	0
	Limited	6,302	16,458	16,623	20,300	11,656
	Closed	3,525	3,977	3,676	0	8,779
Sagebrush/ Perennial Grass	Open	65,782	0	6	6	0
	Limited	88,073	134,739	165,517	165,571	108525
	Closed	12,256	30,838	0	0	57,050
Totals	**Open**	**590,322**	**0**	**2,309**	**2,309**	**0**
	Limited	**888,610**	**1,340,411**	**1,373,994**	**1,761,459**	**795,420**
	Closed	**287,921**	**423,346**	**387,512**	**0**	**967,068**

*Note that acreages in Table 4.211 do not add up to acreages referenced in the text. Acreages included in the table are only for key wildlife habitats. Acreages in the text include areas open, limited, and closed to OHV use for agricultural, disturbed, invasive species and noxious weeds, water, developed, and barren land use/land cover types.

OHV use can cause damage to vegetation used as wildlife forage and cover, as well as cause noise disturbance. OHV use therefore generally has long- and short-term adverse impacts on wildlife species, especially birds, in the Monticello PA (Reijnen and Foppen 1994; Gelbard and Belnap 2003). OHV use also contributes to habitat fragmentation and habitat degradation, including the spread of noxious weeds. These would have long-term adverse impacts to wildlife. The impacts of habitat fragmentation due to minerals and travel decisions under each alternative are discussed in Section 4.3.19.2.15 Impacts of Habitat Fragmentation on Wildlife. An

alternative that prescribes more acreage open to OHV use would result in more short- and long-term adverse impacts to wildlife than an alternative that prescribes less acreage open to OHV use. Likewise, an alternative that prescribes more acreage closed to OHV use would be more beneficial to wildlife than an alternative that prescribes less acreage closed to OHV use. Areas closed to OHV use would include some ACECs, WSAs, SRMAs, CSMAs, vegetation study areas, and non-WSA lands with wilderness characteristics (a list of closed areas under each alternative is provided in Table 2.1).

4.3.19.3.15.1. Alternative A

Under Alternative A, a total of 611,310 acres would be open to OHV use, which is more than under any other alternative. OHV use would be limited to designated roads and/or trails on approximately 1,329,430 acres and approximately 276,430 acres would be closed to OHV use.

4.3.19.3.15.2. Alternatives B and E

Under Alternatives B and E zero acres would be open to OHV use while 1,359,417 acres would be limited to designated routes. Alternatives B and E would close 423,698 acres to OHV use, which is 147,268 acres (35%) more than under Alternative A. These alternatives would prevent more surface disturbance and weed spread associated with OHV use than any other alternative.

4.3.19.3.15.3. Alternative C

Under Alternative C a total of 2,311 acres would be open to OHV use while approximately 1,362,142 acres would be limited to designated routes. Alternative C would close 418,667 acres to OHV use, which is 142,237 acres (33%) more than under Alternative A. This alternative would prevent approximately the same amount of surface disturbance and weed spread associated with OHV use as Alternatives B and E except that this alternative allows for designated "ways" in corridors to reach trailheads whereas Alternatives B and E do not allow these routes. The designated "ways" associated with Alternative C would result in impacts, as described above, in these areas. These impacts would not be sustained under Alternative B or E.

4.3.19.3.15.4. Alternative D

Under Alternative D a total of 2,311 acres would be open to OHV use while 1,780,807 acres would be limited to designated routes. Alternative D would close no land to OHV use. The lack of closures would make the adverse impacts to wildlife species and their habitats of this alternative greater than under all other alternatives.

4.3.19.3.16. Impacts of Vegetation Decisions on Wildlife and Fisheries

Impacts varying between alternatives result from varying treatment acreages (Table 4.212). Though vegetation treatments would likely cause short-term adverse impacts to all wildlife in the area, impacts would vary over the long-term; depending on what sort of habitat is removed and what habitat type is encouraged to regenerate, some species would benefit and others would experience adverse impacts due to loss of forage or cover. Vegetation treatments focused on removing non-native plants would have long-term, beneficial impacts on the treated wildlife habitats as a whole; removing undesirable, non-native plant species, would allow the establishment of a diverse, native vegetation community.

Table 4.212. Acres of Annual Vegetation Treatments by Vegetation Type and Alternative

Vegetation type	Alternatives				
	A	B	C	D	E
Existing treatments on various vegetation types	U[1]	1,000	1,500	2,000	1,000
Sagebrush	U	1,000	1,500	2,000	1,000
Invasive Weeds	U	3,000	3,000	3,000	3,000
Pinyon/juniper	U	2,000	3,000	4,000	2,000
Riparian	U	500	100	100	500
Greasewood	U	100	200	200	100
Total	**U**	**7,600**	**9,300**	**11,300**	**7,600**

U=Unspecified. Total land treatments for Alternative A = 9,320 acres

4.3.19.3.16.1. Alternative A

Under Alternative A, existing land treatments would be maintained and new land treatments would be provided applying RMP stipulations and special conditions through NEPA documentation. Treatments would occur on a dispersed basis on 232,130 acres. Impacts to wildlife would be of the nature described above.

4.3.19.3.16.2. Alternatives B and E

Under Alternatives B and E there would be a total of approximately 7,600 acres of vegetation treatments annually. Of all alternatives, this is the smallest acreage of annual vegetation treatments. Thus, short-term adverse impacts to wildlife would be least pronounced under these alternatives but long-term beneficial impacts to wildlife would also be least pronounced.

4.3.19.3.16.3. Alternative C

Under Alternative C there would be a total of approximately 9,300 acres of vegetation treatments annually. Impacts on wildlife would be intensified under this alternative compared to Alternative A since a greater number of acres would be treated per year.

4.3.19.3.16.4. Alternative D

Under Alternative D there would be a total of approximately 11,300 acres of vegetation treatments annually. The acreage of vegetation treatments is greater under this alternative than under any other alternative, therefore the impacts to wildlife would be most pronounced under this alternative.

4.3.19.3.17. Impacts of Visual Resources Decisions on Wildlife and Fisheries

The impacts to wildlife from visual resources decisions are generally associated with whether or not lands are protected from surface disturbance (due to the visual impacts of such disturbance). If lands are considered to have high scenic quality, they will likely be inventoried and designated as VRM Class I or II. Landscapes with lower scenic quality are likely inventoried and designated as VRM Class III or IV. Usually VRM Classes I and II are most beneficial to wildlife and their

habitats because lands with such ratings are more carefully protected from surface disturbance and its associated adverse impacts to animals.

Impacts that vary between alternatives result from varying acreages that would be designated as VRM Classes I, II, III, or IV (Table 4.213).

Table 4.213. Total Acreage in Monticello PA Designated Under Each VRM Class by Alternative

VRM Class	Alternatives				
	A	B	C	D	E
I	371, 575 (21%)	497,668 (28%)	425,179 (24%)	390,424 (22%)	998,370 (56%)
II	355,112 (20%)	250,641 (14%)	132,001 (7%)	8,838 (<1%)	111,478 (6%)
III	416,806 (23%)	426,350 (24%)	531,920 (30%)	692,741 (39%)	264,369 (15%)
IV	637,875 (36%)	608,463 (34%)	693,995 (39%)	691,119 (39%)	407,459 (23%)
Total[1]	**1,781,368**	**1,783,122**	**1,783,095**	**1,783,122**	**1,781,676**

[1] Total acreages vary due to slight differences in GIS shapefiles.

4.3.19.3.17.1. Alternative A

Under Alternative A, 41% of land in the Monticello PA would be designated as VRM Class I or II. The wildlife species that use these lands would benefit from the increased protection from surface-disturbing activities that management under these VRM Classes affords, but may adversely impact some species that benefit from vegetation treatments that are designed for wildlife.

4.3.19.3.17.2. Alternative B

Under Alternative B 42% of land in the Monticello PA would be designated as VRM Class I or II. This alternative would be the more beneficial to wildlife and their habitats than Alternative A since a greater percentage of land would be managed under the most restrictive VRM Classes. Some species may be adversely impacted in the long-term by greater restrictions on surface-disturbing activities, which includes habitat improvements and vegetation treatments.

4.3.19.3.17.3. Alternative C

Under Alternative C approximately 31% of land in the Monticello PA would be designated as VRM Class I or II. This alternative would be less beneficial to wildlife and their habitats than Alternative A since 10% less land would be managed under the most restrictive VRM Classes. On the other hand, fewer restrictions also allow for more habitat improvements and vegetation treatments which would translate into greater benefits for some species.

4.3.19.3.17.4. Alternative D

Under Alternative D 22% of land in the Monticello PA would be designated as VRM Class I or II. This alternative would be the least beneficial to wildlife compared to all other alternatives since it manages the least amount of land under the most restrictive VRM Classes. Some species

would benefit more under this alternative since more habitat improvements and vegetation treatments could occur.

4.3.19.3.17.5. Alternative E

Under Alternative E 62% of land in the Monticello PA would be designated as VRM Class I or II. This alternative would be the most beneficial to wildlife compared to all other alternatives since it manages the greatest amount of land under the most restrictive VRM Classes. Some species may experience more adverse impacts due to lack of habitat improvements and vegetation treatments, which would be restricted or prohibited under this alternative.

4.3.19.3.18. Impacts of Woodlands Decisions on Wildlife and Fisheries

Impacts from woodlands decisions on wildlife vary depending primarily upon the number of acres of wildlife habitat open to woodland harvest under each alternative (Table 4.214). Adverse impacts to wildlife from woodland harvest include direct habitat loss, habitat degradation, and habitat fragmentation. Indirect, adverse impacts of wood gathering on wildlife species and their habitats include trampling and removal of native vegetation, which results in habitat degradation that can include reduction of prey species, forage species, and cover. All areas open to woodland harvest in each alternative are woodland vegetation types.

Table 4.214. Acres in the Monticello PA Open to Woodland Harvesting

	Alternatives				
	A	B	C	D	E
Total Open Areas	1,309,894	730,074	841,938	841,938	548,477

4.3.19.3.18.1. Alternative A

Under Alternative A, more acres would be open to woodland collection with fewer restrictions than under any other alternative making Alternative A the most adverse to wildlife.

4.3.19.3.18.2. Alternative B

Under Alternative B there would be 579,820 fewer acres open to woodland harvesting than under Alternative A. This alternative would be less adverse to wildlife than Alternative A since it closes more land to harvest of woodland products. Further, limitations on off-road travel and seasonal restrictions on wood collection would help mitigate the adverse impacts of woodland product collection and harvest, where it occurs, on wildlife resources.

4.3.19.3.18.3. Alternative C

Under Alternative C, 467,956 fewer acres would be open to woodland harvesting than under Alternative A. Also, seasonal restrictions on wood collection would not apply in any area and wood collection in certain areas would be restricted to within 150 feet of designated routes and permitted off-road travel. Despite the lack of seasonal restrictions on wood collection this alternative would have fewer adverse impacts on wildlife resources than Alternative A due to the decreased acreage open to wood collection.

4.3.19.3.18.4. Alternative D

Alternative D impacts would be the same as Alternative C except that wood collection in certain areas would not be restricted to any buffer zone along designated routes or permitted off-road travel. Alternative D would have greater adverse impacts on wildlife than Alternative C since it places the fewest restrictions on wood collection. However, impacts associated with Alternative D would be less than Alternative A due to the greater acreage open to woodland product use under Alternative A.

4.3.19.3.18.5. Alternative E

Under Alternative E there would be fewer acres open to woodland harvest than under any other alternative (761,417 fewer acres available for harvesting than Alternative A). This alternative would be the least adverse to wildlife of all alternatives since it opens the least amount of land to woodland collection.

4.3.19.3.19. Impacts of Habitat Fragmentation on Wildlife

In addition to directly disturbing wildlife habitat, roads associated with minerals and travel decisions also fragment adjacent (undisturbed) habitat, thereby degrading its value to wildlife. Habitat fragmentation may be less obvious than direct impacts such as vehicle collisions with wildlife or vegetation removal, but often carries considerable consequences for long-term population and reproductive success. Large expanses of habitat may be required to meet the minimum habitat requirements of the largest, most widely roaming species, including top carnivores and large migrating herd animals.

The impacts of habitat fragmentation from foreseeable oil and gas development were analyzed for deer and elk, desert bighorn sheep, sage grouse, and migratory birds (discussions of impacts to sage grouse are provided in Section 4.3.15, Special Status Species). These species were selected for analysis for three reasons: 1) they are species of high interest; 2) published studies were available that provided suitable fragmentation thresholds to assess impacts to the species; and 3) GIS data were available to support the analyses. Other wildlife species (e.g., amphibians, reptiles, small game, and raptors) would likely also be impacted by habitat fragmentation, but did not meet the analysis criteria above.

The impacts of habitat fragmentation on various animal species are difficult to quantify. Even with site-specific, peer-reviewed ecological research on the impacts to particular wildlife species from habitat fragmentation, many variables that contribute to the severity of the impacts to nearby wildlife remain difficult to predict. Such variables include vehicle use per hour and day, vehicle speed, noise per vehicle, how often drivers leave their vehicles, etc. Unless otherwise stated, for the purpose of this analysis it is assumed that all roads in the Monticello PA (existing and proposed) would have equal impact on a wildlife species.

