CHAPTER 4—ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes environmental consequences that may result from implementing each of the four DRMP/DEIS alternatives and the Proposed RMP described in Chapter 2. The purpose of this chapter is to analyze and disclose potential impacts of the federal action on the human environment. An impact is defined as a modification of the existing environment that is brought about by an outside action. The federal action for this Final Environmental Impact Statement (EIS) is the Bureau of Land Management (BLM) land use plan (LUP) revision for the Richfield Field Office (RFO), including the Proposed RMP that will direct future land management within the RFO.

This chapter is organized by resource topic and contains potential impacts that could or would result from the management actions under DRMP/DEIS Alternatives N, A, C, D, and the Proposed RMP. Topics are presented in the same order as in Chapter 3. Discussions of cumulative impacts, irretrievable and irreversible commitment of resources, unavoidable adverse impacts, and the relationship between local short-term and long-term uses concludes this chapter. The baseline data used for determining the potential impacts are the current resource conditions described in Chapter 3.

4.2 ANALYSIS BACKGROUND

4.2.1 Approach to the Analysis

This impact analysis identifies effects that result from a management action and discusses whether those effects would enhance and improve a given resource or would have the potential to degrade a resource. The analysis describes the actions that have direct and immediate effects, as well as those that result in indirect effects. If an activity or action is not addressed in a given section, no impacts are expected or the impact is expected to be negligible, based on existing knowledge.

The detailed impact analyses and conclusions are based on the BLM's knowledge of resources and the planning area, reviews of existing literature, and information provided by experts in the BLM, cooperating agencies, other agencies, interest groups, and concerned citizens. Impacts on resources and resource uses are analyzed and discussed in detail commensurate with resource issues and concerns identified throughout the process. Geographic information system (GIS) analyses and data from field investigations were used to quantify effects when possible. However, in the absence of quantitative data, qualitative information and best professional judgment were used. Acreage calculations and other numbers used in this analysis are approximate and provided for comparison and analytic purposes; they do not necessarily reflect exact, on-the-ground measurements. At times, impacts are described using ranges of potential impacts or in qualitative terms.

Many management actions presented in Chapter 2 would not result in direct, on-the-ground changes. However, the analysis considers impacts that could eventually result in on-the ground changes, by planning for uses on BLM-administered surface estate and federal mineral estate during the life of the Proposed Resource Management Plan (RMP). Impacts could occur from management of both BLM-managed surface estate and federal mineral estate. BLM-administered federal minerals occur beneath surface estate managed by BLM as well as beneath surface estate within state or private jurisdiction (known as split-estate lands). Some BLM management actions may affect only certain resources and alternatives.

4.2.2 Impact Analysis Terminology

This chapter describes the direct, indirect, and cumulative impact of implementing the DRMP/DEIS No Action Alternative and each of the four action alternatives including the Proposed RMP. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later or farther away but are still reasonably foreseeable. Cumulative impacts are the effects on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of which 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.

Impacts are also described as to their context, intensity, and duration. Context relates to environmental circumstances at the location and in the immediate vicinity of the impact, affected interests, and locality. Intensity refers to the severity or extent of the impact or the magnitude of change from existing conditions. Duration refers to the permanence or longevity of the impacts and is depicted as short term or long term. Short-term duration is defined as anticipated to begin and end within the first 5 years after the action is implemented. Long-term duration is defined as lasting more than 5 years.

4.2.3 Assumptions for Analysis

Assumptions regarding level of land use activity, resource condition, and resource response are made in the analysis. Potential impacts and their significance are determined based on these assumptions. The following assumptions were used in the analysis and apply to all DRMP/DEIS alternatives and the Proposed RMP, unless otherwise noted:

- Management actions proposed in the DRMP/DEIS alternatives and the Proposed RMP would apply to BLM-administered public lands and resources only. However, cumulative impacts analyses consider potential actions by individuals or entities other than the BLM.
- The DRMP/DEIS alternatives and the Proposed RMP would be implemented as described in Chapter 2 and would be implemented in accordance with applicable laws, regulations, and standard management guidelines.
- BLM policies, including *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, and Utah's *Standards for Rangeland Health* (SRH) and *Guidelines for Grazing Management* would be applied as appropriate across all DRMP/DEIS alternatives and the Proposed RMP. Rangeland health would be assessed according to the Standards, and the Guidelines would provide strategies to achieve Standards and other desired resource conditions and management objectives.
- Funding would be available to implement the Proposed RMP, as described in Chapter 2.
- Appropriate maintenance would be carried out to maintain the functional capability of all developments (e.g., roads, fences, and other facilities).
- Restrictions or prohibitions on activities in specific areas would protect sensitive resources.
- Mitigation requirements would be applied as described and would prevent or limit direct impacts associated with land use activities or would result in reclamation of the land after the activity has been completed.
- Monitoring would be completed as indicated, and adjustments or revisions would be made as identified.
- The level of activity on BLM-administered land would increase. This expectation is based on historical trends, existing land use agreements such as leases or permits, and statements of interest in land use by individuals and industry organizations.

4.2.4 Availability of Data and Incomplete Information

Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) require that agencies that evaluate, in an EIS, the reasonably foreseeable significant adverse effects on the human environment identify incomplete or unavailable information, if that information is essential to a reasoned choice among alternatives (43 Code of Federal Regulations [CFR] 1502.22). As is typical in programmatic planning efforts, site-specific data are used to the extent possible but may not be entirely available. The best available information that is pertinent to management actions was used in developing this Proposed RMP. Considerable effort has been taken to acquire and convert resource data into digital format for use in this Proposed RMP. Data was acquired from both BLM and outside sources such as the Utah Division of Wildlife Resources (UDWR). However, certain information was unavailable for use in developing this Proposed RMP. The following types of data were unavailable for all or portions of the planning area:

- Field inventory of soils and water conditions
- Field inventory of wildlife and special status species (SSS) occurrence and condition
- Native American traditional use areas
- Baseline air quality data
- Baseline recreation data
- Surveys for cultural or paleontological resources.

For these resources (and others for which information was unavailable or incomplete), estimates were made regarding the number, type, and significance, based on previous surveys and existing knowledge. Additionally, some impacts cannot be quantified, given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms. In many situations, subsequent project-level analysis will provide the opportunity to collect and examine the site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory efforts by BLM and other agencies within the planning area continue to update and refine information that will be used to implement this Proposed RMP.

4.3 IMPACTS TO PHYSICAL, BIOLOGICAL, AND CULTURAL RESOURCES

4.3.1 Air Resources

This section presents the impacts on air resources from management actions for the resources and resource uses discussed in Chapter 2. Existing conditions concerning air resources are described in Chapter 3.

A qualitative emission comparison approach was selected for the Richfield Proposed RMP analysis of impacts on air quality. This approach was selected because of uncertainties about the number, nature, and specific location of future sources and activities. The emissions calculations were based on the best available engineering data and assumptions; on air, visibility, and emission inventory procedures; and on professional and scientific judgment. However, assumptions were used when specific data or procedures were unavailable. A general statement about National Ambient Air Quality Standards (NAAQS) and Utah Ambient Air Quality Standards can be made for this qualitative analysis. This emission comparison approach is defensible and provides a sound basis for comparing base year air quality emissions with those expected to be produced from the alternatives.

For any future project, BLM will utilize BMPs and site specific mitigation measures, as appropriate and based on site specific conditions, to reduce emissions and comply with local, state, tribal, and federally enforced legal requirements and standards.

Impacts to air quality come primarily from sources outside the planning area, such as regional haze, or from activities on private lands within the planning area (including increased vehicle traffic on highways and roads and industrial development, such as coal-fired power plants) and are thus outside the scope of this Proposed RMP. However, short-term air quality effects could result from fugitive dust and smoke that both directly and indirectly relate to proposed management actions. Main sources of fugitive dust include vehicle and equipment use on unpaved roads, road construction and maintenance activities, and mineral operations. Main sources of smoke are wildland fire use and prescribed fires. Wildfire smoke is outside the scope of this document but will likely remain the largest source of emissions in the next 15 years.

Global Climate Change

The assessment of climate changing pollutant emissions and climate change is in its formative phase; therefore, it is not yet possible to know with confidence the net impact to climate. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations."

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. Currently BLM does not have an established mechanism to accurately predict the effect of resource management-level decisions from this planning effort on global climate change. However, potential impacts to air quality due to climate change are likely to be varied. For example, if global climate change results in a warmer and drier climate, increased particulate matter impacts could occur due to increased wind blown dust from drier and less stable soils. Cool season plant species' spatial ranges are predicted to move north and to higher elevations, and extinction of endemic threatened/endangered plants may be accelerated. Due to loss of habitat, or due to competition from other

species whose ranges may shift northward, the population of some animal species may be reduced. Less snow at lower elevations would be likely to impact the timing and quantity of snowmelt, which, in turn, could impact aquatic species. In the future, as tools for predicting climate changes in a management area improve and/or changes in climate affect resources and necessitate changes in how resources are managed, BLM may be able to re-evaluate decisions made as part of this planning process and adjust management accordingly.

Methods and Assumptions

The emissions inventory was developed for the RFO by using the best available information provided by the RFO about activities on BLM land. The calculations used emissions factors that are accepted and recognized by state and federal regulatory agencies. This analysis selected two time frames to evaluate future emissions. The time frames reflect the current base-year conditions and the long-term impacts. It is assumed that emission growth will always be constant and linear in time. The two inventory time frames are:

- Current emissions (using the year 2007 as a basis)
- 15-year potential emissions for the long term (2022).

The analysis is based on the following assumptions:

- The emission factors recommended by the U.S. Environmental Protection Agency (EPA) (EPA 1995b) would be appropriate for all activities.
- Activity factors would be appropriate for the base year and in future time frames.
- Any anticipated growth in recreation would follow growth trends for Utah during the past 10 years.
- For the qualitative analysis, only emissions from BLM-administered activities would be included.
- Coal production would be stabilized at 13.9 million tons per year. Because underground coal mining does not have specific emissions factors, appropriate factors from surface mining facilities would be used.
- Hydrocarbon emissions, also known as Volatile Organic Compounds (VOC), would include hazardous air pollutants (HAP).

The qualitative analysis used reasonable-but-conservative assumptions for air quality. When there were ranges of activity factors, the upper limit of the range was used to complete calculations for future time frames. BLM would consider performing quantitative dispersion modeling analyses for a project-specific EIS associated with a proposed project.

Visibility is potentially affected by many factors (including emissions), so the qualitative emissions analysis cannot be used to assess potential visibility impacts on nearby Class I areas from activities within the decision area. However, implementation and compliance with the State Implementation Plan, specifically with Section XVII Visibility Protection, is expected to meet visibility goals under all management alternatives. In addition, site-specific EISs and environmental assessments (EA) will include a quantitative visibility analysis, if warranted by the project.

Emissions were calculated for the following activities: conventional oil and coal mining, lands and realty actions, livestock grazing, off-highway vehicle (OHV) use, resource roads use, salable mineral development, and vegetation management. Activities related to cultural resources, paleontology, recreation, transportation and access, OHV use, noxious weed control, wild horses, and fish and wildlife are assumed to be minor sources of air emissions.

Impacts Common to the Proposed RMP and Draft Alternatives

Because this air quality analysis is qualitative, specific impacts of resource activities on air quality cannot be determined. However, it is BLM's judgment that several resource programs (cultural resources, paleontology, forestry and woodlands, wild horses and burros, and fish and wildlife) have only minor or negligible impacts on air quality and will not be discussed further in this analysis. Impacts on air quality would not be anticipated from implementing actions for soil, water, and riparian; visual resources management (VRM); SSS; special designations (Wilderness Study Areas [WSA], Areas of Critical Environmental Concern [ACEC], Wild and Scenic Rivers [WSR]); other special designations; and hazardous materials and waste.

Trucks and heavy equipment (e.g., fire engines, bulldozers) used in vegetation management and manipulation would produce dust when traveling over unpaved roads. Areas receiving vegetation treatment would also add to particulate matter (PM) emissions in the short term until the vegetation recovers sufficiently to stabilize exposed soil.

Wildland and prescribed fires would cause short-term emissions of particulate matter and carbon monoxide (CO) that could spread over large portions of the RFO area, depending on the size of the fire and the wind conditions. In addition, the use of heavy equipment during fire suppression activities would result in particulate emissions (i.e., CO, nitrogen oxides [NO_x], and VOCs).

Livestock grazing and support of grazing activities, which include trucking of livestock into and out of the RFO and checking or constructing livestock range improvements and fences, generate vehicular exhaust emissions and dust. These emissions are produced by both construction activities and regular travel on unpaved and paved roads.

The major recreation impact on air quality would be from OHV use. Use of equipment such as all-terrain vehicles and motorcycles would cause fugitive emissions of PM from traffic on unpaved trails, as well as causing vehicular emissions of PM, CO, NO_x, and VOCs. This impact is expected to peak during weekends and holidays.

The various construction activities authorized under lands and realty for rights-of-way (ROW) (e.g., wind power, communication sites, transmission lines, and pipeline projects) produce PM emissions. The main causes of short-term emissions are soil disturbing activities (e.g., grading, bulldozing, trench digging, traveling on unpaved roads). Exhaust emissions from vehicular travel and emissions from equipment use would also occur.

Air emissions would be produced during all phases of oil development, including exploration, well development, production, and well abandonment and reclamation. During exploration and development, traffic on unpaved and paved roads would cause emissions of PM, CO, NO_x, sulfur dioxide [SO_2], and VOCs. In addition, during well development, drilling activities and construction activities would cause particulate emissions and gaseous emissions as a result of heavy equipment use.

Air emissions would be produced during mining operations and reclamation activities. During mining activities, PM emissions would be produced from overburden removal, blasting, truck loading, bulldozing, grading, storage piles, railroad loading, and travel of heavy equipment over unpaved roads. Gaseous emissions from vehicular exhaust (CO, NO_x, SO_2, and VOCs) would occur from heavy equipment, trains, and vehicular travel.

Base Year

Emissions were calculated for all existing activities and oil well development for the base year (2007) to compare the potential increase in emissions from these activities over a 15-year time horizon (2022). Table 4-1 displays a summary of total emissions that BLM estimates for the base year (2007), broken down by activity. Emissions are calculated on an annual basis (tons per year). The total estimated emissions calculated for 2007 are 1,243 tons per year.

Table 4-1. Base Year Emission Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	21	5	61	3	36	4	0
Oil Well Operations	0	0	3	0	1	0	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Well	**21**	**5**	**64**	**3**	**37**	**4**	**0**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	251	13	1
Lands and Realty	18	3	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	5	5	2	0	353	153	15
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	0	0	0	0	0
Vegetation	5	1	0	0	0	0	0
Subtotal: Non-Oil Well Activities	**171**	**125**	**148**	**16**	**611**	**166**	**16**
Grand Total	**192**	**131**	**213**	**19**	**648**	**171**	**16**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity
[b] HAPs assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Alternative N: No Action

Emissions Calculations

Table 4-2 summarizes total and specific pollutant emissions for Alternative N. These emissions have been estimated for the base-year time frame (2007) and for the 15-year time horizon (2022). Under this alternative, total emissions would increase from the base-year level of 1,243 tons of pollutants per year to 2,250 tons per year by 2022.

Given the low ambient concentrations for some pollutants that exist in the RFO, it is expected that the increase in emissions of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ for Alternative N would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-2. Alternative N Emissions Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	44	13	247	6	60	12	1
Oil Well Operations	8	2	44	1	10	1	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Well	**52**	**15**	**292**	**7**	**70**	**13**	**1**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	252	13	1
Lands and Realty	18	2	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	11	11	5	-	877	322	32
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	-	-	-	-	-
Vegetation	5	1	0	0	0	0	0
Sub-total: Non-Oil Well Activities	**177**	**131**	**151**	**16**	**1,136**	**335**	**33**
Grand Total: Alternative N Development	**229**	**146**	**443**	**23**	**1,206**	**348**	**35**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity
[b] HAPs = assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Impacts from Air Quality, Soil Resources, and Water Resources

Application of best management practices (BMP) (as listed in Appendix 14) and specific mitigation measures identified in activity-level planning and NEPA-level review would prevent or reduce impacts to air quality. Mitigation during surface-disturbing projects would reduce or eliminate the potential for fugitive dust.

Impacts from Vegetation and Fire and Fuels Management

Wildland fires are a source of air pollutant emissions during combustion of vegetation. The amount of emissions depends on the size and intensity of the fire, the fuel type and moisture content, and the available fuel load. The level of resulting air quality impact depends on the amount and duration of emissions, atmospheric dispersions conditions, and terrain. Under the Proposed RMP and DRMP/DEIS Alternatives, BLM intends to comply with the *Utah Smoke Management Plan* (Utah Department of Air Quality [UDAQ] 2003); implementing actions and mitigations designed to minimize impacts from both wildland fire and prescribed fire.

Alternative N, under the *2005 Land Use Plan Amendment for Fire and Fuels Management*, allows for the full range of fire- and fuels-management actions to achieve ecosystem sustainability. This alternative allows a wide range of vegetation treatment (including mechanical, wildland or prescribed fire, and chemical methods). Some of the treatment methods proposed (e.g., mechanical, chemical) would result in localized and short-term impacts to air quality, including fugitive dust, emission/exhaust from equipment, and chemical fumes. The use of naturally ignited wildland fire and prescribed fire would result in smoke

emissions in the immediate area. In general, these impacts would be minor, although moderate-intensity impacts could be experienced in the immediate vicinity of the treatment areas. The effects on air quality from wildland fires would potentially be of longer duration than those from planned ignitions, depending on the vegetation types involved. Wildland fires would result in greater, direct impacts resulting from smoke and fire abatement efforts. Indirect impacts from wildfires could stem from reduced or eliminated vegetation cover, which would expose the underlying soil to wind and water erosion. Until the area revegetated, that erosion would increase levels of fugitive dust (in the short term) during wind events.

Alternative N's wildland fire use, prescribed fire, and non-fire fuel treatments would minimize smoke and other emissions in the short term but could result in increased fuel build-up, more frequent and larger wildland fires, and greater emissions in the long term, until enough treatment has occurred to bring ecosystems within properly functioning parameters.

Impacts from Travel Management

OHV use impacts air quality by increasing fugitive dust levels, particularly in heavily used areas during times of drought, when soil is drier and the potential to generate dust is greater. Because OHV use contributes to air impairments from fugitive dust and vehicular exhaust emissions, closing areas to cross-country, OHV use—except for authorized administrative and emergency purposes—and limiting travel to designated routes would limit impacts to air quality. OHV emissions would be minimal or nonexistent on 214,000 acres (10%) of the RFO that are closed to motorized vehicle use, although some emissions could be transported from adjacent routes along the boundaries of such areas.

The public would have access to 4,315 miles of unpaved routes in the RFO under Alternative N. Use of these routes would continue to create localized air pollution.

Because of their often rough condition, unimproved routes help keep vehicle speeds down, further reducing the levels of dust. Route-maintenance activities, although minimal and designed solely to correct those conditions that are unsafe or hazardous, would also result in fugitive dust. Watering and the use of chemical dust suppressants would greatly reduce the amount of dust emissions. Closing 65 miles of routes would result in reduced amounts of OHV emissions within the immediate vicinity of the closed routes. Overall impacts to air quality from travel on unpaved routes and maintenance or improvement activities would be localized and short term and could be rated from negligible to minor.

Under Alternative N, motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO. Because the vast majority of routes are unpaved, use of these routes would result in fugitive dust. In addition, 1,636,400 acres (77%) of public lands would be open to motorized cross-country vehicle use under Alternative N. Vehicle use, specifically OHV use, in open areas compared to designated and existing routes has the potential to cause the greatest amount of direct impacts to air quality. These impacts on the overall air quality of the planning area would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, soil moisture). Route-maintenance activities, which would be limited to existing route types, maintenance levels, and frequencies, would also result in emissions. Watering and the use of chemical dust suppressants would greatly reduce the amount of dust emissions from maintenance and on haul roads from gravel pits, mines, and oil drilling sites.

Impacts from Minerals and Energy

Air quality could be impacted during all phases of oil and gas development, including exploration, well development, production, and well abandonment. Equipment used for exploration and development emits PM, CO, NO_x, SO_2, and VOCs, including HAPs. Heavy equipment used in well development, drilling, and construction activities could cause increases in PM and tailpipe emissions. Additionally, vehicle traffic on unpaved roads could cause increases in fugitive dust. Oil and gas production could cause

emissions of PM, CO, NO_x, SO_2, and VOCs, including HAPs. Glycol operations and flashing activities could produce PM, SO_2, NO_x, and VOCs. Additionally, flaring of gases would impact air quality from produced methane, hydrogen sulfide, soot or PM, CO, and NO_x.

Adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize such impacts (Appendices 10 and 14). Closing 459,700 acres to fluids mineral leasing, withdrawing 169,480 acres to mineral entry, and closing 459,700 acres to mineral material disposal would virtually eliminate emissions from mineral management within those areas. Overall impacts to air quality would be minor.

Alternative A

Emissions Calculations

Table 4-3 summarizes total and specific pollutant emissions for Alternative A. The total emissions for this alternative would increase from the base-year level of 1,243 tons per year of pollutants to 2,271 tons per year by 2022. Although the differences are small, Alternative A has the largest increase along with the Proposed RMP. Emissions would also increase relative to the No Action Alternative.

Given the low ambient concentrations that exist in the RFO for some pollutants, it is expected that the increase in emissions of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ for Alternative A would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-3. Alternative A Emissions Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	44	13	247	6	60	12	1
Oil Well Operations	8	2	44	1	10	1	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Wells	**52**	**15**	**291**	**7**	**70**	**13**	**1**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	252	13	1
Lands and Realty	18	3	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	11	11	5	-	877	322	32
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	-	-	-	-	-
Vegetation	26	4	0	0	0	0	0
Sub-total: Non-Oil Well Activities	**198**	**135**	**152**	**16**	**1,136**	**335**	**33**
Grand Total: Alternative A Development	**250**	**150**	**443**	**23**	**1,206**	**348**	**35**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity.
[b] Assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N; although under Alternative A, maximum acreage limits would be set (averaging 73,600 annually for all treatments). Although no maximum treatment acreage limits exist under Alternative N, it is likely that more acres would actually be treated under that alternative in some years (active fire years) because Alternative N generally employs full use of wildland fire and allows for treatment of vegetation to reduce hazardous fuel and to restore ecosystem function. Impacts to air quality under Alternative A would likely result in reduced smoke and other emissions in the short term (compared to Alternative N) but would also likely result in increased fuel build-up, more frequent and larger wildland fires, and increased emissions in the long term.

Impacts from Travel Management

The types of impacts experienced as a result of travel-management decisions under Alternative A would be similar to those described under Alternative N. OHV use, which contributes to air impairments from fugitive dust and exhaust emissions, would continue on public lands within the RFO. Under Alternative A, motorized vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; 449,000 acres (21%) of public lands would be open to cross-country motorized vehicle use; and no areas would be closed to motorized use. The amount of open areas, although greatly reduced compared to Alternative N, would still result in the potential for air quality impacts (e.g., fugitive dust, emissions) from vehicle use in and near such areas. The remainder of the RFO would limit motorized use to designated routes (no areas would be closed). The public would have access to 4,312 miles of unpaved routes (slightly more than Alternative N), which could result in increased impacts to air quality. The BLM would close 68 miles of routes (slightly more than those closed in Alternative N). Impacts from route maintenance or improvement activities would be the same as those described under Alternative N. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, soil moisture).

Impacts from Minerals and Energy

Under Alternative A, similar amounts of BLM lands would be closed to fluid mineral leasing (446,900 acres), withdrawn from mineral location (154,700 acres), and closed to mineral material disposal (446, 900 acres) as proposed under Alternative N. Thus, impacts would be similar to those under Alternative A.

Proposed RMP

Emissions Calculations

Table 4-4 summarizes total and specific pollutant emissions for the Proposed RMP. The total emissions for this alternative would increase from the base-year level of 1,243 tons of pollutants per year to 2,271 tons per year by 2022, equivalent to Alternative A. Total emissions would also increase, relative to the No Action Alternative.

Given the low ambient concentrations that exist in the RFO for some pollutants, it is expected that the increase in emissions of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ for the Proposed RMP would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-4. Proposed RMP Emissions Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	44	13	247	6	60	12	1
Oil Well Operations	8	2	44	1	10	1	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Wells	**52**	**15**	**292**	**7**	**70**	**13**	**1**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	252	13	1
Lands and Realty	18	3	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	11	11	5	-	877	322	32
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	-	-	-	-	-
Vegetation	26	4	0	0	0	0	0
Subtotal: Non-Oil Well Activities	**198**	**135**	**151**	**16**	**1,136**	**335**	**33**
Grand Total: Proposed RMP Development	**250**	**150**	**443**	**23**	**1,206**	**348**	**35**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity
[b] Assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as those described under Alternative A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under the Proposed RMP would be similar to those described under Alternative N. OHV use, which contributes to air impairments from fugitive dust and exhaust emissions, would continue on public lands within the RFO. Under the Proposed RMP, motorized vehicles would be limited to designated routes on 1,908,210 acres (90%) of the RFO; 9,890 acres (less than 1%) would be open to motorized vehicle use; and 209,900 acres (10%) would be closed to motorized use. Although motorized vehicle use would be limited to designated routes on a similar number of acres as Alternative A, substantially fewer areas would be open to motorized vehicle use under the Proposed RMP; thereby eliminating impacts from vehicle use in open areas. In addition, 10% of the RFO would be closed to motorized use under the Proposed RMP, which would decrease the potential for emissions in those areas.

The public would have access to 4,277 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution. Substantially more miles of routes (280 miles) would be closed under the Proposed RMP than under Alternative N or A, further reducing the level of emissions near these

closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, soil moisture).

Impacts from Minerals and Energy

Under the Proposed RMP, similar amounts of BLM lands would be closed to fluid mineral leasing (447,300 acres), withdrawn from mineral location (176,200 acres), and closed to mineral material disposal (601,800 acres) as proposed under Alternative N, thus resulting in similar impacts.

Alternative C

Emissions Calculations

Table 4-5 summarizes total and specific pollutant emissions for Alternative C. The total emissions for this alternative would increase from the base-year level of 1,243 tons of pollutants per year to 2,254 tons per year by 2022. Although the differences are small, Alternative C includes the third smallest increase found in any of the alternatives. Emissions would also increase slightly relative to the No Action Alternative.

Given the low ambient concentrations that exist in the RFO for some of the pollutants, it is expected that the increase in CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ emissions from Alternative C would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-5. Alternative C Emissions Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	44	13	247	6	60	12	1
Oil Well Operations	8	2	44	1	10	1	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Well	**52**	**15**	**292**	**7**	**70**	**13**	**1**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	252	13	1
Lands and Realty	18	3	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	11	11	5	-	877	322	32
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	-	-	-	-	-
Vegetation	10	2	0	0	0	0	0
Subtotal: Non-Oil Well Activities	**181**	**133**	**151**	**16**	**1,136**	**335**	**33**
Grand Total: Alternative C Development	**233**	**148**	**443**	**23**	**1,206**	**348**	**34**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity
[b] Assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A and the Proposed RMP, although under Alternative C fewer acres would be treated annually (as much as 26,000 annually for all treatments). Thus, impacts to air quality under Alternative C would result in decreased smoke and other emissions in the short term but could result in increased fuel build-up, more frequent and larger wildfires, and increased emissions in the long term, compared to Alternative A and the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under Alternative C would be similar to those described under Alternative N. OHV use, which contributes to air impairments from fugitive dust and exhaust emissions, would continue on public lands within the RFO. Under Alternative C, motorized vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; 683,000 acres (32%) would be closed to motorized use; and no areas would be open to motorized vehicle use. With a greater area closed to motor vehicle use and with no area open, overall emissions within the RFO would likely be reduced.

The public would have access to 3,192 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution. More miles of routes (1,188 miles) would be closed compared to Alternatives N, A, or the Proposed RMP, further reducing the level of emissions near these closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, soil moisture).

Impacts from Minerals and Energy

Under Alternative C, more BLM lands would be closed to fluid mineral leasing and to mineral material disposal (586,300 acres) and substantially more areas would be withdrawn from mineral location (331,100 acres)than under Alternative N or A, or the Proposed RMP. The impacts to air quality described for Alternative N would therefore occur over a smaller area. Overall impacts to air quality would be minor.

Alternative D

Emissions Calculations

Table 4-6 summarizes total and specific pollutant emissions for Alternative D. The total emissions for this alternative would increase from the base-year level of 1,243 tons of pollutants per year, to 2,240 tons per year by 2022, the lowest increase found among the alternatives. Emissions would also decrease relative to the No Action Alternative.

Given the low ambient concentrations that exist in the RFO for some pollutants, it is expected that the increase in emissions of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ for the Proposed RMP would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-6. Alternative D Emissions Summary

Activity	PM_{10} Tons	$PM_{2.5}$ Tons	NO_x Tons	SO_2 Tons	CO Tons	VOC Tons	HAPs[b] Tons
Oil Well Development and Exploration							
Oil Well Construction	43	12	238	6	58	11	1
Oil Well Operations	8	2	44	1	10	1	0
Oil Well Maintenance	0	0	0	0	0	0	0
Subtotal: Oil Well	**51**	**14**	**282**	**7**	**68**	**12**	**1**
Non-Oil Well Activities							
Coal Mining[a]	111	111	142	16	252	13	1
Lands and Realty	18	3	1	0	0	0	0
Livestock Grazing	5	1	3	0	7	0	0
OHVs[a]	11	11	5	-	877	322	32
Resource Roads	0	0	0	0	0	0	0
Salable Minerals	26	5	-	-	-	-	-
Vegetation	10	2	0	0	0	0	0
Subtotal: Non-Oil Well Activities	**181**	**133**	**151**	**16**	**1,136**	**335**	**33**
Grand Total: Alternative D Development	**232**	**147**	**433**	**23**	**1,204**	**348**	**35**

[a] $PM_{2.5}$ assumed = PM_{10} for this activity
[b] Assumed = VOCs * 0.1
Note: The values in this table may not sum exactly due to rounding.

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as those described under Alternative C.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under Alternative D would be similar to those described under Alternative N. OHV use, which contributes to air impairments from fugitive dust and exhaust emissions, would continue on public lands within the RFO. Under Alternative D, motorized vehicles would be limited to designated routes on 972,800 acres (46%) of the RFO; 1,155,200 acres (54%) would be closed to motorized use; and no areas would be open to motorized vehicle use. With a greater area closed to motor vehicle use and with no area open, overall emissions within the RFO would be reduced.

The public would have access to 3,043 miles of unpaved routes in the RFO. Use of these roads would continue to create localized air pollution. More miles of routes (1,242 miles) would be closed under Alternative D than under any of the other alternatives, further reducing the level of emissions near these closed routes. Overall impacts to air quality would be negligible to minor, depending upon the level of use, speed of vehicle, and climatic conditions (e.g., amount of wind, humidity, soil moisture).

Impacts from Minerals and Energy

Under Alternative D, substantially more BLM lands would be closed to fluid mineral leasing, closed to mineral material disposal (1,160,500 acres), and withdrawn from mineral location (903,900 acres), compared to any of the other alternatives. The impacts to air quality described for Alternative N would therefore occur over a much smaller area; overall impacts to air quality would be negligible.

Mitigation Options

BLM would consider mitigation for potential direct project impacts in an EIS for a proposed project. By identifying potential mitigation measures BLM is not prescribing a particular mitigation measure. In addition to specific mitigation measures for projects, the BLM may consider taking an outcome-based approach.

Mitigation may be applied to fugitive dust and NO_x impacts. Fugitive dust refers to any particulate matter that is not deliberately emitted by a well-defined source. Fugitive dust sources typically include windblown dust from unvegetated lands, construction, and unpaved roads. Table 4-7 shows several fugitive dust mitigation options available.

Table 4-7. Effectiveness and Costs of Fugitive Dusk Mitigation Measures (PM_{10})

	Dust Sources					
	Disturbed Areas	Unpaved Roads[1]				
Effectiveness	Level proportional to percentage of land cover	0–50% reduction in uncontrolled dust emissions	33–100% control efficiency	80% for 15 mph[3] 65% for 20 mph[3] 25% for 30 mph[3]	30% reduction	90% reduction
Estimated Cost	Unknown	$4,000/mile	$2,000 to $4,000/mile per year	Unknown	$9,000/mile	$11,000 to $60,000/mile

NO_x emissions are associated with combustion. Table 4-8 shows several potential mitigation measures that could reduce impacts from NO_x emissions. The appropriate level of control will be determined by the State of Utah during the construction permit process.

Table 4-8. Efficiency of Nitrogen Oxides (NO_x) Mitigation Measures

	NO_x Emissions Sources			
	Field Compressors	Sales Compressors	Temporary Diesel Generators[1]	Heavy Equipment
Mitigation Options/Efficiency	Implement BACT Typically results in a NO_x emission rate of about 1 g/bhp-hr	Implement BACT Typically results in a NO_x emission rate of about 1 g/bhp-hr	Register with state; WDEQ regulate as appropriate	Voluntary use of diesel engines

Wyoming is currently registering these generators to determine whether NO_x emissions are significant.

In addition, Table 4-9 shows additional mitigation measures to be considered in the planning area impact assessment. These are general mitigation opportunities that should be considered and applied as appropriate. BLM has no authority to require any application of these measures, although industry is encouraged to implement these measures on its own before they are required by the State of Utah. Advances in technology are likely to offer new mitigation options during the time covered by the RMP. Under NEPA, the planners of individual projects in the planning area must recommend mitigations measures that are appropriate for the projects. The State of Utah, as the permitting authority, will review permit applications and require specific emission control devices and measures. All costs shown in this table are approximate.

Table 4-9. Additional Mitigation Measures with Approximate Costs and Benefits

Type of Mitigation	Approximate Cost	Environmental Cost	Potential Limitations	Environmental Benefit
Selective Catalytic Reduction for Compressor Emissions	$4,000 to $27,000 per NO_x ton-year.	Possible NH_3 releases.	May be cost prohibitive for oil and gas applications.	NO_x emission rate reduced to 0.1 g/hp-hr; decreased visibility impact.
"Green Completions" and Flowback Units	Capital cost ranges from $1,000 to $10,000. Operating cost is $1,000/year. Payback 1–3 years.	Moving equipment to and from well completions. Fugitive dust from trucks.		Saves 100,000 cubic feet of gas per well per year. Reduces flaring emissions by 70–90% at completion.
Electrical Compressors	Capital cost is 40% of gas turbine cost. Operating costs depend on location of transmission lines.	Displaced air emissions from compressor unit to electric power plant.		Moving air emissions away from sensitive PSD Class I areas.
Fugitive Dust Road Treatment	$2,400–$50,000 per mile.	Possible vegetation effects.		20–100% dust control.
Fugitive Dust Administrative Control	$13,000 per well for remote telemetry. A few added work hours per year traveling at enforced speed limits.	Minor/unknown.	Difficult to enforce.	Reduced VMTs with related emission reductions. Slower speeds give 20–50% reductions in dust emissions.
Larger Diameter Sales Pipeline	Capital costs increase with larger pipes. Operating costs decrease with larger pipes.	Larger trench for burying line. Slightly more surface disturbance.	Probably applicable only for large producing operations.	Possibly resulting in lower compressor emissions.
Microhole Drilling	Cost of technology transfer; then potentially less than conventional drilling.	Additional impacts if duplicate drilling is necessary.		Lighter equipment on roads, smaller drilling sites, reduced gaseous emissions during drilling.
Condensate Pipelines	Cost of pipe and installation minus cost of eliminated storage tank and trucking.	Trench for burying line.	The cost may outweigh benefit.	Eliminate emissions from storage vessels; eliminate miles traveled by vacuum trucks.

Type of Mitigation	Approximate Cost	Environmental Cost	Potential Limitations	Environmental Benefit
Wind Farm Electric Generation	4 to 5 cents/kW-hr. Capital costs are large.	Visual impacts, impacts on raptors, maintenance.	Large capital costs required	Reduced power plant emissions. (VOC, NO_x, SO_2, CO, CO_2)
Phased oil and gas Development	Short-term loss of state and federal royalties	Emissions averaged over a longer period.		Peak emissions and impacts are reduced.

The relationship between VOC and nitrogen oxides to form ozone is complex. At this time it is unclear how ozone concentrations would change with VOC and NO_x mitigation. However, Table 4-10 outlines potential VOC mitigation measures.

Table 4-10. VOC Mitigation Measures

Type of Mitigation	Approximate Cost	Environmental Cost	Environmental Benefit
Condenser on Glycol Dehydrator	$1,000 to $10,000	Unknown	95% VOC and HAP reduction.
Activated Carbon Filter on Condensate Storage Tank	$1,000 and up	Energy required to recycle filter.	50–80% VOC reduction.
Stage I Vapor Controls for Condensate Transfer for Truck Loading	$1,000–$3,000	Potential fire risk with improper operation.	90% VOC emission reduction during transfer.

Summary

A qualitative emission comparison approach was selected for the air quality impact analysis. This analysis shows that under all alternatives, there will be little to no impacts. The emissions calculations were based on the best available engineering data and assumptions; on air, visibility, and atmospheric deposition data; on emission inventory procedures; and on professional and scientific judgment. However, where specific data or procedures were not available, assumptions were made. There are limitations associated with this approach. However, given uncertainties about the number, nature, and specific location of future sources and activities, the emission comparison approach is defensible and provides a sound basis for comparing alternatives.

Table 4-11 and Table 4-12 summarize total and specific pollutant emissions for all the alternatives. The range of total emissions is minor (Table 4-11) and the difference between the alternatives is not significant. Please note that the total numbers in Table 4-11 are derived from adding the PM_{10}, NO_x, SO_2, CO, and VOCs. $PM_{2.5}$ and HAPs are not added in because they are subsets of the PM_{10} and VOC numbers, respectfully. Also note that the totals in Table 4-12 maybe slightly different than the sum of the values in Table 4-2 through Table 4-6 because of rounding.

Except for NO_x, oil development is not a major contributor to air emissions. Non-oil well activities that contribute to emissions include drilling and coal mining, which is the largest contributor to NO_x; OHV activities are the largest contributor to CO, VOC, and HAP emissions; and coal mining is the largest

emissions source for PM. It is expected that the increase in CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ emissions (Table 4-8) from any alternative would not cause concentrations to exceed NAAQS or state ambient air quality standards.

Table 4-11. Total Emissions for Alternatives (Tons Per Year)

Alternative	2007	2022
No Action Alternative	1,243	2,250
Alternative A	1,243	2,271
Proposed RMP	1,243	2,271
Alternative C	1,243	2,254
Alternative D	1,243	2,240

Note: Totals are all pollutants minus $PM_{2.5}$ and HAPs because $PM_{2.5}$ is a subset of PM_{10} and HAPs are a subset of VOCs.

Table 4-12. Increase in Annual Air Emissions From 2007 Conditions on BLM-Administered Lands Within the RFO Area (Tons Per Year)

Time Frame	PM_{10}	$PM_{2.5}$	NO_x	SO_2	CO	VOC	HAPs
No Action Alternative							
2007	192	131	213	19	648	171	16
2022	229	146	443	23	1,206	348	35
Change in emissions from base year	19%	11%	108%	21%	86%	104%	106%
Alternative A							
2007	192	131	213	19	648	171	16
2022	250	150	443	23	1,206	348	35
Change in emissions from base year	30%	14%	108%	21%	86%	104%	106%
Change in emissions from No Action	9%	2%	0%	0%	0%	0%	0%
Proposed RMP							
2007	192	131	213	19	648	171	16
2022	250	150	443	23	1,206	348	35
Change in emissions from base year	30%	14%	108%	21%	86%	104%	106%
Change in emissions from No Action	9%	2%	0%	0%	0%	0%	0%
Alternative C							
2007	192	131	213	19	648	171	16
2022	233	148	443	23	1,206	348	35
Change in emissions from base year	21%	11%	108%	21%	86%	104%	106%
Change in emissions from No Action	2%	0%	0%	0%	0%	0%	0%
Alternative D							
2007	192	131	213	19	648	171	16
2022	232	146	433	23	1,204	348	34

Time Frame	PM_{10}	$PM_{2.5}$	NO_x	SO_2	CO	VOC	HAPs
Change in emissions from base year	21%	11%	108%	21%	86%	104%	106%
Change in emissions from No Action	1%	0%	0%	0%	0%	0%	0%

4.3.2 Soil Resources

Soils within the RFO are susceptible to impacts from compaction and disturbance, which can lead to accelerated erosion, soil loss, and reduced productivity. Management actions that involve ground-disturbing activities, reducing vegetation cover, trampling, and using vehicles and heavy machinery can result in such impacts, especially in areas in which natural erosion rates are very high because of soil or geologic factors. The greatest impacts to soil come from cross-country vehicle travel, the use of vehicles on poorly constructed routes, mineral operations, and visitor use. The effects of cross-country travel include reduction or disturbance of surface cover (e.g., soil-holding vegetation, litter, rocks), displaced soil particles, increased soil compaction, creation of new flow paths and channels, and increased runoff. Combined, these effects increase soil erosion. The effects of travel on poorly constructed routes are similar to the effects of cross-country travel. Thus, the greater the number of poorly constructed routes that are left open, the greater the impacts through compaction and erosion.

Surface disturbances generally increase soil susceptibility to erosion and compaction, which in turn increases the potential for offsite movement, salinity and sediment delivery to streams, and adverse impacts on soil resources. However, short-term activities that disturb soils may sometimes be necessary to make long-term improvements in soil condition and vegetation cover. Activities such as land treatment are expected to slow erosion rates and improve soil productivity, water-holding capacity, and nutrient cycling capability.

Proposed decisions that allow surface-disturbing activities pose greater risks for adverse impacts to soils and, in some places and situations (e.g., OHV open areas and certain activities allowed under VRM Classes III and IV), to the associated biological crusts. Decisions that restrict surface disturbing activities (e.g., OHV limited and closed areas, restrictions to vegetation and surface disturbance under VRM Classes I and II, mineral withdrawals, special designations) are generally beneficial. Some surface disturbing activities (e.g., hazardous fuels treatments, other vegetation treatments) could have adverse short-term but beneficial long-term impacts. Sometimes soil disturbance could be required for successful restoration treatments (e.g., tillage to alleviate compaction, scarifying to incorporate seed). Although the implementation of SRH, BMPs, and other soil-protection measures to maintain long-term soil productivity is common to all alternatives, the risks of adverse soil impacts because of surface-disturbing activities varies by alternative.

Methods and Assumptions

This analysis was based on the following assumptions:

- Soil resources would be managed to meet Standard 1 of Utah's SRH and *Guidelines for Grazing Management*.
- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, could increase water runoff and downstream sediment loads and could lower soil productivity, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time and degree of disturbance, existing vegetation, and precipitation.
- An increase of pollutants in surface waters would affect other beneficial uses (e.g., stock watering, irrigation, drinking water supplies).
- Roads and trails would be properly designed.
- Surface disturbances would be restored or mitigated.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified when possible. Spatial analyses were conducted by using GIS data and analyses. Impacts are described by using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to soils would likely result from actions proposed under the following resource management programs:

- Air Quality, Soil Resources, and Water Resources
- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on soils.

Alternative N: No Action

Impacts from Air Quality, Soil Resources, and Water Resources

Specific stipulations and permit requirements, including reclamation plans to protect soils during and after surface-disturbing activities in the RFO, would minimize the types of impacts described above. These stipulations include the requirement that all surface-disturbing activities are the minimum necessary to complete the task; reclamation plans for road upgrades or realignments; specific soil-stability measures for all surface-disturbing activities and saline soils; and closing and reclaiming temporary roads, facilities, and improvements that are no longer necessary. Impacts would be minor RFO-wide but could be moderate at specific sites. In the long-term, these actions would reduce soil compaction and surface runoff.