4.3.19.3.19.1. General Methodology

GIS models were created to analyze the degree of habitat fragmentation under each alternative. The models were based on the BLM's best available GIS data for existing roads within the Monticello PA. The model utilized habitat acreages proposed under each alternative for each species or group of species. Within areas of the Monticello PA that would be open to oil or gas well development (under Standard, Controlled Surface Use, or Controlled Surface Use and

Timing Stipulations), the number of wells expected under the RFD scenario were randomly distributed by RFD area. Only roads effects were considered in the models; individual wells were assumed to have no area and no impact on fragmentation.

Once the wells had been distributed within the network of existing roads, the model generated new roads that connected each well to the nearest existing road. Roads were generated as the shortest straight line from well to existing road, without consideration for topography or ease of travel. The habitat fragmentation analysis considered the effects of all BLM-identified existing roads and new computer-generated roads on the habitat of each wildlife species examined.

Several potential sources of error affect these analyses. First, not all existing roads were included in the GIS database utilized in the models due to unofficial and uninventoried roads. Therefore, these analyses may slightly underestimate some adverse impacts from habitat fragmentation. Second, many roads in the Monticello PA are rarely traveled by vehicles (personal communication, Katie Stevens), and therefore would have little contribution to habitat fragmentation. Including roads with little travel would tend to overestimate the impacts of roads on wildlife habitat. Because the effects of under- and over-estimation would be consistent across all alternatives, the results presented should be useful for comparative purposes.

4.3.19.3.19.2. Analysis of Impacts to Wildlife

Mule Deer and Elk

Methodology

Habitat fragmentation for mule deer and elk was assessed by determining the proportion of habitat where road densities would exceed 0.16 km/km². Habitat where this threshold would be exceeded was considered unfavorable, following Sawyer et al. (2006), who found that mule deer preferentially use habitat where road densities are </= 0.16 km/km² in a natural gas field in western Wyoming. Because elk are thought to experience similar impacts to mule deer when disturbed, and as they often occur in similar habitat types as mule deer (Sawyer et al. 2006) this information was also used to predict the spatial distribution of elk since there were no comparable elk data. Road density was calculated per square km of BLM-managed habitat in the Monticello PA.

Results

Table 4.215 presents the proportion of UDWR-designated mule deer and elk habitat that would be considered unfavorable to each species due to fragmentation by roads under each alternative. Fragmentation of elk habitat under each alternative is shown in Maps 61 – 64, and mule deer habitat fragmentation is shown in Maps 69 – 72.

Table 4.215. Percent of Mule Deer and Elk Habitat Considered Unfavorable After Fragmentation by Roads (Road Density < 0.16 km/km²)

Species	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Mule Deer	53.2%	50.1%	52.9%	54.4%	50.1%
Elk	49.9%	49.2%	52.2%	52.9%	49.2%

Under each alternative approximately half of the mule deer and elk habitats in the Monticello PA would be unfavorable to mule deer due to existing roads and those expected due to reasonably foreseeable minerals development. The small difference (4.3%) between the most and least favorable alternatives seems to indicate that existing roads in the Monticello PA cause most of the habitat fragmentation for mule deer and elk. The number of new roads to be built under each alternative, as modeled, varies considerably, but in comparison to existing roads, new roads only contribute a few percentage points to habitat fragmentation.

Desert Bighorn Sheep

Methodology

The impacts of habitat fragmentation on desert bighorn sheep were assessed using habitat patch size, rather than road density (as with mule deer and elk). This assessment assumed that patch sizes smaller than 159 km² were generally unsuitably fragmented, following Singer et al. (2001), who found that bighorn sheep released into habitat patches of at least 158.7 km² ± 60.3 km² colonized an average of one neighboring patch, while bighorn sheep released in smaller patches did not colonize neighboring areas and eventually left the area. Patch colonization is a necessary precursor to reproduction and population maintenance. Desert bighorn sheep are more sensitive to encroachment and habitat fragmentation than are other ungulates in the Monticello PA (Singer et al. 2001).

Desert Bighorn Sheep Results

Table 4.216 presents the acres of UDWR-designated desert bighorn sheep habitat that would be found in patches larger or smaller than 159 km² under each alternative.

Table 4.216. Desert Bighorn Sheep Habitat Fragmentation Analysis

Alternative	Road Corridor	Habitat Patch <158.7	Habitat Patch >=158.7	Total
A	3,873	261,751	879,033	1,144, 657
B	2,995	253,611	888,051	
C	3,697	333,632	807,328	
D	3,908	380,348	760,401	
E	2,995	253,611	888,051	

Alternatives E, B, and A are the most favorable alternatives for unfragmented habitat within the Monticello PA. Alternative C would allow for roughly 80,000 fewer acres of isolated habitat for desert bighorn sheep than these alternatives.

Migratory Birds

Methodology

Fragmentation of migratory bird habitat was assessed by calculating the acreage of migratory bird habitat that would be impacted by vehicle and pedestrian traffic for all lands within the Monticello PA. All lands within the Monticello PA were used for these calculations to avoid falsely introducing fragmentation due to land ownership. The potential area of impact was assumed to be a 400-meter buffer along each side of all roads in designated migratory bird

habitat. This buffer represents an average distance based on applicable literature (Clark and Karr 1979, Connelly et al. 2000, Crawford et al. 2004, UDWR 2002).

Because numerous migratory bird species use various habitats in the Monticello PA, impacts were analyzed based on habitat types, which could then be extrapolated to specific bird species.

Results

Table 4.217 presents the acreage of each habitat type that falls within the 400-meter buffer surrounding roads in the Monticello PA by alternative, as well as representative bird species that would be impacted. Although other birds utilize these habitats, these migratory birds were selected for analysis because many of them are found on lists of sensitive species (Partners in Flight and Birds of Conservation Concern). The presence of roads can have numerous adverse impacts on avian communities, including displacement, loss of habitat, and vehicular-related mortalities. Vehicles often hit and kill birds that are attracted to roadside vegetation, spilled grain, or dead animals (Forman and Alexander 1998).

Table 4.217. Acres of Vegetation Habitat Types Impacted by Roads and Buffers

Vegetation Type	Associated Species	Alternatives				
		A	B	C	D	E
Conifer and Mountain Shrub	Clark's Nutcracker, Flammulated Owl, Grace's Warbler, Gray Vireo.	92,333	109,518	110,535	110,860	109,518
Desert Scrub	Ash-throated Flycatcher, Brewer's Sparrow, Golden Eagle.	479,823	454,789	473,849	484,668	454,789
Pinyon-Juniper	Black-throated Gray Warbler, Gray Vireo, Juniper Titmouse, Pinyon Jay.	619,620	535,820	599,590	627,324	535,820
Riparian and Wetland	Blue Grosbeak, Cooper's Hawk, Hermit Thrush, Peregrine Falcon, Northern Harrier.	27,974	27,056	27,867	28,603	27,056
Sagebrush and Perennial Grassland	Horned Lark, Brewer's Sparrow, Sage Thrasher, Western Meadowlark.	174,899	162,975	171,214	176,480	162,975
Total		**1,394,649**	**1,290,158**	**1,383,055**	**1,427,935**	**1,290,158**

Under each of the alternatives, birds that use desert shrub habitats would experience the most habitat fragmentation. Migratory birds that utilize pinyon-juniper woodlands would be the next most heavily impacted by road effects and habitat fragmentation.

Of all the alternatives, Alternative D would cause the most fragmentation by allowing approximately 137,777 more acres of disturbance than Alternatives B and E, 44,880 more than

Alternative C, and 33,286 more than Alternative A. Alternatives B and E would cause the least amount of road-related disturbance to migratory bird habitat (in total and within each habitat type).

4.3.19.4. Summary of Impacts

Table 2.2 contains a summary of impacts of management decisions on wildlife and fisheries resources.

4.3.19.5. Mitigation Measures

The protective measures for wildlife described in Table 2.1, Management Common to All Alternatives in Chapter 2, Appendix M (Raptor Best Management Practices), and Appendix I (SOPs) in addition to BMPs for other resources would serve to avoid and/or minimize impacts to wildlife resources in the Monticello PA.

4.3.19.6. Unavoidable Adverse Impacts

Unavoidable adverse impacts to wildlife would include short-term reductions in cover due to trampling and grazing by livestock, trampling and weed introduction by human visitors (motorized and non-motorized), and noise disturbance of individual animals associated with human presence. Permanent alteration of wildlife habitat due to clearing activities such as oil well pad installation and woodland harvest would constitute long-term adverse impacts on wildlife.

4.3.19.7. Short-Term Use Versus Long-Term Productivity

As discussed throughout this section, some of the short-term, multiple uses of the Monticello PA would adversely impact wildlife habitats. These uses include oil and gas development, livestock grazing, dispersed and developed camping, off-road vehicle travel, and woodland harvest. Most of these impacts, however, are accompanied by economic benefits, and would be partially mitigated by the protective measures discussed in the Impacts Common to All Alternatives sections for each management decision. Effective implementation of these protective measures would prevent these uses from substantially impacting the long-term productivity of wildlife and fisheries resources.

4.3.19.8. Irreversible and Irretrievable Impacts

There would be no anticipated irreversible impacts to wildlife, fisheries, or wildlife habitat associated with the management decisions proposed for the Monticello PA. There would, however, be irretrievable impacts associated with surface-disturbing activities proposed throughout the planning area. The native vegetation that would be removed or disturbed when roads or trails are cut, oil pads installed, or areas are over-grazed would be an irretrievably lost until successful restoration occurred. The effects of habitat fragmentation due to roads and other disturbances would also persist until removed and successfully reclaimed.

4.3.20. Woodlands

The management of high-use recreation areas, some ACECs, non-WSA land with wilderness characteristics, and all WSAs prohibits the harvesting of woodland products. Most woodland

harvesting within the Monticello PA is by individuals for use as firewood, fence posts, Christmas trees, landscaping, and greenwood cutting (see Section 3.21.3, Woodlands, for a description of resource demand and use). Thus, it was assumed that areas within the PA that were open to woodlands harvesting would have beneficial impacts on the resource because 1) opportunities would be available to the public to harvest wood for a variety of uses, and 2) managed woodland harvesting (harvesting-related fuel load reductions) would reduce wildland fire risks in dense woodland stands and potentially improve woodland ecosystem health. The quantitative criteria for impacts analysis were the number of acres available and unavailable for woodland harvesting within the Monticello PA.

4.3.20.1. Impacts Common to All Alternatives

Under all of the alternatives, 386,027 acres of WSAs (approximately 22% of the planning area) would be excluded from woodland harvesting and product use, which would have long-term, restriction-related, adverse impacts on opportunities for woodland harvesting until Congress makes a final determination on the wilderness suitability of these areas.

Long-term, beneficial impacts to woodland resources harvesting opportunities under all of the proposed alternatives would include: (1) allowing woodland harvesting in coordination with fire management fuels treatments projects, and (2) and allowing pinyon and juniper harvesting in areas where these woodland species are encroaching on the sagebrush steppe vegetation community.

4.3.20.2. Impacts Common to All Action Alternatives

Under Alternatives B, C, D, and E, implementing the Healthy Forest Initiative and the 2003 Healthy Forest Restoration Act would have long-term, beneficial impacts on woodland resources by improving the health and ensuring the sustainability of the resource for long-term harvesting and product use.

Restricting riparian woodland species harvesting (cottonwood and willow) to Native American ceremonial use-only in order to maintain or achieve healthy riparian ecosystems would have long-term, beneficial impacts to riparian woodland resources because these restrictions would ensure the health and sustainability of this resource.

4.3.20.3. Alternatives Impacts

For all of the alternatives, woodland resource use and management would be required to meet VRM Class objectives. All of the alternatives would designate acreages within the PA as VRM Class I through VRM Class IV, with VRM Class I management objectives having the most restrictions on surface disturbing activities and VRM Class IV objectives having the least (see Sections 3.18 and 4.18 for a discussion of VRM). For analysis purposes, it was assumed that the more protective VRM classes (VRM Classes I and II) would place more restrictions on woodland harvesting opportunities because harvesting is a surface disturbing activity that could create visual contrasts and impact scenic quality. Thus, in general, VRM Class I and II designations would potentially have long-term, adverse impacts on opportunities for woodland harvesting by restricting these surface disturbing activities in visually protected areas. It was assumed that VRM classes III and IV would likely have the least long-term, adverse impacts on

opportunities for woodland harvesting because the VRM management objectives under these classes would be the least restrictive on surface disturbing activities.

It was also assumed that OHV areas that are designed as open to cross-country use and limited to designated routes would provide adequate access to woodland resources areas for harvesting and transporting woodland products. Consequently, it was assumed that closing an area to OHV motorized travel would essentially preclude woodland harvesting in that area.

The following resource management decisions would have negligible to minor impacts on woodland resources and will not be analyzed further in this section:

- Air Quality

  Air quality management decisions would have negligible impacts on woodland resources because timing prescribed burns and managing emissions to prevent air quality degradation and comply with state and federal air quality standards would not interfere with woodland harvesting and gathering, woodland restoration, and compliance with the Healthy Forest Initiative.

- Health and Safety

  Health and safety management decisions for all the alternatives that would identify and address abandoned minelands safety concerns, respond to hazardous waste releases, and protect public hearth and safety would have negligible impacts on woodland resources management and woodland harvesting for products use. The hazardous materials management decisions would not interfere or restrict woodland harvesting and gathering, woodland sustainability, and woodland restoration.

- Lands and Realty

  Management decisions common to all alternatives for lands and realty for access, permits, transfer, acquisition, or exchange of lands within the Monticello PA would have negligible impacts on woodland resources or woodland harvesting for wood products. The impacts would be negligible because there are no lands and realty management decisions that address woodlands resources management or specifically identify woodland harvest areas.

- Livestock Grazing

  Grazing management decisions would have negligible to minor impacts on woodland resources because grazing restrictions and exclusions and authorized grazing use within the planning area do not impinge on woodland resources management and woodland harvesting for products use.

- Paleontology

  Management decisions common to all alternatives for paleontological resources would have negligible impacts on woodland resources because the collection of fossils for personal, commercial, and scientific use and the protection of this resource would not affect woodland resources harvesting or gathering or woodlands resource management for sustainable woodland products use.

- Special Status Species

The impacts of special status species management decisions common to all alternatives on woodland resources would be negligible because temporary seasonal or spatial buffers and restrictions for roosting or nesting birds and habitat enhancement to protect special status species would not restrict woodland harvesting or woodlands management.

4.3.20.3.1. ALTERNATIVE A

4.3.20.3.1.1. Impacts of Cultural Resources Decisions on Woodlands

The Grand Gulch Special Emphasis Area/National Historic District (37,433 acres) would be excluded from woodland harvesting, which is approximately 3% of the total area open to woodland harvesting under this alternative. Closing this area would have long-term, adverse impacts on the opportunities for woodland products use because the area would not be open to harvesting.

4.3.20.3.1.2. Impacts of Fire Management Decisions on Woodlands

No areas or acreages are specified for fire management under this alternative, except for fuels treatments on an estimated 5,000 to 10,000 acres per year. Woodland resources would be subject to fire management fuels treatments at the site-specific level to reduce the risk of wildland fire. It is impossible to quantitatively analyze the potential impacts of these treatments since it is not known how much, where, or when they would occur. The impacts of these treatments would be analyzed through site-specific NEPA processes. However, it is likely that these treatments would have an adverse, short-term impact on woodlands because of the loss of vegetation (including woody vegetation), and surface disturbances caused by managed, naturally ignited wildland fire, prescribed fire, fuel load reductions, fuels treatments, and fire suppression. This vegetation loss and soil disturbance would likely result in some soil erosion and compaction, as well as increasing the potential for noxious weed and exotic species invasion and establishment. Fire treatments would also have short-term, adverse impacts on woodlands harvesting by potentially restricting entry into treated areas until vegetation re-growth and establishment, typically for two years (personal communication between Daryl Trotter, Moab FO, and David Harris, SWCA, 2006). However, fire management decisions (including managed, naturally ignited wildland fire) under this alternative would have long-term, beneficial impacts on woodland resources because they would reduce the risk of wildland fire due to reduced fuel loads and would improve fire condition classes, resulting in sustainable yields of woodland products.

4.3.20.3.1.3. Impacts of Minerals Decisions on Woodlands

Minerals management decisions for the exploration and development of leasable, locatable, and salable minerals under Alternative A would have potential long-term, adverse impacts on woodland resources through surface disturbances (e.g., access road and well pad construction, seismic and geophysical exploration) that would remove or trample woodland resources, which would reduce woodland resources productivity and reduce the opportunities for woodland harvesting and gathering in developed areas. These impacts would be the same under all of the alternatives.

Under Alternative A, approximately 1,387,933 acres would be available under standard stipulations and timing and controlled surface use leasing categories for oil and natural gas exploration and development. However, it should be noted an estimated total of 76 wells would

be drilled over the lifetime of the proposed RMP with a potential total surface disturbance of 730 acres. Predicted geophysical exploration would impact approximately 886 acres during the life of the plan. Thus, the expected potential disturbance from oil and natural gas exploration and development would be approximately 0.1% of the area available for minerals leasing and development. Based on the expected level of oil and gas development in the PA and the relatively small area of impact, the potential loss of woodland resource productivity would be minor.

4.3.20.3.1.4. Impacts of Recreation Decisions on Woodlands

Under Alternative A, there would be no restrictions from recreation management decisions on woodland resource harvesting, and wood collecting within the designated Canyon Basins, Grand Gulch Plateau, and San Juan River SRMAs. There would be no harvesting restrictions within the ERMA, except for the 1,280-acre Pearson hiking area, approximately 196,040 acres of ROS P-Class areas, and 250 acres of developed recreation sites where harvesting would be excluded. This would have long-term, beneficial impacts on harvesting opportunities in undeveloped recreation areas because relatively few acres would have harvesting prohibitions from recreation-related decisions (11% of the Monticello PA); however, under this alternative, there would also be direct, long-term, adverse impacts caused by unrestricted, unlimited harvesting of the resource that could reduce long-term woodland resource productivity and threaten the long-term sustainability of resource harvesting.

4.3.20.3.1.5. Impacts of Riparian Decisions on Woodlands

Management decisions under this alternative would exclude riparian areas from private and commercial woodland harvesting. Additionally, they would require fire suppression in riparian areas to protect riparian resources. This would have long-term, beneficial impacts on riparian woodland resources (i.e., cottonwood and willow) by ensuring the sustainability and stability of riparian-woodland resources. Although the limitations on woodland harvesting within riparian areas would have some long-term adverse impact on opportunities for resource harvesting, this impact would be minor because riparian vegetation (e.g., cottonwood and willow) are typically not highly sought after for private or commercial harvesting.

4.3.20.3.1.6. Impacts of Soils/Watershed Decisions on Woodlands

Alternative A soils and watershed decisions would have negligible impacts on woodlands resources management or woodland harvesting because there are no vegetation or watershed treatments proposed that would affect woodlands or access to woodland resources.

4.3.20.3.1.7. Impacts of Special Designations Decisions on Woodlands

<u>WSAs</u>

As discussed above under Impacts Common to All Alternatives, all WSAs (totaling 399,600 acres or 22% of the Monticello PA) would be closed to harvesting (in compliance with the IMP) to preserve the wilderness values within these areas. This would have long-term, adverse, but minor impacts on opportunities for woodland resources use because, while these areas are currently and would continue to be closed to harvesting, and because they are relatively inaccessible to woodland harvesting because of topography and/or the lack of OHV access routes.

ACECs

Under Alternative A, approximately 139,796 acres would be closed to harvesting in Bridger Jack Mesa, Butler Wash, Dark Canyon, Hovenweep, Indian Creek, Lavender Mesa, Shay Canyon ACECs, and the Grand Gulch portion of Cedar Mesa ACEC. This would have long-term, adverse, but minor impacts on woodland resources use because less than 8% of the Monticello PA would be closed to harvesting opportunities because of ACEC special designation decisions.

Wild and Scenic Rivers

Under this alternative, river segments encompassing approximately 7,168 acres of the San Juan River and 1,920 acres along the Colorado River were determined to be eligible for suitability determination under the NWSRS, and thus excluded from woodland products harvesting and use. This would have long-term, adverse, but minor impacts to woodland resources harvesting for reasons as discussed under WSAs above.

4.3.20.3.1.8. Impacts of Travel Decisions on Woodlands

Under Alternative A, OHV use would be designated as open, limited to existing or designated routes, or closed. Areas that are closed to OHV use would have long-term, adverse impacts on woodland harvesting because opportunities for harvesting access to woodland resources would be limited or prohibited.

Under this alternative, 276,430 acres would be closed to OHV use (or 21% of the acreage available for woodland harvesting), with long-term, adverse impacts on opportunities for woodland harvesting as discussed above.

4.3.20.3.1.9. Impacts of Vegetation Decisions on Woodlands

Under Alternative A, vegetation treatments would be applied to approximately 232,130 acres. These treatments would reduce fuel loading and control invasive species, with long-term, indirect, beneficial impacts on woodland productivity by reducing the risk of wildland fire and reducing the likelihood of displacement of woodlands by non-native, exotic, invasive species. Potential short-term impacts to woodlands would be the same as those discussed under Fire Management because the methods used for vegetation treatments would be similar: short-term, minor, direct and indirect impacts that would cause woody vegetation productivity losses and soil compaction in treatment areas.

4.3.20.3.1.10. Impacts of Visual Resources Decisions on Woodlands

Alternative A would designate approximately 726,687 acres as VRM Class I and Class II ([41% of the Monticello PA]; 371,575 acres would be managed under VRM Class I objectives and 355,112 acres under VRM Class II objectives). The impacts would be long-term and adverse on woodlands harvesting opportunities from likely restrictions on the amount and type of harvesting to preserve scenic quality; however the impacts would be minor because: (1) non-mechanized harvesting could be allowed within VRM Class I areas if the management class objectives were met, and (2) mechanized harvesting would be allowed in VRM II if the degree of harvesting related surface disturbances met VRM II scenic quality objectives. Approximately 1,054,681 acres would be managed under VRM Class III and IV objectives, with negligible impacts on

woodland harvesting opportunities because few restrictions would be applied under these VRM class objectives to limit harvesting.

4.3.20.3.1.11. Impacts of Wildlife and Fisheries Decisions on Woodlands

Under this alternative, general management decisions for the improvement of riparian habitat areas, control of invasive and non-native plants to maintain migratory bird habitat, and decisions that encourage the regeneration of cottonwood and willows would beneficially protect and improve woodland ecological conditions for sustainable riparian woodlands harvesting. These impacts would be applicable to all of the alternatives.

Under Alternative A, the impacts of specific wildlife and fisheries management decisions on woodland resources use would be negligible because management decisions for wildlife and fish species would not restrict or prohibit woodland harvesting.

4.3.20.3.1.12. Impacts of Woodlands Decisions on Woodlands

Management decisions under Alternative A would allow commercial and private woodland harvesting within the Monticello PA, except for approximately 473,282 acres within WSAs and the woodland harvesting exclusion areas described in the current RMP (Map 77). Accordingly, approximately 1,309,894 acres (73% of the planning area) would be open to harvesting and the remaining 27% would be closed because of WSA protection constraints under the IMP and other management decisions to protect resource values. There would be few other restrictions on harvesting woodland resources under this alternative. This would allow many harvesting opportunities and represents a generally beneficial impact on woodland harvesting and product use in the Monticello PA. The relatively small area closed for woodland harvest under this alternative would not substantially limit woodland harvesting opportunities. Based on GIS GAP data acreage calculations of pinyon and juniper, these woodland species cover approximately 793,757 acres (61%) of the 1,309,894 acres available for harvesting. Table 4.218 shows a comparison of available woodland acreages under each alternative.

Table 4.218. Woodland Available for Woodland Harvesting, by Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Available for Woodland Harvesting in Monticello PA (Acres)	1,309,894	730,074	841,938	841,938	548,477
Percentage of Monticello PA Available for Harvesting	73%	41%	47%	47%	31%
Percentage of Pinyon-Juniper Coverage in Available Areas	61%	69%	71%	71%	13%
Acres of Pinyon- Juniper in Available Areas	793,757	504,666	597,086	597,086	73,428

4.3.20.3.2. ALTERNATIVE B

4.3.20.3.2.1. Impacts of Cultural Resources Decisions on Woodlands

Planned reductions of hazardous fuels or mitigation of potential fuel load hazards around archaeological sites would reduce the risk of wildland fire in the long-term, thus beneficially reducing the risk of loss of woodland productivity and preserving the resource for sustainable harvesting. Specific acreages for these fuel reduction treatments around archaeological sites are not known, but would be analyzed through site-specific NEPA processes when treatments areas were proposed. These impacts would be similar for Alternatives B, C, and D.

Under this alternative, approximately 99,955 acres would be excluded from woodland harvesting (except for traditional cultural use in Tank Bench) within the Comb Ridge, Tank Bench, Beef Basin, and McLoyd Canyon-Moon House CSMAs, and in the Grand Gulch National Historic District, with adverse restriction-related impacts on woodland harvesting opportunities. Compared to Alternative A, this alternative would close more than two and one-half times more acres to woodlands harvesting (62,522 more acres) than Alternative A.

4.3.20.3.2.2. Impacts of Fire Management Decisions on Woodlands

The impacts would be the same as those discussed under Alternative A because the management decisions are the same.

4.3.20.3.2.3. Impacts of Minerals Decisions on Woodlands

Under Alternative B, approximately 1,241,909 acres would be available under standard stipulations and timing and controlled surface use leasing categories for oil and natural gas exploration and development. The potential impacts of mineral exploration and development on woodland resources would be similar to those discussed above under Alternative A because the predicted minerals development within the planning area would be the same. Under this alternative, it is estimated that an average of 66 wells would be drilled during the life of the proposed RMP, causing surface disturbances on approximately 636 acres, with 794 acres of impacts from geophysical exploration. Thus, in comparison to Alternative A, the expected potential disturbance from oil and natural gas exploration and development would be the same (approximately 0.1% of the area available for minerals development), with impacts to woodland resources as discussed under Alternative A.