Impacts from Vegetation and Fire and Fuels Management

Managing vegetation communities and associations to achieve the SRH could increase organic matter content, structure, and permeability, thereby improving the overall productivity of soils. In addition, Alternative N allows for only limited treatment of vegetation, although a full range of tools (including mechanical, wildland or prescribed fire, and chemical methods) would be available. Restoration and vegetation-treatment projects aimed at improving vegetation health and cover would reduce erosion potential and increase soil productivity. However, mechanical, manual, or chemical treatments could result in soil compaction, some loss in vegetation cover, erosion, and changes in soil chemistry and thus could result in erosion. Restrictions in sensitive areas would help protect fragile soil resources in such habitats. These management actions would improve soil stability and prevent soil loss because of erosion. Initially, vegetation treatments change the vegetation structure and increase local erosion and

sedimentation rates. In the long term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts would generally be beneficial overall.

Impacts to soils from vegetation management would occur from fire and fuels management. Impacts to soil resources related to wildland fires are complex and involve changes in nutrient cycling, water infiltration and runoff, and erosion potential. Impacts are a function of the severity of the burn, whether the vegetation community is adapted to fire and the fuel condition class of the vegetation community and the condition of soils (e.g., disturbed) before the burn. Alternative N allows for the full range of fire- and fuels-management actions to achieve ecosystem sustainability. High-severity fires remove vegetation and soil surface cover, which drastically increases the potential for wind and water erosion and sedimentation to streams. Off- and on-road use of heavy fire equipment to suppress fires would cause compaction, and chemical retardant could alter soil chemistry. Management prescriptions and post-fire rehabilitation would minimize some of these impacts. Suppressing fires in areas of excessive fuel buildup could minimize, in the short term, high-severity fires and the associated impacts of vegetation loss and erosion. However, continued suppression of wildland fires could result in increased fuel loading and could increase the risk of high-severity wildfires and adverse soil impacts in the long term. Impacts to soils associated with wildfire could be much greater because of a high percentage of vegetative cover loss and intense deep heating, resulting in soil sterilization and the creation of hydrophobic surface layers.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface-disturbing activities in certain areas, thereby affecting soil resources. VRM Classes I and II would be aimed at greater retention of existing landscape character than Classes III or IV would be. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 acres (27%) would be managed as VRM Class III; and 1,029,500 acres (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and would retain existing vegetation, thereby reducing soil erosion. Areas managed as VRM Class III or IV (75% of the RFO under Alternative N) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which drastically increases the potential for wind and water erosion and sedimentation to streams.

Impacts from Special Status Species

Alternative N (and all the other alternatives) prohibits actions that destroy, adversely modify, or fragment federally listed species habitat; proposes habitat improvements for SSS; generally retains SSS habitat in federal ownership; and considers SSS habitat in all wildland fire-suppression efforts. The combined actions would have beneficial impacts on soils by helping to minimize surface disturbance, thereby maintaining soil productivity and limiting erosion. Springtime seasonal restrictions placed on surface-disturbing activities (e.g., to protect Greater sage-grouse breeding habitat) could also minimize compaction by reducing equipment operations when soils are moist and most susceptible.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife, such as avoiding habitat fragmentation, reducing road densities, and restricting surface disturbance or surface occupancy within 500 feet of riparian areas, would have beneficial impacts on soils by reducing erosion, compaction, or vegetation loss within the riparian buffer zone. These management actions would improve soil stability and prevent soil loss caused by erosion.

Alternative N also proposes habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives. These vegetation treatments would initially change the vegetation structure and would increase local

erosion and sedimentation rates. However, in the long term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts would be beneficial overall.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on soil resources because of trampling, compaction, and reduced vegetation cover. Under Alternative N, 100 animal unit months (AUM) are allocated to burros in the Canyonlands Herd Management Area (HMA), although no appropriate management level (AML) is established. These numbers are greater than Alternative A (which establishes an AML of zero and allocates no AUMs) but less than the Proposed RMP, C, or D (which establish a herd size of between 120 to 200 head). Impacts to soils under Alternative N would be minimal because of the small herd size.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

Conducting commercial timber harvests on a case-by-case basis west of Capitol Reef National Park could result in localized surface disturbance, soil compaction, and changes in vegetation community composition and structure. Soil compaction would reduce water infiltration and could reduce plant growth and nutrient cycling. Indirectly, this could increase sediment loading in streams and could reduce riparian-wetland function. Implementing mitigation measures would reduce the long-term effects of these impacts. Removal of dead and down material would reduce large-size fuels and could alter the physical properties of soil resources.

Alternative N allows for harvesting of forest and woodland products across most of the RFO (i.e., all areas, outside of WSAs, on a case-by-case basis). Harvesting of forest and woodland products would have localized minor-to-moderate impacts on soils from vehicle use to access the harvesting site and from loss of vegetative cover. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short- or long-term changes in species composition or community structure. However, removal of pinyon and juniper trees from areas in which they have invaded or areas in which canopy densities have increased would result in reduced amounts of bare ground and increased litter at the soil surface. Because pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation. This regrowth provides a protective vegetative cover for the soil surface, resulting in decreased erosion.

Impacts from Livestock Grazing

Under Alternative N, 138,952 acres would continue to be unavailable to livestock grazing, while 1,989,048 acres would continue to be available to grazing. Livestock grazing can increase soil compaction in trailing, watering, and mineral-supplement areas. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations and with the *Fundamentals of Rangeland Health* and the *Standards and Guidelines for Grazing Administration*. Adhering to these standards and guidelines would minimize impacts from livestock grazing by maintaining plant vigor and by increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity. This maintenance or improvement would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform. Impacts would therefore be minor area-wide but potentially moderate in specific areas in which livestock tend to congregate.

Impacts from Recreation

Recreational activities have site-specific impacts to soil resources near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long-duration trail use (e.g., walking, equestrian, OHV, mountain biking), especially during wet periods, could result in soil compaction and loss of vegetation cover, and could lead indirectly to increased erosion and loss of soil resources. Large-group recreation events and camping could compact soils, which could change infiltration rates and the distribution of water in soil and could increase surface runoff. Increased runoff and soil erosion would lower the functioning condition of the riparian area. These impacts would be site-specific and localized (Hammitt and Cole 1998).

Visitor use is expected to increase throughout the RFO. Under Alternative N, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore Field Office [FO]) is identified and managed as an extensive recreation management area (ERMA). Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions that would affect soils identified. Thus, intensively used recreation sites (such as near Otter Creek, Big Rock, Factory Butte, or Dirty Devil/Robbers Roost) would experience more intense, regular impacts to soils. Impacts to soils in these areas occur from OHV use and use by large numbers of visitors in a limited space. These activities result in loss of vegetation cover and soil compaction, leading to increased wind and water erosion. These impacts to soils would continue under Alternative N or might increase as visitor use increases.

Impacts from Travel Management

Generally, the more area open to OHV use, the greater the potential for adverse impacts to soil resources from trampling of vegetation and biological soil crusts, which leads to compaction and accelerated erosion. Limiting travel to designated routes confines the impacts to areas already disturbed or hardened for vehicle use. Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing potential impacts to soil over a large portion of the RFO; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized vehicle use. The public would have access to 4,315 miles of unpaved routes in the RFO. Use of these routes would continue to create the potential for soils impacts in the immediate vicinity of these routes.

Among the alternatives, Alternative N would have the greatest adverse impacts to soils because of the large amount of lands open to cross-country motorized use.

Impacts from Lands and Realty

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would provide protection to soils from the mining exploration and development impacts that could cause soil compaction and erosion. Alternative N proposes a total of 169,480 acres of withdrawals. Mining disturbance and associated soil-resource impacts would therefore not occur in these areas.

Retaining habitat for listed and candidate species in federal ownership would continue to provide protection to soils in these areas. Identifying 760 acres as available for sale, compared with retaining the land in federal ownership, could make these lands susceptible to increased impacts to soils because the BLM would implement BMPs for the protection of soils in any actions it authorizes.

Any new land use authorizations (e.g., ROWs, permits, leases, easements) could impact soils through compaction and vegetation removal, which could lead to erosion. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (no surface occupancy [NSO]) (22,600 acres) would be managed as ROW avoidance areas. Exceptions would be granted only when the proposed

authorization would not create substantial surface disturbance or would create only temporary impacts. Thus, impacts to soils in these avoidance areas would be negligible-to-minor and localized.

Impacts from Minerals and Energy

Disturbance of soils associated with mineral resource development would contribute to adverse impacts to soils, including loss of vegetative cover and soil productivity. In particular, noxious weed infestation resulting from disturbance of reclamation-limited soils would impact soil productivity. Biological soil crusts would potentially be crushed during surface disturbance and would no longer be protected from wind or water erosion.

The acreage in each leasing category would quantify impacts to soils, in terms of acres of surface disturbance. The categories, listed from greatest to least amount of surface disturbance, are as follows: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (timing limitation [TL], controlled surface use [CSU]), open to leasing subject to major constraints [NSO], and closed to leasing. Generally, areas that are closed to leasing or open to leasing subject to major constraints (NSO) would experience little or no surface disturbance caused by minerals development; thus, negligible or no adverse impacts to soils would occur. Areas open to leasing subject to standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would experience short- and long-term impacts to soils from surface disturbance associated with minerals development. These short- and long-term adverse impacts would include destruction of biological soil crusts, erosion and subsequent sedimentation of surface waters, changes in surface hydrology and infiltration, and possible alteration of soil chemistry or productivity by noxious weeds.

Under Alternative N, 459,700 acres would be closed to leasing; 22,600 acres would be open to leasing subject to major constraints (NSO); and 1,645,700 acres would be open to leasing subject to standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. In addition, adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to soils.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs pursuant to the Interim Management Policy (IMP) for Lands Under Wilderness Review would prevent most ground-disturbing activities. This management would result in protection for soil resources.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect soil by preventing ground-disturbing activities in the river corridors. All eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. This management would benefit soils by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection for soils, management actions included in ACECs are often more restrictive, thus indirectly providing protection. ACEC-associated protections that would affect soils include managing oil and gas leasing as closed to leasing or open to leasing subject to major constraints (NSO), implementing more restrictive VRM designations, restricting livestock grazing,; and implementing travel limitations. Alternative N continues the designation of four

ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would involve closing the ACECs to OHV use; managing the ACECs as closed to leasing or as open to leasing subject to major constraints (NSO), depending on the ACEC; making three of the four ACECs unavailable for livestock grazing; and acquiring inholdings. These restrictions would reduce surface-disturbing activities within the four ACECs, thus protecting soil resources.

Alternative A

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. It is therefore likely that in some years, fewer acres would be treated under Alternative N; however, in other years (when there are numerous wildland fires) more acres could be treated because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability.

Full suppression of wildland fires is not mandated under Alternative A. Thus, impacts to soils under Alternative A would likely result in decreased short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) compared to Alternative N. However, continued suppression of wildland fires could result in increased fuel loading and increase the risk of high-severity wildfires and adverse soil impacts in the long term. Impacts to soils associated with wildfire would then be much greater in the long term because of a high percentage of vegetative cover loss and intense deep heating from high-intensity fires, resulting in soil sterilization and creation of hydrophobic surface layers.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically increase the potential for wind and water erosion and sedimentation to streams. Thus, Alternative A has the greatest potential to impact soils.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N. However, Alternative A includes additional strategies (including employing directional drilling for oil and gas, closing and reclaiming roads, mitigating the effects of proposed projects that have the potential to cause long-term or permanent impacts or losses of habitat, and using species-specific buffers for surface-disturbing activities) to avoid or reduce fragmenting habitat. The combined actions would have beneficial impacts on soils by helping to maintain soil productivity and limit erosion. Springtime seasonal restrictions placed on surface-disturbing activities (e.g., to protect Greater sage-grouse breeding habitat) could also minimize compaction by reducing equipment operations when soils are moist and most susceptible.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative N. However, Alternative A proposes restricting surface disturbance or surface occupancy within 330 feet of riparian areas (versus 500 feet for Alternative N) and includes fewer restrictions on OHV use in crucial wildlife habitats. These management actions would increase the potential for soils impacts under this alternative.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on soil resources. Under Alternative A, no AUMs would be allocated to burros in the Canyonlands HMA, and the AML would be set at zero. Keeping the AML at zero would eliminate impacts that trampling, compaction, and reduced vegetation cover could cause to soils.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative A, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

Alternative A allows for harvesting of forest and woodland products across most of the RFO (i.e., all areas, outside of WSAs) where sustainable and compatible with restoring, maintaining, or improving forest health. The types of impacts would be similar to those described for Alternative N. However, Alternative A includes objectives to emphasize woodland health, one component of which is maximizing soil productivity and minimizing soil loss. These objectives would be emphasized and addressed for harvesting and mitigation included as appropriate to reduce the potential for soil compaction and erosion. Thus, management of forestry and woodland products under Alternative A would have less potential to adversely impact soils than under Alternative N and may result in beneficial impacts by improving woodland health.

Impacts from Livestock Grazing

Under Alternative A, 102,002 acres would be unavailable to livestock grazing and 2,025,998 acres would be available for grazing. Livestock grazing can increase soil compaction in trailing, watering, and mineral-supplement areas. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration,* and with BLM's riparian policy. Adhering to these statewide standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, and productivity. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform. Impacts would therefore be minor area-wide, but potentially moderate in specific areas in which livestock tend to congregate.

Impacts from Recreation

Under Alternative A, five Special Recreation Management Areas (SRMA) (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and by reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

The construction of recreation facilities in the Big Rock SRMA could have localized short-term adverse impacts, including soil compaction, reduced infiltration, and changes in surface hydrology; long-term impacts to soils would be beneficial by concentrating use areas and thus limiting the extent of soil disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized soil erosion. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate-to-extensive landscape modification would have potentially major impacts, including vegetation removal, soil compaction, changes in surface hydrology, and increased runoff over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates 449,000 acres (21%) of the RFO as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced compared to Alternative N, would still result in impacts to soil from vehicle use in those areas. The remainder of the RFO would have motorized use limited to designated routes: the public would have access to 4,312 miles of unpaved routes while 68 miles of routes would be closed (both of which are essentially the same as Alternative N). No areas would be closed to motorized use, with no accompanying benefits to soils.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N, although impacts to soils could occur over a larger area because of fewer acres proposed for withdrawal (154,700 acres under Alternative A), more acres proposed for disposal (13,400 acres), and fewer ROW avoidance areas (446,900 acres closed to oil and gas leasing). Thus, impacts to soils from surface disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be greater under Alternative A than under Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils because of the surface disturbances associated with such development. However, adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. (See the Impacts from Lands and Realty section for a discussion of withdrawals.) Alternative A proposes fewer acres of mineral withdrawals (154,700 acres), which would provide less protection to soils, compared to Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus,

impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion) could occur in the river corridors. Potential impacts to soils from WSR decisions could be greatest under this alternative. However, because most of the eligible river segments (98 of the 135 total miles) are within WSAs, none of the previously described ground-disturbing activities would occur in those river corridors.

Areas of Critical Environmental Concern

Under Alternative A, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface-disturbing activities within those areas, which could result in impacts to soils.

Proposed RMP

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same for all alternatives (as described in Alternative N).

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be designated as VRM Class II; 393,100 acres (18%) would be designated as VRM Class III; and 1,038,200 acres (49%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance and potential for wind and water erosion and sedimentation to streams), less of the RFO would be designated in these VRM classes than in Alternatives N or A, resulting in less potential impacts to soils, compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts to soils under the Proposed RMP would be similar to those described for Alternative A. However, the Proposed RMP also proposes temporal (i.e., winter and/or spring, depending on species) restrictions on surface-disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in deer and elk crucial habitats. These management actions would also benefit soils by limiting activities during wet seasons (which would reduce soil compaction) and restricting activities that could result in vegetation loss. These management actions would improve soil stability and prevent soil loss caused by erosion.

Impacts from Wild Horses and Burros

Under the Proposed RMP, 600 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 100. These numbers are greater than either Alternative N or A, but less than C or D (which establish a herd size of between 120 and 200 head). Because more burros results in a greater possibility of adverse impacts on soil resources because of trampling, compaction, and reduced vegetation cover, the Proposed RMP would potentially impact soils more than Alternatives N or A but less than Alternatives C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include designating the area as closed to leasing or open to leasing subject to major constraints (NSO), limiting motorized uses to designated routes, and designating the area as VRM Class II. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion).

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products management would be similar to Alternative A, although more lands would be closed to this type of use under the Proposed RMP (one WSR segment—5 miles, compared to zero segments under Alternative A). Thus, localized surface disturbance, soil compaction, and changes in vegetation community composition and structure would be less under the Proposed RMP than under Alternative A.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing decisions would be similar to Alternative A, although less land would be available for grazing under the Proposed RMP (1,989,048 acres, compared to 2,025,998 acres under Alternative A). Thus, impacts to soils from livestock grazing (i.e., increased soil compaction in trailing, watering, and mineral-supplement areas) could occur over a larger area, although the difference between alternatives is negligible.

Impacts from Recreation

Under the Proposed RMP, five SRMAs (860,390 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Establishing a Factory Butte SRMA would limit the impacts of cross-country OHV use on soils to a 8,500 acre area. Construction of facilities in the Big Rock SRMA would have localized short-term impacts including soil compaction, reduced infiltration, and changes in surface hydrology. Managing the Dirty Devil/Robbers Roost SRMA (290,500 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for surface disturbance from recreation. Closing canyons within the Dirty Devil/Robbers Roost SRMA to OHV recreation use and limiting OHV recreation use to designated routes would reduce potential surface disturbance and localized soil erosion. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Henry Mountains SRMA for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance.

The Proposed RMP, which establishes more areas as SRMAs than either Alternative N or A but less than either Alternative C or D, therefore would provide more protection to soils as a result of recreation decisions than either Alternatives N or A and would provide less protection than Alternatives C or D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, the Proposed RMP designates only 9,890 acres (less than 1% of the RFO) as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,908,210 acres (90%) of the RFO; and 209,900 acres (10%) would be closed to motorized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in impacts to soil from vehicle use in those areas. The remainder of the RFO would limit motorized use to designated routes—the public would have access to 4,277 miles of unpaved routes. Under the Proposed RMP, 345

miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, reducing runoff, increasing infiltration, and reducing erosion.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N. However, impacts to soils could occur over a smaller area because more acres would be proposed for withdrawal (176,200 acres under the Proposed RMP) and more acres would designated ROW avoidance areas (including 601,800 acres closed to leasing or open to leasing subject to major constraints [NSO], one suitable WSR segment—5 miles, and two ACECs—2,530 acres). Thus, impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be less under the Proposed RMP than under Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils because of the surface disturbances associated with such development. However, adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. (See the Impacts from Lands and Realty section for a discussion of withdrawals.) The Proposed RMP proposes more acres of mineral withdrawals (176,200 acres) compared to Alternative N or A, which would preclude mineral and energy development in those areas and thus provide more protection to soils.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect soil by preventing ground-disturbing activities in the river corridor. One suitable segment (5 miles) would be managed to protect outstandingly remarkable values, free-flowing nature, and the wild classification under the Proposed RMP. This would benefit soils by limiting ground disturbance in this area. Of the remaining segments, 98 miles are within WSAs, leaving 32 miles on which ground-disturbing activities could potentially impact soils. The Proposed RMP would provide less protection to soils from WSR decisions than Alternative N, C, or D, but more protection than Alternative A.

Areas of Critical Environmental Concern

The Proposed RMP designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values such as relic vegetation in these areas (i.e., closing to OHV use; managing as open to leasing subject to major constraints (NSO), depending on the ACEC; unavailable for livestock grazing; and acquiring inholdings) would reduce surface-disturbing activities within those areas, thus protecting soil resources.

Alternative C

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, Alternative C proposes using only natural processes to manage vegetation. Such processes could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This approach could result in the loss of existing vegetation cover, indirectly increasing erosion. Thus, impacts to soils under Alternative C would likely result in reduced short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) compared to Alternative A, as well as reduced long-term impacts (improved vegetative cover and increased plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage).

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance and potential for wind and water erosion and sedimentation to streams), less of the RFO would be designated in these VRM classes than in Alternative N or A or in the Proposed RMP, resulting in less potential impacts to soils compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative A. However, Alternative C proposes restricting surface disturbance or surface occupancy within 660 feet of riparian areas (versus 330 feet for Alternative A), includes more restrictions on OHV use in crucial wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the protection of wildlife values. These additional management actions would decrease the potential for soils impacts under Alternative C.

Impacts from Wild Horses and Burros

Under Alternative C, 1,200 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than Alternative N, A, or the Proposed RMP. Because more burros result in a greater possibility of adverse impacts on soil resources because of trampling, compaction, and reduced vegetation cover, Alternative C would potentially impact soils more than Alternatives N, A, or the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for soils.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to the Proposed RMP, although more lands would be closed to this type of use under Alternative C (12 WSR

segments—135 miles). Thus, localized surface disturbance, soil compaction, and changes in vegetation-community composition and structure would be less under Alternative C than under the Proposed RMP.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

Under Alternative C, four SRMAs (930,000 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly maintain or reduce the potential for surface disturbance from recreation. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have site-specific impacts including soil compaction, changes in surface hydrology, and increased runoff. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance. Managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain and protect vegetation and soil resources that contribute to the scenic qualities of Sevier Canyon.

Alternative C, which establishes more areas as SRMAs than Alternative N, A, or the Proposed RMP but fewer areas than Alternative D, therefore would provide more protection to soils as a result of recreation decisions than Alternative N or A or the Proposed RMP and would provide less protection than Alternative D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, Alternative C designates no areas as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized vehicle use. The lack of open areas would eliminate impacts to soil from vehicle use in those areas. Limiting motorized use to designated routes—the public would have access to 3,192 miles of unpaved routes—would generally limit soils impacts to areas in the immediate vicinity of the designated route. Under Alternative C, 1,188 miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, reducing runoff, increasing infiltration, and reducing erosion.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N. However, impacts to soils could occur over a much smaller area because of an increase in acres proposed for withdrawal (331,100 acres under Alternative C) or designated as ROW avoidance areas; 735,000 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments (135 miles) and 16 ACECs (886,810 acres). Thus, impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be less under Alternative C, compared to Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Development of oil and gas resources could affect soils because of the surface disturbances associated with such development. However, adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to soils. Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. (See the Impacts from Lands and Realty section for a discussion of

withdrawals.) Alternative C proposes more acres of mineral withdrawals (331,100 acres) than do Alternative N, A, or the Proposed RMP. This increase would preclude mineral and energy development in those areas and thus provide more protection to soils.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect soil by preventing ground-disturbing activities in the river corridors. All 12 suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative C. This would benefit soils by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; designating as VRM Class II; making them unavailable for livestock grazing; and acquiring inholdings) would reduce surface-disturbing activities within those areas, thus protecting soil resources.

Alternative D

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N, although these impacts would occur over a much smaller area because of differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 acres (17%) would be designated as VRM Class III; and 576,600 acres (27%) would be designated as VRM Class IV. Just more than half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface-disturbing activities would generally not be allowed in these areas, resulting in reduced potential for wind and water erosion and sedimentation to streams and less potential impacts to soils compared to Alternative N, A, or C or the Proposed RMP.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include closing to oil and gas leasing, closing to OHV use, and designating as VRM Class I. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion). Therefore, of all the alternatives, Alternative D would therefore be most beneficial to soils.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described for Alternative C, except that no commercial or non-commercial forest and woodland products resource use would be allowed within the 682,600 acres of non-WSA lands with wilderness characteristics. Thus, localized surface disturbance, soil compaction, and changes in vegetation community composition and structure would be greatly reduced under Alternative D, compared to all of the other alternatives.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative C.

Impacts from Recreation

Under Alternative D, seven SRMAs (1,358,100 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing these SRMAs for dispersed recreation in a primitive or semi-primitive setting would indirectly maintain or reduce the potential for surface disturbance from recreation. Associated management actions (closing or limiting OHV use and precluding development of facilities) would have minimize the potential for site-specific impacts including soil compaction, changes in surface hydrology, and increased runoff, which would indirectly maintain and protect soil resources.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized vehicle use. The lack of open areas would eliminate impacts to soil from vehicle use in those areas. Limiting motorized use to designated routes—the public would have access to 3,043 miles of unpaved routes—would generally limit soils impacts to areas in the immediate vicinity of the designated route. Under Alternative D, 1,242 miles of routes would be closed, allowing these areas to revegetate, which would benefit soils by reducing compaction, runoff, and erosion and increasing infiltration.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N. However, impacts to soils could occur over a much smaller area because more acres would be recommended for withdrawal (903,900 acres under Alternative D) and more acres would be designated ROW avoidance areas (1,203,800 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs). Thus, impacts to soils from surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be much less under Alternative D than under all the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. However, impacts to soils could occur over a much smaller area

because more acres would be recommended for withdrawal (903,900 acres under Alternative D) and more areas would be closed to leasing or open to leasing subject to major constraints (NSO) (1,203,800 acres). Closing or withdrawing areas from mineral operations would prevent impacts to soils within those areas. Thus, impacts to soils from mining-related surface-disturbing activities (such as compaction and vegetation removal, which could lead to erosion) would be much less under Alternative D than under all the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.3 Water Resources

This section presents potential impacts to water resources from management actions for other resource programs. Existing conditions for water resources are described in Chapter 3. The discussion of impacts to water resources is limited to the effects of surface-disturbing activities on water quality and watershed health. Activities that disturb the land surface, decrease vegetation cover, or otherwise alter land surface cover would potentially affect water quality and watershed health.

Water quality within the planning area is influenced by both natural and human factors. Water quality problems created by natural geologic conditions are almost impossible to control. Water quality is generally good in the upper reaches of streams. As water flows downstream, the chemical and biological quality of the water deteriorates as salts accumulate, ground cover diminishes, water temperatures increase, fecal coliform from livestock and wildlife increases, and sediments accumulate. Most of the sediment discharge by streams in arid and semi-arid regions is transported during brief periods, usually as a result of thunderstorms. Water quality relative to sediment content is best during periods of low flow; water quality relative to chemical content is best during high flow. The State Division of Water Quality (DWQ) is responsible for adopting, enforcing, and administering state and federal water quality regulations.

Compared to other natural and human-caused factors that affect water quality within the planning area, Proposed RMP decisions would have minor impacts on water quality.

Methods and Assumptions

The analysis is based on the following assumptions:

- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, could increase water runoff and downstream sediment loads, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time and degree of disturbance, existing vegetation, soil type, and precipitation.
- Restrictions on surface-disturbing activities should help to protect and maintain current water quality and to minimize erosion and sedimentation.
- An increase of pollutants in surface waters could affect other beneficial uses (e.g., stock-watering, irrigation, fisheries and aquatic life, recreation, drinking-water supplies).
- Proposed decisions that allow surface-disturbing activities that impact soils could also adversely impact water quality.
- Increased erosion does not necessarily result in increased sedimentation to a perennial stream.
- Some surface-disturbing actions, such as vegetation management projects, could cause short-term adverse impacts to water quality immediately following treatments but could benefit water quality in the long term as vegetation becomes reestablished.
- Proposed decisions that limit surface-disturbing activities or that protect or restore soil, water, and vegetation resources could protect or improve water quality.

Environmental Consequences

Impacts to water resources would likely result from actions proposed under the following resource programs:

- Soil Resources and Water Resources

- Vegetation
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on water resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Specific stipulations and permit requirements, including reclamation plans, to protect water resources during and after surface-disturbing activities in the RFO would minimize impacts. These stipulations include requiring that all surface-disturbing activities be the minimum necessary to complete the task; requiring reclamation plans for road upgrades or realignments; requiring specific soil-stability measures for all surface-disturbing activities and saline soils; closing and reclaiming temporary roads, facilities, and improvements that are no longer necessary; and maintaining a 500-foot buffer zone of no surface disturbance or surface occupancy around all springs to protect water quality. Impacts would be minor RFO-wide, but potentially moderate at specific sites. In the long term, these actions would reduce soil compaction, soil erosion, and surface runoff, which would protect water resources and maintain or improve water quality.

Impacts from Vegetation

Under Alternative N, vegetation treatments would be conducted in accordance with the *Fundamentals of Rangeland Health*, which require that water quality be protected. Initially, vegetation treatments change the vegetation structure and increase local erosion and sedimentation rates, which could adversely affect water quality. However, in the long term, vegetation treatments improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage, which would help protect water quality.

Impacts from Fish and Wildlife

Under Alternative N, proposed decisions that recommend avoiding habitat fragmentation, reducing road densities, and mitigating surface disturbances would benefit water quality by reducing the potential for erosion and sedimentation of streams.

Impacts from Fire and Fuels Management

Alternative N allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. This alternative also allows for treatment of vegetation (including mechanical, wildland fire use or prescribed fire, and chemical methods). This action would move vegetation communities more in line with the historic range of variability. Alternative N would better protect the soil and would increase water quality over the long term as more acres are treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Under Alternative N, the timber harvest acreage and quantities of woodland products harvested (including fuelwood, fence posts, Christmas trees, and seed collection) would be small, so the overall effects on water quality would be negligible. There are more than 2 million acres of public land in the RFO, with the current average annual harvest of timber near zero board feet and other woodland product permits (averaging about 2 cords each) numbering in the hundreds. Additionally, all permits issued for forest and woodland products contain stipulations for the use of BMPs to minimize or eliminate impacts to all resources, including water.

Impacts from Livestock Grazing

Grazing has the potential to accelerate erosion rates and nutrient loads to surface water. As a result, contaminants such as nutrients and bacteria could wash directly into receiving waters from surface-water runoff in grazed areas. Livestock grazing in areas of low rainfall (less than 8 inches per year) generally does not contribute a significant amount of nutrients to surface water because of the aridity of the area, distance from perennial streams, plant uptake, and soil mineralization.

Livestock grazing in the RFO would be managed in keeping with applicable laws and regulations and with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration.* Adhering to these statewide standards and guidelines would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. Alternative N would minimize impacts to water resources within the planning area.

Impacts from Recreation

Under Alternative N, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would affect water resources. Thus, intensively used recreation sites (such as those near Otter Creek, Big Rock, Factory Butte, and Dirty Devil/Robbers Roost) could experience impacts to water quality from OHV use and use by large numbers of visitors in a limited space. These activities could result in loss of vegetation cover and in soil compaction, leading to increased wind and water erosion. Under Alternative N, these impacts to water resources would continue or might increase as visitor use increases.

Impacts from Travel Management

OHV use has the potential to affect water quality by causing surface disturbance, channeling surface runoff, changing vegetation structure, and reducing riparian-wetland function. Roads and OHV routes can be primary sources of sediment and salinity delivery to rivers and streams. Of special concern are routes with a clay-based native surface and routes and cross-country vehicle use within riparian zones and Mancos shale areas. The magnitude and extent of motorized recreation has a greater impact on soil and water resources than non-motorized recreation does. OHV recreation use during periods of high soil-moisture conditions could accelerate localized erosion and damage vegetation.

Acreage open to cross-country OHV use under Alternative N would be 1,636,400 acres (77% of the RFO). Alternative N would therefore allow the greatest ground disturbance from cross-country OHV use and the greatest potential impacts to water quality from cross-country use. However, actual impacts would be dependent on where and when vehicles traveled. Generally, the more miles of open routes, the greater

the possibility of adverse impacts to water quality, although the location of routes (e.g., crossing streams, within riparian areas) is more important than sheer miles. Stream crossings by motorized vehicles could remove riparian vegetation, increase the amount of bare soil, increase localized soil erosion, change surface hydrology, and reduce infiltration, all of which can impact water quality. Alternative N would designate routes with the greatest number of stream crossings (Table 4-13), thus of all the alternatives, Alternative N would result in the most potential impacts to water resources.

Table 4-13. Off-Highway Route Designations and Stream Crossings

	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Miles of designated routes	4,315	4,312	4,277	3,192	3,043
Number of stream crossings	539	443	400	273	266

A specific water quality issue raised during scoping was the effect of cross-country OHV use in the Factory Butte area on water quality in the Fremont River. The lower Fremont River was listed on the State of Utah's 303(d) list as impaired for its agricultural beneficial use because of high concentrations of total dissolved solids (TDS). In 2002, a Total Maximum Daily Load (TMDL) plan was approved and the river was removed from the 303(d) list. The water quality goals for the lower Fremont River and tributaries were to reduce salt loading by improving the efficiency of irrigation systems (and thereby reducing return flows), to restore stream channel stability, and to eliminate TDS loading from the two artesian wells in Caineville Wash. BLM capped the two wells in 2004, fulfilling one of the three major goals.

The primary source of TDS in this watershed originates from the saline Mancos shale formation east of Capitol Reef National Park. Water flowing over, through, and under these shale badlands dissolves and transports salts to the Fremont River. Swing Arm City, north of Caineville, is an area of concentrated OHV use within the Mancos shale badlands. Erosion rates usually increase in areas heavily used by OHVs. However, increased erosion does not immediately result in the delivery of eroded solid particles and solutes to a perennial stream, especially in an arid environment. Swing Arm City drains into a broad alluvial fan before reaching the Fremont River. The lower Fremont is not listed as being impaired by sediment or selenium. Water quality standards and criteria adjacent to and downstream of Factory Butte are violated at very low flows when there is no upland runoff. This has persisted for a long period, predating the use of OHVs in the area.

Closing Swing Arm City to OHV use would not result in a significant improvement in downstream water quality. If concentrated OHV use expanded north into Neilson Wash, there would be a greater likelihood of increased sediment loading into the Fremont River because OHVs would impact previously undisturbed areas, increasing the soil erosion potential. Alternative N would allow OHV use to expand into Neilson Wash, possibly impacting water quality.

Impacts from Lands and Realty

Under Alternative N, 280 acres of public land are identified for Federal Land Policy and Management Act (FLPMA) land sales. Loss of these acres would have no effect on water quality. These lands are currently managed to meet state water quality standards as per the SRH. After disposal, use of these lands would be

beyond the control of BLM management, but it is assumed that any development that may occur would be regulated by the State and that state water quality standards would continue to be met.

Withdrawals protect land and other resources from mineral development or appropriation. Existing withdrawals shown in Chapter 3 (154,700 acres) would continue, with an additional 14,780 acres (developed recreation sites) recommended for withdrawal from mineral entry. Withdrawing developed recreation sites from mineral entry would not change water quality, assuming that no locatable mineral resource is located in these areas.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Development of oil and gas resources could affect water quality because of the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative N would have the most acres open under standard lease terms and 22,600 more acres than Alternative A closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. An estimated 8,180 acres would be disturbed over the next 15 years.

Leasable Minerals—Coal

Live water is protected by a buffer of 500 feet. Floodplains, alluvial valley floors, municipal watersheds, and other important water bodies would be protected under the unsuitability criteria. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations-level development would be addressed in site-specific environmental analysis, and notice-level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Impacts from Lands and Realty) would reduce the amount of land open to disturbance.

Salable Minerals

Proposed operations for salable minerals would be subject to a 500-foot buffer for live water. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under non-impairment standards would prevent most ground-disturbing activities. This prevention would result in protection for water resources.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect water quality by preventing ground-disturbing activities in the river corridors. All eligible segments (12 segments—135 miles) would be protected under Alternative N, thus helping to protect water quality on those rivers.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain or improve water quality in areas in which management prescriptions limit surface disturbance. In Alternative N, there are four existing ACECs comprising 14,780 acres. Protection for the relevant and important values includes travel restrictions (closed to OHV), recommended for withdrawal from mineral entry, unavailable for livestock grazing, and managed as open to leasing subject to major constraints NSO. These restrictions on surface-disturbing activities would provide protection for water resources in these areas.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described for Alternative N except that the buffer zone for no surface disturbance or surface occupancy around all springs, to protect water quality, would be 330 feet (rather than 500 feet). Thus, the protected area would be less (8 acres around all springs in Alternative A versus 18 acres in Alternative N), although the area immediately surrounding the springs would still be protected.

Impacts from Vegetation

Impacts would be the same as those described under Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Under Alternative A, appropriate management response (AMR) would be implemented (as in Alternative N), but fewer acres would be treated. Over time, vegetation communities would be less in line with the historic range of variability, resulting in a reduced level of protection for soil and in reduced water quality. Hazardous-fuels reductions projects could have short-term adverse impacts on water quality. Depending on the timing and intensity of rainfall, increased runoff and soil erosion might originate from treated areas. However, in the long term, prescribed fire and other fuel treatments have been shown to decrease runoff and erosion through the rejuvenation of native grasses. The potential short-term impacts of prescribed fire and other fire treatments can be minimized by limiting their use on steep slopes and near riparian areas.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under Alternative A, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Alternative A allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs) where sustainable and compatible with restoring, maintaining, or improving forest health. Harvest of commercial and non-commercial forest and woodland products based on sustainability and compatibility with forest and woodland health would have no impact on water quality. Permitted activities under Alternative A would incorporate BMPs into the stipulations, to minimize or totally eliminate any created impacts. These stipulations have been developed over time by using site-specific experience. The stipulations, coupled with the projected limited amount of activity in the forestry and woodland program in the RFO, would support the determination of no impact to water resources.

Impacts from Livestock Grazing

Impacts to water resources would be similar to those described under Alternative N, except that an additional 36,950 acres would be available to livestock grazing under Alternative A. However, because livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration,* and with BLM's riparian policy, impacts to water resources from livestock grazing would be minimal.

Impacts from Recreation

Recreational activities can have site-specific impacts to water quality because of surface-water runoff near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. There are five SRMAs proposed for Alternative A, comprising 516,500 acres. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns, reducing sedimentation into surface waters.

The construction of recreation facilities in the Big Rock SRMA could have localized adverse impacts from removal of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for vegetation disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized removal of vegetation. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate-to-extensive landscape modification would have potentially major impacts on water resources by eliminating vegetation or altering plant communities (reducing species diversity or increasing the potential for introduction and spread of invasive species) over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates 449,000 acres (21% of the RFO) as open to motorized vehicle use; motor vehicles would be limited to designated routes on 1,679,000 acres. Actual impacts would depend on where and when vehicles traveled. Alternative A would designate approximately the same miles of routes but with 22% fewer stream crossings (443, compared to 539 under Alternative N). Thus, Alternative A should have less adverse impacts on water quality.

Impacts from Lands and Realty

Under Alternative A, 13,400 acres of public land are identified as available for FLPMA Section 203 sales (the same as under the Proposed RMP). Loss of these acres would have no effect on water quality—these lands are currently managed to meet state water quality standards as per the *Standards and Guidelines for Grazing Administration.* After disposal, use of these lands would be beyond the control of BLM management, but it is assumed that any development that may occur would be regulated by the State, and that state water quality standards would continue to be met.

Land withdrawals protect land and other resources from mineral development or appropriation. Alternative A proposes no new withdrawals (only the 154,700 acres currently withdrawn). Exploration and development of locatable minerals creates surface disturbances that could adversely impact water

quality through soil erosion and sedimentation. Because Alternative A would include the fewest acres withdrawn from mineral entry, impacts to water resources would be expected to be the greatest under Alternative A.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Development of oil and gas resources could affect water quality because of the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. Alternative A would have 375,900 fewer acres than Alternative N open under standard lease terms and the fewest amount of acres closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next 15 years, an estimated 8,180 acres would be disturbed.

Leasable Minerals—Coal

Impacts to water resources are the same as under Alternative N, except the buffer around live water and springs would be 330 feet.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations-level development would be addressed in site-specific environmental analysis, and notice-level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Impacts from Lands and Realty) would reduce the amount of land open to disturbance.

Salable Minerals

Proposed operations for salable minerals are subject to the oil and gas leasing restrictions. Live water and springs would be protected by a buffer of 330 feet, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. Water resources would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, to revegetate disturbed surfaces, and to disallow any dumping of waste materials that would affect water quality.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect water quality by preventing ground-disturbing activities in the river corridors. No eligible segments would be recommended as suitable under Alternative A, resulting in no additional protection for water resources. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, which would provide protection for water resources because of lack of surface-disturbing activities within WSAs.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain or improve water quality in areas in which management prescriptions limit surface disturbance. In Alternative A, there are no potential ACECs, and the four existing ACECs (comprising 14,780 acres of land) would be eliminated. Thus, there would be no protection of relevant and important values from irreparable damage

in these areas possibly posing a threat to water resources from various surface-disturbing activities such as open OHV use and mineral development.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative A.

Impacts from Vegetation

Impacts would be the same as those described under Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative A, except that more acres would potentially be treated, moving vegetation communities more in line with the historic range of variability which would better protect soil resources and increase water quality.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include designating the area as closed to leasing or open to leasing subject to major constraints (NSO) for oil and gas leasing; limiting motorized uses to designated routes; and designating as VRM Class II. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to water quality from surface-disturbing activities (such as stream crossings by OHVs and vegetation removal, which could lead to erosion).

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative A, except that more lands would be closed to this type of use under the Proposed RMP (one WSR segment—5 miles, compared to zero segments under Alternative A, and the Old Woman Front ACEC—330 acres). Areas in which forest and woodland products harvest would occur would incorporate BMPs into permit stipulations to minimize or eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts to water quality would be similar to those described for Alternative A except that the Proposed RMP proposes five SRMAs comprising 860,390 acres. Recreation activities on these five SRMAs include motorized activities at Big Rocks and Factory Butte, which are open OHV areas (8,590 acres). The rest of the area varies from semi-primitive motorized to primitive recreation, with many protective measures for coincident WSA, WSR, and ACEC areas. Impacts from recreation management actions are considered negligible for the Proposed RMP and would not affect water quality beyond the natural "background" level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, the Proposed RMP designates only 9,890 acres (less than 1% of the RFO) open to cross-country OHV use. The Proposed RMP closes 209,900 acres and limits motorized use to

designated routes on 1,908,210 acres. Routes designated under this alternative would include 400 stream crossings—fewer than under Alternative N or A but more than under Alternative C or D.

Impacts from Lands and Realty

Under the Proposed RMP, 13,400 acres of public land are identified as available for FLPMA Section 203 sales. As described under Alternative A, loss of these acres would have no effect on water quality.

Land withdrawals protect land and other resources from mineral development. The Proposed RMP proposes 21,500 acres of new withdrawals and continuation of existing withdrawals (154,700 acres). Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. Thus, withdrawing these lands from mineral entry could slightly reduce the potential impacts to water resources, compared with Alternatives N and A.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Development of oil and gas resources could affect water quality because of the surface disturbances associated with such development, although the permitting process would require potential impacts to water quality to be mitigated. The Proposed RMP would have 608,700 acres open to leasing subject to the standard terms and conditions and 154,500 acres open to leasing subject to major considerations (NSO), whereas Alternative A has 0 acres open to leasing subject to major constraints (NSO) and Alternative N has 22,600 acres closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next 15 years, an estimated 8,180 acres would be disturbed.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative A.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations-level development would be addressed in site-specific environmental analysis, and notice-level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Impacts from Lands and Realty) would reduce the amount of land open to disturbance, thereby helping to protect water resources.

Salable Minerals

Impacts would be the same as those described under Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under the Proposed RMP, one segment with a tentative classification of Wild (the Fremont Gorge—5 miles) would be recommended as suitable. This would serve to protect water quality on that river segment. Protecting the outstandingly remarkable values of this WSR would help protect water quality by preventing ground-disturbing activities in the river corridors. Of the remaining segments, 98 miles are within WSAs, leaving 32 miles on which ground-disturbing activities could potentially impact water

resources. The Proposed RMP would provide less protection to water resources from WSR decisions than under Alternative N, C, or D but more than under Alternative A.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs could improve water quality in areas in which management prescriptions limit surface disturbance. Under the Proposed RMP, two ACECS (2,530 acres) would be designated. Protection of the relevant and important values would include actions such as travel restrictions (closed to OHV), recommending for withdrawal from mineral entry, making the ACECs unavailable for livestock grazing, and managing them as open to leasing subject to major constraints (NSO). These restrictions on surface-disturbing activities would provide protection for water resources in these areas.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative A.