4.3.20.3.2.4. Impacts of Recreation Decisions on Woodlands

Recreation management decisions under Alternative B would close existing and future recreational facilities to private and commercial harvesting of woodland products, including the collection of deadwood for campfires. The San Juan River SRMA (10,203 acres) would be closed to woodland products use, except for campfire wood collecting and permitted wood gathering by Native Americans. Cottonwood and willow woodland harvesting would be allowed for Native American ceremonial use only. The long-term impacts of these management decisions on woodland resource uses along this high-use river corridor would beneficially maintain a sustainable yield of riparian woodland resources. The 375,734-acre Cedar Mesa CSRMA and the Dark Canyon SRMA (30,820 acres) would be closed to all woodland resource use, which would have long-term, adverse impacts on woodland resources because opportunities for harvesting

would be reduced. Compared to Alternative A, this alternative would have more adverse impacts on woodlands by excluding or restricting woodland harvesting on more acres within the Monticello PA.

4.3.20.3.2.5. Impacts of Riparian Decisions on Woodlands

The impacts to woodland resources would be the same as those discussed under Alternative A for riparian resources, except that: (1) riparian woodland harvesting (cottonwood and willow) for traditional purposes would be allowed, and (2) OHV use in specified riparian areas would be designated as closed. Native American harvesting of riparian woodlands for traditional purposes would have negligible or minor impacts on riparian woodland resources because restrictions on harvesting would be implemented as necessary to protect and enhance the riparian woodland resource. Closing riparian areas to OHV use would have long-term, beneficial impacts on riparian woodlands sustainability by directly protecting the resource from surface disturbance-related degradation of this resource, and indirectly protecting riparian soils. Compared to Alternative A, this alternative would be more adverse in the short-term on woodland harvesting by restricting resource use, but also more beneficial in the long-term by managing sensitive riparian woodland resources for sustainable resource harvesting and wood gathering.

4.3.20.3.2.6. Impacts of Soils/Watershed Decisions on Woodlands

Under Alternative B, vegetation treatments to reduce tamarisk in watersheds would have short-term and long-term impacts on woodland resources the same as those discussed under Fire Management for Alternative A because the impacts of vegetation treatments would be the same as fuel reduction treatments. Compared to Alternative A, this alternative would potentially restrict woodland harvesting on up to 1,000 acres per year because of proposed vegetation treatments (see Section 4.3.20.3.2.9, below), with adversely reduced opportunities on harvesting.

4.3.20.3.2.7. Impacts of Special Designations Decisions on Woodlands

ACECs. Under Alternative B, approximately 522,035 acres (29% of the Monticello PA) would be closed to woodland harvesting. The impacts would be the same as discussed under Alternative A, but to a greater degree because this alternative would restrict woodland harvesting on 469,047 more acres (more than three and one-half times the acreage), with similar impacts on opportunities for harvesting, but to a greater degree because more acres of woodlands would be affected by harvesting prohibitions.

Wild and Scenic Rivers. This alternative would exclude approximately 18,768 acres from woodlands harvesting to preserve eligible river corridors. The adverse impacts would be the same as those discussed under Alternative A, but to a greater degree because more area (11,600 acres or 2.5 times more acres than Alternative A) would be excluded from woodland harvesting.

4.3.20.3.2.8. Impacts of Travel Decisions on Woodlands

Under Alternative B, 423,698 acres would be closed to OHV use, with long-term, adverse impacts to harvesting opportunities in the OHV closed areas because access to and transport of woodland products would be prohibited. When compared to Alternative A, this alternative would close approximately 147,268 (53%) more acres to harvesting and collection, with more adverse impacts on harvesting opportunities from reduced access to woodlands.

4.3.20.3.2.9. Impacts of Vegetation Decisions on Woodlands

In general, the impacts to woodlands resources from vegetation decisions would be the same as those discussed under Fire Management because the treatments for vegetation fuel load reductions, noxious weed control, and modification of fire condition classes would be the same treatments used for woodlands. These impacts would be applicable under all of the action alternatives.

Alternative B would treat approximately 2,500 acres per year in pinyon-juniper and riparian areas for the lifetime of the proposed RMP, totaling approximately 37,500 acres. This alternative would have short-term and long-term impacts in these treated areas, as discussed under Fire Management. Compared to Alternative A, this alternative would be more beneficial in the long-term to woodland resources because vegetation treatments in pinyon-juniper and riparian woodlands would reduce fuel loads, thus increasing the likelihood for sustained use of the resource and reducing the likelihood of stand-destroying wildland fire.

4.3.20.3.2.10. Impacts of Visual Resources Decisions on Woodlands

This alternative would designate approximately 748,309 acres (42% of the PA) as VRM Class I (497,668 acres) and VRM Class II (250,641 acres), with the same impacts as discussed under Alternative A. Compared to Alternative A, this alternative would designate 21,622 more acres for higher levels of visual resource protection, which would likely restrict the amount and type of woodland harvesting on more acres in these areas than under Alternative A, with greater long-term, adverse impacts on opportunities for harvesting.

4.3.20.3.2.11. Impacts of Wildlife and Fisheries Decisions on Woodlands

The impacts of this alternative on woodlands would be the same as those as discussed under Alternative A because the management decisions are essentially the same.

4.3.20.3.2.12. Impacts of Woodlands Decisions on Woodlands

Alternative B would potentially allow commercial and private woodland products harvesting (with permitted off-road travel to collect wood) on a total of 730,074 acres within designated woodlands harvesting zones (Map 78). This would permit woodland harvesting on approximately 41% of the PA, with 59% of the planning area (1,055,053 acres) closed to woodland harvesting. It should be noted that, based on GIS acreage calculations of pinyon and juniper GAP data for the woodland zones, these woodland species cover approximately 504,666 acres (69%) of the designated 730,074 acres within the woodland zones available for harvesting.

Under this alternative, the impacts to woodland resources would include: (1) permitted harvesting of woodlands on a substantial portion of the PA, and (2) controlled use of OHVs to collect wood, which would reduce the direct impacts from soil compaction and the indirect, long-term impacts to woodland resources from OHV-caused surface disturbances that create the conditions for exotic plants establishment and soil erosion. Compared to Alternative A, Alternative B would have the same impacts on woodland resources, but to a less beneficial degree, because fewer total acres would be open to woodland harvesting. This alternative would have long-term, potentially adverse impacts on woodland resources through restrictions on selective harvesting on 65,807 acres in the non-WSA portion of the Cedar Mesa Zone. As discussed in Section 3.21.3, the Cedar Mesa area is currently in need of fuel load reductions, and

restrictions on commercial and private selective woodland harvesting would potentially maintain the excessive fuel loading conditions in the area and maintain the risks of wildland fire.

Prohibiting OHV use on Cedar Mesa would likely have some beneficial impacts on long-term woodland sustainability and productivity by reducing the OHV impacts to woodland soils caused by soil and surface disturbances and soil erosion.

4.3.20.3.3. ALTERNATIVE C

4.3.20.3.3.1. Impacts of Cultural Resources Decisions on Woodlands

Under this alternative, approximately 61,943 acres would be excluded from woodland harvesting and product use (except for traditional cultural use in Tank Bench) within the Tank Bench, Beef Basin, and McLoyd Canyon-Moon House CSMAs, and in the Grand Gulch National Historic District. Compared to Alternative A, this alternative would exclude one and one-half times more acres (24,510 acres) from harvesting within the Monticello PA because of cultural management decisions, with resultant decreases in opportunities for woodland harvesting.

4.3.20.3.3.2. Impacts of Fire Management Decisions on Woodlands

No areas or acreages are specified for fire management under this alternative, so the impacts would be the same as those described under Alternative A.

4.3.20.3.3.3. Impacts of Minerals Decisions on Woodlands

Under Alternative C, approximately 1,348,973 acres would be available under standard stipulations and timing and controlled surface use leasing categories for oil and natural gas. The potential impacts on woodland resources would be the same, as discussed above under Alternative A, because the RFD forecast for minerals development within the planning area would be the same. Under this alternative, an estimated 74 wells would be drilled during the life of the proposed RMP, with total surface disturbances of approximately 710 acres. Predicted geophysical exploration impacts under this alternative would be approximately 903 acres. The expected potential disturbance from oil and natural gas exploration and development would be the same as Alternative A (approximately 0.1% of the area available for minerals development) and the impacts to woodland resources would be the same as those discussed under Alternative A.

4.3.20.3.3.4. Impacts of Recreation Decisions on Woodlands

Alternative C would have the same impacts on woodland resources from San Juan River SRMA decisions as discussed under Alternative B because the decisions would be similar. The Dark Canyon SRMA (30,820 acres) and the canyons within the 375,734-acre Cedar Mesa CSRMA would be closed to all woodland resource use. These decisions would adversely reduce the opportunities for woodland harvesting in the long-term. Compared to Alternative A, this alternative would exclude and adversely reduce harvesting opportunities in the long-term on more acres because of recreation decisions.

4.3.20.3.3.5. Impacts of Riparian Decisions on Woodlands

The impacts would be the same as discussed under Alternative B because the management decisions are the same.

4.3.20.3.3.6. Impacts of Soils/Watershed Decisions on Woodlands

The impacts of this alternative would be the same as those discussed under Alternative B because the management decisions are similar. Compared to Alternative A, this alternative would have impacts similar to those discussed under Alternative B, but to a greater degree because potentially more acres would be subjected to riparian vegetation treatments (1,500 acres per year).

4.3.20.3.3.7. Impacts of Special Designations Decisions on Woodlands

ACECs. Approximately 39,093 acres would be closed to woodland harvesting within proposed ACECs under this alternative. This alternative would have the same impacts as Alternative A, but to a lesser degree because 100,703 fewer acres would be adversely excluded from harvesting opportunities.

Wild and Scenic Rivers. This alternative would exclude approximately 3,968 acres from woodlands harvesting along eligible and recommended river segments, with adverse impacts on harvesting opportunities. The impacts would be more beneficial for harvesting opportunities in the long-term when compared to Alternative A because less area (3,200 acres or 55% of the acreage under Alternative A) would be excluded from woodland harvesting.

4.3.20.3.3.8. Impacts of Travel Decisions on Woodlands

Under Alternative C, 418,667 acres would be designated as Closed to OHV use. This would have similar impacts to those discussed under Alternative A, but to a greater adverse degree because this alternative would effectively close approximately 51% more acres to OHV harvesting and collection.

4.3.20.3.3.9. Impacts of Vegetation Decisions on Woodlands

As discussed under Alternative B, vegetation treatments under Alternative C would have the same impacts on woodland resources because the treatments would be the same. Alternative C would treat approximately 3,100 acres per year in pinyon-juniper and riparian areas for the lifetime of the proposed RMP, totaling approximately 46,500 acres. Compared to Alternative A, this alternative would have the same impacts as discussed under Alternative B: more beneficial in the long-term to woodland resources because vegetation treatments in pinyon-juniper and riparian woodlands would reduce fuel loads, thus reducing the risks of stand-destroying wildland fire.

4.3.20.3.3.10. Impacts of Visual Resources Decisions on Woodlands

This alternative would designate approximately 557,180 acres (31% of the PA) as VRM Class I (425,668 acres) and VRM Class II (132,001 acres), with the same impacts as discussed under Alternative A, but to a less adverse degree, because fewer acres would have harvesting restrictions under VRM classes I and II management objectives. Compared to Alternative A, 169,507 fewer acres within the PA would have potential restrictions placed on surface disturbing

woodland harvesting in order to protect visual and scenic resources and meet VRM class objectives, which would have fewer long-term, adverse impacts on opportunities for woodlands harvesting and woodland treatments to improve woodland ecological conditions and fire conditions.

4.3.20.3.3.11. Impacts of Wildlife and Fisheries Decisions on Woodlands

The impacts of this alternative on woodlands would be the same as those discussed under Alternative A because the management decisions are similar.

4.3.20.3.3.12. Impacts of Woodlands Decisions on Woodlands

Alternative C would permit woodland harvesting on 841,938 acres within designated woodland harvesting zones (encompassing approximately 47% of the Monticello PA) (Map 79). Approximately 53% of the PA (943,189 acres) would be closed to woodland harvesting. As noted in the Alternative B analysis, GAP data were used to determine that pinyon and juniper woodland species cover approximately 597,086 acres (71%) of the designated 841,938 acres within the proposed woodland zones. The impacts on woodland resources would be similar to those described under Alternative A, but to a less beneficial degree because 467,956 fewer acres (26% less of the PA) would be open to opportunities for woodland harvesting. The indirect, potentially adverse impacts on woodland resources and soils would be greatly reduced when compared to Alternative A because of additional restrictions and management prescriptions on off-road OHV travel in woodland areas: 2,311 acres would be designated as Open to cross-country OHV use (0.1% of the planning area, but in previously disturbed areas without woodland resources) and limited off-route travel would be allowed to collect harvested wood, so the indirect impacts on woodlands from cross-country OHV use would be minor.

4.3.20.3.4. ALTERNATIVE D

4.3.20.3.4.1. Impacts of Cultural Resources Decisions on Woodlands

Under this alternative, approximately 59,297 acres would be excluded from woodland harvesting within McLoyd Canyon-Moon House and Beef Basin CSMAs and in the Grand Gulch National Historic District. These exclusions would reduce the opportunities for woodland harvesting with the same impacts as described under Alternative C because the number of acres within which harvesting would be prohibited are similar. Compared to Alternative A, approximately 21,864 acres (approximately one and one-half times more acres than Alternative A) within the Monticello PA would be excluded from woodland harvesting opportunities because of management prescriptions to protect cultural resources, with reduced opportunities for harvesting.