Impacts from Vegetation

Impacts would be the same as those described under Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative A, except that fewer acres would be treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for water resources.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under the Proposed RMP, except that more lands would be closed to this type of use under Alternative C (12 WSR segments—135 miles, compared to 0 segments under Alternative A). Areas in which forest and woodland products harvest would occur would incorporate BMPs into permit stipulations to minimize or eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Recreational activities can have site-specific impacts to water quality because of surface water runoff near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. There are four SRMAs (comprising 930,000 acres) proposed for Alternative C. Recreation activities on these four SRMAs include dispersed recreation, emphasizing semi-primitive to primitive recreation activities as opposed to motorized activities. These areas have many coincident protective measures for overlapping WSA, WSR, and ACEC areas. Impacts from recreation management actions are considered negligible and would not affect water quality beyond the natural "background" level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that Alternative C designates no areas as open to cross-country OHV use, designates 683,000 acres as closed to OHV use, and designates 1,445,000 acres in which motorized use would be limited to designated routes. Routes designated under Alternative C would include 273 stream crossings—fewer than Alternative N, A, or the Proposed RMP but slightly more than Alternative D.

Impacts from Lands and Realty

Under Alternative C, no lands are identified for FLPMA Section 203 sales. This would result in the continuation of management of water quality on all federal lands to meet state water quality standards as per the *Standards and Guidelines for Grazing Administration.*

Alternative C also recommends withdrawing 331,100 acres from mineral entry. Potential surface disturbance caused by mineral entry would therefore be reduced over Alternatives N, A, and the Proposed RMP, thus providing protection for water resources by minimizing erosion and sedimentation to surface waters.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Development of oil and gas resources could affect water quality because of the surface disturbances associated with such development, although the permitting process would require mitigation of potential impacts to water quality. Alternative C would designate 491,900 acres as open to leasing subject to standard terms conditions and 148,700 acres as open to leasing subject to major constraints (NSO);Alternatives A and N would designate 0 acres and 22,600 acres, respectively, as closed to surface occupancy. However, mitigation at the time of leasing would preclude significant impacts to water quality. Over the next 15 years, an estimated 8,180 acres would be disturbed.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N, except that the buffer for live water and springs would be 660 feet.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations-level development would be addressed in site-specific environmental analysis while notice level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Impacts from Lands and Realty) would reduce the amount of land open to disturbance.

Salable Minerals

Impacts would be the same as those described under Alternative A, except that the buffer for live water and springs would be 660 feet.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect water quality by preventing ground-disturbing activities in the river corridors. All 12 eligible segments (135 miles) would be protected under Alternative C, resulting in protection for water resources.

Areas of Critical Environmental Concern

Protecting the relevant and important values of the potential ACECs would maintain or improve water quality in areas in which management prescriptions limit surface disturbance. In Alternative C, 16 ACECs (886,810 acres) would be designated. Associated management of these ACECs to protect relevant and important values would include restricting travel (closed to OHV use), recommending the ACECs for withdrawal from mineral entry, making the ACECs unavailable for livestock grazing, and managing the ACECs as open to leasing subject to major constraints (NSO). Alternative C (along with Alternative D) would provide the most protection for water quality because of ACEC designations.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative A.

Impacts from Vegetation

Impacts would be the same as those described under Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative A, except that fewer acres would be treated.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this objective include closing to oil and gas leasing, closing to OHV use, and designating as VRM Class I. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to water quality from surface disturbing activities (such as stream crossings with OHVs and vegetation removal, which could lead to erosion). Of all the alternatives, Alternative D would therefore be most beneficial to water quality.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described under Alternative C, except that no harvest would be allowed on lands with wilderness character. Areas in which forest and woodland products harvest would occur would incorporate BMPs into permit stipulations to minimize or eliminate any impacts to water resources.

Impacts from Livestock Grazing

Impacts would the same as those described under Alternative A.

Impacts from Recreation

Under Alternative D, seven SRMAs (1,358,100 acres) would be established. Recreation activities on these SRMAs include dispersed recreation, emphasizing semi-primitive to primitive recreation activities

as opposed to motorized activities. These areas have many coincident protective measures for overlapping WSA, WSR, and ACEC areas. Impacts from recreation management actions are considered negligible and would not affect water quality beyond the natural "background" level of contaminants from erosion and runoff.

Impacts from Travel Management

The types of impacts from travel management would be similar to those described under Alternative C—there are no open OHV areas under Alternative D. However, the amount of acres closed to OHV use (1,155,200) is the largest of all alternatives. Therefore, of all the alternatives, Alternative D would have the least impacts on water resources from travel management.

Impacts from Lands and Realty

Impacts from FLPMA land sales would be the same as those described under Alternative C.

The types of impacts would be similar to those described under Alternative N, except that Alternative D recommends substantially more acres (903,900 acres, or 42% of the RFO) for withdrawal from mineral entry. As a result, potential surface disturbance caused by mineral entry (and associated impacts to water resources) would be greatly reduced, compared to the other alternatives.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Development of oil and gas resources could affect water quality because of the surface disturbances associated with such development, although the permitting process would require mitigation of potential impacts to water quality. Alternative D would designate 290,200 acres as open to leasing subject to standard terms and conditions and 43,300 acres as open to leasing subject to major constraints (NSO); Alternatives A and N would designate 0 acres and 22,600 acres, respectively, as open to leasing subject to major constraints (NSO). However, mitigation at the time of leasing would preclude significant impacts to water quality. During the next 15 years, an estimated 8,180 acres would be disturbed.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative C.

Locatable Minerals

Exploration and development of locatable minerals creates surface disturbances that could adversely impact water quality through soil erosion and sedimentation. However, plan of operations-level development would be addressed in site-specific environmental analysis, and notice-level activity would be regulated to prevent undue and unnecessary degradation. Withdrawals (discussed under Impacts from Lands and Realty) would reduce the amount of land open to disturbance.

Salable Minerals

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.4 Vegetation

This analysis addresses the potential impacts to vegetation resources as described in Chapter 3—including desert shrub, sagebrush steppe, forests and woodlands, riparian resources, and invasive nonnative species—that could result from implementing the management actions under the alternatives described in Chapter 2. Vegetation is a fundamental and vitally important component of the biological resources in the RFO. The effects on vegetation that result from implementing any of the alternatives under consideration would also affect other resources. Impacts to the vegetation resource could result in reduced biological productivity, weed invasion, and unwanted changes in the composition, function, and structure of vegetation communities. These changes, in turn, could influence forage availability for wildlife and livestock. Where actions result in loss or reduction of vegetative cover or soil erosion or compaction, archaeological, paleontological, historic, wildlife, water, soil, and air resources could be impacted.

The effects of management actions on vegetative communities may vary, depending on a variety of factors such as the type of soils, moisture, topography, and plant reproductive characteristics. Impacts on vegetation resources also vary depending on the seral stage and composition of vegetation communities, as discussed in Chapter 3. The composition of a plant community changes over time as a result of interactions with factors such as climate, resource uses, and disturbance. Surface disturbance can result in the most immediate direct impact to an area, by removing existing vegetation and increasing opportunities for establishment of noxious weeds and invasive species. This could in turn reduce vegetation diversity, production, desirable plant cover, and overall ecological health of vegetation communities. Decreased ecological health would make vegetation communities less resilient to disease, drought, fire, invasive species, and other natural disturbances and stressors. Indirectly, surface disturbance could increase erosion rates, modify soil composition, and alter water flow patterns across the landscape. On the contrary, implementing vegetation treatments (mechanical, fire, biological, and chemical), managing vegetation and ecological resources to meet desired vegetation conditions, and limiting or restricting surface disturbances could serve to generally improve vegetation and ecological conditions. Although short-term losses of vegetation cover would occur, over the long term these actions would help remove undesirable species, increase species and age class diversity, improve vegetation composition and structure, and increase vegetation cover and improve ecological conditions. This would result in healthier vegetation communities that are more capable of retaining moisture and nutrients and of resisting disease, invasive species, drought, and other natural disturbances and stressors.

Methods and Assumptions

This analysis was based on the following assumptions:

- Adequate vegetative ground cover and species composition for site stabilization could typically occur within 5 to 10 years in sagebrush/grass communities depending on climate, soil, and site potential.
- Plant communities would be managed toward achieving a mix of species composition, cover, and age classes.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed; the type, time and degree of disturbance; existing vegetation; and precipitation.
- Noxious and invasive weeds would continue to try to invade and spread as a result of surface disturbing activities, vehicle traffic, recreational activities, wildlife and livestock grazing, and natural causes.
- Weed and pest control would be carried out in coordination with the appropriate county, public, and private interests.

- Climatic fluctuation would continue to influence the health and productivity of plant communities on an annual basis.
- Table 2-11a establishes estimated annual vegetation treatment acres for Alternatives A through D, to achieve the overall treatment acres for those alternatives over the life of the plan. Actual annual treatment acreage would vary depending on conditions, staffing, and similar factors. These acreage figures include all vegetation and fire and fuels treatments.

The analysis of vegetation, which includes structure, productivity, vigor, percent cover, density, and species composition, was based on likely changes relative to movement toward or away from desired vegetation conditions. In the absence of quantitative data, professional judgment was used, and impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. Particular focus was placed on vegetation communities with the greatest sensitivity to changes in structure and species composition and at the most risk from potentially severe mortality events such as drought, insects, and disease infestation.

Environmental Consequences

Impacts to vegetation would likely result from actions proposed under the following resource management programs:

- Soil Resources
- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on vegetation.

Alternative N: No Action

Impacts from Soil Resources

Implementing BMPs to minimize detrimental impacts to soils and water quality from ground-disturbing activities and maintaining or enhancing riparian areas through project design features or stipulations would help to reduce soil erosion, surface runoff, and sedimentation of streams. This reduction would help to maintain or improve upland vegetation and riparian and wetland communities. Making necessary management adjustments to meet watershed and riparian objectives (e.g., *Standards and Guidelines for Grazing Administration* and Utah BLM Riparian Management Policy) would reduce the potential for impacts on creeks, springs, and riparian areas associated with trampling and removal of understory vegetation, thus generally maintaining or improving riparian conditions as well as upland vegetation and wetlands.

Impacts from Vegetation and Fire and Fuels Management

Restoration and Vegetation Treatments

Impacts would vary by the method used to accomplish the treatment, whether manual, mechanical, chemical, biological, or fire. Vegetation treatments are designed to move plant communities towards desired conditions. Not implementing these treatments would inhibit or prevent attainment of ecological objectives and desired conditions for desert shrub, sagebrush steppe, forest and woodland, and riparian communities. Where fuel loads are excessive, failure to conduct vegetation treatments could increase the risk of catastrophic fire, which would put tens of thousands of acres at risk of vegetation loss and would impair riparian-wetland functioning condition. Catastrophic fire would also cause major, long-term indirect impacts in terms of wildlife habitat loss and long-term or permanent reduction in biomass productivity from erosion.

Vegetation treatments are designed to change vegetative composition and diversity from one state to another. As a result, most treatment methods initially remove some or all of the surface vegetation. This removal results in reduction of ground cover and increased erosion. Depending upon the method used, there may also be varying levels of surface disturbance, particularly when mechanical treatment methods are used. Because seeding success is greatest when seeds are covered by soil and protected from erosion and when moisture is held, treatment methods that disturb soils often have higher success rates compared to those methods that do not disturb soils. Successful treatments would increase ground cover and vegetative diversity, providing soil stability, reducing soil surface temperatures, increasing water-holding capability, and increasing food and cover for wildlife. These increases would improve the ecological health of desert shrub, sagebrush steppe, and forests and woodlands and would increase riparian-wetland functioning condition in treated areas.

The greatest level of environmental impact occurs when a vegetation treatment fails. A vegetation treatment is considered a failure when the existing vegetation is not removed or the target vegetative community does not become established. When the existing vegetation remains at the site, the environmental consequences to soil are minimal. However, when the treatment is successful in removing existing vegetation but the desired future vegetative community does not become established, a variety of consequences can result. In such cases, mechanical and other surface-disturbing treatment methods can lead to increased erosion because effective ground cover would be greatly reduced. Increased invasion of noxious weeds and other exotic weed species, decreased water availability, and long-term changes in habitat and species composition could occur. The duration of these effects would vary by treatment method, habitat and community type, availability of appropriate seed, and amount and timing of precipitation. Most such failed treatments would eventually be revegetated by either the former plant community or by some new and perhaps less-desirable community.

Because of the dynamic nature of vegetative communities, even those areas in which seedings are unsuccessful would eventually become filled in with vegetation. Treatment areas change over time as vegetation is re-established. Some areas treated early in the planning cycle would become completely re-vegetated and could conceivably require treatment maintenance prior to the next planning cycle. Failed treatments would not be considered permanently “lost” from the system unless the site became re-established with a highly stable, non-target plant community. Treatment methods that proved to be unsuccessful at achieving the desired results would be modified or discontinued. Because most treatments require at least two growing seasons to determine success, it is unlikely that unsuccessful methods would be used for more than 2 consecutive years. As a result, the potential for failed treatments to occur on the maximum number of acres available for treatment is considered negligible. Use of adaptive management should reduce or eliminate the potential for permanent loss of desired vegetation communities from treatments.

Manual Vegetation Treatments

Compared to other methods, manual treatments would have minimal effects to sensitive vegetative communities because these treatments would avoid destruction of non-target species and therefore would result in a lower likelihood of erosion, soil instability, sedimentation, or increased surface temperatures.

Mechanical Vegetation Treatments

Use of mechanical tools in most sites would reduce canopy cover, increase diversity of understory vegetation, increase soil moisture (because of a reduction of evapotranspiration), and change vegetation type. These impacts would be direct, would be both short- and long-term, and would positively affect some species while adversely affecting others. Creeks, springs, and riparian areas could be adversely affected from the increased run-off and erosion in the short-term until vegetation reestablishes. Long-term, indirect impacts would result from changes in habitat type, which in turn would result from the changes in vegetation density, canopy cover, structure, and the protection and maintenance of vegetation communities. Mechanical treatment methods could also result in localized, short-term impacts to air quality from fugitive dust, equipment emission and exhaust, and chemical fumes, which could lead to reduced plant vigor and fitness or to mortality among individuals or species.

Biological Vegetation Treatments

Target species would experience direct, short-term impacts caused by biological vegetation treatments. Depending upon the biological control agent, a variety of other direct and indirect effects could occur, including mortality of non-target species. As with other vegetation treatment methods, indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short- or long-term changes in species composition or community structure. Creeks, springs, and riparian areas could be adversely affected from the increased run-off and erosion in the short term, until vegetation re-establishes.

Chemical Vegetation Treatments

Target and some non-target species would experience direct, short-term impacts, depending upon the chemical used and the application rate. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, and short- or long-term changes in species composition or community structure. Creeks, springs, and riparian areas could be adversely affected from the increased run-off and erosion in the short term, until vegetation reestablishes. Direct and indirect effects from the use and application of specific chemicals are described in detail in the Final EIS for Vegetation Treatment on BLM Lands in Thirteen Western States (BLM 1991a), as well as the draft revision of the document (BLM 2005).

Prescribed Fire, Fire Use, and Management

The intensity of impacts from prescribed fire and fire use would depend on the size and severity of the fire, as well as the fuel type and quantity. Impacts from fires that cause injury or loss of individual plants and an increase in soil moisture caused by the reduction of evapotranspiration would be short-term and minor. Impacts from fires that change species composition, plant density, and vegetative structure and that increase the abundance of non-native invasive, fire-adapted plant species would be direct, major, and both short- and long-term. Reduced biomass productivity caused by accelerated erosion resulting from the reduction in effective ground cover, as well as reduced habitat suitability for seed dispersers, would represent indirect, major impacts. Creeks, springs, and riparian areas could be adversely affected from the increased run-off and erosion in the short term, until vegetation reestablishes. However, these projects are designed to minimize erosion and increase habitat suitability. If these major impacts cannot be mitigated, the project would not be approved or implemented.

Fire Suppression

Direct impacts from the removal of vegetation from hand-line construction would be short-term and minor. Impacts from using aerially-applied retardant as an alternative to hand-line construction would be negligible. Most impacts from fire suppression activities would be minor, short-term, and localized, particularly if activities in sensitive habitats are mitigated or avoided. Impacts in the arid desert-scrub communities could be longer term because these vegetation communities do not recover as readily.

Control of Noxious Weeds and Invasive Species

Impacts depend upon the method used. Alternative N would allow a full range of treatments for controlling noxious weeds and would help ensure a high degree of success. Direct impacts to the target species from manual techniques and herbicide applications would range from minor to moderate, with some non-targets experiencing impacts in the short term. Eradication of noxious weeds and invasive species and improved species composition for the remaining community would occur over the long term. Controlling noxious and invasive species would also benefit riparian habitat by reducing competition with native species and by allowing natural ecosystems to reestablish.

Collection and Use of Native Seed/Use of Non-native Plants

Under Alternative N, collection and use of native seed could be authorized with a permit. Collection of native seed could result in localized, minor short-term impacts to vegetation from trampling, loss of individuals, reduction in seed availability at the collection site, and potential reduction in plant vigor. The availability of local native seed would result in moderate indirect long-term impacts, which include improved ability to achieve desired conditions by improving the species composition in areas needing vegetation treatments.

Assuming that the criteria described in Chapter 2 are met, non-native plant species could be used in treatment or restoration efforts. The major short-term direct impact from the use of nonnative plant species is the stabilization of soils following disturbance when native species are ineffective, cannot be established, or are unavailable. The major short- and long-term indirect impacts from use of non-native plant species for re-seeding would be an undesirable change in species composition, resulting from introducing species that could out-compete natives or increase the frequency or intensity of wildfire.

Impacts from Visual Resources

Implementing VRM guidelines would increase the difficulty of accomplishing vegetation management actions and would limit the extent and effectiveness of the restoration efforts. Vegetation treatment projects would generally not occur in VRM Class I areas; however, under Alternative N, none of the lands managed by the RFO are classified as VRM Class I. Vegetation treatment, restoration, and weed treatment projects on 529,500 acres (25% of the RFO) within VRM Class II areas could be redesigned, moved, or otherwise restricted. The lack of vegetation treatments could result in increased vegetation density, increased density of late seral succession vegetation, and increased establishment of noxious and invasive species in VRM Class I and II areas. These increases could lead to lead to significant loss of unique vegetation characteristics, reduce resistance to disease and insect pest infestations, and increase the risk of uncharacteristically large or intense wildfires. Decreased ecological health of vegetation communities and riparian-wetland function could result. Managing for VRM Classes III and IV would allow the greatest flexibility for vegetation treatments. Because 569,000 acres would be managed as VRM Class III and 1,029,500 acres would be managed as Class IV, there would be various locations in which proposed projects could be relocated. These projects could assist in achieving desired conditions. See the discussion of restoration and vegetation treatments in the Impacts from Vegetation and Fire and Fuels Management section for a discussion of impacts.

Impacts from Special Status Species

Alternative N (along with all the other alternatives) prohibits actions that destroy, adversely modify, or fragment federally listed species habitat; proposes habitat improvements for SSS; and considers SSS habitat in all wildland fire suppression efforts. Restrictions on vegetation treatments in SSS habitats would reduce or eliminate potential impacts to vegetation from treatment projects. Impacts would vary according to the type of treatment proposed and the nature and extent of the restrictions. Failure to implement vegetation treatments, especially treatments to control noxious weeds, in these habitats could result in direct and indirect long-term impacts to vegetation. The lack of vegetation treatments could result in increased vegetation density, increased density of late seral succession vegetation, and increased establishment of noxious and invasive species in SSS habitats. This could lead to significant loss of unique vegetation characteristics, reduce resistance to disease and insect pest infestations, and increase the risk of uncharacteristically large or intense wildfires. Decreased ecological health of vegetation communities and riparian-wetland function could result.

Restricting authorized uses for SSS would reduce or eliminate disturbances that would otherwise have affected vegetation. All these actions would benefit vegetation by helping to maintain vegetation communities and riparian-wetland functioning condition.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife management, such as avoiding habitat fragmentation, reducing road densities, and restricting surface disturbance or surface occupancy within 500 feet of riparian areas in the Cedar/Beaver/Garfield/Antimony Proposed RMP area and within 330 feet of riparian areas throughout the remainder of the RFO would reduce or eliminate potential impacts to desert shrub, sagebrush steppe, forest and woodland, and riparian communities. Closing routes would reduce introduction of noxious and invasive species, increase plant vigor, and reduce plant mortality associated with dust generation alongside the road. Compaction would also be eliminated along the closed route, which would increase infiltration and reduce erosion, thereby improving vegetative cover and riparian-wetland functioning condition.

Alternative N proposes habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives. Implementation of these vegetation treatments would involve removing individual plants and altering species composition and vegetation structure. Impacts would vary according to the treatment method used (see Impacts from Vegetation Resources) and would initially change the vegetation structure and increase local erosion and sedimentation rates. However, in the long term, vegetation treatments would improve cover and increase plant diversity, thereby stabilizing soil, improving overall watershed and riparian function and condition, and allowing greater infiltration and soil moisture storage. Therefore, impacts to vegetation from proposed decisions for fish and wildlife would be beneficial overall.

Grazing by wildlife can alter vegetation communities and impair riparian-wetland functioning condition by removing portions of plants and seedlings, trampling plants, and compacting soils, and introducing noxious weeds and invasive species. The resulting impacts depend on the extent of the removal, length of grazing period, and climatic conditions. Transplanting big game species would increase the number of grazing animals; however, wildlife tends to disperse across a large area. Thus, impacts from these newly transplanted big game animals should be minor.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on vegetation and riparian-wetland areas because of grazing, trampling, compaction, and reduced vegetation cover. Under Alternative N, 100 AUMs are allocated to burros in the Canyonlands HMA, although no AML is established. These numbers would be the same as under Alternative A but less than under Alternative C

or D or the Proposed RMP (which establish a herd size of between 120 to 200 animals). Thus, impacts to vegetation under Alternative N would be minimal because of the small herd size managed.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would be proposed under Alternative N, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

Proposed decisions for managing forest and woodland products, based on the Healthy Forest Restoration Act, would generally improve the structure, composition, health, and vigor of forest and woodland vegetation. Alternative N allows for harvesting of forest and woodland products across most of the RFO (all areas outside of WSAs, on a case-by-case basis). Harvesting of forest and woodland products would have localized, minor-to-moderate, short-term impacts on soils because of vehicle use to access the harvesting site and because of loss of vegetative cover. Indirect effects would include reduced soil infiltration, increased erosion and sedimentation, increased soil surface temperatures, short- or long-term changes in species composition or community structure, and localized impairment of riparian-wetland functioning condition. However, removal of pinyon and juniper trees from areas in which they have invaded or areas in which canopy densities have increased would result in reduced amounts of bare ground and increased litter at the soil surface, improving vegetation cover and riparian-wetland conditions. Because pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation and in riparian areas.

Impacts from Livestock Grazing

Livestock grazing can directly affect vegetation communities and riparian-wetland conditions by reducing plant vigor, decreasing or eliminating desirable forage species, increasing soil instability and erosion, reducing water quantity and quality, and causing loss of or injury to individual plants from trampling, particularly near water sources. Impacts would be both short- and long-term and range from minor to major, depending upon the grazing intensity, duration, and season of use, and local climatic conditions. Long-term changes in vegetation may result if livestock use consistently exceeds established allocations or if drought or other environmental factors reduce range-carrying capacity. Improper grazing practices could lead to soil compaction, reduced infiltration rates, increased runoff and erosion, and declined riparian and watershed conditions. Livestock grazing could also increase the opportunity for exotic plant species and noxious weed infestations. Season-of-use adjustments could lessen the effects of grazing, particularly if grazing occurs during the non-growing season.

Under Alternative N, 1,989,048 acres would be available for livestock grazing and 138,952 acres would be unavailable for livestock grazing. Livestock grazing could increase soil compaction in trailing, watering, and mineral-supplement areas and could indirectly impact riparian and wetland areas and riparian functioning condition. However, livestock grazing within the RFO would be managed in keeping with applicable laws and regulations, with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration,* and with BLM's riparian policy. Adhering to these statewide standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. These improvements would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform and that riparian areas achieve or maintain Proper Functioning Condition (PFC). Impacts therefore would be minor area-wide but potentially moderate in specific areas such as creek, springs, wetland, and riparian areas.

Construction of new range-water developments would permanently remove vegetation within the footprint of the structures. Surrounding vegetation could be damaged temporarily, but would likely recover, except in the immediate vicinity of the development. Water developments concentrate livestock use and reduce or eliminate vegetation in the immediate vicinity and increase compaction and erosion, which would lead to decreased biological productivity. Increased use of the area by livestock would increase foraging pressure on desirable species. This could result in increased or decreased vigor to the plants, depending upon the species and their phenology. Allotment scale impacts from properly planned water developments include better distribution of livestock and wildlife grazing use on the allotment, resulting in overall improvement in range conditions, increased vigor of vegetation, improved cover to soils, improved livestock performance, and reduced operational costs to permit holders. Maintenance of existing water developments would result in minor disturbance impacts to vegetation resources, similar in scope and nature to those described for new developments.

Impacts from Recreation

Recreational activities have site-specific impacts to vegetation and riparian/wetlands areas near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long-duration trail use (e.g., walking, equestrian, OHV, mountain biking), especially during wet periods, could result in loss of vegetation cover, could increase erosion, and could decrease the riparian ecological condition. Large group-recreation events and camping could compact soils, which could lead to changes in plant vigor and could increase erosion in riparian areas. These impacts would be site-specific and localized.

Visitor use is expected to increase throughout the RFO. Under Alternative N, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities. Thus, intensively used recreation sites (such as those near Otter Creek, Big Rock, Factory Butte, Dirty Devil/Robbers Roost) would experience impacts to vegetation. Impacts to vegetation in these areas would occur from OHV use and use by large numbers of visitors in a limited space. These activities would result in loss of vegetation cover and soil compaction, as well as in a decrease in riparian ecological condition. Under Alternative N, these impacts to vegetation would continue or might even increase as visitor use increases.

Impacts from Travel Management

Generally, the more area that is open to OHV use, the greater the potential for adverse impacts to vegetation near the trails and in riparian areas. Limiting travel to designated routes would confine the impacts to areas that are already disturbed or hardened for vehicle use, particularly if sited away from riparian areas. Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing potential impacts to vegetation over a large portion of the RFO. Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species. Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; 214,000 acres (10%) of the RFO would be closed to motorized vehicle use.

Vehicles traveling on roads in the transportation system would deposit dust on roadside vegetation. This dust could lead to decreased plant vigor and increased mortality alongside the road. Dust settling on vegetation adjacent to roads would also reduce habitat suitability. Under Alternative N, 4,315 miles of unpaved routes in the RFO would be open to motorized use.

Routes within riparian areas remove and destroy riparian vegetation, increase the amount of bare soil, increase localized soil erosion, change surface hydrology, and reduce infiltration. Of all the alternatives,

Alternative N would designate routes with the greatest number of stream crossings (Table 4-13), which would result in the most impacts to riparian vegetation.

Impacts from Lands and Realty

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would preclude future mineral location. This preclusion would reduce the potential for mining disturbance and associated impacts to vegetation and riparian conditions in these areas. However, the identified withdrawals, if established, would be subject to valid existing rights. Therefore, exploration and development impacts related to the exercise of valid existing mineral locations could occur in these areas. Alternative N proposes a total of 169,480 acres of withdrawals.

Land Tenure Adjustments (LTA) (i.e., acquiring or disposing of lands) could result in sensitive vegetative communities entering or leaving federal ownership. High-quality riparian areas are identified in the LTA criteria as areas BLM would retain or acquire, thereby increasing federal ownership of riparian areas and associated federal protection not afforded to lands in private ownership.

Impacts to vegetation resources could result from disposal of federal lands. Impacts associated with land disposals would depend upon the use of those lands by future owners. In the worst-case scenario, all vegetation would be removed from a parcel of land and the site would be paved or otherwise permanently altered to prevent future vegetation growth. This represents minor-to-moderate long-term impacts, depending upon the size and location of the parcel. Parcels that include listed threatened, endangered, or proposed species would not be identified for disposal. Identifying 280 acres as available for sale would make these lands susceptible to increased impacts to vegetation, compared with retaining the land in federal ownership, because the BLM would implement BMPs that protect the ecological health of vegetation communities in any actions it authorizes.

Impacts to vegetation resources could result from issuance of land use authorizations (e.g., ROWs, permits, leases, easements). Impacts from issuance of these authorizations would vary, based on the nature and purpose of the authorization. Impacts to vegetation and riparian areas would generally be minor to moderate and would be addressed in site-specific NEPA analysis. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas. (Exceptions would be granted only when the proposed authorization would not create substantial surface disturbance or would create only temporary impacts.) Thus, impacts to vegetation and riparian areas in these avoidance areas would be negligible-to-minor and would be localized.

Impacts from Minerals and Energy

Impacts to desert shrub, sagebrush steppe, forest and woodland, and riparian communities could result from locatable mineral development, oil and gas development, or mineral material sales and disposal. Although the actual footprint of a well pad or mine may be relatively small, production and development require additional infrastructure, such as roads and pipelines that extend beyond the development site. Mineral development activities are expected to impact vegetation communities and riparian-wetland ecosystems within the planning area because of resulting habitat modification, mortality of individual plants, and soil disturbances. Impacts associated with these actions would include loss or damage of plants because of excavation or trampling, burial under piles of waste material, toxic responses from use of chemicals in mineral extraction or waste pits, and increased exposure to dust and other contaminants associated with construction and use of access roads. Mineral development would impact riparian areas, seeps, and springs through increased runoff, by decreasing infiltration and evapotranspiration from reduction in vegetation cover and increasing the amount of impermeable surface associated with roads, structures, and compacted soil. In addition, disturbance of reclamation-limited soils could increase the

opportunity for exotic plant species and noxious weed infestations, which would impair the functioning conditions in vegetation communities and riparian areas. The severity of effects would depend on the amount of activity and the success of reclamation efforts for disturbed areas. These impacts would be associated with the estimated development of 454 wells and an associated 8,180 acres of disturbance for associated facilities and geophysical exploration on BLM lands under all alternatives, which constitutes less than 1% of BLM lands in the Planning Area. Effects from minerals management would be reduced by BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions within these areas, based on site-specific analysis. Additional Conditions of Approval (COA) could be applied to the lease terms as necessary to establish specific, necessary mitigation measures not covered by lease stipulations for resource and environmental protection.

The acreage in each leasing category would quantify impacts to vegetation in terms of acres of surface disturbance. These categories, listed from greatest to least amount of surface disturbance, are as follows: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), open to leasing subject to major constraints (NSO), and closed to leasing. Generally, areas that are closed to leasing or open to leasing subject to major constraints (NSO) would experience little or no surface disturbance caused by minerals development; thus, negligible or no adverse impacts to vegetation and riparian resources would occur in these areas. Areas open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would experience short- and long-term impacts to vegetation and riparian resources from surface disturbance associated with minerals development as described.

Leasable Minerals

Under Alternative N, 459,700 acres would be closed to leasing; 22,600 acres would be open to leasing subject to major constraints (NSO); and 1,645,700 acres would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). Withdrawing areas from mineral operations or categorizing areas as closed to leasing or open to leasing subject to moderate constraints (NSO) would prevent impacts to vegetation within those areas. (See Impacts from Lands and Realty for a discussion of withdrawals.) Exploration and development of oil and gas resources in areas open to leasing subject to moderate constraints (TL, CSU) or open to leasing subject to the standard terms and constraints could impact vegetation and riparian resources associated with the estimated development of 454 wells and the associated 8,180 acres of surface disturbance, particularly in the Sevier and Sanpete Valleys, where most of the development is expected.

Adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to vegetation and riparian resources. Under Alternative N, management actions that include permit requirements to revegetate disturbed sites and requirements for a 500-foot buffer around riparian areas would also minimize the impacts.

Locatable Minerals

Exploration and development of locatable minerals within the 1,958,520 acres of BLM land that are open to locatable mineral development (92% of the RFO) would create surface disturbances that could adversely impact vegetation and riparian resources. However, plan of operations-level development would be addressed in a site-specific environmental analysis, and notice-level activity would be regulated to prevent undue and unnecessary degradation. These actions would minimize adverse impacts associated with mineral development. Withdrawals would reduce the amount of land open to disturbance and would prevent associated impacts to vegetation and riparian resources in these areas.

Salable Minerals

Under Alternative N, 459,700 acres would be closed to disposal of mineral materials and 169,480 acres would be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to vegetation and riparian resources within those areas. Adverse impacts to vegetation and riparian resources would occur where mineral material sales were authorized. Adherence to BMPs outlined in mining laws, plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to vegetation and riparian resources.

Managing riparian areas to preclude surface disturbance within 500 feet of riparian areas in the Cedar/Beaver/Garfield/Antimony Proposed RMP area and within 330 feet of riparian areas throughout the remainder of the RFO would minimize the impacts from surface disturbance associated with disposal of mineral materials to riparian and wetland communities.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the IMP would prevent most ground-disturbing activities. This prevention would result in protection for vegetation and riparian resources. However, opportunities for vegetation treatments could be limited, which would inhibit or prevent attainment of ecological objectives and desired conditions for desert shrub, sagebrush steppe, forest and woodland, and riparian communities in these areas.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect riparian vegetation by preventing ground-disturbing activities in the river corridors. All eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. This protection would benefit riparian vegetation by limiting ground disturbance in these areas. However, opportunities for vegetation treatments could be limited, thereby inhibiting or preventing attainment of ecological objectives and desired conditions for desert shrub, sagebrush steppe, forest and woodland, and riparian communities in the river corridors.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs often are more restrictive, thus indirectly providing protection for vegetation and riparian-wetland communities. Protections associated with ACEC designation that would affect vegetation and riparian-wetland resources include managing oil and gas leasing as closed to leasing or open to leasing subject to moderate constraints (NSO), implementing more restrictive VRM designations, restricting livestock grazing, and implementing travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Vegetation was specifically identified as a relevant and important value in the North Caineville Mesa and South Caineville Mesa ACECs. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (closing to OHV use; managing as either closed to leasing or open to leasing subject to moderate constraints [NSO], depending on the ACEC; managing as unavailable for livestock grazing in three of the four ACECs; and acquiring inholdings) would reduce surface-disturbing activities within those areas and would protect vegetation and riparian-wetland resources. However, opportunities for vegetation treatments could be limited, thus inhibiting or preventing attainment of ecological objectives and desired conditions for desert shrub, sagebrush steppe, forest and woodland, and riparian communities in these areas.

Alternative A

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N. However, under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. Therefore; fewer acres might be treated under that alternative during some years. However, more acres could be treated during years when numerous wildland fires occur, because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative A allows for the treatment of vegetation by using a full range of treatment types (including mechanical, wildland fire use or prescribed fire, and chemical methods). Additionally, full suppression of wildland fires is not mandated under Alternative A; this decision would reduce pinyon-juniper encroachment and decrease the risk of large or intense wildfires. Thus, impacts to vegetation and riparian-wetland resources under Alternative A would likely result in increased short-term impacts (altered vegetation structure) compared to Alternative N but decreased long-term impacts (improved vegetative cover and increased plant diversity, resulting in stabilized soil, improved overall watershed function and condition, and greater infiltration and soil moisture storage).

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape and could allow the greatest flexibility for vegetation treatments. This design would allow for increased short-term impacts to vegetation but could also result in long-term improvement in ecological condition of treated areas.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N. However, Alternative A includes additional strategies (including employing directional drilling for oil and gas, closing and reclaiming roads, mitigating the effects of proposed projects that have the potential to cause long-term or permanent impacts or loss of habitat, and using species-specific buffers for surface-disturbing activities) to avoid or reduce fragmenting habitat. All these actions would benefit vegetation and riparian-wetland resources by reducing surface disturbance and by reducing the potential for invasion and spread of invasive species.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative N. However, Alternative A proposes restricting surface disturbance or surface occupancy within 330 feet of riparian areas (versus within 500 feet of riparian areas in the Cedar/Beaver/Garfield/Antimony Proposed RMP area and within 330 feet of riparian areas throughout the remainder of the RFO for Alternative N) and includes fewer restrictions on OHV use in crucial wildlife habitats. These management actions would increase the potential for degradation of riparian and upland habitats, as well as the potential for the spread of invasive species under Alternative A.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under Alternative A, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

Alternative A allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs) when sustainable and compatible with restoring, maintaining, or improving forest health. Although the impacts would be similar to those described for Alternative N, Alternative A includes objectives to emphasize woodland health. Harvesting of forest and woodland products would involve vehicle use to access the harvesting site and loss of vegetative cover, thus resulting in localized, minor-to-moderate impacts on vegetation and riparian-wetland resources. Indirect effects could include short- or long-term changes in species composition or community structure as well as increased erosion and decreased riparian functioning condition. However, removal of pinyon and juniper trees from areas in which they have invaded or areas in which canopy densities would have increased results in reduced amounts of bare ground and increased litter at the soil surface. Because pinyon pine and juniper vigorously compete with other plants for available soil water, their removal allows for regrowth of grasses and shrubs in the understory vegetation. This regrowth acts as a protective vegetative cover for the soil surface, resulting in decreased erosion and improved ecological condition of the plant community. Thus, management of forestry and woodland products under Alternative A would have beneficial impacts to vegetation, compared to Alternative N.

Improvement in the ecological condition of forests and woodlands could also improve riparian-wetland function by improving soil stability, reducing excessive runoff, and increasing infiltration of water into root systems that could indirectly benefit riparian resources. However, because areas in which forest and woodland products tend to be harvested are generally not riparian areas, the overall effects of forestry and woodlands decisions on riparian resources would be negligible.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing management would be similar to those described under Alternative N. Under Alternative A, 102,002 acres would be unavailable to livestock grazing, and 2,025,998 acres would be available for grazing. Although livestock grazing could increase soil compaction in trailing, watering, and mineral-supplement areas and could indirectly impact riparian-wetland areas and riparian functioning condition, grazing within the RFO would be managed in keeping with applicable laws and regulations, the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration,* and BLM's Utah Riparian Policy. Adhering to these statewide standards, guidelines, and policy would minimize impacts from livestock grazing by maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. This would ensure that upland soils would exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform and would ensure that riparian areas achieve or maintain proper functioning condition. Therefore, impacts would be minor area-wide but could be moderate in specific areas, such as in riparian areas.

Impacts from Recreation

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate the impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would maintain existing soil,

water, and riparian resource conditions by concentrating impacts to already disturbed areas and by reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

The construction of recreation facilities in the Big Rock SRMA could have localized, adverse, short-term impacts caused by removal of vegetation in those areas. However, long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for vegetation disturbance from recreation. Limiting OHV recreation use in the Dirty Devil/Robbers Roost SRMA to designated routes would reduce potential surface disturbance and localized removal of vegetation. Managing the Sahara Sands SRMA (12,300 acres) for a roaded natural recreational opportunity and the development of facilities would have site-specific impacts, including soil compaction, changes in surface hydrology, and increased runoff. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate-to-extensive landscape modification would have potentially major impacts by eliminating vegetation or altering plant communities (reducing species diversity or increasing the potential for introduction and spread of invasive species) over a relatively large area.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates 449,000 acres (21%) of the RFO as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced compared to Alternative N, would still result in impacts to vegetation from vehicle use in those areas.

The remainder of the RFO would limit motorized use to designated routes, therefore limiting potential impacts to vegetation occurring in the immediate vicinity of the route. The public would have access to 4,312 miles of unpaved routes (essentially the same as Alternative N); 68 miles of routes would be closed, allowing these areas to revegetate. No areas would be closed to motorized use, with no accompanying benefits to vegetation.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species. Alternative A would designate routes with 443 stream crossings (Table 4-13), the second-most crossings of all the alternatives.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, although impacts to vegetation could occur over a larger area because fewer acres would be proposed for withdrawal (154,700 acres under Alternative A), more acres would be proposed for disposal (13,400 acres), and fewer ROW avoidance areas (446,900 acres closed to leasing) would be proposed. Thus, impacts to vegetation from surface-disturbing activities would be greater under Alternative A than under Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Development of oil and gas resources could affect vegetation because of the surface disturbances associated with such development. However, adherence to BMPs outlined in mining laws,

plans of operation, pertinent restrictions, and standard terms and conditions would help minimize impacts to vegetation and riparian-wetland resources. Closing or withdrawing areas from mineral operations would prevent impacts to vegetation and riparian-wetland resources within those areas. (See Impacts from Lands and Realty for a discussion of withdrawals.) Alternative A proposes fewer acres of mineral withdrawals (154,700 acres), fewer areas closed to leasing and closed to disposal of mineral materials (446,900 acres), and fewer areas open to leasing subject to major constraints (NSO) (0 acres), thereby providing less protection to vegetation and riparian-wetland resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable. No special management to protect the outstandingly remarkable values of these rivers would be provided, so WSR designation would not apply to riparian vegetation within these corridors and such vegetation would not be protected from ground-disturbing activities. Opportunities for vegetation treatments would not be restricted, which could assist in attaining ecological objectives and desired conditions in the river corridors. However, most of the eligible river segments (98 of the 135 miles total) are also within WSAs. Consequently, none of the described ground-disturbing activities would occur in those river corridors.

Areas of Critical Environmental Concern

Alternative A designates no ACECs, so no special management to protect desert shrub, sagebrush steppe, forest and woodland, and riparian communities (including vegetation in the North Caineville Mesa and South Caineville Mesa potential ACECs, which was specifically identified as a relevant and important value in those areas) is proposed. Allowing uses that would cause irreparable damage to the relevant and important values in these areas could result in surface-disturbing activities that could impact vegetation resources within those areas. However, opportunities for vegetation treatments would not be limited, which would assist in attaining ecological objectives and desired conditions in these areas.

Proposed RMP

Impacts from Soil Resources

Impacts would be similar to those described under Alternative N. However, new BMPs would improve soil conditions.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative A, except allowing temporary non-renewable use of targeted livestock grazing to reduce site-specific fuels or noxious and invasive weeds could maintain or improve upland vegetation conditions and reduce cheatgrass and other invasive weeds. In forests and woodlands, this action would reduce fuel loads and noxious and invasive weeds, leading to improved health of these communities.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be managed as VRM Class II; 393,100 acres (18%) would be managed as VRM Class III; and 1,038,200 acres (49%) would be managed as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of

moderate-to-major modifications in the existing character of the landscape and could allow the greatest flexibility for vegetation treatments. However, less of the RFO would be designated in these VRM classes than under Alternative N or A, resulting in less potential short-term impacts to vegetation and less long-term improvement in ecological condition of degraded areas, compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts to vegetation under the Proposed RMP would be similar to those described under Alternative A. However, the Proposed RMP would restrict surface disturbance or surface occupancy within the 100-year floodplain or 330 feet of riparian areas, whichever is greater (versus 330 feet for Alternative A). This alternative also proposes temporal (winter and/or spring, depending on species) restrictions on surface-disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in deer and elk crucial habitats. The management actions would also benefit vegetation by limiting activities during wet seasons (which would reduce soil compaction and could reduce plant vigor) and by restricting activities that could result in vegetation loss.