4.3.20.3.4.2. Impacts of Fire Management Decisions on Woodlands

The impacts of fire management on woodland resources would be the same to as those described under Alternative A because the management decisions are similar.

4.3.20.3.4.3. Impacts of Minerals Decisions on Woodlands

Under Alternative D, approximately 1,383,283 acres would be available under standard stipulations and timing and controlled surface use leasing categories for oil and natural gas. The

RFD potential disturbance from oil and natural gas exploration and development would have the same impacts as those discussed under Alternative A (approximately 0.1% of the area available for minerals leasing) because the estimated development would be similar to that discussed under Alternative A: an average of 75 wells drilled during the life of the proposed RMP with approximately 721 total acres of surface disturbances and predicted geophysical exploration impacts totaling 924 acres.

4.3.20.3.4.4. Impacts of Recreation Decisions on Woodlands

Alternative D would have the same impacts on woodland resources from recreational decisions for recreational facilities and the San Juan River SRMA as discussed under Alternative B. Under this alternative, the Dark Canyon SRMA (30,820 acres) and Cedar Mesa canyons within the 375,734-acre C-SRMA would be closed to all woodland resource use, with impacts as discussed under Alternative C. Compared to Alternative A, this alternative would be less beneficial for woodland harvesting opportunities because more acreage would be excluded from harvesting.

4.3.20.3.4.5. Impacts of Riparian Decisions on Woodlands

The impacts would be the same as discussed under Alternative A because the management decisions are the same.

4.3.20.3.4.6. Impacts of Soils/Watershed Decisions on Woodlands

The impacts of this alternative on woodland resources would be the same as those discussed under Alternative B because the same erosion control strategies and similar surface disturbance mitigation would be applied. Compared to Alternative A, this alternative would apply vegetation treatments to more acres within the planning area (2,000 acres per year) with the same impacts as those discussed under Alternative B, but to a greater degree because more acres would be managed for vegetation treatments.

4.3.20.3.4.7. Impacts of Special Designations Decisions on Woodlands

ACECs. Under this alternative, approximately 22,863 acres would be closed to woodland harvesting (within the proposed Valley of the Gods ACEC) with impacts similar to those discussed under Alternative C.

Wild and Scenic Rivers. This alternative would not recommend any river segments as suitable for Wild and Scenic River designation. Accordingly, the impacts under this alternative would be beneficial in the long-term on woodland resources use because no acres would be excluded from resource use within the Monticello PA area river corridors, except for protection of riparian resources. Compared to Alternative A, this alternative would have more beneficial impacts to woodland harvesting because it would provide more opportunities for woodland resource use.

4.3.20.3.4.8. Impacts of Travel Decisions on Woodlands

Under Alternative D, no acres would be closed to OHV use, and all of the PA (1,780,807 acres or 99.9% of the planning area) would be accessible along limited to designated OHV travel routes. This alternative would have negligible impacts on woodland resources areas because there would be very few limitations or restrictions on OHV access to woodland resources in those areas open to woodland harvesting within the Monticello PA. When compared to

Alternative A, this alternative would have more beneficial impacts to woodland resource harvesting opportunities because more acres (all of the PA, with the exception of the 399,600 acres of WSAs) would be accessible to OHV use for woodland harvesting along designated OHV routes.

4.3.20.3.4.9. Impacts of Vegetation Decisions on Woodlands

Alternative D would treat approximately 4,100 acres annually in pinyon-juniper and riparian areas for the lifetime of the proposed RMP, totaling approximately 61,500 acres. The impacts on woodlands would be the same as those discussed under Alternative B because the management decisions are similar.

4.3.20.3.4.10. Impacts of Visual Resources Decisions on Woodlands

This alternative would designate 399,262 acres (22% of the planning area) as VRM Class I (390,424 acres) and VRM Class II (8,838 acres), with the same impacts as those described under Alternative A. However, compared to Alternative A, this alternative would be less adverse in the long-term on harvesting opportunities because 327,425 fewer acres within the PA would be managed under VRM I and II objectives that could limit or restrict woodland harvesting.

4.3.20.3.4.11. Impacts of Wildlife and Fisheries Decisions on Woodlands

The impacts of this alternative on woodlands would be the same as those discussed under Alternative A because the management decisions are similar.

4.3.20.3.4.12. Impacts of Woodlands Decisions on Woodlands

The impacts of woodland management decisions under this alternative would be similar to the impacts described under Alternative C because the acreages available for woodland resource harvesting within woodland zones would be the same (Map 79). Compared to Alternative A, the impacts on woodland harvesting would be less beneficial because of the fewer number of acres potentially available for woodland harvesting (47% of the PA compared to 73% under Alternative A). The indirect, potentially adverse impacts on woodland resources and soils from OHV use would also be similar to those discussed under Alternative C.

4.3.20.3.5. ALTERNATIVE E

Under Alternative E, the impacts on woodland resources would be similar to the impacts discussed under Alternative B because the management decisions are similar, except that this alternative would manage approximately 582,357 acres for the protection of land with non-WSA wilderness characteristics. Protection-related management decisions applicable to these areas would partially include VRM Class I designation, prohibitions on fire and vegetation treatments, closure to wood gathering and harvesting, and closure to OHV cross-country access. These areas would also be closed to minerals leasing and new road construction.

4.3.20.3.5.1. Impacts of Cultural Resources Decisions on Woodlands

The impacts would be the same as discussed under Alternative B because the management decisions are the same. Though approximately 8,514 acres of land with non-WSA wilderness characteristics lie within the proposed Comb Ridge CSMA, Alternative E cultural resource

management decisions would prohibit woodland harvesting within the proposed CSMA, so protection of wilderness values within this area (including prohibitions on woodland harvesting and gathering) would have no impact on woodland harvesting beyond those discussed under Alternative B. No lands with non-WSA wilderness characteristics lie within any of the other CSMAs.

4.3.20.3.5.2. Impacts of Fire Management Decisions on Woodlands

Under this alternative, no fire treatments would be allowed within the 582,357 acres that have non-WSA wilderness characteristics. Prohibiting fuel loading and prescribed fire treatments would have long-term, adverse impacts on woodland resources by maintaining wildland fire risks from untreated fuel loads in these areas, particularly within pinyon-juniper woodlands in the Cedar Mesa area, as discussed above. This alternative would prohibit more area from woodland harvesting than Alternative A, so the impacts from additional restriction and prohibitions of fire treatments within the non-WSA lands with wilderness characteristics would 1) adversely increase wildland fire risks within PA pinyon-juniper woodlands, and 2) adversely reduce the opportunities for fuel load reduction/woodland harvesting, when compared to Alternative A.

4.3.20.3.5.3. Impacts of Minerals Decisions on Woodlands

The impacts of minerals decisions would be the same as those under Alternative B, except that excluding approximately 582,357 acres from minerals exploration and development would slightly reduce the RFD of oil and gas wells within the Monticello PA. This reduction would have negligible impacts on woodland harvesting and woodland resources productivity because the expected reduction in minerals activities (and surface disturbances) would likely be several wells within the planning area. Minerals-related surface disturbances (with loss of woodland productivity and opportunities for harvesting) would be similar to those discussed under Alternative A: the RFD disturbances would be approximately 730 acres, while minerals disturbances under Alternative E would total approximately 519 acres, with geophysical exploration impacts occurring on an estimated 761 acres.

4.3.20.3.5.4. Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Woodlands

The impacts of wilderness characteristics decisions on woodland resources would be similar to the Alternative E discussion for Fire Management, Riparian, Vegetation, and Visual resources, as approximately 582,357 acres of non-WSA lands with wilderness characteristics within the Monticello PA would be protected from surface disturbances, including disturbances potentially caused by fuel load reductions, vegetation treatments, control of invasive species within riparian areas, and woodland harvesting. The impacts on woodland resources would be adverse in the long-term because these protected areas would not be managed to resolve the potentially adverse current conditions and trends pertaining to the resource (e.g., exotic species encroachment into woodlands, heightened wildland fire risks from excessive fuel loads), nor would these areas be managed to provide opportunities for woodland harvesting in upland and riparian areas. Compared to Alternative A, this alternative would have more adverse impacts on woodland resources because (1) of the greater restrictions on surface disturbances that would prevent woodland resource management to reduce wildland fire risks and treatments-related

improvements to woodland ecosystem health, and because (2) of the reduced opportunities for woodland harvesting.

4.3.20.3.5.5. Impacts of Recreation Decisions on Woodlands

The impacts of SRMA recreation management decisions would be the same as discussed under Alternative B, but to a more adverse degree on harvesting because woodland harvesting would be prohibited within all of the proposed SRMAs, including limited harvesting of riparian woodland species (cottonwood and willow) for ceremonial purposes in those areas determined to have non-WSA wilderness characteristics. Within the ERMA, approximately 416,526 acres have non-WSA wilderness characteristics, with the same adverse impacts on woodlands harvesting.

4.3.20.3.5.6. Impacts of Riparian Decisions on Woodlands

Under this alternative, the impacts of wilderness characteristics areas that lie within riparian areas on woodland resources would be similar to those discussed under the Alternative B, but to a greater adverse degree because no cottonwood and willow harvesting for ceremonial purposes would be permitted.

4.3.20.3.5.7. Impacts of Soils/Watershed Decisions on Woodlands

Soils and watershed decisions on woodland resources within non-WSA wilderness characteristics areas would prohibit tamarisk vegetation treatments. The impacts of this decision on woodland resources would be adverse in the long-term because tamarisk vegetation would continue to replace riparian woodland species and encroach on riparian woodland species habitat.

4.3.20.3.5.8. Impacts of Special Designations Decisions on Woodlands

The impacts of special designation decisions on woodlands would be the same as those discussed under Alternative B, except that approximately 109,205 acres would be protected from woodland harvesting within ACECs for preservation of non-WSA wilderness characteristics. The impacts on woodland resources would be adverse in the long-term because these areas would not be available for harvesting opportunities.

4.3.20.3.5.9. Impacts of Travel Decisions on Woodlands

Under this alternative, travel decisions for non-WSA lands with wilderness characteristics would close 970,436 acres to OHV travel, including 582,357 acres of lands with non-WSA wilderness characteristics to all motorized OHV travel (and approximately 179 miles of D-Class OHV routes within non-WSA wilderness characteristics lands), which would have long-term, adverse impacts on woodland resources within and adjacent to the non-WSA wilderness characteristics lands because of the OHV inaccessibility of these areas and the potential difficulty in accessing adjacent woodland harvesting areas. Compared to Alternative A, this alternative would have more of an adverse impact on harvesting opportunities because: (1) 761,417 more acres or 42% more of the PA would be closed to harvesting within the PA to preserve wilderness and other resource values, and (2) OHV access to adjacent woodland harvesting zones or areas would be impeded or prevented from more acreages (694,006 more acres) and travel route miles (959 more miles of D-Class OHV routes) under this alternative than Alternative A (see Section 4.3.16, Travel Management, for a detailed comparison of the travel alternatives).

4.3.20.3.5.10. Impacts of Vegetation Decisions on Woodlands

Management decisions under this alternative would be the same as Alternative B, except this alternative would impose additional prohibitions on vegetation treatments within non-WSA lands with wilderness characteristics. The impacts on the resource would be adverse in the long-term in these protected areas because no efforts would be applied within approximately 582,357 acres to restore pinyon-juniper ecosystem health through vegetation treatments. Compared to Alternative A, this alternative would have more adverse impacts on woodlands because more woodland acreage would be managed to prevent vegetation treatments-related surface disturbances that would improve the woodland ecosystem health.

4.3.20.3.5.11. Impacts of Visual Resources Decisions on Woodlands

As mentioned above, non-WSA lands with wilderness characteristics would be designated for management under VRM Class I objectives, which would prohibit or greatly restrict woodland harvesting within these areas. This would have long-term, adverse impacts on harvesting opportunities because under this alternative 998,370 acres would be designated as VRM Class I and 111,478 acres would be designated as VRM Class II. When combined, these VRM classes would encompass 1,109,848 acres or 62% of the planning area, with VRM objectives that would restrict or prohibit woodland harvesting and vegetation and fire treatments in order to preserve scenic quality within the Monticello PA and to preserve wilderness values within the non-WSA wilderness characteristics lands. Compared to Alternative A, this alternative would manage visual resources with greater degrees of restriction on harvesting and more adverse impacts on woodland resources because more area (383,161 more acres) would be impacted by VRM Class I and Class II management objectives to restrict or prohibit woodland harvesting and/or treatments.

4.3.20.3.5.12. Impacts of Wildlife and Fisheries Decisions on Woodlands

The impacts on woodland resources would be the same as those discussed under Alternative A because the management decisions are similar.

4.3.20.3.5.13. Impacts of Woodlands Decisions on Woodlands

Under this alternative, approximately 548,477 acres within the Monticello PA would be available for woodland harvesting (or 31% of the planning area) (Map 80). Of the areas available for harvesting, GAP vegetation data indicate that 73,428 acres (or 13% of available acres) would have pinyon-juniper coverage. The adverse impacts of woodland decisions under this alternative would be the same as those impacts discussed above in Section 3.20.3.5.4, Impacts of Non-WSA Lands with Wilderness Characteristics Decisions on Woodlands, for the same reasons: the approximately 582,357 acres of area with non-WSA wilderness characteristics would not be available for woodland harvesting or improvements in woodland health through vegetation treatments, and would be prohibited from fuel load treatments to reduce the adverse risks of stand-destroying wildland fire. Compared to Alternative A, this alternative would have greater adverse impacts on woodland harvesting for the reasons discussed: a smaller area (761,417 fewer acres) would be available under Alternative E for harvesting because of non-WSA lands with wilderness characteristics prohibitions and preservation of other resource values on surface disturbances that could degrade wilderness and other natural resource values.

4.3.20.4. SUMMARY OF IMPACTS

Table 2.2 of Chapter 2 contains a summary of impacts of management decisions on woodland resources.

4.3.20.5. MITIGATION MEASURES

Mitigation measures to reduce the impact to woodland resources would include:

- Prioritizing vegetation treatments in woodland areas that have been impacted through disturbances by prescribed fire, OHV access, fire suppression, woodland harvesting, and other surface disturbances to prevent exotic species growth and establishment that could otherwise inhibit or prevent re-growth of woodland species; and
- Reclaiming trails or mitigate the impacts (i.e., apply soil erosion techniques) of OHV access routes used for woodland harvesting, recreation, fire suppression, or vegetation treatments to reduce soil erosion and soil compaction that could indirectly affect woodland productivity.

4.3.20.6. UNAVOIDABLE ADVERSE IMPACTS

Treatments of woodland areas to reduce fuel loading through prescribed burning, to control woodland insect infestations or disease, and to control the spread of exotic species or other activities to improve woodland resources would have unavoidable short-term, adverse impacts on woodland resources. Long-term, unavoidable adverse impacts would be produced by minerals development within woodland areas (e.g., construction of production well pads, access roads, and infrastructure) that would impact woodland resources during the lifetime of the project.

Impacts to woodland resources from woodland harvesting would be unavoidable. However, if managed properly, this use could result in long-term benefits by preventing fuel loading and associated wildland fire.

4.3.20.7. SHORT-TERM USE VS. LONG-TERM PRODUCTIVITY

Short-term uses that could produce long-term losses of woodland resources productivity would include short-term woodland harvesting without adequate control or prevention of exotic vegetation growth and establishment in disturbed areas. This would have long-term adverse impacts on woodland productivity by preventing or slowing woodland re-growth, altering fire regimes, and/or altering the successional pattern of vegetation re-growth to favor exotic vegetation rather than woodland species.

Adequate management of woodland harvest and effective restoration of areas affected by fire or surface disturbance would ensure the long-term productivity of this resource.

4.3.20.8. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

There are no proposed management decisions that would irreversibly remove woodlands or prevent woodland re-growth. Proposed management decision impacts that would cause the irretrievable loss of woodland resources would include: woodland harvest, construction or minerals-related activities that would cause the loss of productivity until areas are rehabilitated or reclaimed; prescribed fire, vegetation, or woodland treatments that would cause the short-term loss of productivity until woodland re-growth; uncontrolled wildland fire that would cause the short-term loss of productivity until woodland re-growth; and recreation and travel-related

activities (e.g., OHV use in woodland resource areas) that could affect vegetation undergrowth and soil stability.

4.4. CUMULATIVE IMPACTS

Cumulative impacts are the effects on the environment from all past, present, and reasonably foreseeable future actions. As stated in 40 CFR 1508.7 (1997), a "cumulative impact" is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. These impacts are discussed because the quality of the human environment is the result of many actions or factors working together to produce a cumulative impact. The effect of any single action cannot be determined by considering that action in isolation. The cumulative impacts discussion that follows considers the proposed alternatives in the context of the broader human environment, within and adjacent to the Monticello PA.

Co-occurring planning projects in the region that would contribute to cumulative impacts include the Manti-La Sal National Forest, the BLM Moab RMP, the Trail of the Ancients, and Hovenweep National Monument. Also, similar management direction and resource uses would occur in the adjacent BLM Field Offices in Colorado. Activities on Utah School and Institutional Trust Land Administration lands (SITLA), private lands, and city and county use plans for surrounding communities could have cumulative impacts where land is developed adjacent to BLM lands.

4.4.1. CUMULATIVE IMPACTS ON AIR QUALITY

The cumulative impacts on air quality discussed here should be considered in addition to those discussed in previous chapters and under the related resource sections. Activities contributing to cumulative impacts to air quality include prescribed burning; construction, equipment operation, and surface-disturbing activities related to oil and gas development; and OHV activity throughout most of the MPA.

Short-term cumulative impacts from the activities proposed for all resource decisions on air quality are projected to be minimal to negligible under all alternatives. Direct and indirect short-term impacts include increases in airborne particulate and gaseous emissions from prescribed burning, construction sites, and/or OHV trails/use areas. Reasonably foreseeable future projects or actions have the potential to add to the impacts of any of the management decisions currently being considered. The primary source of air quality impacts from mineral resource development decisions in the Monticello FO is the production of oil and gas. The magnitude of air quality impact associated with these activities is directly related to the density and intensity with which extraction proceeds. It is reasonable to assume that oil and natural gas exploration and development would continue within the project area over the next 15 years. Accordingly, it is likely that potential air quality impacts from non-project and project-related mineral development in the project area will continue at the current level for the life of the plan.

Other cumulative air quality impacts would be due to continued increases in prescribed fire use for fuels management by both the BLM and other federal agencies. Additionally, human population is expected to continue to grow in and around the planning area, with attendant

increases in pollutants from vehicle emissions. However, it should be noted that fire management in the Moab Fire District will plan fire management activities in such a way that they conform with air quality regulations.

Assuming appropriate application of control measures and strict adherence to existing regulatory and permitting processes, no appreciable cumulative, short-term, adverse air-quality effects are projected specific to oil and gas development. OHVrelated air-quality impacts are expected to be very short-term and site-specific in nature and are not projected to affect the wider planning area.

4.4.2. Cumulative Impacts on Cultural Resources

Impacts associated with resource decisions from this RMP, combined with other past, present, and reasonably foreseeable actions, could produce cumulative impacts on cultural resources and resources of religious or traditional importance to Native American tribes associated with the decision area. The potential for cumulative impacts includes neighboring lands with connected cultural resources including adjoining BLM Field Offices, state and private lands within the planning area, the Uintah and Ouray Indian Reservation, and the Manti-LaSal National Forest. The same management direction and resource uses occur in both planning areas. Surface disturbance associated with consumptive uses such as oil, gas, and other minerals development, and forage use could result in cumulative impacts over a larger landscape scale than what is analyzed in this Monticello RMP. However, planning decisions related to the Moab Field Office and other federal lands are also subject to federal cultural resource laws and application of the Section 106 process of the NHPA. Further, general planning decisions of adjacent federal lands have the potential to impact cultural resources on adjacent lands within the planning area (i.e., fire fuels reduction, erosion reduction through effective vegetation management, etc.), and would generally have a positive effect on cultural resources within the planning area.

Oil and gas development and mineral exploration and development has occurred across this region in the past and would continue into the future. However, the cumulative impacts of these activities on cultural resources in the general vicinity of planning area would likely be less than the potential impacts from the continually increased recreational visitation that cultural sites in the region will be subject to. The advent of the Internet has resulted in the wide publicizing of the locations and types of cultural resources in and around the planning area. This combined with the easy and rapid access afforded by the substantial increase in OHV ownership and recreational use will continue to subject cultural resources in the region to heightened risk of damage, vandalism, and/or looting.

Many decisions related to visual resource management, special designations, and restrictions on surface disturbance have the potential to provide a net positive benefit to cultural resources within the Monticello PA. These decisions would reduce or control the frequency and extent of ground-disturbing activities that present the greatest threat to maintaining the use values of cultural resources. In general, all minerals and recreation decisions under all alternatives have the potential to increase or at least maintain current levels of adverse impacts to cultural resources. Decisions for minerals and recreation generally increase or maintain current levels of surface and subsurface disturbance, and have as an indirect impact an increase in human activity within those areas of minerals development and recreational use. Increased human activity tends to equate with increased adverse impacts on cultural resources, even if these impacts are inadvertent.

In general, implementation of the array of resource decisions under Alternative E would have the lowest degree of potential negative impact on cultural resources within the Monticello FO, and in many cases Alternative E has the highest overall benefit for cultural resources. Overall, fewer acres of land would be open for ground-disturbing activities under this alternative than under any other alternative. Although no direct correlation exists between acres of surface and subsurface disturbance and numbers of cultural resources impact, this general trend holds true. By comparison, Alternative D and Alternative A (No Action) have the potential for roughly comparable levels of potential adverse impact to cultural resources. Decisions under Alternative C would have an intermediate potential for adverse impacts. Under all alternatives, specific undertakings that could result in surface and subsurface disturbance and have the potential to impact cultural resources are subject to the Section 106 process of the NHPA, which calls for the identification of historic properties (i.e., NRHP-listed sites or sites determined eligible for listing on the Register) within the area of potential impacts and the consideration of alternatives to the planned undertaking that could avoid impacts to said properties. In the event that avoidance is not possible, mitigation of the impacts is to be considered.

4.4.3. Cumulative Impacts on Fire Management

Cumulative impacts are a combination of impacts from each alternative with the past, present, and reasonably foreseeable future actions associated with the project and surrounding area. The entire area is managed according to the Moab Fire District Fire Management Plan, which was recently revised. Based on the impetus that the federal fire management agencies are placing on implementing the Federal Wildland Fire Policy, the Healthy Forests Initiative, and the National Fire Plan, these revisions include vegetation management to decrease fuel loading and, consequently, decreased fire risk.

4.4.4. Cumulative Impacts on Health and Safety

Minerals development within surrounding areas would increase the use, generation, and transportation of hazardous materials. City and County use plans for surrounding communities could have cumulative impacts, whereby mineral resources are developed adjacent to BLM lands. State lands that are surrounded by BLM land could have impacts from inholding development.

Hazardous materials are regulated by the EPA and administrated by state agencies regardless of land status. If all applicable laws, regulations, safeguards, and procedures were followed, there would be no cumulative impacts caused by hazardous materials.

4.4.5. Cumulative Impacts on Lands and Realty

The number of land use authorizations, particularly rights-of-way and permits, is a function of demand for these uses. Additional future development of adjacent federal, state, and private lands would likely result in additional requests for and approval of land-use authorizations for facilities such as roads, utilities, and communication sites.

City and County use plans could have cumulative impacts where land is developed adjacent to BLM lands. Both the Grand and San Juan County Use Plans have no net loss of private land as a result of government agency land ownership adjustments. Even though land exchange would be the preferred means of land ownership adjustment, such a position could affect the land

ownership adjustment program by more strongly favoring land exchanges and outright disposals of public land over purchases of private land.

The designation of right-of-way avoidance and exclusion areas on BLM lands, along with similar restrictions on right-of-way development on adjacent lands, particularly National Forest lands, would have a cumulative impact of reducing routing options for right-of-way facilities such as utilities and roads. Alternative E has the most avoidance and exclusion areas, followed by Alternative B.

4.4.6. CUMULATIVE IMPACTS ON LIVESTOCK AND GRAZING

Cumulative impacts to livestock and grazing could result from activities on adjacent private lands, activities scheduled for State and Institutional Trust Land Administration lands, and administrative actions on adjacent National Forest System lands on the Ashley National Forest. These cumulative impacts have been considered as part of the direct and indirect impacts analysis, as the calculated AUMs include current and reasonably foreseeable grazing on state, private, and tribal lands.

It is likely that adjacent lands would see an increase in land uses (such as development and recreation) that may influence available resources within the Monticello PA in the future. These factors may increase the demand for BLM lands available for grazing. However, this increased demand would not be met because the number of acres available for grazing is fixed for the life of the plan. Proper grazing would ensure rangeland quality.

The following resource decisions have no foreseeable impacts on livestock grazing: air quality, human health and safety, paleontology, Special Designations (ACEC, Wild and Scenic Rivers, Wilderness), Special Status Species, Visual, and Wilderness Characteristics and Woodlands.

4.4.7. CUMULATIVE IMPACTS ON MINERALS

Past and present mineral resource development management actions that have affected the mineral resources in the Monticello FO are listed in the Mineral Potential Report and in Section 3.8 of Chapter 3. Reasonable foreseeable future mineral resource development management actions include those listed in the RFD scenario as occurring on all lands in the Monticello FO, including USFS, NPS, state, private, and tribal lands; according to the RFD, an average of 195 oil and gas wells is expected on all lands in the Monticello FO over the next 15 years. Some past, present, and reasonably foreseeable future mineral resource development includes lands administered by two or more agencies, including those already listed and the Moab, Richfield, Kanab, Hassayampa, Grand Junction, Uncompahgre, and Dolores Field Offices of the BLM (BLM 2005a; BLM 2005b). These cumulative mineral resource management actions result in beneficial impacts to mineral resource knowledge, yields, and royalties in the Monticello FO, as described in Section 4.3.7.3, Summary of Locatable RFD and Saleable RFD. By the same token, continued extraction of mineral resources, over time, reduces the finite quantities of these resources in the Monticello FO.