Impacts from Wild Horses and Burros

Under the Proposed RMP, 600 AUMs are allocated to burros in the Canyonlands HMA, to meet an AML upper limit of 100. These numbers are greater than either Alternative N or A but fewer than DRMP/DEIS Alternative C or D (which establish a herd size of between 120 to 200 head). Because more burros result in a greater possibility of adverse impacts to vegetation because of trampling and reduced vegetation cover, the Proposed RMP would potentially impact vegetation more than DRMP/DEIS Alternative N or A but less than DRMP/DEIS Alternative C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres would be managed to maintain wilderness characteristics. Management actions would include the following: designating the areas as closed to leasing or open to leasing subject to major constraints (NSO), restricting OHV use to designated routes; and designating the areas as VRM Class II. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize direct impacts from surface-disturbing activities to vegetation. The management prescriptions, specifically managing as VRM Class II, could also limit options of managing vegetation. The results would be less long-term improvement in the ecological condition of degraded areas, compared to DRMP/DEIS Alternatives N, A, or C because opportunities to perform vegetation treatments would be limited in their methods. However, these areas would be available for healthy lands initiative projects, which would reduce the magnitude of this impact, compared to Alternative D. This impact would be most pronounced in the Ragged Mountain, Mount Pennell, and Mount Ellen—Blue Hills, non-WSA lands in which vegetation treatments could be needed to improve buffalo habitat. Vegetation treatments could be completed using only fire or biological treatment methods, which may not obtain the results being sought for habitat manipulation in a timely manner.

The remainder of the non-WSA lands with Wilderness Characteristics (604,000 acres) would be managed according to other resource decisions of the Proposed RMP. Impacts would be the same as described under DRMP/DEIS Alternative A.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to those described under DRMP/DEIS Alternative A, although more lands would be closed to this type of use under the Proposed RMP (one WSR segment –5 miles, compared to zero segments under Alternative

A). Thus, localized disturbance to vegetation and changes in vegetation community composition and structure would be less under the Proposed RMP than under Alternative A.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing decisions would be similar to those described under Alternative A, although less land would be available for grazing under the Proposed RMP (1,989,048 acres, compared to 2,025,998 acres under Alternative A). Livestock grazing would be managed in keeping with applicable laws and regulations the *Fundamentals of Rangeland Health*, and *Standards and Guidelines for Grazing Administration,* and BLM's Utah Riparian Policy. Therefore, impacts from livestock grazing would be minimized by maintaining plant vigor and by increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. Impacts would be minor area-wide but potentially moderate in specific areas such as riparian areas, although the difference between alternatives is negligible.

Impacts from Recreation

Under the Proposed RMP, five SRMAs (860,390 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Limiting OHV use to designated routes would maintain existing soil, water, and riparian resource conditions by concentrating impacts to already disturbed areas and by reducing the extent of soil compaction. Maintaining the existing condition of riparian-wetland areas would reduce soil erosion. Reducing the extent of soil compaction would indirectly maintain existing infiltration and soil-water distribution patterns.

Establishing a Factory Butte SRMA would limit the impacts of cross-country OHV use on vegetation to a 8,500 acre area. Construction of facilities in the Big Rock SRMA would have localized, adverse impacts caused by removing of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Dirty Devil/Robbers Roost SRMA (290,500 acres) for primitive and semi-primitive recreation would reduce the potential for surface disturbance and localized vegetation removal caused by recreation. Closing canyons within the Dirty Devil/Robbers Roost SRMA to OHV recreation use and limiting OHV recreation use to designated routes would reduce potential impacts to vegetation. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities would have localized, adverse impacts caused by removal of vegetation in those areas; long-term impacts would be beneficial by concentrating use areas and thus limiting the extent of vegetation disturbance. Managing the Henry Mountains SRMA for primitive and semi-primitive recreation would indirectly maintain or reduce the potential for soil disturbance.

The Proposed RMP establishes more areas as SRMAs than does Alternative N or A but fewer areas than does Alternative C or D. Therefore, the Proposed RMP would provide more protection to vegetation as a result of recreation decisions than would Alternative N or A and would provide less protection than would Alternative C or D.

Impacts from Travel Management

The Proposed RMP designates only 9,890 acres (less than 1% of the RFO) as open to motorized vehicles, thereby minimizing direct impacts to vegetation, as a result of vehicles trampling plants. The amount of open areas, although greatly reduced compared to Alternative N, would result in direct and indirect impacts that vehicle use in those areas would cause to vegetation. The absence of vehicle use in riparian areas would benefit riparian functioning condition, by eliminating vehicles crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species.

The Proposed RMP would close 209,900 acres (10% of the RFO) to motorized use, thereby eliminating all impacts that vehicles driving over plants and depositing dust on individual plants could cause to vegetation. This restriction would allow for revegetation and increased plant vigor in closed areas that had previously been open or limited.

The remainder of the RFO (1,908,210 acres) would limit motorized use to designated routes, thereby limiting potential impacts to vegetation in the immediate vicinity of the route. The public would have access to 4,277 miles of unpaved routes (slightly less than under Alternative N); 345 miles of routes would be closed (more than double the amount closed under Alternative N), allowing these areas to revegetate.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species. The Proposed RMP would designate routes with 400 stream crossings (Table 4-13)—fewer than under Alternative N or A but more than under Alternative C or D.

Impacts from Lands and Realty

Impacts to vegetation would occur over a smaller area than in Alternative N. Impacts to vegetation would occur over a smaller area than Alternative N because more acres would be proposed for withdrawal (176,200 acres under the Proposed RMP) and more acres would be designated ROW avoidance areas (630,600 acres closed to leasing or open to leasing subject to major constraints [NSO], one suitable WSR segment—5 miles, and two ACECs—2,530 acres). Thus, impacts to vegetation and riparian resources because of surface-disturbing activities would be less under the Proposed RMP than under Alternative N.

Impacts from Minerals and Energy

The types of impacts that would result from minerals and energy decisions would be similar to those described under Alternative N. However, the Proposed RMP proposes more acres of mineral withdrawals (176,200 acres) than does Alternative N or A. These withdrawals would preclude mineral and energy development in those areas and thus allow less disturbance to vegetation and riparian resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect vegetation and riparian resources by preventing ground-disturbing activities in the river corridors. One suitable segment (5 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and wild classification under the Proposed RMP. This management would benefit riparian vegetation by limiting ground disturbance in the area, although opportunities for vegetation treatments could be limited, thereby inhibiting or preventing attainment of ecological objectives and desired conditions in these river corridors.

Of the remaining segments not being carried forward into the Proposed RMP, 98 miles are within WSAs, which are managed under the IMP and are consequently mostly protected from surface disturbing activities, leaving 32 miles on which ground-disturbing activities could potentially impact vegetation. The Proposed RMP would provide less protection to vegetation from WSR decisions than would Alternative N, C, or D but would provide more protection than would Alternative A.

Areas of Critical Environmental Concern

The Proposed RMP designates two ACECs (2,530 acres). Vegetation was specifically identified as a relevant and important value in the North Caineville Mesa and Old Woman Front ACECs. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas, thereby protecting vegetation and riparian resources and R and I values. Restrictions could include closing the areas to OHV use; managing the areas as open to leasing subject to major constraints (NSO), depending on the ACEC; making the areas unavailable for livestock grazing; and acquiring inholdings.

Alternative C

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A. However, under Alternative C, fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, Alternative C proposes only treatment methods that mimic natural processes to manage vegetation. Such methods could be less effective than conventional vegetation treatments and would not be effective in all vegetation and riparian-wetland communities. The result could be the loss of existing vegetation cover, indirectly decreasing the ecological condition of the treated area. Control of some invasive species could also be difficult because of lack of suitable substitute treatments, possibly allowing the spread of invasive species and displacement of desirable vegetation (using fire as a control tool for invasive species, including tamarisk, could increase the growth and spread of these species). Thus, impacts to vegetation and riparian-wetland resources under Alternative C would likely result in less short-term impacts (altered vegetation structure) but more long-term impacts (reduced vegetative cover and plant diversity) than under Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape and could allow greater flexibility for vegetation treatments. However, less of the RFO would be designated in these VRM classes than under Alternative N or A or the Proposed RMP, resulting in less potential short-term impacts to vegetation and riparian resources and less long-term improvement in ecological condition of degraded areas, compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative A. However, Alternative C proposes restricting surface disturbance or surface occupancy within 660 feet of riparian areas (versus 330 feet for Alternative A), includes more restrictions on OHV use in wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the

protection of wildlife values. These additional management actions would decrease the potential for impacts to vegetation and would increase protection for riparian vegetation under this alternative.

Impacts from Wild Horses and Burros

Under Alternative C, 1,200 AUMs are allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than under Alternative N or A or the Proposed RMP. Because more burros result in a greater possibility of adverse impacts on vegetation because of trampling, compaction, and reduced vegetation cover, Alternative C would potentially impact vegetation more than would Alternative N or A or the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for vegetation.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to the Proposed RMP, although more lands (12 WSR segments—135 miles) would be closed to this type of use under Alternative C. Thus, localized disturbance to vegetation and changes in vegetation community composition and structure would be reduced under this alternative, compared to the Proposed RMP.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under the Proposed RMP. Under Alternative C, four SRMAs (930,000 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV recreation; thereby eliminating impacts that cross-country OHV use could cause to vegetation. All SRMAs would be established to provide for primitive or semi-primitive recreation opportunities. OHV use would be limited to designated routes, and facilities would either not be provided or would be the minimal necessary. These management prescriptions would reduce the potential for surface disturbance and localized vegetation removal caused by recreation and would benefit riparian functioning condition by eliminating vehicles that could crush vegetation, compact soils, erode streambanks, increase sediment in streams, and spread invasive species.

Alternative C would establish more areas as SRMAs than would Alternative N or A or the Proposed RMP but fewer areas than would Alternative D. Therefore, Alternative C would provide more protection to vegetation as a result of recreation decisions than would Alternative N or A or the Proposed RMP and less protection than would Alternative D.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, Alternative C designates no areas as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized vehicle use. The lack of open areas would eliminate impacts that vehicle use in those areas could cause to vegetation.

Limiting motorized use to designated routes—the public would have access to 3,192 miles of unpaved routes—would limit impacts to vegetation to areas in the immediate vicinity of the designated route;

1,188 miles of routes would be closed, allowing these areas to revegetate. Prohibiting construction of new routes in riparian areas would provide additional protection for riparian resources by precluding new disturbance (crushing of vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species) in these areas.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species. Alternative C would designate routes with 273 stream crossings (Table 4-13), the second most crossings under all the alternatives and only slightly more than under Alternative D.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty decisions would be similar to those described under Alternative N. However, impacts to vegetation could occur over a much smaller area because more acres would be proposed for withdrawal (331,100 acres under Alternative C) and more acres would be designated ROW avoidance areas (735,000 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs). Thus, impacts to vegetation and riparian resources from surface-disturbing activities would be less under this alternative than under Alternative N.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy decisions would be similar to those described under Alternative N. However, Alternative C proposes more acres of mineral withdrawals (331,100 acres), compared to Alternative N or A or the Proposed RMP. These withdrawals would preclude mineral and energy development in those areas and thus reduce disturbance to vegetation and riparian resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect vegetation by preventing ground-disturbing activities in the river corridors. Under Alternative C, 12 suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. This management would benefit riparian vegetation by limiting ground disturbance in these areas. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and desired conditions in these river corridors.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Vegetation was specifically identified as a relevant and important value in the North Caineville Mesa and South Caineville Mesa ACECs, and vegetation management was identified as a management prescription in the Henry Mountains ACEC to provide improved habitat for bison and mule deer, both identified as relevant and important values. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas (all ACECs except for the Henry Mountains) would reduce surface-disturbing activities within those areas, thus protecting vegetation and improving the ecological condition of riparian areas. Restrictions could include closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; designating the areas as VRM Class II; making the areas unavailable for livestock grazing or fencing riparian areas in ACECs where grazing occurs; and

acquiring inholdings. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and desired conditions in these areas.

Alternative D

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. However, these impacts would occur over a much smaller area because of differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 acres (17%) would be designated as VRM Class III; and 576,600 acres (27%) would be designated as VRM Class IV. Just more than one-half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface-disturbing activities would generally not be allowed in these areas, resulting in restrictions on treating vegetation even in areas in which ecological condition has been degraded. Therefore, Alternative D would result in less potential for wind and water erosion and sedimentation to streams, as well as less potential short-term impacts to vegetation and less long-term improvement in ecological condition of degraded areas, compared to Alternative N, A, or C or the Proposed RMP.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres would be managed to maintain wilderness characteristics. Management actions to achieve this would include the following: designating the areas as closed to leasing; closing the area to OHV use; and designating the area as VRM Class I. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize direct impacts that surface-disturbing activities could cause to vegetation. It could also limit options of managing vegetation, which could result in less long-term improvement in ecological condition of degraded areas, compared to Alternatives N, A, or C or the Proposed RMP, because opportunities to perform vegetation treatments would be very limited in their methods. This would be especially true in the Kingston Ridge, Limestone Cliffs, and Wildcat Knolls non-WSA areas in which vegetation manipulations could be needed to improve deer and elk habitat, as well as in the Ragged Mountain, Mount Pennell, Mount Ellen—Blue Hills, Pole Canyon, Mount Hillers, and Bull Mountain non-WSA lands, in which vegetation treatments could be needed to improve buffalo habitat. Vegetation treatments could be completed only by using fire or biological treatment methods, which may not obtain the results being sought for habitat manipulation in a timely manner.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative C, except that no commercial or non-commercial forest and woodland products would be allowed within the 682,600 acres of non-WSA lands with wilderness characteristics. Thus, localized surface disturbance and changes in vegetation community composition and structure would be greatly reduced under Alternative D, compared to all the other alternatives.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative C.

Impacts from Recreation

Under Alternative D, seven SRMAs (1,358,100 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Managing these SRMAs for dispersed recreation in a primitive or semi-primitive setting would indirectly maintain or reduce the potential for surface disturbance caused by recreation. Associated management actions (closing or limiting the area for OHV use and precluding development of facilities) would minimize the potential for surface disturbance and localized removal of vegetation because of recreation and would benefit riparian functioning condition by eliminating vehicles that could crush vegetation, compact soils, erode streambanks, increase sediment in streams, and spread invasive species.

Alternative D, which establishes more areas as SRMAs than any other alternative, would provide the most protection to vegetation and riparian-wetland areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized vehicle use. The lack of open areas would eliminate impacts to vegetation from vehicle use in those areas. Limiting motorized use to designated routes—the public would have access to 3,043 miles of unpaved routes—would generally limit impacts to vegetation to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed (the most under any alternative), allowing these areas to revegetate.

Vehicle use in riparian areas could affect riparian functioning condition by crushing vegetation, compacting soils, eroding streambanks, increasing sediment in streams, and spreading invasive species. Alternative D would designate routes with 266 stream crossings (Table 4-13), the least crossings under all the alternatives.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty management would be similar to those described under Alternative N, although impacts to vegetation would occur over a much smaller area because more acres would be proposed for withdrawal (903,900 acres under Alternative D) and more acres would be designated ROW avoidance areas (1,203,800 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs). Thus, impacts to vegetation from surface-disturbing activities would be much less under Alternative D than under all the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. However, impacts to vegetation would occur over a much smaller area because more acres would be proposed for withdrawal (903,900 acres under Alternative D) and more areas would be

closed to leasing or open to leasing subject to major constraints (NSO) (1,203,800 acres). Closing or withdrawing areas from mineral operations would prevent impacts to vegetation and riparian resources within those areas. Thus, impacts to vegetation and riparian resources from mining-related, surface-disturbing activities would be much less under Alternative D than under all the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.5 Cultural Resources

This section presents potential impacts that the alternatives could have on cultural resources, as determined through changes in or access to the resources. Cultural resources specifically include archaeological resources, historical resources, and resources of importance to Native Americans. The locations of most cultural resource sites in the Planning Area are not known. See Chapter 3 for a discussion of cultural resources in the RFO. The required consultations for Section 106 of the National Historic Preservation Act (NHPA) are in progress and will be completed prior to signature of the Record of Decision (ROD). The BLM has forwarded to the SHPO a determination that, although in some cases, management actions in this plan may have a potential to affect historic properties, there would be no adverse affect to these historic properties.

Archaeological and historical resources may be impacted by unauthorized collection and excavation, vandalism, erosion, trampling, OHV use, fire, soil compaction, and mechanized surface disturbance. Indirect impacts may cause surface disturbance that allows subsequent soil erosion and undermining of sites and structures. Indirect impacts may also allow access or lack of access for vandalism. In addition, resources of importance to Native Americans may be impacted by unauthorized collection, vandalism, erosion, trampling, OHV use, fire, mechanized surface disturbance, and loss of access to sacred or traditional use areas. These impacts affect the artifacts, features, and architecture that make up these sites, in ways that reduce their integrity, scramble their context, alter their connection to traditional values, decrease their research potential, and ultimately affect a site's eligibility for placement on the National Register of Historic Places (NRHP). Archaeological data consist of "objects" (artifacts, features, and architecture) and the spatial relationships (context) between objects. The ability to interpret and understand the past is based on both of these things. Surface and subsurface disturbances can destroy both the "objects" as well as their spatial relationships and therefore any interpretation and understanding that derives from them. Impacts from surface disturbance can not only affect the setting and physical integrity of sites and areas but can also diminish the interpretive value of those sites and areas. In general, impacts that surface disturbance cause to cultural resources are long-term in nature; once a site has been impacted, the effect typically cannot be reversed.

Current BLM policy is to categorize cultural resources according to their potential or best use. The six use categories outlined in the BLM 8110 manual recognize a greater degree of uses that different kinds of sites may be put to or objectives they may serve. The six categories are as follows:

- Scientific Use
- Conservation for Future Use
- Traditional Use
- Public Use
- Experimental Use
- Discharged from Management

In addition to providing clear management direction for specific classes of sites, allocation of cultural resources to these use categories also allows land managers to address the values of cultural resources before they are threatened by an undertaking.

4.3.5.1 Native American Religious Concerns

This section also discusses impacts to Native American religious concerns, from actions either implemented or authorized by BLM. All federal agencies must consider two major issues relating to Native Americans: 1) traditional cultural properties and 2) sacred sites.

A traditional cultural property (TCP) is a property that possesses traditional cultural significance derived from the role that the property plays in a group's historically rooted beliefs, customs, and practices. There are various types of TCPs, but those of concern to Native American coordination efforts are typically 1) locations associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world; or 2) locations to which Native American religious practitioners have historically gone, and may still go, to perform traditional ceremonial activities. A TCP is a property that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that 1) are rooted in that community's history and 2) are important in maintaining the continuing cultural identity of the community.

Sacred sites are defined in Executive Order 13007, Indian Sacred Sites, as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." This appears to be a very limiting definition, but sacred sites can and do consist of a variety of places and landscapes (e.g., springs, mountains, caves, archaeological sites). Some of the better known sites are the Sweetgrass Hills in Montana, the San Francisco Peaks in Arizona, and the Medicine Wheel in the Bighorn Mountains of Wyoming.

The Executive Order requires that sacred sites must be identified as such either by a Native American tribe or by a Native American individual whom the tribe has named as the appropriately authoritative representative of its religion. The important point here is that the Federal Government has no role in the identification or validation of sacred sites. The sovereign-government-to-sovereign-government nature of consultation between Native American tribes and the Federal Government dictates that the determination of sacred sites is a Native American role. The tribes may or may not choose to disclose the qualities that contribute to the sacred nature of a site but, regardless of their choice, there is no review of such determinations by a federal agency.

Sacred sites generally fall under a completely different set of criteria than TCPs. A big difference between TCPs and sacred sites is that TCPs are a Section 106 issue with protection afforded by compliance with that section of the NHPA. Section 106 compliance involves detailed review by the State Historic Preservation Officer (SHPO) and, if need be, the Advisory Council on Historic Preservation. Sacred sites are not subject to such review. Sacred sites are a NEPA issue and must be treated carefully in any land-use planning and decision-making. However, even this distinction can be blurred in the case of the sacred site that meets certain NRHP eligibility criteria and also qualifies as a TCP. In such cases, sacred sites are subject to Section 106 compliance.

In addition to the NEPA requirements, Executive Order (EO) 13007 requires federal land management agencies to accommodate access to and ceremonial use of Native American sacred sites by Native American religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. EO 13007 also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of sacred sites or that may adversely affect sacred sites.

Impacts and Mitigation

Mitigation of impacts to Native American religious concerns is an entirely different matter than the treatment of threatened cultural resources. From the perspective of traditional religious practitioners, a particular area could be regarded as a hallowed place, perhaps devoted to or having been the scene of special religious rites and ceremonies. Practitioners and believers might perceive any secular use or development in such a place to be injurious to its exceptional sacred qualities or to be a sacrilege and

therefore unacceptable. The BLM manager might be put in the position of having to weigh a proposal for a legally and politically supported use, such as mineral development, in an area regarded as sacred and inviolate. Therefore, the participation of tribes in the environmental analysis process is both encouraged and invited so that such concerns might be made known. Mitigation strategies designed to reduce or eliminate impacts of proposed undertakings generally follow models related to NEPA and NHPA and their implementing regulations. In the case of NHPA, these mitigation strategies generally consist of avoiding the resource, redesigning the project, or otherwise safeguarding what makes the historic resource important, before it succumbs to project implementation. However, these conventional methods of mitigation generally do not appropriately address the consequences to Native American cultural and religious concerns.

Some traditional mitigation strategies used by federal agencies could work with Native American issues, if those issues are tangible in nature. For example, a BLM proposal might be modified to allow for continuing traditional resource use by Native Americans, or that traditional use might be moved outside the area affected by the project, if the use by Native Americans is flexible. Access to a sacred site, as well as the site itself, may be closed to everyone but Native Americans for a certain time. Accommodating ceremonial use may mean assuring privacy. Both sides can be flexible in such cases. In contrast, the abstract, non-resource issues surrounding belief and practice are a much different matter. There is no appropriate mitigation that could be applied to something as intangible as a belief system.

Any protection afforded these special places requires that the federal land manager know where the places are so that protective measures can be implemented. This knowledge often becomes an issue in itself because the relationship between Native American tribes and the Federal Government has never caused Native Americans to want to reveal or entrust sacred concerns to federal officials. Because almost any action taken by this agency could affect both tangible and intangible Native American concerns in some way, it becomes BLM's responsibility to identify those concerns and deal with them appropriately. That situation would remain the same regardless of the management alternative chosen. A Memorandum of Understanding (MOU) between the BLM and the Paiute Indian Tribe of Utah was signed in 1998 and deals with coordination between the two entities, including outlining the coordination process, the tribal area of interest, types of projects the tribe is interested in, and the resolution of any issues that may arise during consultation. This MOU marks substantial progress towards the identification and resolution of these sensitive issues. The BLM proposes to enter into agreements, formally or informally, with all tribes interested in dealing with the RFO. This should make consultation efforts for the RFO both meaningful and productive. Any agreements which are developed could affect future management as Native American concerns are addressed.

Only two areas that have special significance to Native American tribes have been identified in the RFO to date: Quitchupah Canyon in Sevier and Emery Counties (held sacred by the Paiute Indian Tribe of Utah) and the Henry Mountains of Wayne and Garfield Counties (held sacred by the Navajo Nation). Other concerns to date have been restricted to smaller areas and individual cultural resource sites discovered during the normal field-inventory process. All these sites would be considered carefully in future project planning. Tribes would continue to be consulted about these resources and how they should be managed to eliminate or mitigate impacts.

Throughout the land use planning process, the BLM has consulted with several tribes. Information on this process is contained in Chapter 5. During consultation communications, issues and concerns were raised regarding many of the proposals discussed in this Proposed RMP. Other issues included the following:

- Generally, the tribes supported the conservation of all resources. The tribes would prefer to see all cultural sites left in their existing states and not be subjected to disturbance from any proposed action.

- Federal land managers should consider and be sensitive to Native American religious concerns and beliefs while implementing mandated multiple-use policies.

- Several tribes generally oppose oil, gas, and mineral development because digging up the earth for any reason negatively affects all living beings.

- Many Native Americans feel that OHV users are not meeting nature on its own terms and are thereby limiting the experience because of the introduction of the artificial OHV into natural settings. Some Native American concerns on OHVs include the following:
  - OHV use can cause considerable adverse effects to the natural and cultural resources.
  - OHV use can disturb, modify, or decrease vegetation cover, making areas more susceptible to flooding and erosion.
  - OHV use can result in vandalism to cultural resources. Those archaeological sites that remain in good condition are that way primarily because of their isolation and limited access. It has been demonstrated that increased access results in increased destruction of those cultural resources that are a very real part of Native American culture and religion.
  - The transportation plan must include a real commitment to law enforcement so that any claim that OHVs are limited to existing roads and trails has some meaning.

– OHV use on the public lands is regulated by EO and other regulations. EO 11644 specifies in Section 9 that if the agency determines that the use of OHVs will cause or is causing adverse effects on soil, wildlife, wildlife habitat, or cultural resources in certain areas or on certain trails, the agency will immediately close those areas and trails to OHV use until such time as the adverse impacts have been eliminated and measures have been implemented to prevent future recurrence.

- The FLPMA requires resources to be managed to best meet present and future needs of the American people. Several tribes tend to feel that current BLM public land management is placing undue emphasis on present needs with little thought being given to future needs or conditions. For example, the federal agencies need to consider how ecosystems will respond to the stresses of global climate change.

- The tribes favor ACEC protection of the relevant and important values found in many places on public lands, especially of cultural and water resources. They feel that all areas having these values should be designated or managed to protect those values.

Methods and Assumptions

To analyze the potential effects of the alternatives on archaeological and historical resources, information was gathered from inventories and excavations in and adjacent to the Planning Area. However, less than 1% of the RFO has been inventoried, and only a handful of excavations have been conducted. The analysis is also based on professional expertise of BLM specialists at the RFO, a review of the relevant scientific literature, and consultation with tribal governments and individual tribal members.

Effects are quantified where possible. In absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. The intensities of impacts are also described, where possible.

This analysis was based on the following assumptions:

- All laws for the management and protection of cultural resources would be followed, to the extent allowed by budget and available personnel.
- Section 106 inventories and mitigation would be conducted for all proposed projects, as required by NHPA, under each alternative.

- Cultural resources would continue to be discovered throughout the RFO.
- Some proactive Section 110 inventory, research, stabilization, or preservation would be accomplished in the Planning Area each year.
- NRHP-listed and some NRHP-eligible sites, as well as the cultural resources in the ACECs, would be monitored for vandalism and protected or stabilized, as necessary.
- All surface-disturbing activities include mitigation to reduce impacts to cultural resources. Analysis of impacts includes all mitigation.
- The demand for use of cultural resources, public use, scientific use, and traditional use would remain at current levels or increase slightly.
- As access to an area increases, incidental damage of cultural resources adjacent to the access route(s) would increase. Impacts from incidental damage would be reduced as distance from the access route increases.

Environmental Consequences

Impacts to cultural resources could result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on cultural resources.

Alternative N: No Action

Impacts from Vegetation and Fire and Fuels Management

Restoration activities under this alternative would continue to be implemented using a variety of treatment methods; impacts to cultural resources would vary by treatment method. Eradication of noxious weeds may involve surface disturbance, which also could impact cultural sites. Sites eligible for listing on the NRHP in these areas would continue to be avoided by any surface-disturbing activity. Mitigation of some impacts would be provided by following Section 106 procedures.

Wildland fire itself does not affect cultural resources in the same manner as surface-disturbing activities do. Impacts from fire vary based on the type of material that composes the cultural resources as well as the temperature and duration of exposure to fire. As a general rule, fire does not affect buried cultural materials. Studies show that even a few inches of soil cover (4 inches) are sufficient to protect cultural materials (Oster no date). Fires that burn hot and fast through a site may have less effect on certain types of cultural materials than do fires that smolder in the duff or burn for a long period of time, allowing heat from the fire to penetrate the surface. Determining temporal context is an important part of archaeology. Fire has the potential to adversely impact the dating potential of archaeological data obtained from both

organic and inorganic material (Deal no date, Buenger 2003, Lloyd et al. 2002, Shackley et al. 2002, Solomon 2002). The high heat from fire can and often does destroy the usefulness of datable deposits.

Prehistoric and historic resources potentially affected by fire may be inorganic (lithic, ceramics, cans, glass, rock art) or organic (basketry, wooden structures, dendroglyphs). Generally speaking, organic materials are more at risk because they tend to burn or alter at lower temperatures than do inorganic items. Fire impacts to inorganic cultural resources include fracturing, shattering, and changes in color and internal luster, all of which might reduce an artifact's ability to render information about the past. As a general rule, hotter temperatures and longer exposure to fire are more likely to affect lithic materials. When these materials are likely to be present, it may be necessary to take protective measures. Historic earthworks such as trails, roads, irrigation ditches, and canals are less sensitive to fire. Wildland fire could also impact rock art. Fire effects include soot smudging and discoloration from smoke, which obscure the rock art images; degradation of the rock surface from spalling, exfoliation, and increased weathering; changes in organic paints because of heat; and damage to rock varnish, which could destroy the varnish's potential to date the art (Tratebas 2004, Kelly and McCarthy 2001).

Emergency suppression activities often are underway before any resource-protection efforts are organized. Therefore, cultural resources may be inadvertently damaged. Fire-suppression activities may require use of heavy equipment that can directly impact cultural resources through surface disturbance. Wildland fires may destroy or alter cultural sites susceptible to damage from fire, heat, or smoke. Fire suppression activities overall would help to stop wildland fire and ultimately protect cultural resources that might be destroyed or damaged by fire. Therefore, impacts from fire and fuels management would be minor to moderate, considerably less in intensity than wildfires that would destroy wooden features and structures and damage rock art and surface features.

Emergency stabilization and rehabilitation (ESR) of burned areas would be subject to intensive cultural-resource inventories and Section 106 review. Significant cultural sites would be protected by these measures. The only unmitigated impacts would be to sites that do not meet the NRHP eligibility criteria.

Prescribed fires would be allowed across sites not vulnerable to destruction by fire, such as areas that have burned in the past. Areas excluded from fire treatment would be rock art, wooden structures or features, and any area vulnerable to the indirect effects of subsequent erosion.

Mechanical treatments require the use of heavy equipment. As described previously, use of heavy equipment can directly impact cultural resources through surface disturbance and direct destruction of artifacts and features. Biological treatments would have no direct impacts on cultural resources because the biological agent targets the vegetation species treated. Manual treatments would have minimal effects on cultural resources because all treatment is done by hand, with no use of heavy equipment.

Riparian invasive and exotic species removal could occur in some riparian areas and may directly impact archaeological and historical resources. However, treatment efforts would help to stop the root damage and erosion of deposits and structures caused by invasive species and would help to keep archaeological and historical resources intact. Mitigation associated with compliance with NEPA and NHPA would help to redesign projects so that sites would be avoided or measures would be taken to protect these resources.

Vegetation treatments would have indirect impacts on cultural resources because of increased erosion and displacement and destruction of surface artifacts and, in some cases, destruction of surface and buried structures and features. Overall impacts from vegetation management would result in direct and indirect impacts to cultural resources. These impacts could be partially mitigated during compliance with NEPA and Section 106 of NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts.

These impacts to cultural resources would also apply to resources of importance to Native Americans. Also, restoration, including fire and fuels management, could increase some native vegetation important to Native Americans. Historically (prior to the arrival of Euro-Americans), Native Americans burned areas in the RFO to encourage growth of native plants, as well as for other reasons. Restoration efforts benefit some types of native vegetation and provide additional locations for Native Americans to collect such vegetation. Impacts from all vegetation treatments, including fire and fuels management, on resources of importance to Native Americans would be moderate. Traditional uses of and access to resources would continue and would be sustainable.

Impacts from Cultural Resources

Under Alternative N, present management would continue and there would be no site use allocation and no priority areas for new field inventories. Cultural resources would be managed in compliance with laws and regulations, and this management usually would be addressed only if and when a given site was threatened by a surface-disturbing activity. Cultural inventories, documentation, research, protective measures, and monitoring would continue to provide information about the past in the RFO and to protect cultural resource sites.

Impacts from Visual Resources

VRM Classes I and II would help protect cultural resource sites and landscapes from visual intrusions and surface disturbance; however, such categories could also limit research excavations. Under Alternative N, none of the lands managed by the RFO are classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II. Major modifications to the visual landscape could be allowed on 1,029,500 acres (48% of the RFO) managed as VRM Class IV. These impacts may also apply to TCPs and the landscapes associated with them, although any impacts would be subject to Section 106 compliance.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

Alternative N allows for harvesting of forest and woodland products across most of the RFO (all areas, outside of WSAs, on a case-by-case basis). Forest and woodland harvest could have potential inadvertent impacts to cultural resources from the cross-country driving and surface disturbance associated with woodcutting and timber harvest activities. Commercial timber harvesting would be allowed only on a case-by-case basis west of Capitol Reef National Park, subject to compliance with NEPA and Section 106 of NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts. It is important to note that not all areas open to woodland-products use contain actual woodlands that would be targeted for use. As such, the actual acres on which this activity would occur is expected to be much less than the total amount of lands open for this use, which could result in localized areas in which impacts to cultural resources would occur but minor impacts overall. Woodland harvest would also result in long-term benefits to traditional cultural practices of Native Americans in the RFO.

Impacts from Livestock Grazing

Under this alternative, 138,952 acres would continue to be unavailable to livestock grazing; 1,989,048 acres would continue to be available to grazing. The dispersed nature of livestock grazing can cause disturbance by livestock that is spread lightly over large areas, in most cases. In areas in which livestock congregate and trail, cultural resource sites could be impacted by short-term removal of protective vegetation cover, increased soil compaction, and some mixing of artifacts and contextual relationships. These types of impacts would be site-specific and localized. Adherence to *Fundamentals of Rangeland*

Health and *Standards and Guidelines for Grazing Administration* would result in mitigation of these possible impacts and a decrease in potential erosion and trampling. Impacts on specific areas would be identified and mitigated through the grazing-permit administration process. With mitigation, these impacts would likely be relatively minimal. Changes to grazing management could be subject to adherence of Section 106 of NHPA, which would mitigate impacts to cultural resources and resources of importance to Native Americans.

Impacts from Recreation

Visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. OHV use in particular could lead to inadvertent damage to cultural sites, as well as collection of artifacts and vandalism of sites because of ease of access across a large portion of the RFO.

Development of recreation facilities would increase the potential for the identification of cultural resources during inventories before development. In addition, providing developed sites in a few areas of high recreation use would reduce the potential for unmitigated impacts from dispersed recreation. However, there would be a potential for significant cultural resource impacts at non-developed recreation sites. Although use would be dispersed over a larger area, reducing the magnitude of impact, non-developed recreation sites usually do not have cultural resource inventories and clearances before being established.

Impacts from non-developed recreation would be mitigated on a case-by-case basis when discovered. Cultural sites adjacent to developed recreation sites could be impacted because of inadvertent damage from uninformed or unaware recreationists. The use of signs, trails, and facilities would reduce inadvertent damage to cultural resources. Limited management at popular dispersed use areas would continue to result in concentrated recreation use, which could increase the potential for inadvertent damage of cultural sites.

More public land users and more intense recreational use on public lands near the communities would result in direct and indirect impacts to cultural resources. Impacts in some specific areas near communities or on some types of archaeological sites, such as caves, rock shelters, or rock art, could be moderate or major. Visitors conducting activities under special recreation permits would be educated about the provisions of the Archaeological Resources Protection Act (ARPA) and Native American Graves Protection and Repatriation Act (NAGPRA), which would help protect cultural resource sites.

These same impacts would also apply to resources of importance to Native Americans, with the exception that additional recreational use could interfere with traditional uses in some areas.

Impacts from Travel Management

Impacts to cultural resources primarily stem from management actions that restrict or increase access. Increased access to cultural sites could increase contact by visitors who could intentionally damage sites by collecting surface artifacts, vandalizing, illegally digging, or otherwise excavating the sites. Visitors could also unintentionally damage sites by camping or driving across them. Reducing such access by closing roads or restricting travel could thus protect cultural resources. However, increased access could allow for the increased presence of law enforcement, cultural resource personnel, and site stewards for purposes of monitoring sites and areas. Increasing access could also increase the amount of cultural resource inventories and research, by decreasing the cost of excavation, inventory, or recording. Finally, increased access would allow for the increased presence of the public, which could also deter vandalism. This possibility is suggested by recent ARPA cases in southern Utah, showing that pothunters in the area

tend to select isolated sites to excavate without getting caught. As a result, more and more pothunters in the area are using OHVs or 4-wheel drive vehicles to access and vandalize sites in roadless areas.

Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing unlimited access to the majority of the RFO. Allowing cross-country OHV use could generally impact surface features, break artifacts, and otherwise disturb cultural resources at the surface. It could also result in the pioneering of new routes, increasing motorized access throughout these acres and increasing incidental damage to cultural sites. Unlike other permitted uses, cultural resource inventories and mitigation strategies would not be implemented before designating these large areas open to cross-country OHV use. Mitigation of cultural resource impacts would be implemented on a case-by-case basis after the impact has occurred. Mitigation would occur only in situations in which impacted properties retain qualities that make them eligible for inclusion in the NRHP.

Alternative N would limit motorized vehicles to existing, designated, and maintained routes on 277,600 acres (13% of the RFO); 214,000 acres (10% of the RFO) would be closed to motorized vehicle use, thereby limiting direct and indirect impacts associated with vehicle use on or near sites. The public would have access to 4,315 miles of unpaved routes in the RFO, which could allow continued access for vandalism of cultural resources.

Among the alternatives, Alternative N would have the greatest adverse impacts to cultural resources because of the large amount of lands open to cross-country motorized use.

Impacts from Lands and Realty

Land disposals would impact cultural resources because the disposed lands and associated resources would lose the protection provided by federal laws. Impacts would be direct and long term, depending on the location of the lands to be disposed and the nature of the cultural resources on them. Retaining significant cultural sites in federal ownership and acquiring non-federal lands with significant cultural sites would provide protection to these sites.

Any new land use authorizations (e.g., ROWs, permits, leases, easements) would cause direct and indirect long-term impacts to cultural resources and would be mitigated under NEPA and Section 106 of NHPA. Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas (with exceptions granted only when the proposed authorization would not create substantial surface disturbance or would create only temporary impacts). Thus, impacts to cultural resources in these avoidance areas would be negligible.

Impacts from Minerals and Energy

Cultural resource values on 1,236,500 acres (58% of the RFO) open to leasing subject to the standard terms and conditions and on 409,200 acres (19% of the RFO) open to leasing subject to moderate constraints (TL, CSU) could be impacted by oil and gas leasing. Cultural site densities throughout the RFO, although varying in different areas, are low enough to provide for the identification and avoidance of cultural sites when lessees exercise initial development rights associated with oil and gas leases. Based on the Reasonably Foreseeable Development (RFD), oil and gas developments within these areas could impact 8,180 acres during the next 15 years (Appendix 12). Oil and gas development on these acres would include surface disturbance on an average of between 2 and 4 acres per drill pad (depending on RFD Area) and between 2 and 5 miles of road per drill pad (depending on RFD Area), with an average of 4 acres of surface disturbance per mile of road (Appendix 12). All developments on these acres would typically be subject to Class III cultural resource inventories and evaluation on a project-by-project basis prior to allowing the disturbance, whether road construction or well pad development. This requirement would likely result in the identification of cultural sites in these areas. Site densities throughout the RFO

would generally result in the identification and avoidance of cultural sites during construction activities associated with development. However, surface disturbance associated with oil and gas development in areas of very high cultural-site density could result in the identification of sites that are unavoidable to mineral development. Sites that are unavoidable would be mitigated, resulting in the physical alteration or elimination of sites as they are mitigated through data recovery or other onsite means.

Managing 1,668,300 acres (78% of the RFO) as open to some category of oil and gas leasing could result in surface disturbance caused by seismic operations that support exploration on oil and gas leases. Potential oil and gas leasing categories include the following: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), and open to leasing subject to major constraints (NSO) This would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

Alternative N allows sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—any cultural resources present have likely been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or would result in mitigation (scientific data-recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under Alternative N, 459,700 acres would be closed to leasing and closed to disposal of salable minerals; 169,480 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to cultural resources.

Impacts from Special Designations

Wilderness Study Areas

WSAs are managed under the IMP criteria until Congress either designates an area as wilderness or releases it from further consideration. This management effectively provides protection to the cultural resources in those areas by limiting motorized access and nearly all activities that could adversely affect archaeological and historic sites. However, this management also affects research proposals and activities at sites within WSAs. Anything that would not comply with the IMP (e.g., anything that would impair the suitability of such areas for preservation as wilderness) would not be authorized.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect cultural resources by preventing ground-disturbing activities in the river corridors. All eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. This management would benefit cultural resources by limiting ground disturbance in these areas.

The Dirty Devil, No Mans Mesa, Robbers Roost Canyon, Fish Creek and Quitchupah Creek segments have cultural as outstandingly remarkable values. However, these segments will not be designated as suitable for further consideration in the NWSRS. The cultural resource outstandingly remarkable values for these river segments will continue to be protected under other resource management decisions. WSR management decisions will not impact cultural resources on these river segments.

The Maidenwater Creek, Fremont Gorge, Sams Mesa, Twin Corral Box Canyon, Larry Canyon and Beaver Wash segments do not contain cultural resources as part o the outstandingly remarkable values. Management decisions that would continue to protect their outstandingly remarkable values may also

benefit cultural resources. Since these river segments would not be designated as suitable, there are no WSR management decisions that would impact cultural resources.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, thus indirectly providing protection for cultural resources. Protections associated with ACEC designation that would affect cultural resources include managing oil and gas leasing as closed to leasing or open to leasing subject to moderate constraints (NSO); managing more areas under restrictive VRM designations; restricting livestock grazing; and limiting travel. Alternative N continues the designation of four ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface disturbing activities within those areas, protecting cultural resources. Such restrictions could include closing to OHV use; managing as either closed to leasing or open to leasing subject to moderate constraints (NSO), depending on the ACEC; managing as unavailable for livestock grazing in three of the four ACECs; and acquiring inholdings.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N However, under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). Although no maximum treatment acreage limits would be set under Alternative N, it is likely that more acres would actually be treated under that alternative because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative N allows for treatment of vegetation (including mechanical, wildland fire use and/or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment than do Alternative N or the Proposed RMP. Mechanical treatments require the use of heavy equipment. As described previously, use of heavy equipment can directly impact cultural resources by causing surface disturbance and direct destruction of artifacts and features.

Impacts from Cultural Resources

Allocating and managing cultural resource sites to one of six uses would result in the sites being proactively managed compared to Alternative N and considering cultural resource sites' varied values. These six uses are as follows: scientific, conservation, traditional, public, experimental, or discharged from management. Under Alternative A, most cultural sites would be managed for public use, thereby providing opportunities to educate the public about past human activities within the RFO. This type of site management would require extensive inventories and other research so that the sites could be interpreted for the public. However, designated public use sites could also lead to damage and vandalism at or near the sites.

Monitoring of identified cultural sites with known impacts, as well as of sites that are sensitive to incidental impacts, would indicate whether management actions would be needed to protect the sites, thus decreasing the potential for losing cultural values because of deterioration and impact. The prioritization for new non-Section 106 inventories in the Horseshoe Canyon South area would result in the identification of cultural resources and sites, which in turn would increase the knowledge base on the Archaic period occupation of Utah and would provide for improved management of these resources.

Impacts to cultural landscapes eligible for the NRHP would be considered through adherence to federal regulations. This management could protect the cultural characteristics of the landscapes. However, activities could be permitted that could result in the degradation or loss of landscape characteristics.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to cultural resources. These areas would still be subject to Section 106 procedures prior to the surface-disturbing activity, thereby increasing discovery of sites and providing protection (through site avoidance) or increased knowledge (through data recovery).