Past, present, and reasonable foreseeable future management actions regarding other resources would also impact mineral resource development:

- Non-discretionary management of WSAs under the IMP precludes most surface-disturbing activities. Impacts of designation of WSAs are discussed in Section 4.3.7.4.
- VRM decisions on Monticello FO lands adjacent to the other BLM lands (i.e., Moab, Richfield, Kanab, Hassayampa, Grand Junction, Uncompahgre, and Dolores planning areas) may be based in part on viewsheds looking into those other BLM lands. As consistent VRM decisions would be made across these boundaries, VRM decisions for the Moab, Richfield, Kanab, Hassayampa, Grand Junction, Uncompahgre, and Dolores planning areas would likely result in cumulative impacts to mineral resources—either beneficial if VRM III or IV, or adverse if VRM I or II.
- Wildlife habitat decisions made by the Utah Division of Wildlife Resources (e.g., crucial habitat for a given sensitive species, habitat fragmentation) have the potential to impact mineral resource development in the Monticello FO. These decisions would result in generally adverse impacts in the form of controlled surface use or timing limitation stipulations on mineral resource development activities.

Generally, resource decisions occurring on multiple-use, non-Monticello FO lands managed by state and federal agencies (e.g., SITLA, USFS, the BLM Moab Field Office) would have cumulative impacts similar in type to those on Monticello FO lands. Individual private land parcels represent a full spectrum of impacts, from full mineral resource development/use (beneficial) to resource preservation (adverse).

4.4.8. Cumulative Impacts on Non-WSAs with Wilderness Characteristics

Resource decisions from this RMP could combine with other past, present, and reasonably foreseeable future actions to produce cumulative impacts to wilderness characteristics associated with the planning area. Resource decisions for other lands adjacent to the Monticello PA could result in cumulative impacts. The same management direction and resource uses occur in all of the above planning areas. Resource management on adjacent federal lands (including USFS-administered land and NPS land), private land, and state lands would also affect wilderness characteristics in the area. USFS management would generally have a similar management focus as BLM decisions. NPS decisions would generally enhance wilderness characteristics, because its lands are managed under a preservation rather than multiple-use mandate. Surface disturbance associated with consumptive uses such as oil, gas, and other minerals development would result in cumulative impacts over a larger landscape scale than analyzed in this document. Private and state lands have a different mandate for management. Activities and management of these lands would negatively impact non-WSA lands with wilderness characteristics found on public land.

In addition to the acreage currently being managed to protect and preserve their wilderness characteristics, BLM Utah is considering management options for 2,847,156 additional acres of non-WSA lands (5.4% of Utah lands) with wilderness characteristics in six ongoing land-use planning efforts. This includes the 582,357 acres in the Monticello PA. There are other federal lands with wilderness characteristics in Utah that are currently being managed to protect those values. These are identified in Table 4.219 below.

Table 4.219. Federal Lands with Wilderness Characteristics in Utah that are Currently Being Managed to Protect Those Values

Land Administrator	Administrative Unit	Acres	Percent of Land in Utah*
BLM	Designated Wilderness	127,700	0.24
BLM	Wilderness Study Areas	3,214,740	6.12
National Park Service	Recommended Wilderness	1,467,082	2.79
U. S. Forest Service	Designated Wilderness	773,124	1.47
U. S. Forest Service	Recommended Wilderness	83,390	0.16
Total		**5,666,036**	**10.78**

*The percentage figures shown in this table are based on a total land area of 52,541,440 acres in Utah.

Oil and gas development has occurred across this region in the past and will continue at an increasing rate into the future. The combined amount of surface disturbance of these past, present, and future actions would be detrimental to areas surrounding non-WSA lands with wilderness characteristics (depending on their location).

The overall cumulative impact of activities proposed for all resource decisions on non-WSA lands with wilderness characteristics includes short-term detrimental impacts and long-term improvements to habitat. Major contributors to detrimental impacts include OHV activities throughout most of the area, surface degradation from mineral development related activities, all other surface-disturbing activities, and vegetation treatments such as sagebrush removal. Direct impacts would be due to loss of naturalness, including loss of individual plants or animals, from mineral development or other surface-disturbing activities. Indirect impacts would also occur with habitat fragmentation due to mineral development, and changes in OHV use due to increased roads or use of roads. These activities would concentrate recreation use on non-WSA lands with wilderness characteristics. The cumulative impacts of all these uses could lead to loss of naturalness in the future.

4.4.9. Cumulative Impacts on Paleontological Resources

Unauthorized activities such as OHV use, dispersed recreation, and vandalism would continue to have adverse impacts on paleontological resources under all alternatives. These impacts would be reduced under Alternative B and E and to a lesser extent under Alternative C because they provide more constraints on OHV use and dispersed recreation activities. Alternative A showed 611,310 acres open to OHV travel. All action alternatives have only a small open area (from 0-2,311 acres). There would also be impacts as a result of permitted surface-disturbing activities such as mineral development in areas containing significant paleontological resources. The potential for inadvertent adverse impacts to paleontological resources from surface-disturbing activities would be greater under Alternatives A and D. The cumulative impacts of alternatives that include surface-disturbing activities within areas containing fossils have the potential to damage this fragile, nonrenewable resource. However, existing laws, regulations, and policies provide ample opportunity to mitigate adverse impacts through avoidance or collections of

specimens and data. While it is expected that some fossils will be destroyed in the course of other legitimate uses of public lands, mitigation measures will bring consultant paleontologists to areas in the Monticello FO where no researchers are currently studying fossils. Thus fossils that would otherwise have disintegrated over time due to weathering and erosion will be collected, placed in repositories, and preserved in perpetuity.

4.4.10. CUMULATIVE IMPACTS ON RECREATION

Recreational visitation within and around the project area will likely continue to increase steadily over the long-term. Past and present actions that have had and are having impacts on recreation include mineral development, wildland fire suppression and fuels treatments, OHV travel, utility corridor development, grazing and recreational activities in riparian areas, and management within existing SRMAs and the ERMA. Recreational uses that are expected to have the greatest growth would be OHV use, cultural visitation, river running, and motorized visitation of adjacent scenic areas such as Canyonlands National Park, Monument Valley, Valley of the Gods, and Arches National Park. This increased visitation will satisfy more recreational needs but may result in a cumulative loss in the recreational experience by increasing crowding and resulting in long-term impacts to natural and cultural resources that are integral to this experience. In as much as energy development and other surface-disturbing activities increase, there will be a negative impact to recreationists. Based on the RFD for oil and gas, negative impacts are expected to be largely contained in or near existing fields.

The potential cumulative impacts on recreation from actions within the Monticello PA and adjacent and local administrative agencies are as follows:

- Oil, gas, locatable, and salable minerals exploration and development could have a long-term, cumulative effect on the recreational viewshed from surface disturbances and facilities. VRM mitigation would reduce these effects, but it is likely that the activities would remain visible from points of view within the MPA and from viewpoints within the adjacent national parks.
- Wildland fire suppression would temporarily affect recreation use in or adjacent to areas where prescribed fire or other vegetation treatments are being conducted. The long-term cumulative effects would reduce fire risks to recreation areas and facilities within the MPA and on lands under other administrative agencies. Prescribed burning would temporarily degrade air quality (and scenic quality), but with the reduced risks of wildland fire, there would be a cumulative decrease in smoke emissions.
- OHV travel management would have beneficial cumulative effects on recreational experiences and resources by reducing surface impacts to soils, cultural resources, riparian areas, and wildlife habitat by generally confining travel to designated routes within the MPA. The reduction in OHV-related surface disturbances would also cumulatively reduce the spread and establishment of exotic, invasive plant species.
- Riparian areas would be beneficially affected by cumulative actions to improve ecological conditions within these sensitive areas, which would improve recreation experiences for wildlife viewing, camping, and hiking.
- The cumulative effect on recreation resources would be enhanced in the long-term by managing existing and proposed SRMAs and the ERMA in the Monticello PA and in adjacent BLM Moab FO. The designation of SRMAs would help to reduce the conflicts

between the different recreation uses. The cumulative effect of managing the Monticello PA to respond to the expected increase in visitation, changes in recreational demand, and the wide range of recreational activities would have beneficial effects on recreation.

Cumulative impacts on recreation opportunities, setting, and experience would be greater under Alternatives A and D, as restrictions on surface development and protections afforded to natural resources within the planning area would be less intensive under these alternatives. Alternative E would provide the greatest protection to natural resources and the highest level of non-motorized recreation opportunities. There would be an intermediate amount of cumulative impacts to recreation under Alternative C.

4.4.11. Cumulative Impacts on Riparian Resources

Past and present actions within the MPA and on adjacent USFS-administered lands, state lands, and private lands that affect and have affected riparian areas include livestock grazing, recreational uses (including OHVs, non-motorized recreation, etc.), mineral exploration and development, and upstream water withdrawals and impoundments. In general, these actions have all had cumulatively adverse impacts on riparian health. Livestock grazing, recreation, and mineral-related activities have led to surface disturbance, soil compaction, removal of riparian vegetation, bank trampling, and alteration of riparian areas' physical structure. They have also resulted in the widespread introduction of invasive weeds. Water withdrawals and impoundments have limited the health and extent of riparian zones by decreasing water availability, and encouraged the introduction of invasive plants through the stabilization of formerly dynamic sediment deposits, such as bars and banks.

Reasonably foreseeable future actions that would affect riparian areas include an expansion of recreational use and ongoing mineral exploration, development, and extraction. All of these actions could have a potential adverse effect on riparian areas. Beneficial impacts would result from USFS planning efforts, which will reduce negative impacts to riparian resources on National Forest lands. Future impacts on private lands may include both positive and negative impacts as described above.

Under all alternatives, riparian resources would benefit from management for PFC in accordance with the Utah Standards for Rangeland Health and Guidelines for Grazing Management for BLM in Utah (BLM 1997). Adherence with these plans would mitigate many of the adverse impacts from past, present, and future actions. In addition, continuing closure of several allotments to grazing would continue the restoration and enhancement of riparian resources in these areas.

In terms of project contributions to cumulative impacts, Alternative C would present a level of riparian resource protection balanced between Alternatives E and D. Alternative D would favor resource development, and more surface-disturbing activities would occur than in the other action alternatives. Alternative E would favor riparian resource protection, and fewer surface-disturbing activities would occur than in other action alternatives. Alternative A (No Action) is such that many of the management guidelines are unspecified with respect to riparian and other resources. However, with respect to recreation, cross-country OHV use under Alternative A presents the greatest potential risk of adverse impacts to riparian areas and soils. All the action alternatives benefit from removing the large area open to OHV travel (611,000 acres) and making essentially all lands either limited or closed.

4.4.12. CUMULATIVE IMPACTS ON SOCIOECONOMICS

The master plans for San Juan and Grand Counties set forth a desired direction for the local economy of each county. These plans, when taken together with the allowable activities on federal lands, could cumulatively increase the economic condition of the region by increasing jobs and population.

The mission of the State of Utah Travel Council is to promote tourism throughout Utah. The Travel Council currently promotes the Monticello area as a place where visitors can explore cultural and scenic resources through hiking, biking, OHV use, and river running. Cultural visitation, OHV use, and river running have become recreational pursuits for which this portion of southwestern Utah has become well known. The visitation resulting from this marketing, combined with the nationwide increase in OHV use, when considered together with recreational activities that would occur on federal lands, could create a beneficial cumulative impact to the regional tourism industry. This potential for increased visitation and economic benefits is even more probable when one considers that the planning area is surrounded by several other well-known popular tourist destinations managed by other agencies, including Canyonlands National Park, Hovenweep National Monument, Monument Valley, and Valley of the Gods.

Mineral development outside the Monticello FO's jurisdiction, but within or near the Monticello PA, could also impact social and economic conditions. According to the BLM's RFD, the total maximum amount of wells predicted to be drilled on all lands within the planning area over the life of the RMP is 195 wells (see Table 4.1). According to the Alternative A (No Action), the maximum amount of wells projected for BLM lands is 73 (see Table 4.42). Additional development of producing oil and gas wells could bring additional tax and royalty revenue to the counties. Additional jobs may be created with the increased production.

Additional mineral development, including the potential increase in uranium mining on federal and non-BLM lands and the start up of the White Mesa Mill, will increase working mines and provide an economic benefit. A potential increase in uranium extraction throughout the MPA could have some short-term beneficial economic impact on local communities; however, uranium development is not projected to be extensive, and therefore should not adversely impact visitor experience and recreation-related revenues. Additionally, establishment of the Lisbon Valley Copper Mine could have short- and long-term beneficial impacts on local economic conditions with regard to employment and tax revenue for San Juan County. The Lisbon Valley Copper Mine is expected to employ approximately 145 people and produce more than 12,500 tons of ore per day (BLM 2004e).

4.4.13. CUMULATIVE IMPACTS ON SOIL AND WATER RESOURCES

Reasonably foreseeable actions affecting soil and water resources include reasonably foreseeable increased oil and gas development on adjacent tribal, private, and state-owned lands, as well as non-BLM federal lands located near the planning area. This development would include disturbances associated with drilling, building of access roads, and placement of pipelines. Other associated impacts include the increased need for water to support this mineral development. It is estimated that a total of 195 wells would likely be developed on non-BLM land in or adjacent to the planning area over the next 15 years. This compares with the estimated total of 73, 66, 74, and 75 wells that would be developed on BLM lands under Alternatives A, B, C, and D, respectively.

Past and present actions that affect and have affected soil and water resources include livestock grazing, recreational uses (including OHVs, non-motorized recreation, etc.), mineral exploration and development, woodland harvest, and vegetation treatments (including those for fire management on lands managed by both the state and other federal agencies).

Livestock and recreation resource uses on non-BLM lands would cause both beneficial and adverse cumulative impacts to soil resources. With respect to livestock, trampling would be adverse to soils, but proper grazing management would preserve vegetation cover, thereby reducing soil erosion. With respect to recreation, open OHV use on state and private lands would generally be adverse to soils.

Soil productivity would be primarily impacted by surface disturbance and vegetation loss associated with these activities, increasing soil erosion and loss, as well as landslides and flooding. Surface water quality would primarily be impacted by increased soil erosion, increased salinity, and sedimentation of streams. Changes in the timing and magnitude of surface water flows would also reasonably be expected depending on the magnitude of the actions.

Groundwater quality may be affected through the discharge of saline or hydrocarbon-impacted waters during drilling and development of oil and gas wells. Utilization of groundwater as a water supply to support resource development may result in decreased aquifer storage and lower water levels. Shallow alluvial aquifers may be negatively impacted due to development as well. The vertical movement of groundwater along fractures and faults induced by production of hydrocarbons and water from oil and gas wells could change salinity concentrations over a short or long period of time, depending upon structural controls and rock types. These impacts may have an effect on surface water features, such as springs and perennial flows, and may have an economic impact on domestic wells through increased pumping costs.

Under all alternatives, soils and water resources would benefit from management, in accordance with the Standards for Rangeland Health and Guidelines for Grazing Management of BLM Lands in Utah (BLM 1997). Adherence to these standards would reduce many of the adverse impacts from future actions. In general, Alternatives A and D would be the least protective of soil and water resources, result in the least beneficial impacts on soils and water resources, and have the least mitigating effect on past impacts to soils and water resources in the Monticello PA. Alternative E would be the most protective and would provide the greatest reductions of cumulative impacts by excluding the most areas from surface disturbance. Alternative C would provide an intermediate level of protection and mitigation of cumulative impacts.

However, Alternative A (No Action) would likely result in higher contributions to cumulative impacts from OHV use and camping due to the lower level of restrictions on cross-country OHV travel and dispersed camping.

Outside of BLM lands, resource decisions occurring on other lands managed by state and federal agencies (such as the USFS) would have cumulative impacts similar to the BLM. Private lands present a full spectrum, from full resource development/use (adverse) to resource preservation (beneficial).

4.4.14. Cumulative Impacts on Special Designations

Cumulative impacts to Special Designations can result from decisions on BLM lands and state lands within the designations. Adverse impacts would occur mainly from surface-disturbing

activities such as mineral development and OHV use off existing roads. Direct adverse impacts would be due to the loss of vegetation resulting in impacts to soils, wildlife habitat, and visual resources. These cumulative impacts could lead to the loss of relevant and important values for ACECs and outstanding remarkable values (ORVs) for Wild and Scenic Rivers. The potential for damage to the important resource values identified within proposed Special Designations is greatest for Alternatives A and D, least for Alternative B, and intermediate for Alternative C.

With congressional designation of a Wild and Scenic River, the BLM would continue to manage for the ORVs, classification, and free-flowing nature of the river. Congressional designation would provide management with mechanisms to maintain free-flowing values, protect or enhance water quality, protect ORVs, manage consistently with the wild, scenic, or recreational classifications, and where it is a management plan objective, to purchase property as well as promote economic development, tourism, or recreational use.

Congressional designation does not affect existing river compacts, nor does it provide federal authority to regulate non-federal lands. On navigable rivers, the bed and banks are state lands, and the federal and state governments would collaborate on matters affecting instream flow and other river resources.

The Wild and Scenic Rivers Act implies a federal reserved water right; however, it must be the minimal amount necessary for purposes of the Act, it must be adjudicated through state processes, and it would be junior to existing water rights. The amount of the federal right would vary from river to river, depending on the river's flows, the unappropriated quantities in the river, and the values for which the river is being protected. Rather than initiating efforts to secure water rights for instream flows, the BLM could develop cooperative or voluntary water-flow management strategies with other water users and the state. In some situations, the state may have already established minimum stream flows for fish protection or other purposes that may be adequate to meet the wild and scenic river needs.

Designated wild rivers would be closed to mineral location. The Federal Energy Regulatory Commission (FERC) would be prohibited from licensing the new construction of hydroelectric facilities "on or directly affecting" a designated WSR. The Wild and Scenic Rivers Act also prohibits any department or agency of the United State from assisting in the construction of any water resources project that would have a "direct and adverse" impact on the values for which the river was designated. It also precludes federal assistance to projects below/above a designated river that are determined by the administrative agency to invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present as of the date of designation.

Please see the WSR suitability appendix for an evaluation of suitability for each river segment. A suitability finding will be made in the record of decision (ROD).

4.4.15. Cumulative Impacts on Special Status Species

Resource decisions from this RMP could combine with other past, present, and reasonably foreseeable actions to produce cumulative impacts to special status species associated with the planning area. Co-occurring planning projects in the region include the Moab Field Office BLM RMP. Resource decisions for the Moab Field Office, which is adjacent to the Monticello FO, would likely result in cumulative impacts. The same management direction and resource uses

occur in both planning areas. The Manti-La Sal National Forest management decisions would also overlap regarding several of the same resources. Surface disturbances associated with consumptive uses such as forage use as well as oil, gas, and other minerals development would result in cumulative impacts over a larger landscape scale than what is analyzed in this Monticello RMP.

Oil and gas development has occurred across this region in the past and will continue into the future. The combined amount of surface disturbance of these past, present, and future actions would be detrimental to special status plants. The spatial layout of oil and gas facilities disturbs a large proportion of vegetation when considered across the landscape. Each disturbed area for a well pad or road increases the opportunity for weed invasions, and disrupts the spatial continuity of vegetation communities. Other activities such as road construction and increased OHV use will increase access to sensitive areas upon which Special Status Species are dependent for survival. For example, increased access into prairie dog sites will increase mortality by shooters and indirectly impact all the species associated with them.

The overall cumulative impact of activities proposed for all resource decisions on special status plants is projected to be moderate to detrimental at localized areas within the short-term. Major contributors include OHV activities throughout most of the area; increased livestock grazing; habitat destruction from mineral-development-related activities; some vegetation treatments such as sagebrush removal; and possible project developments such as livestock water developments resulting in redistribution of livestock into previously unused areas that are sensitive to disturbance. Direct impacts would be due to loss of individual plants from mineral-, oil-, and gas-related development. Indirect impacts from habitat fragmentation due to development, changes in OHV use due to increased roads, and rock/fossil collection would also occur. These activities would concentrate grazing pressures and recreation use on habitat sites for some species. The cumulative impacts of all these uses could lead to lower populations of Special Status plants and animals in the future. In addition, some sensitive species may be pushed closer to listing or extinction from the cumulative degradation of BLM lands in the long-term. Beneficial impacts would be obtained with designation of proposed ACECs, because numerous plant populations would be given special management protection within the boundaries of those designated areas.

4.4.16. CUMULATIVE IMPACTS ON TRAVEL

Other past, present, and foreseeable future actions that would cumulatively impact travel opportunities within the Monticello FO planning area include changes in recreational use, both within the planning area and in adjacent federally managed areas (the Moab FO planning area, Manti-LaSal National Forest, and Canyonlands and Arches National Parks). Trends indicate that visitation and recreation are increasing within the Monticello FO planning area and on these adjacent, federally administered lands. Increasing recreational use within the region could affect travel within the Monticello FO planning, as increasing demands for recreational opportunities could require more road signs, more travel kiosks and information booths, and more restrictions on roadside parking and camping.

Transportation and road networks adjacent to BLM lands include routes shared with other federal agencies, SITLA, and private landowners. Cumulative impacts to transportation and access would occur primarily from actions that facilitate, restrict or preclude motorized access.

Management actions that restrict OHV use would limit the degree of travel opportunities and the ability to access certain portions of the planning area. The continued maintenance of federal and state highways would provide arterial connections to BLM roads. County-maintained routes that connect federal and state highways to BLM-system routes would maintain and improve access to the MPA's resources.

Past minerals activities produced many of the current travel routes within the planning area, but foreseeable minerals exploration and development (primarily oil and gas) within the planning areas and on adjacent federal lands, while creating access routes to production wells, would probably have minor impacts on travel opportunities within the planning area. New routes would generally be short spur roads that would be reclaimed once they no longer serve their intended functions.

4.4.17. Cumulative Impacts on Vegetation

Past and present actions that affect and have affected vegetation resources include livestock grazing, recreational uses (including OHVs, non-motorized recreation, etc.), mineral exploration and development, woodland harvest, and vegetation treatments (including those for fire management) on adjacent tribal, private and state-owned lands, as well as non-BLM federal lands located near the planning area. This development would include disturbances associated with drilling, building of access roads, and placement of pipelines. Other associated impacts include the increased need for water to support this mineral development. It is estimated that approximately 120 wells would likely be developed on non-BLM land in or adjacent to the planning area over the next 15 years. This compares with the estimated total of 73, 66, 74, and 75 wells that would be developed on BLM-lands under Alternatives A, B, C, and D, respectively.

Other vegetation impacts are associated with recreational uses, including hiking, equestrian, camping, and OHV use on lands managed by both the state and other federal agencies. These uses have the potential to trample or crush vegetation. Typically hiking and equestrian use occurs on existing trails. However, the increased popularity of four-wheelers in the general region poses a risk to vegetation on state and private lands where OHV use may not be restricted to existing roads and trails. Additionally, the lack of regulations on dispersed camping, combined with the increased recreational visitation that the area continues to experience, indicates that the potential for long-term vegetation disturbance from dispersed camping and associated recreation will increase.

4.4.18. Cumulative Impacts on Visual Resources

Past and present actions causing cumulative impacts on visual resources include fire suppression, minimal fuels treatments, and minimal prescribed fire treatments, resulting in a buildup of hazardous fuels materials. Minerals exploration, development, and extraction have been and are being conducted within the Monticello PA and are producing surface disturbances. The demand for recreational opportunities has been and is presently intensifying, resulting in impacts on backcountry and frontcountry recreation areas as visitors expand into previously undisturbed areas of the MPA. Other management efforts within and outside the planning area boundaries could produce long-term cumulative impacts on visual resources. Reasonably foreseeable future actions, including planning efforts to locate and develop mineral and hydrocarbon resources within the Monticello FO, could have adverse impacts on visual resources. Impacts would be

caused by surface disturbance from production, exploration, and construction of drilling and mining facilities, and OHV use.

Actions outside of the Monticello FO that could potentially affect visual resources would include mineral development on adjacent private lands, as well as the adjacent national forest and the Moab Field Office. The impacts on visual resources would be cumulatively beneficial if these administrative areas coordinate their planning efforts to preserve scenic quality along their boundaries with the Monticello FO. Conversely, if planning efforts are not coordinated, scenic quality could be adversely affected for both the Monticello FO and adjacent scenic areas such as Deadhorse Point and Canyonlands National Park.

4.4.19. Cumulative Impacts on Wildlife and Fisheries

Resource decisions from this RMP could combine with other past, present, and reasonably foreseeable actions to produce cumulative impacts to wildlife and fisheries populations associated with the planning area. Co-occurring planning projects in the region include the Moab Field BLM RMP. Resource decisions for the Moab Field Office, which is adjacent to the Monticello FO, would likely result in cumulative impacts. The same management direction and resource uses occur in both planning areas. Surface disturbance associated with consumptive uses such as forage use as well as oil, gas, and other minerals development would result in cumulative impacts over a larger landscape scale than what is analyzed in this Monticello RMP.

Oil and gas development has occurred across this region in the past and will continue into the future. Additionally, both copper and uranium mining have occurred and would continue to occur in the planning area. The combined amount of surface disturbance of these past, present, and future actions would be detrimental to vegetation. The spatial layout of oil and gas facilities disturbs a large proportion of vegetation and wildlife habitat when considered across the landscape. Each disturbed area increases the opportunity for weed invasions and disrupts the spatial continuity of vegetation communities.

4.4.20. Cumulative Impacts on Woodlands

Other management efforts within the planning area boundaries could produce long-term cumulative impacts on woodland resources. Reasonably foreseeable future actions, including planning efforts to locate and develop mineral and hydrocarbon resources within the planning area, would potentially have adverse impacts on woodland resources by removing the resource from production and use in construction and support facility areas. Most foreseeable future development within the Monticello FO consists of oil and gas well exploration and development and potential uranium mining. Actions outside of the Monticello FO that could potentially affect woodlands resources include oil and gas leasing, fire management, and timber sales in the Moab FO and Manti-La Sal National Forest. These planning efforts could have cumulative beneficial impacts on woodland resources if inter- and intra-agency coordination were included. Coordination would be useful in managing wildfires and prescribed burns. Cumulatively, these planning efforts would create greater woodland diversity and health through fire and vegetation treatments. Conversely, if planning coordination were not included in these management plans, the potential for the loss and/or degradation of woodland resources would be increased. Other resource use management actions would have adverse impacts on woodland resources by restricted resource harvesting (WSAs and Wilderness Areas, ACECs, SRMAs, and wilderness characteristics areas), and would continue to restrict resource harvesting in the future; however,

the area of harvesting restrictions would be relatively small compared to the area managed as open to opportunities for resource harvesting.

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