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative A, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

Impacts from harvesting of forest and woodland products would be the same as those described for Alternative N. However, Alternative A allows for harvesting of forest and woodland products across more of the RFO (all areas, outside of WSAs, when sustainable and compatible with restoring, maintaining, or improving forest health). Thus, forest and woodland products harvest would be subject to compliance with NEPA and Section 106 of NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts. It is important to note that not all areas open to woodland products use contain actual woodlands that would be targeted for use. As such, the actual acres on which this activity would occur is expected to be much less than the total amount of lands open for this use. The result could be localized areas in which impacts to cultural resources would occur but minor impacts overall. Woodland harvest would also result in long-term benefits to traditional cultural practices of Native Americans in the RFO.

Impacts from Livestock Grazing

Impacts caused by livestock grazing would be the same as those described for Alternative N. However, under Alternative A, an additional 36,950 acres would be available for grazing. Thus, impacts to cultural resources could occur over a slightly larger area under Alternative A.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of cultural sites, compared to Alternative N.

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This management would decrease the potential for inadvertent damage of cultural sites as compared to Alternative N. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts to cultural resources.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing long-term impacts. This focus would also decrease the potential for inadvertent damage of cultural sites as compared to Alternative N. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for damage to cultural resources, by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate-to-

extensive landscape modification would have potentially major impacts and would result in continued impacts to cultural resources. However, this area is receiving heavy motorized use currently, so sites are likely already damaged.

Alternative A would allow vehicles to pull off of designated routes (outside WSAs) 100 feet to either side of centerline (for parking or staging) and 300 feet to either side of centerline (for camping). This could result in vehicles generally impacting surface features, breaking artifacts, and otherwise disturbing cultural resources at the surface.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates substantially fewer areas (449,000 acres, or 21% of the RFO) as open to motorized vehicles. Motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced, compared to Alternative N, would still result in impacts to cultural resources from vehicle use in those areas. However, the potential for new impacts to cultural resources is low because these areas have been subject to disturbance from cross-country use during recent years. Continued use of OHVs would not be expected to cause additional adverse impacts.

The remainder of the RFO would limit motorized use to designated routes—the public would have access to 4,312 miles of unpaved routes (slightly more than under Alternative N), resulting in the potential for inadvertent damage to cultural resources along those routes. There would be 68 miles of routes closed, resulting in less potential for damage to cultural resources in those areas. No areas would be closed to motorized use, with no accompanying benefits to cultural resources.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that fewer acres would be recommended for withdrawal (154,700 acres under Alternative A). Thus, unavoidable impacts to cultural resources from minerals activities would be greater under Alternative A than under Alternative N, although sites that are unavoidable would be mitigated.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that under Alternative A there are fewer ROW avoidance areas because Section 106 of NHPA would need to be adhered to for all actions undertaken by BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. Managing 1,681,100 acres (79% of the RFO) as open to various categories of oil and gas leasing could result in surface disturbance from seismic operations that support oil and gas leases. Oil and gas leasing categories include the following: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), and open to oil and gas leasing subject to major constraints (NSO). This management would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

Alternative A allows sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—any cultural

resources present have likely been significantly altered or destroyed, resulting in loss of information. New sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under Alternative A, 446,900 acres would be closed to leasing and closed to disposal of salable minerals; 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to cultural resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus, the potential for inadvertent damage to cultural resources from surface-disturbing activities would be greatest under this alternative. However, most of the eligible river segments (98 of the 135 miles total) are also within WSAs, which would provide protection for cultural resources by limiting surface disturbance in those areas.

Areas of Critical Environmental Concern

Under Alternative A, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface-disturbing activities within those areas that could result in inadvertent damage to cultural resources

Proposed RMP

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative A.

Impacts from Cultural Resources

Impacts would be less than those described for Alternative A. Fewer sites would be allocated to public use under the Proposed RMP, and more sites would be managed for their information potential and scientific use and would be made available for scientific study. This scientific use category would be applied almost exclusively to prehistoric archaeological sites; most historic sites with ranching/homestead structures would remain in the public use category. The amount of new field inventory necessary under the Proposed RMP would be far lower than under Alternative A because many more site types would be managed for scientific use under the Proposed RMP. The majority of sites would be preserved for scientific study, which would decrease public access to cultural sites and decrease the likelihood of inadvertent damage or vandalism to these resources. In addition, the prioritization for new field inventories in the Horseshoe Canyon, Trough Hollow, Bull Creek, and other areas of special cultural significance would increase the cultural knowledge base in these areas, while providing for improved management of these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be designated as VRM Class II; 393,100 acres (18%) would be designated as VRM Class III; and 1,038,200 acres (49%) would be designated as VRM

Class IV. The majority of the RFO would be designated as VRM Class III or IV, which could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to cultural resources. However, less of the RFO would be designated in these VRM classes than in Alternative N or A, resulting in less potential impacts to cultural resources, compared to those alternatives.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres would be managed to maintain wilderness characteristics. Management actions would include minimizing or avoiding surface-disturbing activities. Such actions would include designating the areas as open to leasing subject to major constraints (NSO), limiting motorized uses to designated routes, and designating the areas as VRM Class II. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to cultural resources because there would be limited or no vehicular activity or other forms of disturbance that could affect cultural sites. Protection of wilderness characteristics lands can restrict methods of archaeological site excavations or research activities during which surface-disturbing activities would occur. However, resource inventories would not be precluded, and information gathered from these inventories would increase knowledge of cultural resources.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodland products management would be similar to Alternative A. However, more lands would be closed to this type of use under the Proposed RMP (one WSR segment—5 miles, compared to zero segments under Alternative N), resulting in less potential impacts to cultural resources.

Traditional cultural practices would not be affected because Native American collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A. However, the Proposed RMP would establish five SRMAs (860,390 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. The Proposed RMP proposes only 24,400 acres at Factory Butte and 90 acres at Big Rocks as OHV SRMAs, thus decreasing the potential for inadvertent damage of cultural sites, compared to Alternative A.

The Proposed RMP would allow vehicles to pull off of designated routes (outside WSAs) 50 feet to either side of centerline (for parking/staging) and 150 feet to either side of centerline (for camping). Although this could result in vehicles generally impacting surface features, breaking artifacts, and otherwise disturbing cultural resources at the surface, the area of potential impact would be less than under either Alternative N or A.

Impacts from Travel Management

The impacts experienced as a result of travel management would be less than those described under Alternative N. However, the Proposed RMP would designate only 9,890 acres (less than 1% of the RFO) as open to motorized vehicles; would limit motor vehicles to designated routes on 1,908,210 acres (90% of the RFO); and would close 209,900 acres (10% of the RFO) to motorized vehicle use. OHV use in open areas, although greatly reduced, compared to Alternative N, would still result in impacts to cultural

resources from vehicle use in those areas. The remainder of the RFO would limit motorized use to designated routes. The public would have access to 4,277 miles of unpaved routes; 345 miles of routes would be closed, resulting in less potential for damage to cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (176,200 acres) would be recommended for withdrawal under the Proposed RMP. Thus, unavoidable impacts to cultural resources from minerals activities would be less under the Proposed RMP than under Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that fewer ROW avoidance areas are proposed under the Proposed RMP. Because Section 106 of NHPA would need to be adhered to for all actions undertaken by BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. A similar acreage (1,680,700 acres, or 79% of the RFO) would be open to some category of oil and gas leasing, which could result in surface disturbance caused by seismic operations that support oil and gas leases. (The potential categories are as follows: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints [TL, CSU], and open to leasing subject to major constraints [NSO]). This would action would likely result in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

The Proposed RMP also allows the sale of mineral materials (salable minerals) on (1,680,700 acres, or 79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—any cultural resources present probably have been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 447,300 acres would be closed to leasing and 601,800 acres would be closed to disposal of salable minerals; 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to cultural resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect cultural resources by preventing ground-disturbing activities in the river corridors. Under the Proposed RMP, one suitable segment, The Fremont Gorge (5 miles), would be managed to protect its outstandingly remarkable values, free-flowing nature, and tentative classification. This management would protect cultural resources from inadvertent damage, by limiting ground-disturbance in this area. The Proposed RMP would recommend one more suitable river segment than would Alternative A but would recommend fewer segments than

under Alternative C or D. Of the remaining segments, not being carried forward in the Proposed RMP, 98 miles are within WSAs, leaving 32 miles on which ground-disturbing activities could inadvertently impact cultural resources. The Proposed RMP would provide less protection to cultural resources through WSR decisions than would Alternative N, C, or D but more than would Alternative A.

Areas of Critical Environmental Concern

The Proposed RMP designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas, thereby providing protection to cultural resources from inadvertent damage. Disallowed uses would include the following: closing the area to OHV use; managing the area as open to leasing subject to major constraints [NSO], depending on the ACEC; making the area unavailable for livestock grazing; and acquiring inholdings.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A. However, under Alternative C, fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only methods that mimic natural processes (fire and biological treatment methods) to manage vegetation. Such treatments could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. The treatments could result in the loss of existing vegetation cover, indirectly increasing erosion. Thus, impacts to soils under Alternative C would likely result in reduced short-term impacts (altered vegetation structure and increased local erosion and sedimentation rates) compared to the Proposed RMP, as well as reduced long-term impacts (improved vegetative cover and increased plant diversity, thereby stabilizing soil, improving overall watershed function and condition, and allowing greater infiltration and soil moisture storage).

Impacts from Cultural Resources

Impacts would be similar to those described for the Proposed RMP. However, under Alternative C, most site types would be allocated to conservation use, resulting in a decrease in opportunities for research and a decrease in the level of management involvement. Allocating most site types to conservation use would preserve the sites in the long term, making them available for future use. In addition, the prioritization for new field inventories in the Horseshoe Canyon, Trough Hollow, Bull Creek, and other areas of special cultural significance would increase the cultural knowledge base in these areas and would provide for improved management of these resources. Advertising archaeological sites and resources could increase visitation, which may result in trampling, creation of trails and removal of vegetation which would increase erosion and damage to sites. The increase in visitation could require additional monitoring of archaeological resources to identify and address impacts. Increased visitation could also denigrate the values Native Americans have for the area.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be managed as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV, less of the RFO would be designated in VRM Class IV (which allows major modifications to the existing character of the landscape) than in Alternative N or A or the Proposed RMP, resulting in less potential for inadvertent damage to cultural resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for cultural resources.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forestry and woodlands management would be similar to the Proposed RMP, although more lands (12 WSR segments—135 miles) would be closed to this type of use under Alternative C. Thus, the potential for localized surface disturbance to cultural resources would be less under Alternative C than under the Proposed RMP.

Traditional cultural practices would not be affected because Native American collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative A, except that four SRMAs (930,000 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use under Alternative C, thereby decreasing the potential for the damage that this type of use could cause to cultural resources.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for recreation to cause surface disturbance (and associated damage to cultural resources). Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and damage to cultural resources. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized, site-specific impacts, although Section 106 procedures would be adhered to prior to construction of any facilities.

Alternative C allows vehicles to pull off of designated routes (outside WSAs) 25 feet to either side of centerline (for parking/staging); camping would be allowed only in designated campsites, with travel between campsites allowed only on designated routes. Together, these restrictions would minimize disturbance to cultural resources and would result in less disturbance to these resources than would Alternative N or A or the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, Alternative C designates no areas as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized vehicle use. The lack of open areas would eliminate impacts (breaking artifacts and disturbing/damaging surface features) that vehicle use in those areas could cause to cultural resources. Limiting motorized use to designated routes—the public would have access to 3,192 miles of unpaved routes—would generally limit cultural resource impacts to areas in the immediate vicinity of the designated route; 1,188 miles of routes would be closed, resulting in less potential for damage to cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (331,100 acres) would be recommended for withdrawal under Alternative C. Thus, unavoidable impacts that minerals activities would cause to cultural resources would be less under Alternative C than under Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N. However, more ROW avoidance areas are proposed under Alternative C (735,000 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs). Because Section 106 of NHPA would need to be adhered to for all actions undertaken by BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N because a similar number of acres (1,541,700 acres, or 72% of the RFO) would be open to oil and gas leasing (open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints [TL, CSU], and open to oil and gas leasing subject to major constraints [NSO]). Such leasing could result in surface disturbance caused by seismic operations that supporting oil and gas leases, likely resulting in the identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

Alternative C allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—any cultural resources present probably have been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under this alternative, 586,300 acres would be closed to leasing and closed to disposal of salable minerals; 331,100 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to cultural resources from these types of activities. Alternative C proposes more acres of mineral withdrawals and more areas closed leasing or to disposal of salable minerals than does Alternative N or A or the Proposed RMP. Therefore, Alternative C would preclude mineral and energy development in those areas and thus provide more protection to cultural resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect cultural resources by preventing ground-disturbing activities in the river corridors. Under Alternative C, all 12 suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. This management would protect cultural resources from inadvertent damage, by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within the areas, thereby providing cultural resources protection from inadvertent damage. Disallowed uses would include closing to OHV use; managing as either closed to leasing or open to leasing with major constraints (NSO), depending on the ACEC; designating as VRM Class II; making the areas unavailable for livestock grazing; and acquiring inholdings.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative C. Advertising archaeological resources could increase visitation, which may result in trampling, creation of trails and removal of vegetation which would increase erosion and damage to sites. There might be increased vandalism. May need to monitor and address result of increased visitation. This is why some offices have not designated archaeological ACECs. Increased visitation may also denigrate the values Native Americans have for the area.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. However, these impacts would occur over a much smaller area because of differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be managed as VRM Class II; 355,100 (17%) would be managed as VRM Class III; and 576,600 (27%) would be managed as VRM Class IV. Just over half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface-disturbing activities would generally not be allowed in these areas, resulting in reduced potential for damage to cultural resources, compared to Alternative N, A, or C or the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres would be managed to maintain wilderness characteristics. Management actions would include minimizing or avoiding surface-disturbing activities by designating the areas as closed to oil and gas leasing, closing the areas to OHV use, and designating the areas as VRM Class I. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to cultural resources because there would be no vehicular activity or other forms of disturbance that could affect cultural sites. However, protection of wilderness characteristics lands could also preclude archaeological site excavations or research activities during which surface-disturbing activities would occur. However, resource inventories would not be precluded, and information gathered from these inventories would increase knowledge of cultural resources, especially in the Wildcat Knolls and Mount Ellen—Blue Hills non-WSA areas. Management actions under Alternative D would also close off vehicle access to known cultural sites that are visited as a recreational activity within these non-WSA areas. Of all the alternatives, Alternative D would provide the most protection to cultural resources.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative C. However, no commercial or non-commercial harvest of forest and woodland products would be allowed within the 682,600 acres of non-

WSA lands with wilderness characteristics. Thus, the potential for localized surface disturbance to cultural resources would be greatly reduced under Alternative D, compared to all the other alternatives.

Traditional cultural practices would not be affected because Native American collection of woodland products in riparian areas (outside of WSAs) for traditional purposes would be allowed.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative C. However, seven SRMAs (1,358,100 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use, which would decrease the potential for damage to cultural resources from this type of use. As described under Alternative C, the development of facilities could have localized, site-specific impacts, although Section 106 procedures would be adhered to prior to construction of any facilities.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D would limit motorized use to designated routes on 972,800 acres (46% of the RFO); 1,155,200 acres (54%) would be closed to motorized vehicle use. The lack of open areas would eliminate impacts that vehicle use could cause to cultural resources in those areas. Limiting motorized use to designated routes—the public would have access to 3,043 miles of unpaved routes—would generally limit soils impacts to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed, allowing protection of cultural resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (903,900 acres) would be recommended for withdrawal under Alternative D. Thus, unavoidable impacts that minerals activities would cause to cultural resources would be significantly less under Alternative D than under Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas are proposed under Alternative D (1,203,800 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs). Because Section 106 of NHPA would need to be adhered to for all actions undertaken by BLM, impacts to cultural resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. However, these potential impacts would occur over a substantially smaller area under Alternative D; —967,500 acres, or 45% of the RFO— would be open to some category of oil and gas leasing that could result in surface disturbance caused by seismic operations that support oil and gas leases. Potential categories include the following: open to oil and gas leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), and open to oil and gas leasing subject to major constraints (NSO). This management would likely result in the

identification of cultural sites in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

Alternative D allows sale of mineral materials (salable minerals) on 967,500 acres (45% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—any cultural resources present probably have been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to Section 106 procedures, which would either protect the site through avoidance or result in mitigation (scientific data recovery methods such as recordation, surface collection, subsurface testing, and excavation).

Under Alternative D, 1,160,500 acres would be closed to leasing and closed to disposal of salable minerals; 903,900 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to cultural resources. Alternative D proposes more acres of mineral withdrawals and more areas closed to leasing or to disposal of salable minerals than do any of the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as described under Alternative C.

4.3.6 Paleontological Resources

This section presents potential impacts of the alternatives on paleontological resources. A comprehensive paleontological resource inventory of the RFO has not been conducted, and the occurrences of most paleontological resources are not known, although a review of paleontological research on formations contained within the RFO has identified the types of fossil resources known to be present. See Chapter 3 for a discussion of the paleontological resources in the RFO.

Impacts on paleontological resources occur from natural weathering and erosion, surface-disturbing activities, excavation, and theft or vandalism. In general, fossil resources are physically destroyed through such agents or activities; in the case of illegal theft and vandalism, important contextual data is also irretrievably lost. Unlike cultural resources, which exist largely at or near the land surface, paleontological resources are found both at the surface and throughout the subsurface environment. As a result, actions (e.g., coal mining or road construction), that may destroy a fossil presently at the surface may at the same time expose new resources that were deeply buried in rock strata. In this same manner, erosion is continually bringing new fossils to the surface even as it destroys what is presently exposed. For management purposes, impacts must be set against the context of the rarity of individual fossil specimens. As erosion brings a particular fossil specimen to the surface, if it is a relatively common and well understood fossil species or a non-diagnostic portion of a potentially rare form, impacts on that resource, up to and including its complete physical destruction, are not significant. By definition, all vertebrate fossils are considered rare by BLM, and impacts to these types of fossils are of greatest concern.

BLM paleontological resource management policy is to identify, evaluate, and (when appropriate) protect scientifically significant paleontological resources, ensuring that proposed land uses that BLM initiates or authorizes do not inadvertently damage or destroy these resources (BLM Manual 8270, *Paleontological Resource Management*). BLM policy also requires the facilitation of appropriate scientific, educational, and recreational uses of paleontological resources, such as research and interpretation. Surface-disturbing actions are required to mitigate damage to paleontological resources. Mitigation measures include project relocation or redesign (avoidance) or scientific data-recovery methods. Avoidance is BLM's preferred mitigation measure for surface-disturbing activities. Standard assessment/inventory and avoidance procedures conducted in conjunction with surface-disturbing actions would protect most paleontological resources from significant impacts. If mitigation measures are implemented, these newly exposed fossils become available for salvage, data recovery, scientific analysis, and preservation into perpetuity at a public museum (beneficial impact). The beneficial effects of mitigation 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, impacts on paleontological resources from ground disturbance are long-term in nature. Although natural erosion, exposure, and deterioration of paleontological localities may be slowed or halted, damage to fossils and localities cannot typically be reversed.

Methods and Assumptions

This analysis was based on the following assumptions:

- Paleontological resources will continue to be discovered throughout the RFO.
- Recovery and curation in paleontological resources by permitted specialists would result in resource protection and preservation of paleontological values as well as in educational opportunities.
- Paleontological resources identified during assessments and inventories would be protected through data collection and mitigation.

- The number of localities that could be impacted by various actions would directly correlate to the degree, nature, and quantity of surface-disturbing activities within the RFO.
- Surface-disturbing activities could expose, dislodge, or damage paleontological resources and features that were not visible prior to surface disturbance.

The analysis of potential impacts to paleontological resources is based on the expertise of BLM resource specialists at the RFO and the Utah State Office. The impact analysis is also based on review of existing literature, geologic maps, field trips, site visits, and information provided by non-planning team experts in BLM, United States Geological Survey (USGS), and other agencies.

Paleontological resources are associated with specific geologic formations. The paleontological resources section in Chapter 3 includes a summary table of the fossil assemblages that are associated with each geologic group, formation, and member in the RFO. No vertebrate fossil remains have been documented in the RFO. However, vertebrate fossil remains are found adjacent to the RFO (such as in Grand Staircase-Escalante National Monument), within many of the same geologic formations that are present in the RFO.

All surface-disturbing activities include mitigation to reduce impacts to paleontological resources. Analysis of impacts includes all mitigation measures in place. Effects are quantified when possible. In absence of quantitative data, best professional judgment was used.

Environmental Consequences

Impacts to paleontological resources would result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Paleontological Resources
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on paleontological resources.

Alternative N: No Action

Impacts from Vegetation and Fire and Fuels Management

Alternative N allows for limited treatment of vegetation (including mechanical, wildland or prescribed fire, and chemical methods). Wildland fire use and prescribed fire could cause direct and indirect impacts to paleontological resources. Fire could cause the direct destruction of organic fossil remains; the removal of vegetative cover by fire would accelerate erosion in the short-term, creating indirect impacts. However, these impacts would be negligible compared with similar impacts that occur by natural processes.

Fire suppression that involves the use of heavy equipment, road construction, and building of fire lines could damage or destroy surface fossils. In these areas, paleontological mitigation would reduce potential adverse impacts to below the level of significance. Potential long-term adverse impacts would result from the construction of new fire roads, which would increase access to BLM lands that were previously less

accessible to the public, thus increasing the potential for unauthorized fossil collecting and vandalism. The recovery and preservation of fossils as the result of paleontological mitigation would be a beneficial impact because these actions would permanently preserve paleontological resources that may otherwise never have been discovered, and make the resources available for scientific research, education, and display.

Impacts from Paleontological Resources

Monitoring scientifically significant paleontological localities would document the rate of deterioration and provide baseline data for possible site protection, restoration, or data retrieval. Not excavating and curating scientifically significant sites could result in the natural deterioration of the sites and the loss of the associated paleontological information. Not monitoring scientifically significant sites could result in the natural deterioration or incidental damage of the sites and the loss of the associated paleontological information.

Paleontological inventory data for the RFO is crucial for sound resource protection decisions. Annual compilations of all new paleontological localities should be updated into a single, comprehensive GIS database that is accessible to local resource specialists. This database would ultimately lead to better resource protection because it would provide decision-makers with emerging patterns for the spatial and temporal distribution of paleontological resources. Not requiring assessments or inventories in areas with a medium potential for paleontological resources could result in damage to fossils after surface disturbance commences, resulting in the loss of scientifically significant paleontological resources.

Providing interpretive opportunities could provide more paleontological resource sites for public use and education because inventories would be required to recover scientifically important data prior to allowing public use of the sites. Increased paleontological interpretation could also increase public appreciation for the decision area's paleontological values. Increased public appreciation could lead to increased user stewardship. Impacts associated with stewardship attitudes include the following: increased protection of paleontological sites, decreased inadvertent damage to or disturbance of paleontological sites, decreased vandalism and looting, and preserved integrity of paleontological resources.

Allowing surface collection of common invertebrate and botanical paleontological resources throughout the RFO could result in the incidental collection of scientifically significant resources.

Impacts from Visual Resources

In general, VRM class management actions would limit or allow surface-disturbing activities in certain areas, thereby affecting paleontological resources. VRM Classes I and II would be aimed at greater retention of existing landscape character than would Classes III or IV. Under Alternative N, none of the lands managed by the RFO would be classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 acres (27%) would be managed as VRM Class III; and 1,029,500 acres (48%) would be managed as VRM Class IV. Restrictions on visually obtrusive developments in VRM Class II areas would limit development; although not a restriction on surface disturbance, management to preserve and maintain the landscape could reduce disturbance that could impact paleontological resources. This long-term impact would generally protect paleontological resources in place. Areas managed as VRM Class III or IV (75% of the RFO under Alternative N) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which drastically increases the potential for wind and water erosion and the potential for adverse impacts to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

Recreational activities could have direct and indirect impacts on paleontological resources if these activities occur in areas containing occurrences of scientifically significant surface fossils. Motorized use has the greatest potential to adversely affect paleontological resources because of surface disturbance and associated accelerated erosion. Active management of recreational use within the RFO should minimize these impacts by limiting use in sensitive areas that are more likely to contain scientifically significant surface fossils.

Unlike permitted activities (e.g., mineral development, ROW development) that are subject to site-specific evaluations and monitoring, dispersed recreation activities are not under the same degree of scrutiny prior to use. Because of their widespread occurrence and generally unsupervised nature, casual recreational use would likely result in unmitigated impacts on surface-exposed paleontological resources. Most of this impact would result from unauthorized collecting and vandalism. However, unmitigated impacts could also result from any surface-disturbing aspect of recreation. Dispersed recreation occurs throughout the RFO.

Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no identified special prescriptions that would limit use in areas that contain occurrences of scientifically significant surface fossils. Thus, recreational use within the RFO could result in direct impacts to paleontological resources from unauthorized fossil collecting and vandalism, as well as indirect impacts from increased erosion caused by loss of vegetation cover and by soil compaction.

Impacts from Travel Management

Generally, the more area that is open to OHV use, the greater the potential for adverse impacts to paleontological resources because of surface disturbance and trampling of vegetation, which leads to accelerated erosion. Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing potential impacts to paleontological resources over a large portion of the RFO. This allowance would decrease vegetation density, increase erosion, and could generally break, spread, and otherwise disturb paleontological resources at the surface. The significance of this impact would depend on the scientific significance of the fossils that could be affected. Mitigation of paleontological resource damage would be accomplished through data-recovery efforts implemented on a case-by-case basis when the damage is discovered.

Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13% of the RFO). Limiting OHV use to 4,315 miles of designated routes could result in similar impacts. In these areas, impacts from vehicle use off the route would be eliminated, but sites adjacent to routes could be damaged. Designating existing routes that already receive OHV use as open for continued use would not, by the act of designation, result in increased impacts. Because the designated routes currently exist and receive use, additional impacts on or adjacent to them would be minimal. In areas in which OHV use is limited to designated routes, there would be no impacts from OHV use in areas away from the designated routes.

Alternative N would have the greatest potential impacts to paleontological resources because of the large amount of lands open to cross-country motorized use, the most miles of roads (4,315 miles) open to motorized travel, and the fewest miles of roads (65 miles) closed to motorized travel. Road closures,

which would reduce erosion, trampling, vandalism, and other surface-disturbing impacts that damage paleontological resources, could also affect research by limiting access.

Impacts from Lands and Realty

Lands and realty actions could result in the acquisition of surface and subsurface estate, which would bring the estate under federal protection and benefit paleontological resources. Identifying 280 acres as available for sale would make these lands susceptible to long-term indirect and cumulative adverse impacts on paleontological resources by removing scientifically significant fossils from the public domain, thus rendering them permanently unavailable for scientific research and education.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws would provide protection to paleontological resources from the impacts of mining exploration and development that could damage these resources. Alternative N proposes a total of 169,480 acres of withdrawals. Mining disturbance and associated impacts to paleontological resources would therefore not occur in these areas.

Any new land use authorizations (e.g., ROWs, permits, leases, easements) could impact paleontological resources through surface disturbance (which could directly damage the resource) or through soil compaction and vegetation removal (which could lead to soil erosion and indirect impacts). Under this alternative, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas. Exceptions would be granted only if the proposed authorization would not create substantial surface disturbance or would create only temporary impacts. Thus, impacts to paleontological resources in these avoidance areas would be negligible to minor and would be localized.

Impacts from Minerals and Energy

Development of oil and gas resources could affect paleontological resources because of the surface disturbances associated with such development. Oil and gas would be open to leasing subject to standard terms and conditions and open to leasing subject to moderate constraints (TL, CSU) on 1,645,700 acres (77% of the RFO). Based on the RFD, oil and gas development could impact as much as 8,180 acres over the life of this plan (Appendix 12). In these areas, paleontological resources could be identified prior to oil and gas development if an assessment or inventory was performed, but neither is required under Alternative N. Thus, the potential for significant impacts exists because of the lack of required inventories prior to surface disturbance. Vertebrate or other scientifically significant fossils could be inadvertently damaged from disturbance if they were not identified and avoided.

Surface disturbance associated with the development of salable materials and locatable minerals could impact paleontological resources in a similar manner to the impacts noted for oil and gas development. Under this alternative, 1,668,300 acres would be open to disposal of salable minerals; 1,958,520 acres would be potentially available for mineral location. Paleontological localities could be identified prior to surface disturbance if an assessment or inventory were completed, but neither is required under Alternative N. Thus, the potential would exist for significant impacts to vertebrate or other scientifically significant fossils, which could be damaged inadvertently if they were not identified and avoided.

Paleontological resources in areas that are open to leasing subject to major constraints (NSO) (22,600 acres), closed to leasing (459,700 acres), or closed to disposal of salable minerals (459,700 acres) would be protected from oil and gas development. In addition, paleontological resources in areas withdrawn from minerals entry (169,480 acres) would be protected from potential impacts associated with the extraction of those minerals (see Impacts from Lands and Realty for a discussion of withdrawals).

Impacts from Special Designations

Wilderness Study Areas

WSAs are managed under non-impairment criteria until Congress either designates an area as wilderness or releases it from further consideration. This management effectively provides protection to the paleontological resources in those areas by limiting motorized access and most of the activities that could adversely affect the sites. However, this management also affects research proposals and activities at sites within WSAs; such restrictions on surface disturbance could make paleontological resource studies more difficult. Any activities conducted within a WSA must meet the IMP non-impairment criteria. Anything that would not comply with these criteria (e.g., anything that would impair the suitability of such areas for preservation as wilderness) would not be authorized.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect cultural resources by preventing ground-disturbing activities in the river corridors. Under Alternative N, all eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. This management would benefit paleontological resources by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, management actions included in ACECs are often more restrictive, thus indirectly providing protection for paleontological resources. Protections that are associated with ACEC designation and that would affect paleontological resources include managing oil and gas leasing as closed to leasing or open to leasing subject to major constraints (NSO); identifying more restrictive VRM designations; and limiting travel. Alternative N continues the designation of four ACECs (14,780 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface disturbing activities within those areas, protecting paleontological resources. Such disallowances include closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; and acquiring inholdings.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A maximum acreage limits would be set (averaging 73,600 annually for all treatments). Although no maximum treatment acreage limits would be set under Alternative N, it is likely that more acres would actually be treated under that alternative because it allows for the full range of fire and fuels management actions to achieve ecosystem sustainability. Alternative N allows for treatment of vegetation (including mechanical, wildland fire use or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment than does either Alternative N or the Proposed RMP.

Impacts from Paleontological Resources

Requiring paleontological assessments prior to permitting surface-disturbing activities in areas that have a high potential for paleontological resources would identify new paleontological localities. Proposed land uses would include actions such as mineral exploration and development (including oil and gas development), development/construction within ROWs, recreation site development, some vegetation treatment projects, some forest/woodland product harvest, or construction of some range improvements. Based on the findings of the assessment, mitigation would be implemented at all phases of development. Although assessments would minimize the potential for unmitigated impacts to known paleontological

resources, assessments would not require an on-the-ground inventory prior to all disturbances. This could result in the inadvertent damage of paleontological resources that were not identified prior to surface disturbance. Inadvertent damage to vertebrate fossils or other scientifically significant paleontological resources would generally be a significant impact, although mitigation could reduce the magnitude of damage, by providing data recovery.

Targeting fossil sites with high scientific value for excavation and curation would ensure that fossil sites with high scientific value are protected either through excavation and data recovery or through increased monitoring. In addition, monitoring high-significance (scientific or interpretive) sites with fossil resources that are not feasible or desirable to excavate or collect would ensure that fossil sites that are important to science and the public would be protected from inadvertent damage or natural deterioration.

Allowing collection of common invertebrate and botanical paleontological resources (except for scientifically significant resources) throughout the RFO could result in the incidental collection of significant resources. However, identifying (and closing to casual collection) areas with rare and significant fossils could reduce impacts caused by incidental collection, compared to Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under Alternative A, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 0 acres would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for paleontological resources.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of paleontological resources, compared to Alternative N.

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This management would decrease the potential for inadvertent damage of paleontological resources, compared to Alternative N. Managing the Factory Butte, Big Rock, and Sahara Sands SRMAs for motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and would result in continued impacts to paleontological resources. However, these areas currently receive heavy motorized use, so sites likely are damaged already. Limiting OHV use in the Otter Creek Reservoir and Dirty Devil/Robbers Roost SRMAs to designated routes would limit the extent of potential impacts to paleontological resources.

Alternative A allows vehicles to pull off of designated routes (outside WSAs) 100 feet to either side of the centerline (for parking or staging) and 300 feet to either side of the centerline (for camping). This allowance could result in vehicles generally disturbing paleontological resources at the surface.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under Alternative A would be similar to those described under Alternative N. Limiting OHV use to designated routes on 1,679,000 acres (79% of the RFO) would provide increased protection to paleontological resources, compared to Alternative N. The change from managing most of the RFO as open to cross-country OHV use (under Alternative N) to limiting OHV use to designated routes would decrease impacts. Paleontological resources away from designated routes would be protected from OHV impacts. Rather than the potential for increased disturbance and incidental damage associated with pioneered routes in areas open to cross-country use, impacts on paleontological resources from OHV use on designated routes, as discussed under Alternative N, would be limited to 4,312 miles of designated routes (which is virtually identical to the number designated in Alternative N). In addition, reducing the number of routes open for motorized use would further reduce the accessibility of remote paleontological localities. While such isolation provides indirect protections from inadvertent damage, it also increases the potential for a locality to be damaged through natural deterioration, prior to being identified and recovered. There would be no impacts from OHV use on 68 miles of closed routes.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that fewer acres (154,700 acres) would be recommended for withdrawal under Alternative A. Thus, unavoidable impacts to paleontological resources from minerals activities would be greater under Alternative A than under Alternative N, although sites that are unavoidable would be mitigated.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that Alternative A would designate fewer ROW avoidance areas.

Impacts from Minerals and Energy

Under Alternative A, similar amounts of BLM lands would be closed to fluid mineral leasing (446,900 acres), withdrawn from mineral location (154,700 acres), and closed to mineral material disposal (446,900 acres), as compared to Alternative N, thus resulting in similar impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable, and no special management to protect the outstandingly remarkable values of these rivers would be provided. Thus, the potential for inadvertent damage to paleontological resources from surface-disturbing activities would be greatest under this alternative. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, which would provide protection for these resources.

Areas of Critical Environmental Concern

Under Alternative A, no areas would be designated as ACECs. Providing no special management prescriptions would allow surface-disturbing activities within those areas, which could result in inadvertent damage to paleontological resources.

Proposed RMP

Impacts from Vegetation and Fire and Fuels Management

Impacts would the same as those described under Alternative A.

Impacts from Paleontological Resources

Requiring on-the-ground paleontological inventories prior to permitting surface-disturbing activities in areas that have a high potential for paleontological resources would result in the identification, evaluation, and protection (when appropriate) of scientifically significant fossil resources. By focusing on areas that have a high potential, the formation and facies most likely to contain scientifically significant fossils would be scrutinized. If fossil resources are identified, mitigation measures could be applied to protect the resource. Mitigation measures include project relocation or redesign (avoidance) or various scientific data recovery methods, such as recordation, surface collection, subsurface testing, or excavation. These mitigation actions would prevent significant impacts to paleontological resources while increasing the knowledge and understanding of the area's paleontological resources and of the history of life on Earth. In addition, projects such as development and construction within ROWs, recreation site development, or construction of range improvements would be studied prior to implementation.

Requiring assessments in areas that have a medium potential for paleontological resources would allow for mitigation needs to be identified and implemented in areas that are less likely to contain significant fossils. There would be a potential for some localities in areas with a medium potential to be damaged after surface disturbance begins, if a field inventory were not performed. Based on the findings of the assessment, mitigation would be implemented at all phases of development.

As the number of paleontological inventories and assessments increases compared to Alternative A, knowledge of the area's paleontological resources would increase. More paleontological localities would be identified and there would be an associated reduction in the number of localities that could be damaged prior to surface-disturbing activity.

The prioritization for new non-Section 106 inventories in these areas would identify paleontological resources and sites, increasing the database of resources. Compared to Alternative A, the Proposed RMP would increase the knowledge base in this area while providing for improved management of these resources.

Impacts from collection of common invertebrate and botanical paleontological resources would be the same as those described under Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be designated as VRM Class II; 393,100 acres (18%) would be designated as VRM Class III; and 1,038,200 acres (49%) would be designated as VRM Class IV. The majority of the RFO would be designated as VRM Class III or IV, which could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying surface disturbance and potential inadvertent damage to paleontological resources. However, less of the RFO would be designated in these VRM classes under the Proposed RMP than under Alternative N or A, resulting in less potential impacts, compared to those alternatives.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres would be managed to maintain wilderness characteristics. Management actions would include minimizing or avoiding surface-disturbing activities by taking

measures such as designating the lands as closed to leasing or open to leasing subject to major constraints (NSO), limiting motorized uses to designated routes, or designating the lands as VRM Class II. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to paleontological resources because there would be no vehicular activity or other forms of disturbance that could affect paleontological sites. Protection of non-WSA lands with wilderness characteristics can restrict methods of paleontological site excavations or research activities in areas in which surface-disturbing activities would occur. However, resource inventories would not be precluded, and information gathered from these inventories would increase knowledge of paleontological resources.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A. However, the Proposed RMP would establish five SRMAs (860,390 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This alternative proposes only 24,400 acres at Factory Butte and 90 acres at Big Rocks as OHV SRMAs, which would decrease the potential for inadvertent damage of paleontological resources, compared to Alternative A.

The Proposed RMP allows vehicles to pull off of designated routes (outside WSAs) 50 feet to either side of centerline (for parking/staging), and 150 feet to either side of centerline (for camping). Although this allowance could result in vehicles disturbing paleontological resources at the surface, the area of potential impact would be less than under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management decisions under the Proposed RMP would be similar to those described under Alternative N. However, the Proposed RMP would allow cross-country OHV use on only 9,890 acres (less than 1% of the RFO). Paleontological resources likely would not be damaged because the areas being proposed for cross-country use have already been subject to disturbance, either through natural processes or human use. Continued disturbance of previously disturbed areas would not result in impacts to paleontological localities.

Limiting OHV use to designated routes on 1,908,210 acres (90% of the RFO) would provide increased protection to paleontological resources, compared to Alternative N or A. Paleontological resources away from designated routes would be protected from OHV impacts. As discussed under Alternative A, rather than the potential for increased disturbance and incidental damage associated with pioneered routes in areas open to cross-country use, impacts on paleontological resources from OHV use would be limited to 4,277 miles of designated routes. There would be no impacts from OHV use on the 209,900 acres (10% of the RFO) closed to OHV use, in areas away from the designated routes, and on the 345 miles of closed routes. In addition, reducing temporary roads associated with temporary projects and reclaiming unnecessary facilities and improvements would further reduce access for paleontological resource study, increasing the isolated nature. While such isolation provides indirect protections from inadvertent damage, it also increases the potential for a locality to be damaged through natural deterioration prior to being identified and recovered.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (176,200 acres) would be recommended for withdrawal under the Proposed RMP. Thus, unavoidable impacts to paleontological resources from minerals activities would be less under this alternative than under Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas would be proposed under the Proposed RMP.

Impacts from Minerals and Energy

Under the Proposed RMP, similar amounts of BLM lands would be closed to fluid mineral leasing (447,300 acres), withdrawn from mineral location (176,200 acres), and closed to mineral material disposal (601,800 acres), compared to Alternative N, thus resulting in similar impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect paleontological resources by preventing ground-disturbing activities in the river corridors. Under the Proposed RMP, one suitable segment (5 miles) would be managed to protect its outstandingly remarkable values, free-flowing nature, and tentative classification. This management would protect paleontological resources from inadvertent damage by limiting ground disturbance in this area. The Proposed RMP recommends more suitable river segments than does Alternative A but fewer than does Alternative C or D. Of the remaining segments, 98 miles are within WSAs, leaving 32 miles on which ground-disturbing activities could impact paleontological resources. The Proposed RMP would provide less protection from WSR decisions than would Alternative N, C, or D but more protection than would Alternative A.

Areas of Critical Environmental Concern

The Proposed RMP designates two ACECs (2,530 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas, thereby providing paleontological resources with protection from inadvertent damage. Uses that would be disallowed would include closing the area to OHV use; managing the area as either open to leasing subject to major constraints (NSO), depending on the ACEC; and acquiring inholdings. The Proposed RMP would designate more ACECs than would Alternative A but fewer ACECs than would Alternative C or D.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A and the Proposed RMP, although under Alternative C fewer acres would be treated annually (averaging 26,000 annually for all treatments). However, Alternative C proposes using only those processes (prescribed fire, biological, and hand cutting) that mimic natural processes to manage vegetation. This restriction would reduce the number of acres treated with methods that directly affect soils, thus reducing the potential for direct damage to paleontological localities.

Impacts from Paleontological Resources

Requiring paleontological inventories throughout the RFO prior to permitting surface-disturbing activities would result in the inventory, identification, and collection of paleontological resources throughout the RFO. Proposed land uses that would require inventories would include actions such as mineral exploration and development (including oil and gas development), development or construction of

ROWs, recreation site development, some vegetation treatment projects, timber harvest, and construction of some range improvements. No surface disturbance would occur until an on-the-ground inventory cleared the area to proceed and until any paleontological resources were identified and avoided or recovered. Therefore, Alternative C would result in lower potential for incidental damage to paleontological resources than would Alternative N or A or the Proposed RMP. In addition, increases in the acres inventoried would result in more identified paleontological localities than under the other alternatives. All impacts that surface-disturbing actions could cause to identified paleontological sites would be mitigated. Impact mitigation would minimize the potential for adverse effects to identified paleontological sites.

The prioritization for new non-Section 106 inventories in these areas would identify paleontological resources and sites, increasing the database of resources. Compared to Alternative N or A or the Proposed RMP, Alternative C would increase the knowledge base in this area while providing for improved management of these resources. Requiring such inventories annually would ensure an increase in the knowledge and understanding of the decision area's paleontological resources. This knowledge and understanding would improve management of these resources.

Allowing collection of common invertebrate and botanical paleontological resources in specifically designated areas would reduce the potential for incidental collection of scientifically significant resources, compared to Alternative N or A or the Proposed RMP. In these areas, non-scientifically significant paleontological resources could be removed. Areas with rare or scientifically significant resources would not be open for personal collection, thus protecting these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV, less of the RFO would be designated in VRM Class IV (which allows major modifications to the existing character of the landscape with accompanying surface disturbance) than would be under Alternative N or A or the Proposed RMP, resulting in less potential for inadvertent damage to paleontological resources.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for paleontological resources.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A. However, under Alternative C, four SRMAs (930,000 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use under Alternative C, thereby decreasing the potential for damage to paleontological resources from this type of use.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to paleontological resources) caused by recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and damage to paleontological resources. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural

recreation experience and the development of facilities could have localized site-specific impacts, although paleontological inventories would be required prior to construction of any facilities.

Alternative C allows vehicles to pull off of designated routes (outside WSAs) 25 feet to either side of the centerline (for parking/staging); camping would be allowed only in designated campsites, with travel between campsites allowed only on designated routes. Together, these restrictions would minimize disturbance to paleontological resources and would result in less disturbance to these resources than would Alternative N or A or the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, Alternative C would designate no areas as open to motorized vehicles; would limit motor vehicles to designated routes on 1,445,000 acres (68%) of the RFO; and would close 683,000 acres (32%) to motorized vehicle use. The lack of open areas would eliminate impacts that vehicle use could cause to paleontological resources in those areas. Limiting motorized use to designated routes—the public would have access to 3,192 miles of unpaved routes—would generally limit paleontological resource impacts to areas in the immediate vicinity of the designated route; 1,188 miles of routes would be closed, resulting in less potential for damage to paleontological resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (331,100 acres) would be recommended for withdrawal under Alternative C. Thus, unavoidable impacts that mineral activities might cause to paleontological resources would be less under Alternative C, compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas (735,000 acres closed to leasing or open to leasing subject to major constraints (NSO), 12 suitable WSR segments, and 16 ACECs) are proposed under Alternative C. Because paleontological inventories would be required prior to permitting all surface-disturbing activities, impacts to paleontological resources would be negligible.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N because a similar amount of acres (1,541,700 acres, or 72% of the RFO) would be open to some category of oil and gas leasing. These categories would include the following: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), and open to oil and gas leasing subject to major constraints (NSO). This management could result in surface disturbance caused by seismic operations that support oil and gas leases, likely resulting in the identification of paleontological resources in these areas. Upon identification, seismic operations should be able to avoid all the identified sites.

Alternative C allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted. Therefore, —any paleontological resources present likely have been significantly altered or destroyed, resulting in loss of information.

Under Alternative C, 586,300 acres would be closed to and closed to disposal of salable minerals; 331,100 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to paleontological resources. Alternative C proposes more acres of mineral withdrawals and more areas closed to leasing or disposal of salable minerals, compared to Alternative N or A or the Proposed RMP. Alternative C would preclude mineral and energy development in those areas and thus provide more protection to these resources.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of suitable WSRs would help protect soil by preventing ground-disturbing activities in the river corridors. All 12 suitable segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under this alternative. Alternative C would also protect paleontological resources from inadvertent damage, by limiting ground disturbance in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within the areas, thereby providing protection from inadvertent damage to paleontological resources. Management actions that would limit surface-disturbing activities include: closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; and acquiring inholdings. Alternative C (along with Alternative D) would designate the most ACECs.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. However, these impacts would occur over a much smaller area because of differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 acres (17%) would be designated as VRM Class III; and 576,600 acres (27%) would be designated as VRM Class IV. Just more than half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface-disturbing activities (and potential inadvertent damage to paleontological resources) would generally not be allowed in these areas, resulting in reduced potential for damage to these resources, compared to Alternative N, A, or C or the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres would be managed to maintain wilderness characteristics. Management actions would include minimizing or avoiding surface-disturbing activities by closing the lands to leasing, closing the lands to OHV use, or designating the lands as VRM Class I. The emphasis on naturalness and a lack of surface-disturbing activities within these areas would minimize impacts to paleontological resources because there would be no vehicular activity or other forms of disturbance that could affect paleontological sites. Protection of wilderness characteristics lands could also preclude paleontological site excavations or research activities where surface disturbing activities would occur. However, resource inventories would not be precluded, and information gathered from these inventories would increase knowledge of paleontological resources. Alternative D would also close OHV access to known paleontological sites that are visited as a recreational activity within these non-WSA areas. Of all the alternatives, Alternative D would provide the most protection for paleontological resources.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described for Alternative C, except that seven SRMAs (1,358,100 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. No SRMAs would be established for OHV use, thereby decreasing the potential for damage that this type of use could cause to paleontological resources. As described under Alternative C, the development of facilities could have localized site-specific impacts, although paleontological inventories would be conducted prior to construction of any facilities, thereby allowing for avoidance or mitigation of sites.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D would limit motorized use to designated routes on 972,800 acres (46% of the RFO) and would close 1,155,200 acres (54%) to motorized vehicle use. The lack of open areas would eliminate impacts caused by vehicle use to paleontological resources in those areas. Limiting motorized use to designated routes—the public would have access to 3,043 miles of unpaved routes—would generally limit soils impacts to areas in the immediate vicinity of the designated route; 1,242 miles of routes would be closed, allowing protection of paleontological resources in those areas.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative N.

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that more acres (903,900 acres) would be recommended for withdrawal under Alternative D. Thus, unavoidable impacts that minerals activities could cause to paleontological resources would be significantly less under Alternative D, compared to Alternative N.

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance/exclusion areas (1,203,800 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments, and 16 ACECs) would be proposed under Alternative D. These avoidance/exclusion areas would encompass 57% of the RFO, thereby providing more protection to paleontological resources (through reduction in inadvertent impacts) than under any of the other alternatives.

Impacts from Minerals and Energy

The types of impacts experienced as a result of minerals and energy management would be similar to those described under Alternative N. However, these potential impacts would occur over a substantially

smaller area under Alternative D; 967,500 acres (45% of the RFO) would be open to some category of oil and gas leasing. These categories include the following: open to leasing subject to the standard terms and conditions, open to leasing subject to moderate constraints (TL, CSU), and open to oil and gas leasing subject to major constraints (NSO).

Alternative D allows sale of mineral materials (salable minerals) on 967,500 acres (45% of the RFO). Because existing areas of salable mineral disposals have already been substantially impacted, any cultural resources present likely have been significantly altered or destroyed, resulting in loss of information. However, new sites would be subject to paleontological inventories; identified sites would either protect the site through avoidance or result in mitigation (scientific data recovery).

Under Alternative D, 1,160,500 acres would be closed to leasing and closed to disposal of salable minerals; 903,900 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent these types of activity from causing impacts to paleontological resources. Alternative D proposes more acres of mineral withdrawals and more areas closed to leasing or to disposal of salable minerals than any of the other alternatives.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

4.3.7 Visual Resources

The BLM's VRM class objectives were used to analyze impacts on visual resources. These objectives provide a baseline for determining how much a proposed management action would affect visual resources or scenic quality, as well as for determining the level of disturbance that an area can support while still meeting visual resource objectives.

The following BLM VRM class objectives and descriptions are summarized from *BLM Manual Handbook H-8431-1* (1986).

- **VRM Class I.** The objective of Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activities. The level of change to the characteristic landscape should be very low and should not attract attention.
- **VRM Class II.** The objective of Class II is to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes to the landscape must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **VRM Class III.** The objective of Class III is to partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Management activities may attract the attention of the casual observer, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **VRM Class IV.** The objective of Class IV is to provide for management activities that require major modifications to the existing character of the landscape. The level of change to the landscape can be high. The management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic visual elements of form, line, color, and texture.

Visual resource inventories were completed before each of the planning efforts for the existing LUPs. These inventories were used to generate the existing VRM objectives for the lands managed by the RFO (Map 2-1). Landscape and the visual resource conditions may have changed since these objectives were set. Currently, WSAs are managed under a number of VRM classes. In accordance with BLM IM-2000-096, all WSAs would be managed as VRM Class I following completion of this Proposed RMP.

The criteria for analysis were the number of acres proposed for designation under the VRM classes, and the level of impacts and surface disturbances permitted under each class. Analyses of the impacts on visual resources are discussed in terms of the number of acres in each VRM category because management actions under the Proposed RMP would be required to comply with (e.g., not exceed) the approved VRM class objectives.

Methods and Assumptions

The following assumptions are made regarding future management of visual resources:

- Activities proposed that would not initially meet VRM objectives for the area would be mitigated to the extent needed to meet the objectives. Proposed activities that could not be mitigated would not be authorized.

- The greater the size or severity of surface disturbance, the greater the impact there would be to scenic quality.
- All actions proposed during the Proposed RMP process must consider the importance of the visual values and the effects that the project may have on these values.

VRM class designations by alternative are shown in Table 4-14.

Table 4-14. VRM Classes, Acres, and Percentage of RFO Lands

VRM Class	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	0 acres * (0%)	446,900 acres (21%)	446,900 acres (21%)	446,900 acres (21%)	1,129,600 acres (53%)
Class II	529,500 acres (25%)	0 acres (0%)	249,800 acres (12%)	230,600 acres (11%)	66,700 acres (3%)
Class III	569,000 acres (27%)	392,800 acres (18%)	393,100 acres (18%)	509,100 acres (24%)	355,100 acres (17%)
Class IV	1,029,500 acres (48%)	1,288,300 acres (61%)	1,038,200 acres (49%)	941,400 acres (44%)	576,600 acres (27%)

* By BLM policy, WSAs are managed to meet VRM Class I objectives.

Environmental Consequences

Impacts to Visual Resources would result from actions proposed under the following resource management programs:

- Air Quality, Soil Resources, and Water Resources
- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on visual resources.

Alternative N: No Action

Impacts from Air Quality, Soil Resources, and Water Resources

Implementing appropriate BMPs to minimize surface disturbance (Appendix 14) would reduce visual contrasts created by a variety of resource management projects. Both short- and long-term impacts would be localized. Actions to improve riparian and watershed condition in areas of moderate to severe erosion

would affect visual resources in a manner similar to those described under Impacts from Vegetation and Fire and Fuels Management.

Alternative N precludes surface-disturbing activities within 500 feet around natural springs, for the purpose of protecting water quality. This preclusion would also protect visual resources by retaining the existing character of the landscape in those areas.

Requiring the mitigation of impacts caused by fugitive dust during surface-disturbing projects would help maintain visual resource conditions.

Impacts from Vegetation and Fire and Fuels Management

Over the long term, restoration and vegetation treatments designed to improve ecological conditions could indirectly enhance visual resources, on a localized basis. However, in the short term, methods used to achieve improved ecological conditions could directly create visual changes to landscape form, line, color, and texture. Such impacts would range from minor to moderate, depending on the scope and magnitude of treatment and the methods used. Chemical and biological methods would tend to gradually create visual contrasts that mimic natural ecological change, whereas fire and mechanical methods would create such contrasts more suddenly and noticeably. Depending on the VRM class of the area in which a particular treatment is conducted, impacts to the landscape could either meet or not meet the visual objective for the class. For example, treatments that create moderate change in VRM Class III areas would likely meet the visual standard, whereas moderate change that attracts attention in a VRM Class I or II area would not. Alternative N allows for a full range of treatment methods (including mechanical, wildland or prescribed fire, and chemical methods). Some of the proposed treatment methods (e.g., mechanical, chemical) would result in localized, short-term impacts to visual resources, by creating visual contrasts.

Impacts to visual resources from prevention and mitigation programs aimed at reducing unwanted ignitions in wildland fire use and non-wildland fire use areas would be similar to those described for vegetation treatments. However, actions related to prevention could reduce human-caused ignitions and related visual impacts caused by fire. Post-fire rehabilitation methods, such as seed drilling, mulching, netting, or hydroseeding, could directly result in localized visual contrasts. Impacts would be minor to moderate in the short term but would become negligible in the long-term. Wildland fires and prescribed fires would result in smoke, causing short-term, minor-to-moderate impacts on visual resources. Such fires would also affect visual resources because of increased vehicle traffic, fire lines, and the contrast between burned and unburned areas. The latter could vary in size from a few acres to tens of thousands of acres.

Noxious weeds could affect visual resources to a minor degree by replacing native vegetation and creating changes in existing landscape form, color, or texture. Efforts to control or eliminate noxious weeds would reduce such impacts. Visual impacts created by the localized, small-scale collection or use of vegetative materials would be negligible. However, any vegetation removal associated with larger-scale research or restoration efforts could produce impacts similar to those described for mechanical vegetation treatments.

Impacts from Cultural Resources

The protective management of cultural resources would generally complement the maintenance of landscape character and the conservation of visual resources. When excavation or restoration measures involve surface- or vegetation-disturbing activities, noticeable contrast or reduced scenic quality ratings could result. Impacts would be direct, localized, and short term and would depend on the type, scope, and magnitude of the excavation or restoration and the amount of change that it would cause to existing landscape form, line, color, or texture. The potential for reducing or restricting public access to cultural

resources could reduce public opportunities to view some scenic resources. Such reduced opportunities would depend on the type and location of the restriction and its overlap with known scenic viewing locations.

Impacts from Visual Resources

Alternative N represents the VRM classes currently in place. Per BLM policy, WSAs would be managed as VRM Class I under all action alternatives, to preserve their scenic value. Areas managed as VRM Class I would experience little to no change to their landscape character and, thus, to their scenic value. Areas managed as VRM Class IV would allow for major modifications of the landscape.

Use of the VRM contrast rating process would continue to provide site-specific visual analysis of proposed surface-disturbing activities, to ensure that such projects meet visual objectives in project areas (through design features or mitigation). Both short- and long-term, indirect effects would accrue over the life of the Proposed RMP as management practices were constrained by the contrast rating process to sustain or enhance visual landscapes. Proposals would be required to mitigate impacts to scenic quality through project design (such as requiring new facilities to be painted to blend in with the surrounding landscape) and location and to conform to the designated VRM class objectives. Under Alternative N, actions to restore natural conditions or appearance in areas that were already modified may succeed on a localized basis, reducing some visual contrast in the long term.

Impacts from Special Status Species

Alternative N (along with all the other alternatives) prohibits actions that destroy, adversely modify, or fragment federally listed species habitat; proposes habitat improvements for SSS; and considers SSS habitat in all wildland fire suppression efforts.

The protective management prescribed for SSS (including those relating to riparian habitats, ACECs, and non-ACEC habitats) would generally complement the maintenance of landscape character and the conservation of visual resources. However, restoration measures that involve surface- or vegetation-disturbing components would create noticeable contrast or reduce scenic quality ratings. Such impacts would be direct and short term and could range from minor to moderate, depending on the type of treatment or restoration and the amount of change that it would cause to existing landscape form, line, color, or texture. Reducing or restricting public access in SSS habitats could reduce public opportunities to view some scenic resources. Impacts would be direct and long term and could range from negligible to moderate, depending on the type and location of the restriction and its overlap with known scenic viewing locations.

Impacts from Fish and Wildlife

Alternative N (along with all the other alternatives) includes provisions to avoid or reduce habitat fragmentation. These provisions could include collocating facilities, employing directional drilling, reclaiming redundant roads, reclaiming roads no longer serving their intended purpose, or using topographic and vegetation screening to reduce the influence of intrusions. These measures would generally complement the maintenance of landscape character and the conservation of visual resources. However, restoration measures that involve surface- or vegetation-disturbing components would create noticeable contrast or reduce scenic quality ratings. Such impacts would be direct and short term and could range from minor to moderate, depending on the type of treatment or restoration and the amount of change that it would cause to existing landscape form, line, color, or texture.

Constructing or modifying wildlife water developments could create visual contrasts with surrounding landscapes. Impacts would be localized and long term, depending on the placement, design, and use of native materials and the area's VRM class designation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Where livestock grazing would continue to be authorized (1,989,048 acres of the RFO), the installation of additional fences or livestock improvements (cattle guards, water developments, and roads necessary to access improvement sites) could directly impact visual resources by adding forms, lines, colors, and textures not found in the surrounding landscape. Such impacts would be localized, long term, and could range from negligible to moderate. Where livestock grazing would not be available (138,952 acres), the potential for these impacts would be eliminated, effectively maintaining visual resource integrity over the long term. Any removal of livestock facilities in these areas would enhance visual resources in the long term, by bringing the area back into its natural or near-natural condition.

Areas in which livestock tend to congregate would create contrasts that would be noticeable to the casual observer. These impacts would typically be long-term, direct, and localized. Implementing Utah's SRH would increase the potential for directly improving or enhancing visual resources.

Impacts from Recreation

Overall recreation guidance, ERMA management decisions, and the continued issuance of special recreation permits would not affect visual resources. No specific facilities are proposed, but any constructed would be based on needs for resource protection and user demand. New facilities or new types of commercial activities could result in changes to the landscape. However, specific projects are not identified at this time and therefore cannot be analyzed.

SRMAs would likely attract more visitor use to the RFO in the long term. Increased visitor use could generate localized visual contrasts in the form of dust from traffic, changes to camping areas, and potential impacts from illegal, off-road driving. More intensive management of these areas could enhance public access to scenic views and overlooks. SRMA management decisions could affect scenic resources. Under Alternative N, only a portion of the existing Yuba Reservoir SRMA would be within the RFO. However, this SRMA is administered by the Fillmore FO and is not analyzed in this Proposed RMP.

Recreational activities would have site-specific impacts near frequent and high-use areas such as campgrounds, parking lots, trailheads, and other recreation-related use areas. Long-duration trail use (e.g., walking, equestrian, OHV, mountain biking) could result in loss of vegetation cover, especially during wet periods, Large-group recreation events and camping could compact soils, leading to changes in plant vigor. These impacts would change the characteristic landscape and would be site-specific and localized. Dispersed recreation activities would create less impacts to visual resources than would these more intensive, concentrated recreation uses. Closing or rehabilitating undeveloped sites would restore the visual resources of those sites.

Impacts from Travel Management

The designation of OHV open areas could cause adverse impacts to landscapes and visual values. The level of use, season of use, type of soil, and vegetative community all could influence the amount of change to the landscape. Cross-country OHV use could result in visual contrasts in color because of disturbed soils and vegetation and contrasting linear disturbance on the landscape. The length of time observed and distance from important viewpoints could influence the perceived changes to the overall visual values.

Under Alternative N, 1,637,000 acres (75% of the RFO) would remain open to cross-country OHV use: 206,000 acres in VRM Class II; 489,000 acres in VRM Class III; and 942,000 acres in VRM Class IV. Although the landscape in many areas would not be impacted by cross-country use because of topographic and vegetation limitations, continuing to manage this large area as open would allow the greatest potential for changes to the landscape and impacts to scenic resources because of soil disturbance, tire tracks, and hill climbs, all of which would be inconsistent with the objectives for VRM Class II. The open OHV acreage is significantly higher in Alternative N than any of the other alternatives. There would be 214,000 acres (10% of the RFO) that would be closed to OHV use under this alternative (primarily within WSAs), precluding scenic impacts from OHV use on those lands.

Under Alternative N, motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO. OHV routes create visible lines on the landscape. Depending on topography, the vegetation community, and observation point(s), those lines are visible to varying degrees. Further, removal of vegetation would reveal the underlying soil, which often contrasts with the surrounding vegetation in both color and texture. This contrast would further accentuate the change to the landscape. In those areas in which OHV use is limited to designated routes, management would limit impacts on the landscape to the existing transportation system and would eliminate the creation of new routes that would result in further changes to the landscape and visual quality. Alternative N would allow the use of 4,315 miles. The designation of existing routes would protect visual resources by reducing the potential for the creation of additional routes and changes to the landscape, such as soil disturbance, erosion, and loss of vegetation.

The potential for cross-country access to dispersed campsites to cause additional changes to the landscape would be greatest under Alternative N. Dispersed camping and cross-country access to these campsites would be allowed to take place anywhere outside the WSAs. Existing sites with access would continue to be used, but the number of these sites could increase under this alternative, causing changes to the landscape.

Impacts from Lands and Realty

Land tenure decisions include both the disposal and acquisition of land. The 203 Sales maps 2-21through 2-26 are in the map section of Volume III of the PRMP/FEIS. When public lands are disposed of, BLM no longer controls the scenery, and development could affect the visual qualities of adjoining public lands. Because it is unknown which lands (if any) might be sold, it is unknown whether those lands would be of high value because of visual interest. When BLM acquires lands, it also acquires responsibility for the scenery. Acquired lands would be managed according to VRM objectives on adjoining parcels. Under Alternative N, as much as 280 acres could leave federal ownership through FLPMA sales. Although BLM would no longer control the scenery on lands disposed of by FLPMA Section 203 sales, and although their development could create minor-to-major, long-term, direct, localized visual contrasts with the surrounding landscape, the lands identified for sale are usually isolated, difficult-to-manage parcels or are adjacent to developed areas in established communities. Therefore, these lands would have less potential of being high value for visual interest, so the potential for the loss of public viewing of scenic resources on these lands would be low.

Impacts to visual resources could result from issuance of land use authorizations (e.g., ROWs, permits, leases, easements). Impacts from issuance of these authorizations would vary based upon the nature and purpose of the authorization and the amount of change it would cause to existing landscape form, line, color, or texture. These authorizations could include a reduction in scenic quality ratings. Impacts generally would be minor to moderate and would be addressed in site-specific NEPA analysis. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas. Exceptions would be granted only when the proposed

authorization would not create substantial surface disturbance or would create only temporary impacts. Thus, impacts to visual resources in these avoidance areas would be negligible to minor and localized.

When possible, new ROW and communication sites would be collocated in existing corridors or sites. Although such developments could change landscapes, collocating new development with existing facilities would protect undisturbed areas from visual intrusions.

If wind or solar energy were developed in the lands managed by the RFO, it would impact visual resources. Introducing large wind structures or solar arrays would be a noticeable change to the landscape. Under Alternative N, exploration and development would be considered on a case-by-case basis. Because of the potential for a great level of change to the landscape, these developments would be consistent only with VRM Class IV objectives.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights, which could result in disturbance and associated impacts to visual resources in these areas. Alternative N proposes a total of 169,480 acres of withdrawals.

Impacts from Minerals and Energy

Leasable Minerals

Table 4-15 presents the RFD scenario for oil and gas for lands managed by the RFO. Under all alternatives, the RFD projects that 454 oil and gas wells would be developed within the planning area, which includes all land ownerships, during the next 15 to 20 years.

Table 4-15. Reasonably Foreseeable Development Scenario for Oil and Gas

Development Potential	Well Locations	# of Wells Predicted	Geophysical Surface Impacts	Well Surface Impacts	Total Surface Impacts
High (Area 4) Western Sevier and Sanpete Counties	BLM 45% Private 40% USFS 10% State 5%	360	4,500 acres	540 acres	5,040 acres
Moderate (Area 3) Eastern Sevier and Sanpete Counties	USFS 100% (Fishlake and Manti-LaSal National Forests)	49	360 acres	1,100 acres	1,460 acres
Low (Areas 1 & 2) Piute, Wayne, eastern Garfield, and southern Sevier Counties	BLM 100%	45	240 acres	1,440 acres	1,680 acres
Totals		**454**	**5,100 acres**	**3,080 acres**	**8,180 acres**

In the area with high development potential (western Sevier and Sanpete Valleys), the construction of roads, well pads, and other facilities would add further developments to a moderately altered landscape. These agricultural valleys consist of cultivated fields, roads, and rural towns bordered by rolling hills and mountains. Many of the developments would be visible and would attract attention, which would result in changes to the existing visual resources.

The area with moderate development potential (eastern Sevier and Sanpete Counties) generally has a natural-appearing landscape but allows for screening of most projects because of topography and vegetation. Road construction in these areas could require more cutting and filling, which would be more visible on the landscape. However, this area would still contain relatively few wells, with few disturbance acres spread over a large area, resulting in minimum impacts to visual resources.

The area with low development potential is generally more remote, with natural-appearing landscapes, and visitors may be more sensitive to landscape changes. Therefore, a few wells spread over such a large area would have a minimal impact on visual resources. The overall landscape character and vistas would not change.

Locatable Minerals

Exploration and development of locatable minerals create surface disturbances that could adversely impact visual resources. Impacts to visual resources would be unavoidable because of major surface-disturbing activities to mine for the mineral sources. However, little development of locatable minerals is expected during the next 15 to 20 years.

Withdrawals would reduce the amount of land open to disturbance. Alternative N proposes a total of 169,480 acres of withdrawals. See Impacts from Lands and Realty for a discussion of withdrawals.

Salable Minerals

Salable minerals are under the same restrictions as oil and gas resources. The same lands that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would be available for salable mineral disposal, just as those lands that are either closed to leasing or open to leasing subject to major constraints (NSO) would be unavailable for salable mineral disposal. Under Alternative N, 459,700 acres would be closed to disposal of mineral materials and 169,480 would be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to scenery because no surface-disturbing activities associated with mining of salable minerals would be allowed in those areas.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the IMP would prevent most ground-disturbing activities. This management would contribute to preservation of the existing landscape character to a major degree over the long term.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect visual resources by preventing ground-disturbing activities that would impact the scenic character in the river corridors. Under Alternative N, all eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. This management would preserve the existing character of the landscape in these areas.

Areas of Critical Environmental Concern

Although ACEC designation alone does not necessarily provide protection, the management actions included in ACECs are often more restrictive, thus indirectly providing protection for visual resources. Protections associated with ACEC designation that would affect visual resources include managing oil and gas leasing as closed to leasing or open to leasing subject to major constraints (NSO), implementing more-restrictive VRM designations, restricting livestock grazing to protect relict vegetation and ecologic (riparian) values, and limiting travel limitations. Alternative N continues the designation of four ACECs

(14,780 acres). Scenery was not one of the relevant and important values identified for these ACECs. However, allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas and thus protect visual resources. Such disallowance could include closing the areas to OHV use; managing the area as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; making the area unavailable for livestock grazing in ACECs with relict vegetation and ecologic relevant and important values; and acquiring inholdings.

Alternative A

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N. However, under Alternative A, the buffer zone of areas closed to leasing subject to major constraints (NSO) around springs would be 330 feet. Therefore, this alternative would protect a smaller area (8 acres) from changes to the characteristic landscape than would Alternative N (18 acres).

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N, although under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). Although no maximum treatment acreage limits would be set under Alternative N, more acres probably would be treated under that alternative because it allows for the full range of fire and fuels management actions to achieve ecosystem sustainability and allows for a full suite of treatment methods (including mechanical, wildland fire use or prescribed fire, and chemical methods). Alternative A incorporates more mechanical treatment than does Alternative N or the Proposed RMP.

Potential visual effects that could result from a severe wildfire include loss of trees, blackening of the landscape, and blackened deadfall, including the disruption of line and form caused by ground-disturbing activities. Large areas, including areas in VRM Classes I and II, could be blackened and charred, and large amounts of smoke could be produced.

Impacts from Cultural Resources

Under Alternative A, all cultural properties in the RFO are allocated to one of six uses (scientific, conservation, traditional, public, experimental, or discharged from management). These use allocations pertain to the cultural resources themselves rather than to areas of land, so impacts that management of cultural resources would cause to visual resources would be similar to those described for Alternative N. However, under Alternative A, the majority of cultural resource site types would be allocated to public use, thereby providing increased public access to cultural resources and increased public opportunities to view these resources.

Impacts from Visual Resources

VRM class designations vary by alternative (Table 4-14). Under Alternative A, all areas outside of WSAs would be designated as VRM Class III or Class IV. These designations mean that there could be moderate changes to the landscape (on 392,800 acres designated as Class III) or major changes to the existing character of the landscape (on 1,288,300 acres designated as Class IV). Of all the alternatives, Alternative A could have the most impact on visual resources.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N. However, Alternative A includes additional strategies to avoid or reduce

fragmentation of habitat. These strategies could include employing directional drilling for oil and gas, closing and reclaiming roads, mitigating the effects of proposed projects that could cause long-term or permanent impacts or losses of habitat, and using species-specific buffers for surface-disturbing activities. All these actions would reduce surface disturbance and reduce the potential for invasion and spread of invasive species, thereby helping to maintain the visual character of the landscape.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative A, resulting in no additional protection for visual resources.

Impacts from Livestock Grazing

Impacts would be essentially the same as those described under Alternative N, except that under Alternative A, an additional 36,950 acres (less than 1% of the RFO) would be available for livestock grazing. Installation of additional fences or livestock improvements (cattle guards, water developments, and roads necessary to access improvement sites) on these acres could directly impact visual resources by adding forms, lines, colors, and textures not found in the surrounding landscape. Such impacts would be localized, long-term, and could range from negligible to moderate. Where livestock grazing would not be available (102,002 acres), the potential for the these impacts would be eliminated, effectively maintaining visual-resource integrity over the long-term. Any removal of livestock facilities in these areas would enhance visual resources in the long term by bringing the area back into its natural or near-natural condition.

Impacts from Recreation

The types of impacts experienced as a result of recreation management decisions would be similar to those described for Alternative N. However, under Alternative A, SRMAs would be established that provide for cross-country OHV activities at Otter Creek (the west side of the reservoir), Big Rocks, Factory Butte, and Sahara Sands. Allowing cross-country activities and providing necessary facilities would enhance and probably increase use in these areas, resulting in changes to the landscape (developments such as staging areas, restrooms, and increased vehicle tracks). Terrain, soils, season of use, and distance from main travel routes would influence the noticeability of these changes. To be consistent with these uses, these areas would be designated as VRM Class IV.

The Dirty Devil/Robbers Roost SRMA (290,000 acres) would be established to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. No site developments, or only the minimum required for site protection, and no onsite interpretive facilities would be proposed for this area. The management objectives for this SRMA would help preserve the landscape characteristics in this area.

Impacts from Travel Management

The designation of OHV open areas can cause adverse impacts to landscapes and visual values. The level of use, season of use, type of soil, and vegetative community influence the amount of change to the landscape. The length of time observed and distance from important viewpoints can influence the perceived changes to the overall visual values.

Under Alternative A, 449,000 acres (21% of the RFO) would remain open to cross-country OHV use. The open OHV acreage is significantly less under this alternative than under Alternative N, but substantially greater than under Alternative C or D or the Proposed RMP. Although topographic and vegetation

limitations in some areas would prevent impacts by cross-country use, continuing to manage this large area as open would allow the greatest potential for changes to the landscape and impacts to scenic resources as a result of soil disturbance, tire tracks, and hill climbs.

Areas not designated as open to OHV use would be limited to designated routes, thereby minimizing impacts to visual resources on the 1,679,000 acres within the limited category. Limiting vehicles to designated routes would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion, and loss of vegetation, although intermittent dust from use of these unpaved routes and visibility of lines in the landscape would still be apparent. The potential impacts identified in Alternative N from cross-country motorized access to dispersed campsites would not be present under Alternative A on the areas designated as limited to OHV use—vehicles on existing spur routes to established campsites would be allowed within 300 feet of the centerline of designated routes. No new campsites or travel ways would be authorized, resulting in no effect to visual resources.

Under Alternative A, no lands would be closed to OHV use, with no accompanying benefits to visual resources.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under Alternative A would be similar to those described under Alternative N, except that as much as 13,460 acres could potentially leave federal ownership through FLPMA Section 203 sales. Although the BLM would no longer control the scenery on lands disposed of by Section 203 sales and their development could create minor-to-major, long-term, direct, localized visual contrasts with the surrounding landscape, the lands identified for sale are usually isolated, difficult-to-manage parcels or are adjacent to developed areas in established communities. These lands therefore would have less potential of being of high value for visual interest, so the potential for the loss of public viewing of scenic resources on these lands would be low.

Under Alternative A, there would be no new withdrawals from mineral entry considered and therefore no additional benefits to scenic resources, compared to Alternative N.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative N, although impacts could occur over a larger area because less acres would be proposed for ROW avoidance areas (446,900 acres closed to leasing).

Wind or solar energy development would be considered throughout the lands managed by the RFO, except for WSAs (VRM Class I). Introducing large wind structures and solar arrays would be a noticeable change to the landscape. Because of the potential for a high level of change to the landscape, these developments would be consistent only with VRM Class IV objectives (1,288,300 acres, or 61% of the RFO). Introducing these developments in VRM Class II and III areas would be inconsistent with the objectives for those VRM classes, and would therefore adversely affect visual resources. Alternative A would have the greatest potential impact to visual resources.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals development would be similar to those described under Alternative N. Development of oil and gas resources could affect scenic landscapes because of the surface disturbances associated with such development. However, designating areas as closed to leasing (446,900 acres) and designating fewer acres than Alternative N as open to leasing subject to major constraints (NSO) (0 acres) would provide less protection to visual resources by precluding fewer surface-disturbing activities.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be similar to those described under Alternative N, except Alternative A recommends fewer acres of mineral withdrawals (154,700 acres). Thus, impacts associated with locatable minerals mining could occur over a larger area of the RFO.

Salable Minerals

The types of impacts experienced from disposal of salable minerals would be similar to those described under Alternative N, except that Alternative A proposes fewer acres of mineral withdrawals (154,700 acres), fewer areas closed to salable mineral disposal (446,900 acres), and fewer areas open with restrictions (0 acres). Thus, impacts associated with disposal of salable minerals could occur over a larger area of the RFO.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable. No special management to protect the outstandingly remarkable values of these rivers would be provided, so visual resources within these corridors would not be protected by WSR designation from ground-disturbing activities in the river corridors. However, most of the eligible river segments (98 of the 135 total miles) are also within WSAs, so ground-disturbing activities would not occur in those river corridors and the scenic landscape would be protected.

Areas of Critical Environmental Concern

Alternative A designates no ACECs, so no special management (e.g., managing oil and gas leasing as closed to leasing or open to leasing subject to major constraints (NSO), more restrictive VRM designations, travel limitations) to protect the scenic landscape is proposed. Allowing surface- disturbing uses that could cause irreparable damage to the relevant and important values in these areas could impact visual resources.

Proposed RMP

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those under Alternatives N and A, (as described under Alternative N). The Proposed RMP would have a buffer zone of 330 feet on each side of the waterway or 100 yard flood plain whichever is greater, potentially offering more protection than Alternative N or A.

Impacts from Vegetation and Fire and Fuels Management

Under the Proposed RMP, vegetation treatment strategies that are consistent with managing scenic quality on public land would be implemented. These treatments would reduce the risk of severe wildfire that could potentially affect all visual classes and result in impacts on visual resources. Large, severe wildfires change the landscape in a way that could degrade visual quality, especially on fragile soils on which the duration of erosion impacts may be longest.

Allowing fire to resume a more natural, ecological role across the landscape may constitute a short-term conflict between ecological sustainability and scenic aesthetics. However, recent studies have shown public support for controlled burns and other fuels-reduction methods to reduce the risk of larger,

uncontrolled burns (USDA 2003). Resource values and short-term visual impacts versus long-term improvement in visual character of the landscape would be considered in planning fire and fuels management activities.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative A. However, under the Proposed RMP, fewer sites would be allocated to public use, thus providing decreased public access to cultural resources and decreased public opportunities to view these resources.

Impacts from Visual Resources

Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be designated as VRM Class II; 393,100 acres (18%) would be designated as VRM Class III; and 1,038,200 acres (49%) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape. However, under the Proposed RMP, less of the RFO would be designated in these VRM classes than under Alternative N or A, resulting in less potential impacts to visual resources, compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres in 12 areas would be managed to protect their wilderness characteristics (size, naturalness, opportunities for solitude, and opportunities for primitive forms of recreation). These lands would be designated as VRM Class II, to retain the existing character of the landscape. These areas would be managed to minimize surface-disturbing activities, thus preventing changes to the characteristic landscape (vegetation, landform, and water) and protecting the scenic quality of these lands.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts that would be experienced under the Proposed RMP would be similar to those described under Alternative A. Under the Proposed RMP, established SRMAs would provide for cross-country OHV activities at Factory Butte and Big Rocks. Management actions would focus on the OHV activities in these areas and the development of facilities to support the motorized activities. Allowing cross-country activities and providing necessary facilities would enhance and probably increase use in these areas, which would result in changes to the landscape (developments such as staging areas, restrooms, and increased vehicle tracks). Terrain, soils, season of use, and distance from main travel routes would influence how noticeable these changes are. These changes would be more apparent at Factory Butte than Big Rocks because of the terrain and proximity to a main highway.

The kiosks and loading/unloading ramps in the Factory Butte SRMA (Appendix 18) would be screened from Highway 24 by low hills in the foreground. They would be seen for only a few seconds, if at all, by highway traffic. For motorized visitors using the open OHV area, the noticeability of the improvements

would vary, depending on the visitor's vantage point. The upgraded entrance, kiosk, and ramps would be noticeable as visitors enter the area and use these facilities. As visitors travel further into the area, the improvements would not be as noticeable from a distance. From many locations within the open area, the structures would be partially or often totally hidden because of terrain. The fences would be most noticeable to riders as they approach these boundaries. For safety reasons, the fences must be noticeable enough to keep riders from running into them. These improvements would be seen but would not dominate the landscape or attract the attention of visitors unless the visitors were in close proximity to the structures.

Although various structures are planned within VRM Class II and Class III areas, topographic screening would be used whenever possible. Elements would be added to the landscape, but would not be expected to dominate the landscape or view. No changes to the overall landform or vegetation would occur. The contrast caused by the addition of structures would be moderate to weak for some elements of the landscape and would be nonexistent for other elements. The added facilities in the Factory Butte SRMA would be consistent with VRM Class II and Class III objectives in as much as improvements would be seen but only for short durations and should not attract the attention of the casual observer. The majority of the improvements would be located in areas designated as VRM Class IV. The proposed actions at these sites would be consistent with this VRM class. None of the improvements would require major modification of the existing character of the landscape.

The Capitol Reef Gateway SRMA would be established to manage recreation opportunities associated with Capitol Reef National Park, while protecting the values of the Fremont Gorge WSA and WSR segment. In this SRMA, there would be 2,900 acres in VRM Class I; 2,300 acres in Class II; and 7,600 acres in Classes III and IV. Facilities would be allowed to reduce resource impacts. Although the addition of facilities would introduce change into the landscape, the placement of facilities would be required to meet VRM objectives. The planned development of facilities could reduce impacts currently taking place from uncontrolled, dispersed use.

The Henry Mountains SRMA would be established under the Proposed RMP. The management of Class A scenery outside WSAs as VRM Class II would be beneficial in retaining the visual character of these areas because only low levels of changes to the landscape can occur in Class II areas.

Impacts from Travel Management

Under the Proposed RMP, less than 1% of the RFO (9,390 acres) would remain open to cross-country OHV use. Potential impacts to visual resources could occur within the open area because of a higher concentration of users in a much smaller area. Cross-country use and indications of motorized use on the landscape (including soil disturbance and loss of vegetation) would continue and likely increase on these acres. However, the total acres open to OHV use would be significantly less than under Alternative N.

Under the Proposed RMP, approximately 10% of the RFO (209,900 acres) would be closed to OHV use (primarily within WSAs), precluding scenic impacts from OHV use on those lands.

The remainder of the RFO lands (1,908,210 acres) would limit motor vehicles to designated routes. OHV use within these areas would be restricted to 4,277 miles of designated routes and would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion and loss of vegetation. The number of designated route miles would be fewer than under Alternative N or A, resulting in less intermittent dust from use of these unpaved routes.

The potential impacts identified in Alternative N from cross-country access to dispersed campsites and for parking/staging would be greatly reduced under the Proposed RMP (and could occur only on the 9,390 acres open to OHV use). Vehicle access within areas limited to designated routes would be allowed on

existing spur routes to established campsites within 150 feet of the centerline of designated routes; vehicles would also be allowed to pull off designated routes up to 50 feet of each side of the centerline for parking/staging. By restricting motorized use, both of these actions would restrict potential effects to the visual landscape of those areas.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under the Proposed RMP would be the same as those described under Alternative A.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative A. However, under the Proposed RMP, impacts could occur over a smaller area because more acres would be proposed for ROW avoidance areas (601,800 acres closed to leasing or open to leasing subject to major constraints [NSO], one suitable WSR segment—5 miles, and 2 ACECs—2,530 acres).

If wind or solar energy was developed in the lands managed by the RFO, it would impact visual resources. Introducing large wind structures and solar arrays would be a noticeable change to the landscape. Under the Proposed RMP, exploration and development would be considered on a case-by-case basis. Because of the potential for a high level of change to the landscape, these developments would be consistent only with VRM Class IV objectives and would be allowed only in those areas (49% of the RFO).

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights, which could result in disturbance and associated impacts to visual resources in these areas. The Proposed RMP proposes a total of 176,200 acres of withdrawals.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, the Proposed RMP proposes more acres of mineral withdrawals (176,200 acres) than does Alternative N or A, precluding mining activities in those areas and thus allowing less disturbance to the visual landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N. However, under the Proposed RMP, more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions (601,800 acres would be closed to disposal of mineral materials; 1,072,000 acres would be open with restrictions to reduce ground disturbance; and 176,200 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the suitable WSRs would help protect visual resources by preventing ground-disturbing activities in the river corridors. Under the Proposed RMP, one segment with a tentative classification of Wild (5 miles) would be managed as suitable to protect its outstandingly remarkable values, free-flowing nature, and wild classification, thus preserving the existing character of the landscape in that area. This leaves 32 miles on which ground-disturbing activities could impact the scenic landscape. Under the Proposed RMP, WSR decisions would provide less protection to visual resources than under Alternative N, C, or D but more protection than under Alternative A.

Areas of Critical Environmental Concern

The types of impacts experienced as a result of ACEC designations would be similar to those described under Alternative N, except that the Proposed RMP designates fewer areas as ACECs (two areas, totaling 2,530 acres). Scenery was not one of the relevant and important values identified for these ACECs (North Caineville Mesa and Old Woman Front). However, management actions included in ACEC management are often more restrictive, thus indirectly providing protection for visual resources. Protections associated with designation of these ACECs for the protection of the relict vegetation relevant and important values that would affect visual resources include recommending the lands for withdrawal from mineral entry, managing oil and gas leasing as open subject to major constraints (NSO), authorizing no new facilities or improvements, acquiring inholdings, closing the lands to forestry and woodland products harvesting, restricting livestock grazing, and closing the lands to OHV use. All these actions would reduce surface-disturbing activities within those areas and indirectly protect visual resources.

Alternative C

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N. However, under Alternative C, the buffer zone of lands open to leasing subject to major constraints (NSO) around springs would be 660 feet, thus protecting a larger area (34 acres, compared with 18 acres under Alternative N) from changes to the characteristic landscape.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although under Alternative C, fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes (biological and fire) to manage vegetation. These processes could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. The result could be the loss of existing vegetation cover or longer timeframes for treated areas to blend in with surrounding areas, resulting in changes in the characteristic landscape lasting for a long period. This management could also make control of some invasive species difficult because of lack of suitable substitute treatments (using fire as a control tool for species including tamarisk could increase the growth and spread of this non-native species), possibly allowing the spread of invasive species and displacement of desirable vegetation and resulting in a less natural appearance. Thus, impacts to visual resources under Alternative C would likely result in reduced short-term impacts (because fewer acres would be treated) but increased long-term impacts, compared to Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described for the Proposed RMP, except that more sites would be allocated to conservation use under Alternative C. This allocation would provide decreased public access to cultural sites and decreased public opportunities to view these resources.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be designated as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be designated as VRM Class IV. Alternative C designates all Class A scenery within ACECs as VRM Class II, thus protecting the scenic quality in those areas.

Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate-to-major modifications in the existing character of the landscape and could allow greater flexibility for vegetation treatments. However, less of the RFO would be designated in these VRM classes under Alternative C than under Alternative N or A or the Proposed RMP, resulting in less potential impacts to visual resources as compared to those alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for vegetation.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

Under Alternative C, the Dirty Devil/Robbers Roost SRMA (375,800 acres) would be established to provide for recreational experiences complementary with the remote and scenic nature and other resource values, notably the ACEC values, of the area. The SRMA would be 85,300 acres larger than under the Proposed RMP, and would have more emphasis on primitive recreation opportunities. No site developments, or only the minimum required for site protection, and no onsite interpretive facilities would be proposed for this area. The VRM management objectives for this SRMA (205,200 acres in VRM Class I; 48,700 acres in VRM Class II; and 121,900 in VRM Classes III and IV) would help preserve the landscape characteristics in this area.

The Capitol Reef Gateway SRMA would be established to manage recreation opportunities associated with Capitol Reef National Park, while protecting the values of the Fremont Gorge WSA, WSR segment, and Fremont Gorge/Cockscomb ACEC. No interior site developments or onsite interpretation facilities would be allowed. Only the minimum developments required for site protection would be provided. The management objectives for this SRMA would help preserve the landscape characteristics in this area. There are 2,900 acres in VRM Class I; 2,300 acres in VRM Class II; and 7,600 acres in VRM Class III (no acres in Class IV).

Under Alternative C, the Henry Mountains SRMA would be established and managed in concert with the Henry Mountains ACEC. The management of Class A scenery as VRM Class II would be beneficial in retaining the visual character of these areas.

Sevier Canyon SRMA would be managed to protect the scenic values in and around the Sevier Canyon. Management of this SRMA in concert with the Sevier Canyon ACEC would help preserve the landscape characteristics in this area.

Impacts from Travel Management

Under Alternative C, no acres would be open to cross-country OHV use, thus protecting the visual resources throughout the RFO from potential impacts caused by cross-country motorized use (soil disturbance and loss of vegetation). Thirty-two percent of the RFO (683,000 acres) would be closed to OHVs under this alternative, precluding scenic impacts from OHV use on those lands.

Areas not designated as closed to OHV use would be limited to designated routes, thus protecting visual resources on the 1,445,000 acres within the limited category (no areas would be open to OHV use under this alternative). OHV use within these areas would be restricted to 3,192 miles of designated routes and would reduce the potential for additional changes to the landscape, such as soil disturbance, erosion, and loss of vegetation. The number of designated route miles would be less than under Alternative N or A or the Proposed RMP but more than Alternative D.

Impacts from Lands and Realty

The types of impacts experienced as a result of land tenure adjustments under Alternative C would be similar to those described under Alternative A, except that less land would be available for disposal under Alternative C. This alternative identifies no lands for FLPMA land sales; lands could be disposed of by other means (such as exchange) if the land tenure adjustment met the goals and objectives of Alternative C, such as resulting in a net increase of sensitive resources.

The types of impacts experienced as a result of issuing lands use authorizations would be similar to those described under Alternative A. However, under Alternative C, impacts could occur over a smaller area because more acres are proposed as ROW avoidance areas (735,000 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments—135 miles, and 16 ACECs—886,810 acres).

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights, which could result in disturbance and associated impacts to visual resources in these areas. Alternative C proposes a total of 331,100 acres of withdrawals.

Wind or solar energy development would be considered on all RFO lands that are designated as VRM Class IV (the only class that allows major modifications to the landscape). This designation would give some protection to the landscape character in VRM Class I, II, and III areas. This kind of development would still be noticeable in VRM Class IV lands, but would be consistent with the VRM objectives for that class.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, Alternative C proposes more acres of mineral withdrawals

(331,100 acres) than does Alternative N or A or the Proposed RMP, thus precluding mining activities in those areas and allowing less modification to the landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N. However, under Alternative C, more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions (586,300 acres would be closed to disposal of mineral materials; 1,049,800 acres would be open with restrictions to reduce ground disturbance; and 331,100 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery by allowing less modification to the landscape.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Protecting the outstandingly remarkable values of the eligible WSRs would help protect visual resources by preventing ground-disturbing activities in the river corridors. Under Alternative C, all eligible segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. This management would preserve the existing character of the landscape in these areas.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres); scenery was specifically identified as a relevant and important value in 7 of these (Badlands, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Little Rockies, and Lower Muddy Creek). To protect the visual resources in these ACECs, the Class A scenery would be designated as VRM Class II. Vegetation management was identified as a management prescription in the Henry Mountains ACEC, to provide improved habitat for bison and mule deer, both identified as relevant and important values. Allowing no uses (in all ACECs except for the Henry Mountains) that would cause irreparable damage to the relevant and important values would reduce surface-disturbing activities within those areas, protecting vegetation and improving ecological condition of riparian areas. Possible disallowances include closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; designating the areas as VRM Class II; making the areas unavailable for livestock grazing as appropriate to protect relict vegetation and ecological values, or fencing riparian areas in ACECs where grazing occurs; and acquiring inholdings. However, opportunities for vegetation treatments could be limited, which could inhibit or prevent attainment of ecological objectives and desired conditions in these areas.

Alternative D

Impacts from Air Quality, Soil Resources, and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N, although under Alternative D, these impacts would occur over a much smaller area because of differences in VRM class designations between the two alternatives. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 acres (17%) would be designated as VRM Class III; and 576,600 acres (27%) would be designated as VRM Class IV. Just more than half of the RFO would be designated as VRM Class I or II, meaning that the existing character of the landscape must be preserved or retained. Thus, surface-disturbing activities would generally not be allowed in these areas, resulting in retention of the characteristic landscape. Therefore, Alternative D would result in less impacts to scenery than would Alternative N, A, or C or the Proposed RMP.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres in 29 areas would be managed to protect their wilderness characteristics (size, naturalness, opportunities for solitude, and opportunities for primitive forms of recreation). These lands would be designated as VRM Class I to preserve the characteristic landscape. These areas would be closed to surface-disturbing activities, thus preventing changes to the characteristic landscape (vegetation, landform, and water) and protecting the scenic quality of these lands.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

Impacts would be similar to those described under Alternative C, with the exception that three additional SRMAs (with a combined acreage of 266,400 acres) would be established: Labyrinth Canyon, Little Rockies, and San Rafael Swell. These SRMAs would be established to provide for recreational experiences complementary with the remote and scenic nature and other resource values of the area. No site developments, or only the minimum required for site protection, and no onsite interpretive facilities would be proposed for this area. The management objectives for this SRMA would help preserve the landscape characteristics in this area.

Impacts from Travel Management

Under Alternative D, no acres would be open to cross-country OHV use, so the visual resources throughout the RFO would be protected from potential impacts from cross-country motorized use (including soil disturbance and loss of vegetation). Under Alternative D, 1,155,200 acres (54% of the RFO) would be closed to OHVs, precluding scenic impacts from OHV use on those lands. This alternative would designate the most area as closed to OHV use, thus providing the most protection to visual resources.

The remainder of the RFO (972,800 acres) would limit motorized travel to designated routes. OHV use within these areas would be restricted to 3,043 miles of designated routes, thus reducing the potential for additional landscape changes such as soil disturbance, erosion, and loss of vegetation. The number of designated route miles would be least under Alternative D of all the alternatives.

Impacts from Lands and Realty

Under Alternative D, 903,900 acres (42% of the RFO) would be recommended for withdrawal from mineral entry including:

- Rainbow Hills ACEC, Old Woman Front ACEC, and portions of the remaining ACEC
- All 12 eligible WSR segments
- All non-WSA lands with wilderness characteristics.

Withdrawing lands from all forms of entry, location, selection, sale, or leasing under the public land laws could prevent major modification to the landscape. However, the identified withdrawals, if established, would be subject to valid existing rights, which could result in disturbance and associated impacts to visual resources in these areas. Scenic values would be best protected under Alternative D because the most acreage would be withdrawn from future entry, location, selection, sale, or leasing.

Wind or solar energy development would be considered on all RFO lands that are designated as VRM Class IV (the only class that allows major modifications to the landscape). This would give some protection to the landscape character in VRM Class I, II, and III areas. The introduction of this kind of development would still be noticeable in VRM Class IV lands, but would be consistent with the VRM objectives for that class.

Potential impacts that lands and realty decisions could have on visual resources would be the least under Alternative D.

Impacts from Minerals and Energy

Leasable Minerals

The types of impacts experienced as a result of leasable minerals decisions would be similar to those described under Alternative N. However, under Alternative D, impacts would occur over a much smaller area because more areas would be closed to leasing or open to leasing subject to major constraints (NSO) (1,203,800 acres). Designating areas as closed to leasing would prevent changes to the characteristic landscape (vegetation, landform, and water) and protect the scenic quality of these lands. Impacts to visual resources from leasable minerals activities would be much less under Alternative D, compared to all the other alternatives.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals decisions would be similar to those described under Alternative N. However, Alternative D proposes substantially more acres of mineral withdrawals (903,900 acres), compared to Alternatives N, A, or C or the Proposed RMP, thus precluding mining activities in those areas and allowing less modification to the landscape.

Salable Minerals

The types of impacts experienced as a result of salable minerals decisions would be similar to those described under Alternative N. However, under Alternative D, more lands would be closed to disposal of salable minerals or open to salable mineral disposal with restrictions (1,160,500 acres would be closed to disposal of mineral materials; 290,200 acres would be open with restrictions to reduce ground disturbance; and 903,900 acres would be withdrawn from mineral entry). Closing or withdrawing areas from mineral operations would prevent impacts to scenery.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative C, except that under Alternative D, additional restrictions would be applied to non-WSA lands with wilderness characteristic areas that are within ACECs. These restrictions could include designating Class A scenery as VRM Class I, not allowing fences or surface-disturbing activities, closing these areas to leasing, closing the areas to OHV use, or recommending the areas for withdrawal from mineral entry. All these actions would preclude surface-disturbing activities in those areas, thus allowing minimal modification to the landscape.

4.3.8 Special Status Species

This analysis focuses on impacts to SSS as a result of management actions that affect species or their populations and changes to the condition of their habitats. SSS include federally listed species, federal proposed and candidate species, and BLM sensitive species. Although some data on known locations and habitats within the RFO are available, the data are neither complete nor comprehensive of all SSS known to occur or potential habitat that might exist. Known and potential SSS and habitat locations were considered in the analysis; however, the potential for species to occur outside these areas was also considered and, as a result, some impacts are discussed in more general terms. Impacts to other fish and wildlife species and their habitats are addressed in Fish and Wildlife.

To preserve SSS, various laws, regulations, and policies require that SSS be considered in any agency decision that could affect threatened and endangered and sensitive species. Consideration usually includes inventory, evaluation, and mitigation of effects. Addressing effects to these species includes either project relocation or redesign (avoidance) or site-specific mitigation.

Although information on locations of all SSS sites in the RFO is incomplete, the analysis considers the management alternatives and their potential to directly or indirectly affect SSS resources, as noted previously. The number of species that could be affected by various actions is directly correlated with the degree, nature, and quantity of surface-disturbing activities in the RFO. Impacts are quantified when possible. In the absence of quantitative data, best professional judgment was used. Some of the decisions in this document are programmatic; others (e.g., route designation, oil and gas leasing categories) may be implemented immediately. To ensure preservation of specific species, further analyses will be required at the implementation level, following site-specific species inventories.

Impacts that other management programs in the planning area could cause to SSS include loss or alteration of native habitats, increased invasion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior (leading to reduced reproductive fitness or increased susceptibility to predation), and direct mortality of individuals. Surface-disturbing actions that alter vegetation characteristics (e.g. structure, composition, or production) have the potential to affect habitat suitability for special status plants or animals, particularly when the disturbance removes or reduces cover or food resources. Even minor changes to vegetation communities have the potential to affect SSS.

Direct impacts from management activities to SSS may result in mortality or displacement of individuals, disturbance caused by reduced air or water quality, and alteration of immediate environments through loss of or changes to key habitat components. Beneficial or adverse effects are possible. Key habitat components include food availability or quality, cover from predators, thermal refugia, nesting/roosting/denning habitat, water availability and quality, and travel corridors. Direct impacts may affect individuals, populations, or habitats for the duration of the action, for a few days thereafter, or for several growing seasons, or may continue indefinitely if the action results in permanent habitat loss.

Indirect impacts from management activities to SSS typically result from influences of post-disturbance succession, recovery, or rehabilitation of the habitat. Beneficial or adverse effects are possible. These impacts may be long term, depending on the severity of the habitat alteration, and may change species assemblages (relative abundances or species composition), species behaviors, or overall population trends, benefiting some species and adversely affecting others.

Methods and Assumptions

To analyze the potential effects of the alternatives on SSS, information was gathered from existing inventories, recovery plans, conservation agreements, Utah Natural Heritage Program database, relevant scientific literature, computer habitat models, and other sources identifying the potential distribution of these species in and adjacent to the planning area. The analysis is also based on professional expertise of BLM specialists at the RFO, Utah State Office, knowledge of the area, and a review of the relevant scientific literature.

To comply with Section 7 of the Endangered Species Act (ESA), a Biological Assessment (BA) will be prepared to address impacts and mitigating measures on threatened, endangered, and candidate species, as well as designated critical habitat. In determining impacts for this Proposed RMP, BLM staff considered how the action would affect listed or candidate species known or suspected to occur in an area. Impacts were measured against information about threats found in the *Federal Register* (FR) notice describing the listing of the species and the potential for the action to modify designated or proposed critical habitat. Direct and indirect impacts were considered together with impacts of activities that are interrelated or interdependent. Impacts were quantified when possible. In absence of quantitative data, best professional judgment was used. In the following discussion, impacts are sometimes described by using ranges of potential impacts or in qualitative terms, if appropriate.

This analysis was based on the following assumptions:

- SSS habitat would be managed for the benefit of those species as a priority over other resource allocations and uses.
- Ground-disturbing activities could lead to modification of habitat or loss or gain of individuals, depending on the amount of area disturbed, the species affected, and the location of the disturbance.
- All surface-disturbing activities would include mitigation to reduce impacts to SSS and their habitat. Conservation measures developed for each listed or proposed species (Appendix 14) would be applied to any proposed project within the habitat of that species. Analysis of impacts and determinations of effects would include any and all mitigation and conservation measures.
- Prior to any surface-disturbing activity, an SSS review would occur to determine whether any such species would be present in the project area.
- United States Fish and Wildlife Service (USFWS) would be consulted for any actions that could have a potential to affect federally listed species.

Environmental Consequences

Impacts to SSS would likely result from actions proposed under the following resource management programs:

- Soil Resources
- Water Resources
- Vegetation
- Cultural Resources
- Paleontological Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros

- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on SSS.

Alternative N: No Action

Impacts from Soil Resources

Activities conducted under the soil management program are limited to monitoring, implementing support activities, providing information for other BLM programs, and recommending appropriate mitigation. Typical activities implemented under the soil resource program would include mapping soils, maintaining soil databases, identifying timing stipulations, and recommending protective measures for critical soils. For example, implementation of timing stipulations would reduce surface disturbance in areas that have a high seasonal erosion potential. As a result, SSS would benefit from a decrease in erosion and sedimentation, thereby generally maintaining or improving habitat.

Many special status plant species such as Last Chance townsendia (*Townsendia aprica*) and Wright fishhook cactus (*Sclerocactus wrightiae*) are located in drainages or runoff areas within the Mancos Shale formation. The soils in these areas are naturally erosive and have a high salt content. Increased erosion and sedimentation has been shown to cause the direct mortality of both plant species (personal observation, Megan Robinson). The management of soil would help reduce the amount of erosion and sedimentation within SSS habitat.

Impacts from Water Resources

Implementation of water quality- and quantity-related actions would guide or advise other program actions and activities in a manner conducive to maintaining or improving surface water quality. This implementation would be consistent with existing and anticipated uses and applicable state and federal water quality standards. Beneficial impacts to SSS include improved habitat for fish and wildlife and their associated prey. Maintaining or improving habitat associated with aquatic systems would provide long-term benefits for bald eagle (*Haliaeetus leucocephalus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), Northern goshawk (*Accipiter gentilis*), and Western yellow-billed cuckoo (*Coccyzus americanus*) habitat and populations. No management actions under any of the alternatives would adversely affect the federally listed Colorado River fish or their habitat in the planning area or in downstream reaches. Long-term reductions in water quality, water quantity, flow, or changes in water temperatures are not anticipated.

Impacts from Vegetation

Management Activities in Riparian and Wetland Areas

The purpose of the riparian and wetland management program is to maintain, restore, or improve riparian habitats. Proposed management actions that would be implemented to protect riparian areas include restrictions on time, space, and placement, as well as the establishment of 500-foot buffer zones around riparian areas. No surface-disturbing activities would be allowed around the outer edge of springs unless

it could be shown that there would be no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This restriction would protect any SSS and habitat within the buffer zone from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian-area restoration and vegetation treatment.

Vegetation treatments and streambank stabilization projects would potentially result in short-term adverse impacts to SSS whose habitat is located primarily in riparian and wetland areas (e.g., Southwestern willow flycatcher, bald eagle, yellow-billed cuckoo). Streambank stabilization and habitat restoration projects could result in the removal of riparian vegetation in these areas. Many of these areas are potential habitat for riparian obligate SSS. Impacts to SSS from these activities could include temporary disturbance or loss of occupied or potential habitat from heavy equipment use, increased human presence, and associated noise. Vegetation treatments in riparian areas could include the use of herbicides, fire, or mechanical removal of exotic plant species such as tamarisk or Russian olive. Application of herbicides has a remote potential for accidental drift into SSS habitat.

In the long-term, vegetation treatments and streambank recontouring would likely benefit riparian obligate SSS by improving or enhancing riparian habitat. Additionally, beneficial impacts to upland SSS could result from maintaining or improving natural hydrologic watershed processes. Activities to maintain or improve riparian health would have beneficial impacts on riparian-obligate SSS. Such activities could include construction of livestock, wildlife, and recreation exclosures within riparian habitats or habitat rehabilitation projects.

As stated, management of riparian and wetland areas would include the avoidance of surface-disturbing activities within 500 feet of riparian areas. This restriction would likely benefit riparian-obligate SSS. For example:

1. The Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo are riparian obligate species. Any restrictions on surface disturbance in the riparian habitat of these species would reduce adverse impacts. Southwestern willow flycatchers and yellow-billed cuckoos have both been known to nest in exotic riparian plant species such as tamarisk and Russian olive. The restriction of riparian projects such as mechanical removal of exotic species could protect nesting Southwestern willow flycatchers or yellow-billed cuckoos from nest abandonment and destruction.

2. Restrictions and buffers zones would reduce human activity within Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo habitat. Human activity and noise in areas occupied by Southwestern willow flycatchers, bald eagles, and yellow-billed cuckoos could alter nesting or foraging behavior. Reducing or eliminating human interaction by implementing restrictions and buffer zones would reduce the likelihood of altering these behaviors and could help increase nesting success rates. Federally listed Colorado River fish species located downstream from the planning area would not be adversely affected by any actions related to riparian and wetland management. The restrictions and buffer zones would maintain or improve the current character of the major streams, such as the Dirty Devil River, that flow into listed Colorado River fish habitat.

All riparian areas would be managed in accordance with BLM Utah riparian policy. It is the objective of this riparian policy to improve or maintain riparian areas in proper functioning condition. Riparian areas are classified as in “proper functioning condition” when there is adequate vegetation and landform structure present to dissipate stream energy from high flows. This condition reduces erosion, improves water quality, filtrates sediment, captures bedload, and aids floodplain development. Properly functioning riparian areas also result in an improvement in flood water retention and groundwater recharge,

development of root masses that stabilize streambanks against cutting action, development of diverse ponding and channel characteristics necessary for fish production and other uses, and greater biodiversity support. Continuing to implement this policy would minimize impacts on SSS inhabiting riparian and wetland areas.

Riparian and Wetland Inventories

Inventories within riparian and wetland areas would result in a better understanding of the extent of SSS and their habitats. This information would assist in the management of these areas. For example, inventory and monitoring activities could lead to habitat improvement actions such as construction of livestock, wildlife, and recreation exclosures within riparian habitats, or habitat rehabilitation projects. Wetland-obligate SSS are likely to benefit in the long term from maintained or improved riparian habitats.

Adverse short-term impacts that could result from riparian and wetland inventories could include the trampling of SSS plants and associated habitats, and increased human activity within special status wildlife species habitat.

Human presence and noise associated with exclosure development and maintenance within special status bird species habitat (such as habitat of the Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo) could disturb foraging behavior and cause nests to be abandoned, if the action inadvertently occurred during the species' nesting season.

Overall Vegetation Management

Vegetation management activities include fencing, weed treatment, timber harvest, sagebrush management (spraying, mechanical treatment, or burning), and seeding of disturbed areas or weed-treated areas. Vegetation management activities, especially those that use heavy equipment, would result in short-term adverse impacts to special status plant species and their habitat. Surface-disturbing activities could result in the crushing and mortality of individual plants and alteration of their habitat because of soil erosion or sedimentation.

Potential short-term impacts to Utah prairie dogs (*Cynomys parvidens*) include direct mortality of individuals from accidental chemical treatment drift, increased human presence, and damage to burrows. Heavy equipment used for reseeding or mechanical removal of undesirable vegetation could inadvertently damage burrows. Increased human presence could alter Utah prairie dog behavior, reducing the amount of time available for the species to forage, and could cause unnecessary energy expenditures in fleeing and alerting behavior. The presence of biologists during these activities would reduce the potential for burrow disturbance by monitoring and overseeing treatment operations. The removal of sagebrush from around prairie dog colonies would benefit the prairie dogs by allowing for growth of herbaceous vegetation used for foraging and by removing predator cover.

Human disturbance and noise associated with the use of heavy equipment could temporarily disperse special status bird species from occupied habitats. Adverse impacts to special status bird species could also result from accidental chemical drift from pesticide use in nearby areas, which could poison individuals or result in mortality of prey species. Prescribed burning could also disturb nesting special status bird species. These impacts would be expected to be localized and short term.

In the long term, SSS would benefit from most vegetation treatments because of an increase in vegetation productivity, which would provide additional forage, cover, and prey base.

Vegetation Treatments

Vegetation treatment methods include mechanical, prescribed fire, and chemical treatments. Surface disturbing activities, such as the use of heavy equipment, could cause crushing and mortality of individual plants and could alter habitat. The use of herbicides or pesticides in occupied habitat could render the habitat unsuitable for use by some species. Chemical weed controls could also affect potential pollinators of special status plant species, by eliminating their habitat.

Using heavy equipment to remove vegetation could temporarily reduce potential breeding and nesting habitats. Human disturbance and noise associated with the use of heavy equipment could also temporarily displace special status bird species from foraging and nesting habitats. For example, the Southwestern willow flycatcher and the yellow-billed cuckoo have been known to nest in tamarisk and Russian olive. Vegetation treatments to remove these invasive plant species could result in habitat loss and could disrupt nesting and foraging behavior.

The use of pesticides could result in a short-term reduction in herbivorous insects, which could cause changes to surrounding vegetation. If insect populations were substantially reduced over a long period, insectivorous SSS could disperse from currently occupied areas in an effort to find a larger forage base.

Chemical treatments and prescribed burning could also disturb nesting special status bird species because of smoke or chemical spray inadvertently drifting into occupied habitat. These activities have the potential to remove suitable habitat or other desirable vegetation.

In the long term, SSS would benefit from most vegetation treatments through an increase in vegetation productivity, which would provide additional forage, cover, and prey base.

Management of Noxious Weeds and Invasive Species

Noxious and invasive weed management activities include herbicide use, biological controls, and mechanical treatments in weed infested areas. Actions conducted in areas near SSS habitat could benefit these species by removing species that would compete with native species for available space and resources. When a specific project has been selected in SSS habitat, the necessary Section 7 consultation with USFWS would occur. Adverse impacts could result from mechanical vegetation treatments requiring the use of heavy equipment, resulting in the crushing and mortality of individual special status plant and animal species, as previously discussed. Short-term habitat and forage loss for some SSS could also result. Adverse direct impacts could result from accidental chemical drift caused by herbicide use in nearby areas.

Insect Pest Management

SSS could benefit from treatments that target destructive insects such as grasshoppers, cutworms, and Mormon crickets. Actions taken to remove destructive insects would reduce potential competition for available forage. However, many special status plant species' pollination vectors are not clearly understood. The elimination of potential pollinators could contribute to low fruit and seed set within the plant populations.

Control of insects in localized areas would likely result in adverse impacts to SSS in those areas. The reduction of some specific insect populations within special status bird habitats could alter foraging and nesting behavior by reducing the prey base and by requiring the birds to travel further to forage. For example, grasshoppers are a food source for Southwestern willow flycatcher, burrowing owl, yellow-billed cuckoo, and Greater sage-grouse. The short-term reduction in herbivorous insects could also result in changes to surrounding vegetation. If insect populations were substantially reduced over a long period,

special status bird species could disperse from currently occupied areas in an effort to find a larger forage base.

Adverse impacts could also result from accidental chemical drift of pesticides used in nearby areas. Ingestion of pesticides could lead to direct mortality of individual Utah prairie dogs or could cause decreased pup survival. However, continued dusting to control plague would help stabilize prairie dog populations and reduce the potential for catastrophic loss in individual colonies.

Impacts from Cultural Resources

Cultural resource actions could occur within occupied or potential habitat of SSS. Such actions could include developing interpretive sites, identifying cultural resources, using hand and power tools, establishing temporary camping areas, building fences, and stabilizing deteriorating buildings. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and cause the species to leave the area or abandon nests. Interpretive sites placed near nests or within home ranges of bird pairs could disturb nesting behavior on a long-term basis. This activity could lead to individual nest failure and reduced reproductive success.

The development of interpretive sites located within SSS habitat could also increase human activity in an area, resulting in the crushing and trampling of individual plants and habitat degradation over the long term. Cultural resource program actions involving excavation efforts could cause localized population declines because of crushing and destruction of individual plants, increased sedimentation, and soil compaction.

If a cultural resource project is conducted within SSS habitat, the described actions could adversely affect special status animal species, such as Utah prairie dogs and Greater sage-grouse, through the trampling of burrows and habitat degradation. These actions could result in surface disturbance, increased human presence, and noise that would disturb or displace special status animal species. Additionally, excavation activities within occupied habitat could cause direct mortality to the species. Human activities could disrupt foraging behaviors and could cause species to abandon habitat. Interpretive sites located within or near occupied habitat could disturb species' natural behavior on a long-term basis because of increased human presence.

The identification of new areas for field inventories could adversely impact SSS, depending on the intensity of the survey. If field inventories were to include SSS habitat, adverse impacts could be expected. Special status plant species populations and habitat could be trampled by surveyors searching for cultural artifacts and sites to survey. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. Ground-dwelling species such as the Utah prairie dog and Greater sage-grouse could experience trampling of burrows and habitat degradation within the survey areas. These actions also could result in increased erosion, noise, and visual stimulants for the species. Human activities could disrupt foraging behaviors and could result in the abandonment of the areas. Implementation of Alternative N would not directly affect SSS because no priority areas for new field inventories would be identified within the RFO.

Impacts from Paleontological Resources

Paleontological resource actions could include developing interpretive sites, identifying paleontological sites, using hand and power tools, establishing temporary camping areas, and building fences. These developments could occur within occupied or potential habitat of SSS. Actions including the development of interpretive sites, identification of paleontological resources, and the use of hand and power tools for excavation activities would increase noise and visual stimulants. These actions could temporarily disturb or displace birds. In addition, nests or key habitat components could be damaged or destroyed by the

removal of vegetation through actual digging activity or by the fencing of paleontological sites. Temporary camping areas could be established in habitats used by special status bird species. Human activities associated with paleontological activities in bird habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests.

If conducted within special status plant species habitat, paleontological resource activities could cause localized population declines. The necessity to conduct excavations and related activities within SSS plant habitat is expected to be rare.

Based on existing information, there would be little overlap between paleontological resources and Utah prairie dog habitats. However, should an excavation be required in prairie dog habitat, the dogs would be displaced from the disturbed areas. The use of heavy equipment within occupied habitat could destroy occupied burrows. Human activities in viable habitats could disrupt foraging behaviors and could result in the species abandoning occupied habitat. Increased human activity at interpretive sites within or near occupied habitat could disturb the prairie dog's natural behavior.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface-disturbing activities in certain areas, thereby affecting SSS. VRM Classes I and II, which preserve or retain the existing character of the landscape, would protect SSS by restricting ground-disturbing activities. VRM Classes III and IV would provide less protection by allowing more changes to the landscape and by being less restrictive of ground-disturbing activities. Under Alternative N, none of the lands managed by the RFO would be classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 acres (27%) would be managed as VRM Class III; and 1,029,500 acres (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and retain existing vegetation, thereby protecting SSS. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for SSS.

Impacts from Special Status Species

Implementation of the SSS program is designed to manage threatened, endangered, candidate, and sensitive species and their habitat. Activities could include conducting surveys, implementing habitat-improvement projects, and closing areas that contain populations or suitable habitat for SSS to OHV use or other surface-disturbing activities. Other actions would include inventory, monitoring, and population dynamics studies. BLM would continue to participate in the development of Recovery Plans and Conservation Agreements. Management activities conducted under the program that would benefit SSS include the provision of guidance, monitoring, and conservation measures.

Impacts from Fish and Wildlife

The primary threat to SSS as a result of implementing actions that are associated with the wildlife management program would be habitat manipulation that could cause surface disturbances in potential or occupied habitat. Habitat manipulations such as prescribed burns, and chemical or biological controls are typically used to improve habitat for wildlife. The continued maintenance or improvement of wildlife habitats in the vicinity of listed SSS could hold some long-term benefits for the species. However, there could be short-term adverse impacts such as loss or fragmentation of habitat, loss of individuals because of redistribution of grazing herbivores, or temporary sedimentation or changes in natural water regimes because of hydrologic changes. An increase in sedimentation could be particularly harmful to plant species that are located in drainages or wetland areas. However, these potential impacts would be

localized and would not affect endangered Colorado River fish habitat downstream from the planning area.

Restrictions or stipulations of surface-disturbing activities within wildlife habitats that overlap with SSS habitat could benefit SSS within the restricted areas. The restrictions would reduce adverse effects incurred by surface disturbances that could harm SSS. Under Alternative N, areas in which current surface-disturbance restrictions are in place (such as WSAs and eligible WSR corridors) could benefit SSS within these areas. In areas in which there are no surface-disturbance restrictions, impacts (such as decreased air quality, erosion, soil compaction, introduction of exotic and noxious weeds, crushing of plants, and habitat modification) could cause incidental take of the species.

SSS such as the Mexican spotted owl, bald eagle, and Cronquist wild buckwheat (*Eriogonum corymbosum* var. *cronquistii*) are known to exist within the Henry Mountains area. Alternative N would restrict oil and gas exploration and leasing activities in crucial bison habitats and in crucial and high-value mule deer habitats during the winter and spring, minimizing disturbance to these SSS. Soils are often wet during the winter and spring, so lack of activity would minimize the potential for soil compaction and would reduce detrimental impacts to wild buckwheat. Restricting activities in winter and spring would also reduce disturbance to wintering bald eagles and breeding Mexican spotted owls.

Implementation of this alternative would provide no seasonal or spatial restrictions on surface-disturbing activities in desert bighorn habitat but would require compliance with the *Desert Bighorn Sheep Management Plan* which includes the following goals: 1) Establish optimum populations of bighorn sheep in all suitable habitat within the state, 2) provide good quality habitat for healthy populations of bighorn sheep, and 3) provide high quality opportunities for hunting and viewing of bighorn sheep. However, this management plan lacks specific direction on actions to protect bighorn sheep and their habitat from surface-disturbing activities (such as oil and gas development), so potential adverse impacts could be substantial.

Impacts from Wild Horses and Burros

Alternative N would allocate 100 AUMs for wild burros in the Canyonlands HMA. This HMA is located near Mexican spotted owl designated critical habitat. Therefore, authorized wild burro activities could impact occupied Mexican spotted owl habitat during the life of the Proposed RMP. The presence of wild burros and subsequent gathering-related actions could adversely affect the Mexican spotted owl through noise, construction of temporary gathering structures, and the trampling of habitat used by the owl. Herd gathers generally would be conducted after July 1, minimizing harmful effects to nesting spotted owls. Herd gathering would be conducted using hazing techniques of low flying helicopters, vehicles, and gathering pens. Wild burros could run through occupied spotted owl habitat. These activities could disrupt owl foraging behaviors.

Impacts from Fire and Fuels Management

The focus of this analysis is on fire management activities including wildfire suppression, prescribed fire, and non-fire fuel treatments, and not on the impacts of wildfire itself. Actions associated with fire management could adversely affect SSS and their habitat.

Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by special status bird species would affect nesting, foraging, or roosting behavior. Foraging, nesting, and communal winter roosting habitats could be lost because of the use of heavy equipment, hand tools, and noise associated with intensive human activity. Some snags used for perching, roosting, or nesting could be lost because of suppression operations. However, these snags could be replaced as new snags result from fire mortality. The effects from wildland fire suppression could potentially become long term, depending upon the severity and extent of the activities conducted during a particular fire

suppression operation. A large fire that would require extensive suppression operations, such as extensive staging areas and fire-line construction, could result in long-term adverse effects to special status bird species and their habitats. However, smaller fires that would require less-extensive suppression operations would generally avoid these long-term, adverse effects.

Fire suppression activities could adversely affect special status animal species such as the Utah prairie dog and Greater sage-grouse and could cause immediate post-fire alteration or damage of occupied or suitable habitats. Suppression operations could result in harassment, displacement, injury, or mortality during staging, fire line construction, backburning, noise, or other human-caused disturbance. Any direct adverse effects would generally be short term, ending when or shortly after suppression actions were concluded. However, surface-disturbing operations conducted during fire suppression would result in a reduction or loss in quantity and quality of cover and forage habitat in both the grassland and sagebrush habitats. These activities would reduce forage availability, damage or destroy burrows or colonies, and remove the sagebrush and shrubs that provide above-ground vegetation cover. Despite the immediate initial loss of forage and shrub cover, some suppression tactics (e.g., backburning operations), or emergency restoration actions would stimulate vigorous regrowth of forb species in the following growing seasons. This regrowth would benefit SSS through improved forage quality and quantity.

A large fire event and associated suppression activities could result in the deposition of large amounts of sediment and ash into local river systems. Federally listed Colorado River fish habitat located downstream from the planning area could experience short-term water quality degradation. However, no long-term adverse impacts to the river system or the fish would be anticipated. Any fire retardant inadvertently deposited into the river system would likely dissipate and would not affect any listed fish species. Because prescribed fire-related actions tend to be limited in scope and smaller than major wildfires, no downstream adverse impacts to the listed Colorado River fish would be expected.

Fire management activities could adversely affect special status plant species by trampling individuals or habitat. Fire suppression activities also have the potential for resulting in increased erosion. The fire itself could result in the death of individual plants or the alteration of their habitat. The construction of fire lines by using hand tools and heavy machinery could also result in the destruction of individual plants and could alter habitat. Many special status plant species are found in locations in which wildfire did not historically burn. However, the presence of invasive weeds in those areas could result in fires burning where they previously did not. Therefore, the potential of a wildland fire, with attendant suppression activities, in special status plant species habitat is increasing.

Prescribed fire management activities, including fire-line construction and use of staging areas, could adversely affect listed special status plant species by trampling individual plants or altering habitat, as previously described. However, the severity of this impact would be much less than described under Appropriate Management Response because prescribed burns generally would not be proposed within special status plant species habitat.

Under Alternative N, prescribed fires would be used to reduce hazardous fuels within the RFO. As stated above, prescribed fires would have the potential to adversely affect SSS. However, habitat manipulations resulting from the use of fire would also benefit SSS over the long term by improving vegetative conditions.

Stabilization and rehabilitation efforts would benefit SSS over the long term by decreasing erosion and restoring or improving habitat conditions following a fire event, although there could be short-term adverse impacts. The planting of non-native species that could out-compete special status plant species and other native plant species used by special status wildlife species would alter habitat conditions and would make them less favorable. The use of heavy equipment within special status plant species habitat

could result in the crushing of individual plants and segmentation of populations. Increased human activity during construction efforts could cause special status bird species to alter foraging, nesting, and roosting behaviors. The use of heavy equipment associated with stabilization efforts within Utah prairie dog colonies could result in the crushing of burrows and the direct mortality of individual prairie dogs.

Alternative N includes stabilization efforts as needed for every wildland fire. Stabilization efforts have the potential to benefit SSS through decreased erosion and improved habitat and vegetative conditions. However, as described previously, surface-disturbing activities associated with stabilization also have the potential to adversely affect SSS by altering habitat, primarily on a short-term basis.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for SSS.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

Forestry and woodland management actions include the harvesting of firewood, poles, Christmas trees, pine nuts, timber, and seed collection. Commercial forestry activities (e.g., timber harvests and sales) are restricted to upland forests. These activities could include the use of heavy equipment, helicopters, chemical applications, road construction, and culvert installation, and typically would result in increased traffic, noise, and human presence.

The implementation of forestry management actions that reduce pinyon-juniper woodland invasion would benefit those SSS that require open space. The clearing of old, dense, relatively less-productive woodlands could open up more productive areas that could be used by SSS.

Potential adverse impacts to special status bird species could include loss of habitat, increased human access to remote habitats because of new road construction, increased noise, increased human activity, overspray or drift of chemical treatments, and culvert installation or waterbar construction, all of which could alter riparian function. These activities could result in habitat loss or fragmentation, displacement of individuals, reduction in special status bird species prey base, or direct mortality of individuals. Human activities associated with forestry and woodland actions could increase noise and visual stimulants in habitats. These factors could disrupt nesting and foraging behaviors, could result in the species leaving the area or abandoning nests, or could lead to individual nest failure and reduced reproductive success. A significant alteration of habitat could render suitable habitat uninhabitable for SSS.

Timber and woodland harvest activities, including the construction of timber access roads, could result in the direct and indirect loss of special status plant species and their habitat. Additionally, authorized collection of seeds within special status plant species habitat could result in loss or damage to plants. Seeds are typically gathered by thrashing the plants with tennis rackets. Motorized vehicles are used as part of the collection activity. The inadvertent or deliberate collection of special status plant species seeds would reduce recruitment within the habitat, resulting in population loss.

Surface-disturbing activities such as the use of heavy machinery and equipment could contribute to decreased air quality. Decreased air quality could adversely affect SSS if it is significant within occupied habitat.

The clearing of woodlands could open areas that could be used by the Utah prairie dog both for burrows and forage.

Most of the special status plant species located in the RFO are not located in forested areas that would be impacted by commercial timber harvesting. However, construction of roads through viable and occupied habitat of SSS to access the timber could adversely impact SSS.

Alternative N would allow timber harvest in areas west of Capitol Reef National Park. Both the Rabbit Valley gilia (*Gilia caespitosa)* and last chance townsendia (*Townsendia aprica*) are located west of Capitol Reef National Park and could be adversely affected, as described previously.

Seed and Live Plant Collection

Alternative N would allow the commercial collection of live plants and seeds. Authorized collection of seeds within special status plant species populations and habitat can damage the plants. Seeds are typically gathered by thrashing the plants with tennis rackets. The collection of special status plant species seeds would also reduce recruitment within viable habitat, by reducing the number of viable seeds within an area. However, potential impacts would be reduced because of required NEPA analysis and consultation under Section 7 of the ESA for projects involving collection of special status plant species or their seeds.

Human activities associated with seed and live-plant collection can increase noise and visual stimulants in viable habitats of special status bird species. These actions could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. The actions could also lead to individual nest failure and reduced reproductive success.

Human activities associated with seed and live-plant collections could result in the trampling of burrows for Utah prairie dog and pygmy rabbit. These activities could also alter foraging behaviors within a population during the activities' duration. The collection of seeds within SSS habitat could reduce available forage for SSS or their prey.

Impacts from Livestock Grazing

The primary threats to SSS from the implementation of the livestock grazing program are surface-disturbing actions such as the construction of fences, water pipelines, cattle guards, wells, livestock ponds, and actual grazing activities. Although the threat would be minimized through the use of inventories, clearances, and mitigation, construction activities have the potential to directly impact special status plant species through individual mortality during construction efforts (e.g., crushing of plants from vehicles or fence posts). The construction of fences or livestock ponds has the potential to indirectly affect special status plant species by leading to concentrations of cattle in occupied habitat, thus resulting in trampling of plants. Similarly, placement of salt and mineral supplements could lead to cattle concentration in special status plant species habitats and could result in trampling of individuals. Non-structural grazing projects could include seeding, plowing, and herbicide spraying. Plowing and herbicide use could result in the direct mortality of populations and viable habitat. The alteration of habitat could have an indirect adverse effect on habitat for the pollinators of special status plant species.

Human activity from authorized construction and herding efforts in viable special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. The placement of salt and mineral supplements could lead to cattle concentration in special status bird species habitats and could result in the displacement of the species. Finally, non-structural grazing projects could include seeding, grazing, and herbicide spraying. These activities could alter the habitats used by special status bird species prey, and could result in disrupted foraging behaviors.

Livestock grazing management activities (construction of fences and water ponds, herding cattle, watering, and salting) within occupied prairie dog habitat could cause the direct mortality of individuals. Increased human activity during these projects could disrupt the foraging habits of the Utah prairie dog.

Conversion of Kind of Livestock and Adjusting Season of Use and Permitted Use

Adjusting livestock season of use could benefit SSS. Many special status plant species appear to be particularly susceptible to livestock grazing-related impacts during the spring, when the plants are sprouting, flowering, and fruiting. Most of the special status bird species thrive when there is little or no disturbance during breeding and nesting periods.

Studies conducted on the effects of grazing and habitat quality on the Utah prairie dog have shown strong associations between grazing season of use and prairie dog weight gain and reproduction. Adult weight gain was three times lower in complexes that were grazed in the summer than in complexes that were grazed in the spring or fall/winter (Ritchie and Cheng 2001). The BLM permits authorizing livestock grazing contain terms and conditions that specify livestock numbers and season-of-use, to ensure that an area is properly grazed. Livestock grazing in summer appears to be the most detrimental to Utah prairie dog populations. Fall or winter grazing was shown to have a beneficial effect on prairie dogs as compared to no grazing, because grazing can prevent vegetation from visually obscuring the horizon and can aid prairie dogs in detecting predators. Spring grazing could enhance prairie dog survival, but repeated annual spring grazing is likely to accelerate shrub invasion, leading to long-term Utah prairie dog habitat degradation. Fall and winter grazing may not reduce standing plant material enough to enhance prairie dog predator detection, especially in areas dominated by crested wheatgrass (*Agropyron cristatum*).

The ability to adjust livestock numbers because of unforeseen conditions such as drought also benefits SSS. During drought conditions, competition between livestock and wildlife is high and undesirable vegetation is consumed. This could include special status plant species. Additionally, livestock within special status animal species habitat such as the Utah prairie dog are in direct competition for forage. Livestock numbers that might have a beneficial effect or no effect to Utah prairie dogs in wet years could have detrimental effects during drought conditions.

The conversion of kind of livestock use could have adverse effects on special status plant species. For example, sheep have upper incisors, so sheep can graze more closely to the ground and impact vegetation more severely than can cattle. Thus, sheep within Utah prairie dog habitat could graze more forage used by the prairie dogs for survival than would cattle. Sheep also would eat a greater variety of plant species than cattle. Therefore, the introduction of sheep in a former cattle allotment could have detrimental effects by foraging on special status plant species and habitat.

Impacts from Recreation

Any form of recreational activity that increases noise and dust could adversely impact SSS by disturbing breeding, feeding, or sheltering activities. Motorized recreation has the greatest potential to affect SSS, particularly during the time of year when species are rearing young. Animals could be injured or killed by collisions with vehicles on designated routes, and plants could be crushed by vehicles. Disturbance could lead to emigration or an increased risk of predation.

Foot traffic through sensitive areas could disturb, injure, or kill SSS or prevent successful feeding or breeding activities. Recreational shooting activities might increase noise and trash in a localized area and could lead to injury or death of animals. Camping might cause minor to moderate impacts by disturbing animals, altering or removing habitat, crushing plants, increasing trash and debris in the area, and increasing the risk of wildfire. Animals might ingest foreign food substances that could cause illness or

death. Camping activities where pets are allowed to roam freely might also cause impacts to special status wildlife. Use restrictions on these types of activities should reduce or eliminate adverse effects.

Recreationists often use riparian areas because of the presence of shade, water, aesthetic values, and opportunities for camping, fishing, boating, swimming, and other activities. Impacts to these habitats could be detrimental to riparian obligate species by altering foraging, nesting, and mating behaviors. Extended recreational use in riparian areas could also result in sedimentation and compaction of soils, which could alter viable habitat for aquatic species.

Visitor use is expected to increase throughout the RFO. Under Alternative N, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. OHV use in particular could lead to inadvertent damage to SSS and their habitat because of ease of access across a large portion of the RFO. Increasing recreational uses could also have adverse impacts on special status birds, particularly in riparian areas, displacing birds and degrading habitat.

Special recreation permits (SRPs) are issued to control visitor use and protect resources. Stipulations for protecting SSS, developed in consultation with USFWS, would be included in SRPs that would mitigate impacts to species and habitat, Mitigation could include actions such as limiting camping near springs or protecting raptors and nests from rock-climbing activities).

Impacts from Travel Management

Motorized activities in special status bird species habitats could disrupt nesting and foraging behaviors, resulting in the species leaving the area or abandoning nests. Frequently used OHV areas near nests or within home ranges of individual pairs could disturb nesting behavior on a long-term basis. This type of activity could also lead to individual nest failure and reduced reproductive success.

OHV use could degrade habitat, particularly meadow and shrub habitats that are vital to special status bird species prey. Noise produced by OHVs could disturb special status bird species at important nesting and roosting sites during critical periods.

OHV use in riparian habitats could result in the trampling, clearing, and cutting of vegetation; prevention of seed germination because of soil compaction; increased bank erosion and sedimentation; increased incidence of fire; introduction of exotic plant species; and noise disturbance. These impacts could result in adverse effects for SSS such as the Southwestern willow flycatcher, bald eagle, and yellow-billed cuckoo. Adverse effects could result from reduction of available foraging, roosting, breeding, and stopover habitats. OHV disturbance could increase the potential for nest abandonment or mortality of young and eggs.

Impacts of OHV use on special status plant species could involve habitat disturbance and increased access for illegal collectors. OHV use within SSS habitats could lead to direct mortality of the species (through the crushing of plants) and indirect mortality (through increases in erosion and sedimentation). For example, monitoring has shown that OHV use has had an adverse impact on special status plant species population in the Factory Butte area. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance (e.g., crushing of vegetation, soil disturbance) associated with OHV use could increase native plant communities' susceptibility to weed establishment and could modify localized soil conditions until they are unsuitable for establishment by native species.

OHV use could result in adverse impacts to Utah prairie dogs; such impacts include damage to burrows, loss of forage, harassment, noise, and direct mortality. If OHV use occurs in occupied Utah prairie dog colonies, ground disturbances associated with these activities could cause burrows to collapse, thereby impacting Utah prairie dog colony structure and function. In addition, OHV use could destroy vegetation within and near Utah prairie dog colonies, thereby degrading potential foraging habitats. Increased human activity near prairie dog towns could alter typical activity patterns, leading to decreased nutritional health. OHV use could increase interactions between Utah prairie dogs and humans; if these interactions involve hunters, the potential for mortality of prairie dogs could also increase.

Restrictions on OHV use within SSS habitat would benefit the species by limiting disturbance. Under Alternative N, 1,636,400 acres would continue to be open to cross-country OHV use. This area includes some habitat for and populations of all the SSS located within the RFO. As stated previously, continued OHV use would result in adverse impacts to SSS. It is anticipated that OHV use would continue to increase in the future. As a result, adverse impacts to SSS in the RFO would also increase.

Under Alternative N, there would be 4,315 miles of open routes and 65 miles of closed routes. Alternative N does not take SSS into account when considering OHV route designations; the designations are based on the location of existing routes. Therefore, SSS could be adversely impacted by OHV route designation under this alternative.

Impacts from Lands and Realty

Land Tenure Adjustments

The effects of land tenure adjustments on SSS would be determined through site-specific environmental analysis for any proposed land disposals. Generally, lands containing listed plant and animal species habitat would not be considered for disposal. BLM could acquire lands that contain SSS habitat. Doing so would benefit SSS by providing protections that would not be afforded by non-federal ownership.

Withdrawals

Implementation of Alternative N would include recommending the four existing ACECs for mineral withdrawal, in addition to the existing withdrawals. Withdrawing these areas from mineral entry would reduce any adverse effects to SSS that could result from mineral development in these areas.

Rights-of-Way and Other Land Use Authorizations

ROWs or other land use authorizations (e.g., permits, leases, easements) could be proposed in populations and habitats for SSS. Construction of ROWs in SSS habitats could cause direct impacts to the habitat through trampling and other surface disturbance. Indirect impacts could include changes in hydrology or degradation of habitat because of increased sedimentation or habitat fragmentation. ROWs within viable or occupied SSS habitat could also degrade habitat through the introduction of invasive weeds.

Surface disturbances associated with ROWs and other land use authorizations could cause habitat loss or changes in vegetation structure, which could alter special status bird species' breeding and migratory habitats at or near disturbance locations. In addition, the construction, operation, and maintenance of ROWs could increase noise and human presence in otherwise remote areas and could increase stress levels of special status bird species. Increased human presence could disturb foraging and nesting behavior of special status bird species prey. The disturbance of individuals could result in reduced productivity or nesting success and increased likelihood of individual mortality.

If ROWs were authorized and developed in or near known populations of listed plant species, the habitat could be degraded, resulting in plant mortality.

Activities associated with ROW development (e.g., blading and grading of vegetation for construction of ROWs) could produce open areas that create ideal habitat for Utah prairie dogs. Blading and grading of habitat could also be beneficial to prairie dogs, by decreasing the vegetation height and therefore increasing visibility around existing colonies. When these disturbed areas are successfully reclaimed, the regrowth of native vegetation provides ideal forage for the prairie dog.

Construction and operation of roadway systems increase both traffic and visitation to otherwise remote areas. Increases in traffic and human presence could lead to increased mortality of special status animal species such as the Utah prairie dog, because of vehicle collisions and potential poaching (Laun 1957; Johnson and Collinge 2004).

ROW construction activities have the potential to result in short-term impacts to the Utah prairie dog, including damage to burrows, temporary displacement, loss of forage, and direct mortality. Potential long-term impacts include loss of habitat and disturbance from increased human presence, noise, and increased vehicular traffic on roadways. Direct habitat loss, including the conversion of habitat to agriculture, urban sprawl, and roadway development, have all been cited as reasons for population declines in prairie dogs (Smith 1955; Wuerthner 1997; National Wildlife Federation 2000; National Wildlife Federation and Environmental Defense 2002). Any direct habitat loss caused by ROW development in existing habitat (e.g., established prairie dog towns) or potential habitat (e.g., short grass prairie; low growing shrub lands) could adversely impact the Utah prairie dog.

Any new land use authorizations (e.g., ROWs, permits, leases, easements) would require consultation with USFWS and NEPA review, to minimize impacts to SSS. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas. Exceptions would be granted only when the proposed authorization would not create substantial surface disturbance or would create only temporary impacts. Thus, impacts to SSS in these avoidance areas would be negligible.

Wind and Solar Energy

According to the U.S. Department of Energy, National Renewable Energy Laboratory, the planning area has a low potential for wind and solar energy. Wind energy developments could potentially impact several special status plant and animal species. According to the *Final Programmatic Environmental Impact Statement on Wind Energy Development* (BLM 2005c), impacts to threatened and endangered species would include habitat disturbance, introduction of invasive weeds, individual mortality, erosion and runoff, fugitive dust, noise, exposure to contaminants, and interference with behavioral activities. That EIS notes that the operational impacts of most concern to ecological resources would be those associated with bird and bat strikes with turbines and associated infrastructure (e.g., transmission lines and meteorological towers) and to a lesser extent, electrocution of birds. Other concerns include habitat fragmentation, noise, and disturbance from human and vehicle activity.

Alternative N would include solar and wind energy exploration and development on a case-by-case basis. Any impacts to SSS would depend upon the type of project proposed. For example, the use of solar panels within a special status plant species population could block sunlight from the plants; or the use of wind turbines could result in collisions with special status bird species.

Impacts from Minerals and Energy

Construction and operation of facilities associated with mineral exploration could expand current roadway systems and increase both traffic and visitation to otherwise remote areas. Increased traffic could result in increased mortality of SSS from vehicle collisions, poaching, and trampling of habitat. In addition to

direct human-caused mortality, SSS could also be affected through exposure to spills or other sources of petroleum products.

Impacts from mineral development activities could include disturbances related to construction activities, noise from vehicles and equipment, seismic activities, increased human presence, and other related operations. Increased vehicle traffic could disturb special status bird species' nesting and roosting sites. Mineral and energy development typically disturb or remove vegetation and soil. When these activities are within special status bird species foraging habitat, the species can be adversely affected through a loss or decrease in food base. Exploration and production activities could result in increased human presence, increased noise levels, habitat fragmentation, and displacement of individuals.

Potential impacts of energy and mineral development to special status plant species include direct mortality caused by construction equipment and vehicles in occupied habitats. Also, habitat could be lost or modified by constructing well pads, pipelines, and associated facilities in occupied and suitable habitats or by disturbing habitat of the species' pollinators. Alternative N would protect Greater sage-grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Leasable Minerals—Oil and Gas

In December 2004, BLM and USFWS completed a programmatic consultation under Section 7 of the ESA, resulting in the development of a set of lease notices for listed species; this list is to be attached to oil and gas leases offered in the state. These lease notices, in conjunction with a threatened and endangered lease stipulation required by Instruction Memorandum (IM) WO 2002-174 and IM UT 2005-089, would alert potential lessees of the possible presence of listed species on the lease parcels. The notices would also inform potential lessees of restrictions and requirements that could be necessary at a future developmental stage. The lease notices and accompanying consultation memoranda are found in Appendix 11. These notices would apply to all the listed species found within the RFO. Application of the measures resulted in a "may affect, not likely to adversely affect" determination for the oil and gas leasing program.

Implementation of Alternative N would result in 1,236,500 acres (58% of the RFO) open to leasing subject to the standard terms and conditions; 409,200 acres (19%) open to leasing subject to moderate constraints (TL, CSU), 22,600 acres (1%) open to leasing subject to major constraints (NSO), and 459,700 acres (22%) closed to leasing. SSS that are located in areas that are open to leasing subject to the standard terms and conditions or that are open to leasing subject to moderate constraints (TL, CSU) include the Rabbit Valley gilia, Greater sage-grouse, pygmy rabbit, and other species. Fluid mineral development could adversely impact these species. Alternative N would protect Greater sage-grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Leasable Minerals—Coal

Any direct impacts of coal development on listed plant and animal species would be precluded by Coal Unsuitability Criterion 9, which states, "Federally-designated habitat for listed threatened or endangered plant and animal species or species proposed for listing…shall be considered unsuitable." Alternative N would protect Greater sage-grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Geophysical

Under Alternative N, the BLM would allow geophysical explorations outside of WSAs and existing ACECs. Geophysical exploration involves the use of OHVs and vehicles to lay geophones, to drill shot holes for charges, or to create a sound wave using all-terrain “thumper" vehicles instead of using charges. Vehicles are also used to remove the geophones and reclaim the shot holes (if used). Exploration for oil and gas (including coalbed natural gas) may also include the drilling of one or more wells to test for the reservoir and its productive viability. During the exploration phase of drilling, surface-disturbing activities include the construction of roads, well pads, reserve pits, and other facilities. Adverse impacts to SSS, which were described previously under Impacts from Minerals and Energy, might result from surface-disturbing geophysical activities. Alternative N would protect Greater sage-grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Locatable Minerals

SSS could be adversely affected (as described previously) by the surface-disturbing activities that would result from locatable minerals development. Under Alternative N, 169,480 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent these types of activities from causing impacts to SSS. Alternative N would protect Greater sage-grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Salable Minerals

Alternative N allows the sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted—it is likely that SSS do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, thereby protecting SSS including Greater sage-grouse. Alternative N would protect Greater sage- grouse habitat by prohibiting surface disturbing activities near leks from March 1 through July 15, and within nesting/brooding habitat from April 1 through June 15. Other SSS that inhabit these areas would benefit from these stipulations (e.g., pygmy rabbit, Utah prairie dog).

Impacts from Special Designations

Wilderness Study Areas

Continued management of WSAs under the IMP would limit surface-disturbing activities that could adversely affect SSS. SSS located in WSAs include the Mexican spotted owl and bald eagle. WSAs are closed to leasing, precluding any impact from oil and gas development on SSS within these areas, and are managed as VRM Class I, which further restricts surface-disturbing activities.

Wild and Scenic Rivers

Under Alternative N, the outstandingly remarkable values, tentative classification, and free-flowing nature of all eligible river segments would be protected. SSS such as the Mexican spotted owl and bald eagle could benefit from continuing these protections because no surface-disturbing activities would be allowed within the SSS habitat in these areas.

Areas of Critical Environmental Concern

Under Alternative N, BLM would continue designation and special management of the four existing ACECs: Beaver Wash, North Caineville Mesa, South Caineville Mesa, and Gilbert Badlands. Habitat for

the Wright fishhook cactus, Mexican spotted owl, and bald eagle is located within these ACECs. ACECs provide limited protection for SSS by restricting many surface-disturbing activities.

Alternative A

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation

The types of impacts experienced as a result of riparian management would be similar to those described under Alternative N, except that the size of the buffer zone in which no surface disturbance would be allowed is 330 feet on each side of the riparian area under Alternative A (compared with 500 feet under Alternative N). Thus, Alternative A would protect a smaller area around the riparian/wetland zones from surface disturbance. However, projects to improve habitat conditions within these riparian zones (if they would benefit SSS) could still be performed, even within this buffer zone.

The types of impacts experienced as a result of vegetation management would be similar to those described under Alternative N. Under Alternative A, existing vegetation treatments would be maintained and new treatments to increase productivity and to achieve desired vegetation conditions would be implemented. Beneficial effects could result from many of these activities, which would include improved vegetation conditions. An increase in vegetation productivity could result in the introduction of native or non-native species that could directly compete with special status plant species through encroachment in occupied and potential habitat. Adverse effects could also result from the construction efforts associated with some vegetation treatments, as described previously under Alternative N.

The types of impacts experienced as a result of noxious weed and invasive species management would be similar to those described under Alternative N, except that implementation of Alternative A would likely result in additional acres being managed for invasive and noxious weed control. As a result, potential adverse short-term impacts to SSS could increase. However, potential long-term benefits would also be greater as a result of weed-control methods that would improve forage and habitat for special status animal species. SSS habitat would also be improved by the removal of invasive and noxious weeds, which compete for available space and resources.

Impacts from implementing insect pest management actions would be the same as those described under Alternative N.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N, except that most cultural resource sites would be allocated and managed for public use under Alternative A. This allocation would emphasize public education and interpretation of cultural resources, which would increase visitation to sites. Human activities in special status bird species habitats could disrupt nesting and foraging behaviors and could result in the species leaving the area or abandoning nests. Ground dwelling species such as the Utah prairie dog and Greater sage-grouse could experience trampling of burrows and habitat degradation within the survey areas. These actions could also result in increased erosion, noise, and visual stimulants for the species. Human activities could disrupt foraging behaviors and could result in the abandonment of the areas. However, these activities would only affect relatively small, localized areas.

Alternative A identifies Horseshoe Canyon South WSA as an inventory priority area. SSS known to exist in the area include the Mexican spotted owl (*Strix occidentalis*), bald eagle (*Haliaeetus leucocephalus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Adverse impacts from inventories could result in localized habitat degradation, altered foraging behaviors, and nest abandonment.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative A would be similar to those described under Alternative N, except that 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I under Alternative A. If SSS habitat overlaps with these areas, SSS would benefit because VRM Class I areas (which require preservation of the existing landscape) would restrict surface-disturbing activities.

Under Alternative A, none of the lands managed by the RFO would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be managed as VRM Class IV. Areas designated as VRM Class III or IV (79% of the RFO under Alternative A) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for SSS. Alternative A designates more acres as VRM Classes III and IV than do any of the other alternatives.

Impacts from Special Status Species

Generally, impacts would be similar to those described under Alternative N. Alternative A would impose a one-quarter mile seasonal buffer (March 15 through June 1) for no surface disturbance or permanent structure around Greater sage-grouse leks, but wouldn't include restrictions on surface disturbing activities within nesting/brooding habitat. Therefore, this alternative provides less protection to sage-grouse and other SSS in these areas than Alternative N.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N. However, under Alternative A mitigation could be required in deer and elk habitats from December 15 through April 15 and in crucial desert bighorn habitat from April 15 through June 15. Implementation of these restrictions and mitigation measures could benefit SSS in these areas.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under Alternative A would be similar to those described under Alternative N, except that under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually). Prescribed fires and wildland fires have the potential to adversely affect SSS. However, habitat manipulations through the use of fire could benefit SSS over the long term by improving vegetation conditions.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would be proposed under Alternative A, resulting in no additional protection for SSS.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs) under Alternative A. Thus, impacts from this type of activity would occur over a larger area.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described under Alternative N, except that the designation of specific areas for seed collection would be considered under Alternative A. If specific areas that exclude occupied SSS habitat were designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied SSS habitat was considered for seed collection, NEPA analysis and Section 7 consultation would be required, reducing the potential for adverse impacts.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N, except that 36,950 more acres would be available for livestock grazing under Alternative A. Thus, impacts from surface-disturbing activities associated with the construction and implementation of range improvements (both structural and non-structural) could occur on additional acres. However, because this area represents a very small portion of the total RFO (less than 2%), impacts to SSS from implementation of Alternative A would be negligible.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas would decrease the potential for inadvertent damage of SSS and their habitat, compared to Alternative N.

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This management would decrease the potential for such impacts to SSS as trampling, erosion, destruction of viable and occupied habitat, and the direct mortality of individuals. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing impacts. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for impacts to SSS by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate to extensive landscape modification would have potentially major impacts and would result in continued impacts to SSS. However, this area is currently receiving heavy motorized use.

Alternative A allows vehicles to pull off of designated routes (outside WSAs) as much as 100 feet to either side of the centerline (for parking/staging) and as much as 300 feet to either side of the centerline (for camping). This allowance could result in vehicles generally impacting SSS and their habitat in these areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that implementation of Alternative A would result in 449,000 acres that are

open to cross-country OHV use. These open areas include some populations of and some habitat for the Wright fishhook cactus and San Rafael cactus, both of which are federally listed species. OHV use within SSS habitats has the potential to lead to direct mortality of the species, through the crushing of plants, and indirect mortality, through increases in erosion and sedimentation. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment, and can modify soil conditions so that the soils are unsuitable for establishment by native species. OHV use in special status plant species habitat could provide increased access for illegal collectors.

Areas, including those that contain SSS habitat, that are either closed to OHV use or in which use is limited to designated routes would be protected from the surface-disturbing activities associated with this activity. Alternative A, which designates no areas as closed to OHV use and 1,679,000 acres as limited, would provide more protection to SSS than Alternative N would because substantially less areas are open to cross-country OHV use under Alternative A. Alternative A also proposes to limit OHV use to designated routes in Greater sage-grouse breeding (leks) and nesting habitats.

Under Alternative A, 4,312 miles of routes would be available for public use and 68 miles would be closed. Alternative A was developed to avoid threats to soil, watershed, vegetation, and SSS, with respect to route designations. Therefore, SSS could be protected when road restrictions are placed in areas in which OHV use is deemed to be a threat to a particular species. Under Alternative A, routes that are restricted or closed are located in areas in which SSS such as the Mexican spotted owl, pygmy rabbit, and the Wright fishhook cactus exist. Limited or no access to these areas would reduce adverse effects to SSS that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Implementation of Alternative A would have little or no effect on SSS. The existing withdrawals are located in picnic and camping areas that do not contain any known SSS populations or habitats.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that under Alternative A, there would be fewer ROW avoidance areas. However, because consultation with USFWS and NEPA review would be required for any new ROW or other land use authorization, impacts to SSS would be negligible.

Wind and Solar Energy

Implementation of Alternative A would allow wind and solar energy exploration and development throughout the RFO except for in WSAs and VRM Class I areas. The restriction of wind and solar energy exploration and development within WSAs and VRM Class I areas could indirectly benefit SSS such as the Mexican spotted owl and the Wright fishhook cactus, by eliminating surface-disturbing activities within these areas.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative A, 860,600 acres (40% of the RFO) would be open to leasing subject to the standard terms and conditions; 820,500 acres (39%) would be open to leasing subject to moderate constraints (TL, CSU); and 446,900 acres (21%) would be closed to leasing. SSS that are located in areas that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) include Rabbit Valley gilia, pygmy rabbit, Greater sage-grouse, and the California condor. Fluid mineral development could adversely impact these species. Potential impacts to SSS from fluid mineral development are greatest under Alternative A. Although this alternative provides protection to sage-grouse lekking habitat by prohibiting surface disturbing activities within ¼ mile of leks from March 15 through June 1, it doesn't provide protection against surface disturbing activities within sage-grouse nesting/brooding habitat. Therefore, this alternative is less protective of SSS inhabiting sagebrush communities than Alternative N.

Leasable Minerals—Coal

Generally, impacts would be the same as those described under Alternative N. However, in regards to Greater sage-grouse, this alternative provides less protection because it doesn't include restrictions on surface disturbing activities within nesting/brooding habitat.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under Alternative A, geophysical explorations would be allowed throughout the RFO, with the exception of WSAs, as determined through site-specific NEPA analysis. Alternative A therefore could result in more potential impacts to SSS than would Alternative N. For example, this alternative provides less protection to Greater sage-grouse because it doesn't include restrictions on surface disturbing activities within nesting/brooding habitat.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be the same as those described under Alternative N. Under Alternative A, 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts to SSS from these types of activities. This alternative would recommend the least amount of acres for mineral withdrawal, which could result in the most impacts to SSS. This alternative also provides less protection to Greater sage-grouse because it doesn't include restrictions on surface disturbing activities within nesting/brooding habitat.

Salable Minerals

The types of impacts experienced from the disposal of salable minerals would be the same as those described under Alternative N. Alternative A allows sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted; it is likely that SSS do not occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect SSS. If salable minerals exist within Greater sage-grouse habitat, this alternative would provide less protection than Alternative N because it doesn't include restrictions on surface disturbing activities within nesting/brooding habitat.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible rivers would be recommended or managed as suitable. The outstandingly remarkable values, tentative classification, and free-flowing nature of these river segments would not be protected. Thus, SSS such as the Mexican spotted owl and bald eagle would not receive any additional benefit.

Areas of Critical Environmental Concern

Under Alternative A, no ACECs would be designated. No special management to protect relevant and important values would be provided to SSS or their habitat. Impacts, however, would be little changed from Alternative N because three of the four ACECs are within WSAs and the other—North Caineville Mesa—is virtually inaccessible. ACECs provide limited protection for SSS by restricting many surface-disturbing activities.

Proposed RMP

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation

Impacts from riparian, vegetation, and noxious weeds/invasive species management would be the same as those described under Alternative A.

The types of impacts experienced as a result of insect pest management would be similar to those described under Alternative N, except that implementation of the Proposed RMP would allow for pest-control treatments when the area economic threshold is exceeded. This action would likely be implemented only during large insect outbreaks, such as outbreaks of grasshoppers and Mormon crickets. The use of insecticides within viable and occupied special status plant species habitat during large outbreaks could benefit the species by reducing competition for available food. However, adverse impacts would also be realized in the form of decreased plant pollinators and reduced forage base for special status wildlife species.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative A, except that fewer cultural resource sites would be allocated and managed for public use. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption to SSS would affect only relatively small, localized areas and would occur in fewer areas than under Alternative N or A.

The Proposed RMP would emphasize several new priority inventory areas. Many SSS are located in these inventory areas. Potential adverse effects to SSS as a result of cultural resources inventories would include surface-disturbing activities that could result in nest abandonment, habitat alteration, or loss of individual plants. Significance of the impacts would depend on the exact location of the designated area and the intensity of the inventory.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts under the Proposed RMP would be similar to those described under Alternative A. However, more acres would be designated as VRM Class I or II (696,700 acres, or 33% of the RFO), which would protect SSS by restricting surface-disturbing activities in these areas.

Under the Proposed RMP, 393,100 acres (18%) would be designated as VRM Class III and 1,038,200 (49%) would be managed as VRM Class IV. These areas, which can allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for SSS. The Proposed RMP would designate more acres as VRM Class III or IV than would Alternative C or D, but fewer acres than would Alternative N or A.

Impacts from Special Status Species

Generally, impacts would be the same as those described under Alternative N. However, the Proposed RMP has additional protections for sage grouse habitat. This includes managing the area as open to leasing subject to major constraints (NSO) within ½ mile of Greater sage-grouse leks and prohibiting surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exceptions, waivers, and modifications). Implementation of these stipulations would directly benefit sage-grouse by protecting habitat during the breeding, brood rearing, and winter seasons. Other SSS that inhabit these areas would also benefit. Therefore, the Proposed RMP provides greater protection to sage-grouse and potentially other SSS than either Alternative N or A.

Impacts from Fish and Wildlife

Proposed actions such as habitat manipulations and range developments could result in short-term adverse impacts to SSS, such as Mexican spotted owl and bald eagle, and could detrimentally influence their behavior. Additionally, habitat manipulations and developments could also reduce populations and alter habitat of special status plant species such as Cronquist wild buckwheat.

Short-term adverse impacts could result from vegetation treatments that require the use of heavy equipment. Human disturbance and noise associated with the use of heavy equipment could temporarily disperse Mexican spotted owls and bald eagles from occupied habitats. Adverse direct impacts could also result from accidental chemical drift from pesticide use in nearby areas. These activities have the potential to remove suitable habitat or other desired vegetation for SSS. Additionally, habitat manipulations and developments could also reduce populations and alter habitat of special status plant species such as Cronquist wild buckwheat. Vegetation treatments would likely benefit SSS and their prey over the long-term by providing additional forage.

Implementation of the Proposed RMP would result in seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their lifecycles. However, exceptions, waivers, and modifications could be granted on a case-by-case basis. Protective stipulations placed on crucial habitats that overlap with SSS' habitat would reduce adverse effects caused by surface-disturbing activities.

Surface-disturbing activities could contribute to decreased air quality and increased soil erosion, soil compaction, introduction and spread of invasive and noxious weeds, crushing of plants, habitat degradation, and the incidental take of listed wildlife species. Restrictions or stipulations of surface-disturbing activities within wildlife habitats that overlap with SSS habitat could benefit SSS within the restricted areas. The restrictions would reduce adverse effects incurred by surface disturbances that could harm SSS. The Proposed RMP would prohibit surface-disturbing activities in crucial deer and elk habitat

from December 1 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Mitigation measures would be required for pronghorn antelope from May 15 through June 15. However, exceptions, waivers, and modifications could be granted on a case-by-case basis. The additional surface restrictions and mitigations related to other wildlife species would indirectly benefit SSS located in these areas, by limiting habitat disturbance. SSS that would benefit from these surface restrictions include the Utah prairie dog, pygmy rabbit, Greater sage-grouse, Mexican spotted owl, and bald eagle.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described under Alternative N, except that the Proposed RMP would manage the Canyonlands HMA for 60–100 wild burros. New burros could be introduced to maintain genetic variability. Under the Proposed RMP, activities including the introduction and gathering of wild burros would have the potential to adversely affect the Mexican spotted owl, as described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under the Proposed RMP would be similar to those described under Alternative N, except that the Proposed RMP would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. As previously discussed, stabilization efforts would have the potential to benefit SSS through decreased erosion and improved habitat and vegetation conditions but would also result in short-term adverse impacts that would alter habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, non-WSA lands with wilderness characteristics (78,600 acres) would be protected from impacts that could degrade wilderness values. This protection would limit impacts to SSS and their habitat, where those species and habitat lie within the protected lands. For example:

- Of 365,500 acres of Mexican spotted owl critical habitat within the RFO, 14,300 acres (4%) are within the non-WSA lands with wilderness characteristics managed for those characteristics. Protecting the wilderness characteristics areas would reduce or eliminate potential impacts to the owls and owl habitat within these areas.
- Of 364,300 acres of potential habitat for the Wright fishhook cactus, 20,900 acres (6%) are within the non-WSA lands with wilderness characteristics managed for those characteristics. Protecting the wilderness characteristics areas would likewise protect the cacti in these areas from surface-disturbing activities, notably cross-country OHV use.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and the one suitable WSR corridor recommended under the Proposed RMP). Thus, impacts from this type of activity would occur over a larger area than under Alternative N but over a smaller area than under Alternative A.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described under Alternative N, except that the designation of specific areas for seed and live plant collection would be considered under the Proposed RMP (with the exception of WSAs and the 1

recommended suitable WSR corridor). The exclusion of these areas from live plant and seed collection activities would reduce the adverse impacts to SSS that occupy these areas. If specific areas that exclude occupied SSS habitat are designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied SSS habitat is considered for seed collection, NEPA analysis and consultation under Section 7 of the ESA would be required, thus reducing the potential for adverse impacts.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A. However, the Proposed RMP would establish five SRMAs (860,390 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. The Proposed RMP would propose 24,400 acres at Factory Butte and 90 acres at Big Rocks as OHV SRMAs, thereby decreasing the potential for impacts to SSS, as compared to Alternative A.

In the Factory Butte SRMA, no Threatened and/or Endangered (T&E) species (as per ESA of 1973) or Candidate plant species were found at any of the locations at which surface disturbance is proposed (Appendix 18). Therefore, no damage to T&E plants would be caused by the construction of fences or kiosks, but the presence of these facilities would help to effectively enforce OHV management prescriptions.

The Proposed RMP allows vehicles to pull off of designated routes (outside WSAs) as much as 50 feet to either side of the centerline (for parking/staging) and as much as 150 feet to either side of the centerline (for camping). Although these allowances could result in vehicles generally impacting SSS, the area of potential impact would be less than under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that implementation of the Proposed RMP would result in 9,890 acres that are open to cross-country OHV use. These open areas include populations and habitat of Wright fishhook cactus. OHV use could be more concentrated in this smaller area, and would likely have more adverse effects per acre. Impacts of OHV use on special status plant species could involve habitat disturbance and increased access for illegal collectors. OHV use within SSS habitats has the potential to lead to direct mortality of the species, through the crushing of plants by tires, and indirect mortality, through increases in erosion and sedimentation. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) could increase the susceptibility of native plant communities to weed establishment and could modify soil conditions so that soils are unsuitable for establishment by native species.

Areas, including those that contain SSS habitat, that are either closed to OHV use or that limit use to designated routes would be protected from the surface-disturbing activities associated with this activity. The Proposed RMP designates 209,900 acres as closed to OHV use and 1,908,210 acres as limited, thus providing more protection to SSS than either Alternative N or A because substantially fewer areas are open to OHV use. The Proposed RMP would provide greater protection to Greater sage-grouse than Alternatives N and A by limiting OHV use to designated routes in all sage-grouse habitats including breeding (leks), nesting, brood-rearing and wintering habitats. The Proposed RMP also provides timing

limitations on surface disturbing or otherwise disruptive activities within breeding, brood-rearing, and winter habitat. These actions to protect sage grouse habitat would also benefit other SSS inhabiting sagebrush habitats (e.g., pygmy rabbit, Utah prairie dog).

Under the Proposed RMP, there would be 4,277 miles of routes available for use by the public, and 345 miles would be closed. The Proposed RMP designates routes to minimize harassment or significant disruption of wildlife. The Proposed RMP also gives special attention to SSS and their habitats. Many of the routes that are restricted or closed are located in areas in which SSS such as the Mexican spotted owl, last chance townsendia, Winkler pincushion cactus, Rabbit Valley gilia, pygmy rabbit, and the Wright fishhook cactus exist. Limited or no access to these areas would reduce adverse effects to SSS that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Implementation of the Proposed RMP would include recommending two ACECs (2,530 acres), one suitable WSR segment (5 miles), and developed recreation sites for mineral withdrawal. Several SSS, including Mexican spotted owl, Wright fishhook cactus, and Winkler pincushion cactus, are located in these areas. Withdrawing these areas from mineral entry would reduce adverse impacts to SSS that could result from mineral developments in these areas.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that fewer ROW avoidance areas would be proposed under the Proposed RMP. Because consultation with USFWS and NEPA review would be required for new ROWs or other land use authorizations, impacts to SSS would be negligible.

Wind and Solar Energy

Implementation of the Proposed RMP would allow wind and solar energy exploration and development throughout the RFO, except for in WSAs, ACECs, areas managed as open to leasing subject to major constraints (NSO), migratory bird habitats, raptor nesting complexes, threatened and endangered species habitats, and VRM Class I or II areas. The restriction on wind and solar development within these areas would likely benefit federally listed and non-listed special status bird species, including migratory species, by providing sites in which conflicts between birds and wind and solar facilities would be avoided. Potential species involved would include the Southwestern willow flycatcher, bald eagle, Mexican spotted owl, Greater sage-grouse, ferruginous hawk, Western yellow-billed cuckoo, and California condor. Restriction of wind and solar exploration activities located in WSAs and ACECs could indirectly benefit other SSS, such as the pygmy rabbit (*Brachylagus idahoensis*), that may be within those areas. The potential impacts that wind and solar energy would have on SSS would be less than under Alternative N or A because the Proposed RMP would include more areas in which restrictions would apply.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, 608,700 acres (29% of the RFO) would be open to leasing subject to the standard terms and conditions; 917,500 acres (43%) would be open to leasing subject to moderate constraints (TL, CSU); 154,500 acres (7%) would be open to leasing subject to major constraints (NSO),

and 447,300 (21%) would be closed to leasing. SSS that are located in areas that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) include the Rabbit Valley gilia, Greater sage-grouse, pygmy rabbit, and the California condor. Fluid mineral development could adversely impact these species. The Proposed RMP allows NSO within ½ mile of Greater sage-grouse leks and prohibits surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exceptions, waivers, and modifications). These stipulations provide greater protection to sage-grouse and other SSS that may inhabit these areas (e.g., pygmy rabbits) compared to Alternatives N and A.

Leasable Minerals—Coal

Generally, impacts would be the same as those described under Alternative N. However, the Proposed RMP allows NSO within ½ mile of Greater sage-grouse leks and prohibits surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 providing greater protection to sage-grouse and other SSS that may inhabit these areas (e.g., pygmy rabbits) compared to Alternatives N and A.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under the Proposed RMP, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable WSR corridors (one segment with a tentative classification of Wild—5 miles), and ACECs (2,530 acres), as determined through site-specific NEPA analysis. The Proposed RMP therefore could result in more impacts to SSS than would Alternative N, C, or D but less than Alternative A. The Proposed RMP allows NSO within ½ mile of Greater sage-grouse leks year round and prohibits surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14. Therefore, it provides greater protection to sage-grouse and other SSS that may inhabit these areas (e.g., pygmy rabbits) compared to Alternatives N and A.

Locatable Minerals

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Under the Proposed RMP, 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to SSS. The Proposed RMP would recommend fewer acres for mineral withdrawal than would Alternative C or D but more acres than would Alternative N or A. The Proposed RMP allows NSO within ½ mile of Greater sage-grouse leks and prohibits surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14. Therefore, it provides greater protection to sage-grouse and other SSS that may inhabit these areas (e.g., pygmy rabbits) compared to Alternatives N and A.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described under Alternative N. The Proposed RMP allows the sale of mineral materials (salable minerals) on 1,680,700 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted; it is unlikely that SSS occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect SSS. If salable minerals exist within Greater sage-grouse habitat, the Proposed RMP would provide greater protection than Alternatives N and A because it allows NSO within ½ mile of Greater sage-grouse leks year round, and prohibits surface

disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 – March 14.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under the Proposed RMP, one river segment (the Fremont River in Fremont Gorge—5 total miles) would be recommended as suitable for WSR designation. Managing this area as suitable for inclusion in the National Wild and Scenic River System (NWSRS) would benefit species such as the Mexican spotted owl and bald eagle, both of which use this area. A lack of potential for surface-disturbing activities would also result in the protection of habitat used by the prey of the Mexican spotted owl.

Areas of Critical Environmental Concern

Under the Proposed RMP, two ACECs would be designated: North Caineville Mesa (2,200 acres) and Old Woman Front Research Natural Area (RNA) (330 acres). Habitat for the Wright fishhook cactus, Winkler pincushion cactus, and bald eagle is included within these ACECs. The ACECs would provide protection for SSS by restricting many surface-disturbing activities. Special management of these ACECs would include closing to OHV use, managing as a ROW avoidance areas, managing oil and gas leasing as open with NSO, unavailable for livestock grazing, and closed to harvesting of woodland products (Old Woman Front). These management prescriptions to protect relevant and important values would also protect the SSS that occur in the ACECs.

Alternative C

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation

The types of impacts experienced as a result of riparian management would be similar to those described under Alternative N, except that the size of the buffer zone in which no surface disturbance would be allowed would be 660 feet on each side of the riparian area under Alternative C (compared with 500 feet under Alternative N). Thus, Alternative C would protect a larger area around the riparian/wetland zones from surface-disturbing activities.

The types of impacts experienced as a result of vegetation management would be similar to those described for Alternative N, except that Alternative C would allow for vegetation management only through natural processes. Implementing this alternative would have no adverse effects on SSS, resulting from surface-disturbing or vegetation manipulation activities. However, the potential for beneficial impacts would be reduced because the types of treatment methods proposed under Alternative C could be less effective than conventional vegetation treatments and might not be effective in all vegetation communities. This reduction could result in the loss of existing vegetation cover, indirectly decreasing the ecological condition of the treated area.

The types of impacts experienced as a result of noxious weed and invasive species management would be similar to those described under Alternative N. However, implementation of Alternative C would initiate

an attempt to control noxious and invasive weeds through treatment methods that mimic natural processes. Implementation of this alternative could make control of some invasive species difficult because of lack of suitable substitute treatments; using fire as a control tool for species such as tamarisk, could increase the growth and spread of non-native species and could allow the spread of invasive species and displacement of desirable vegetation. This management could have indirect adverse effects on SSS because noxious and invasive weeds would likely expand their range and could alter suitable special status plant species habitat and reduce available forage for special status wildlife species such as the Utah prairie dog and the pygmy rabbit. In addition, weeds could compete with special status plant species for available space and nutrients. The short-term adverse effects that could result from surface-disturbing activities (as discussed under Alternative A) would not be realized. Beneficial impacts resulting from weed-control treatments through natural processes within SSS habitat would be limited.

The types of impacts experienced as a result of insect pest management would be similar to those described under Alternative N. However, implementation of Alternative C would result in no immediate beneficial or adverse impacts caused by pest control treatments within special status plant species habitat because no control measures would be implemented. However, SSS could be affected if insect pests proliferate to the point of removing large amounts of potential forage and thus changing the landscape or habitat.

Impacts from Cultural Resources

Impacts would be similar to those described under the Proposed RMP, except that fewer cultural resource sites would be allocated and managed for public use under Alternative C. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption to SSS would affect only relatively small, localized areas and would occur in fewer areas than under Alternative N or A.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative C would be similar to those described for the Proposed RMP. However, under Alternative C, more acres would be designated as VRM Class I or II (677,500 acres, or 32% of the RFO), which would protect SSS by restricting surface-disturbing activities in these areas.

Under Alternative C, 509,100 acres (24%) would be designated as VRM Class III and 941,400 (44%) would be designated as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for SSS. Alternative C would designate more acres as VRM Classes III and IV than would Alternative D but fewer acres than would Alternative N or A or the Proposed RMP.

Impacts from Special Status Species

Impacts would be similar as those described under the Proposed RMP. Although Alternative C does not include timing limitations on surface disturbing activities in sage grouse winter habitat, this habitat is mostly within crucial mule deer habitat which does have a timing limitation on such activities from December 15 through April 15.

The protections that do exist for sage-grouse under Alternative C would apply to other SSS whose habitat overlaps that of the sage-grouse (e.g., pygmy rabbit, Utah prairie dog).

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under the Proposed RMP, except that Alternative C would implement seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their lifecycles. Stipulations placed on crucial habitat management areas that overlap with SSS habitat would reduce adverse effects caused by surface-disturbing activities that could harm SSS.

Alternative C also prohibits surface-disturbing activities in crucial and high-value deer and elk habitat from December 1 through April 15, in crucial desert bighorn habitat from April 15 through June 15, and in crucial pronghorn antelope habitat from May 15 through June 15. The additional surface restrictions and mitigations related to other wildlife species would indirectly benefit SSS located in these surface-restriction areas, by limiting habitat disturbance. SSS that would benefit from these surface restrictions would include the Utah prairie dog, pygmy rabbit, Greater sage-grouse, Mexican spotted owl, and bald eagle.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described under Alternative N, except that Alternative C would propose to manage the Canyonlands HMA for 120–200 wild burros. New burros could be introduced to maintain genetic variability. Under Alternative C, activities such as the introduction and gathering of wild burros would have the potential to adversely affect the Mexican spotted owl, as described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under Alternative C would be similar to those described under the Proposed RMP, except that average annual treatments would be less under Alternative C (26,000 acres). As stated previously, prescribed fires and wildland fires have the potential to adversely affect SSS. However, habitat manipulations through the use of fire could benefit SSS over the long term through improved vegetative conditions. With fewer acres treated under Alternative C, there would be less potential adverse impacts but also less potential beneficial impacts resulting from habitat manipulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no additional protection for SSS.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and suitable WSR corridors) under Alternative C. Thus, impacts from this type of activity would occur over a smaller area than under Alternative A or the Proposed RMP. In addition, the rejuvenating benefits to habitats resulting from the clearing of woodland areas would not be realized in the areas in which forest and woodland products harvesting was precluded.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collection would be similar to those described under Alternative N, except that the designation of specific areas for seed and live plant collection would be considered under Alternative C (with the exception of WSAs and suitable WSR corridors). The exclusion of these areas from live plant and seed collection activities would reduce the

adverse impacts to SSS that occupy these areas. If specific areas that exclude occupied SSS habitat were designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied SSS habitats are considered as areas for seed collection, NEPA analysis and Section 7 consultation would be required, reducing the potential for adverse impacts. Alternative C would preclude more areas from seed and live plant collection than would Alternative N or A or the Proposed RMP but less than would Alternative D.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A. However, Alternative C would establish four SRMAs (930,000 acres) to manage recreational use and to mitigate impacts caused by this use. Alternative C would establish no SRMAs, thus decreasing the potential for impacts that this type of use could have on SSS.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to SSS) caused by recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and impacts to SSS. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized, site-specific impacts, although consultation with USFWS and NEPA review would be required prior to construction of any facilities.

Alternative C would allow vehicles to pull off of designated routes (outside WSAs) as much as 25 feet to either side of the centerline (for parking/staging); camping would be allowed only in designated campsites, with travel between campsites allowed only on designated routes. These management prescriptions would minimize disturbance to SSS and would result in less disturbance than under Alternative N or A or the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, under Alternative C, no acres would be open to cross-country OHV use; 1,445,000 acres would be limited to OHV use on designated routes only; and 683,000 acres would be closed to OHV use. By eliminating areas that are open to unrestricted OHV use, adverse impacts to SSS would be substantially reduced. As in the Proposed RMP, Alternative C would limit OHV use to designated routes in all sage-grouse habitats including breeding (leks), nesting, brood-rearing and wintering habitats.

Under Alternative C, there would be 3,192 miles of designated routes and 1,188 miles of routes that would be closed. Alternative C would designate routes to minimize harassment or significant disruption of wildlife. This alternative would also give special attention to SSS and their habitats. Many of the routes that are restricted or closed are located in areas that contain most of the SSS within the planning area. Limited or no access to these areas would reduce adverse effects to SSS that could result from OHV use.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Alternative C recommends withdrawing from mineral entry all or parts of several ACECs, suitable WSR corridors, and developed recreation sites (331,100 acres, or 16% of the RFO). Several SSS, including Mexican spotted owl, Wright fishhook cactus, pygmy rabbit, Rabbit Valley gilia, bald eagle, Utah prairie dog, and Winkler pincushion cactus, are located in these areas. Withdrawing these areas from mineral entry would reduce adverse impacts to SSS that could result from mineral developments.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that Alternative C would propose more ROW avoidance areas (735,000 acres closed to leasing or open to leasing subject to major constraints (NSO), 12 suitable WSR segments, and 16 ACECs). Because consultation with USFWS and NEPA review would be required, impacts to SSS would be negligible.

Wind and Solar Energy

Alternative C specifically excludes SSS habitats from wind and solar energy developments. This management would help to protect SSS (including bats, migratory birds, and raptors) from any surface-disturbing action that could result from these developments.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, 491,900 acres (23% of the RFO) would be open to leasing subject to the standard terms and conditions; 901,100 acres (42%) would be open to leasing subject to moderate constraints (TL, CSU); 148,700 acres (7%) would be open to leasing subject to major constraints (NSO); and 586,300 acres (28%) would be closed to leasing. SSS that are located in areas that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) include the Rabbit Valley gilia, Greater sage-grouse, and pygmy rabbit. Fluid mineral development could adversely impact these species. As under the Proposed RMP, this alternative provides stipulations to protect sage grouse breeding and brood-rearing habitat, however it does not allow for NSO within ½ mile of leks or provide timing limitations to protect winter habitat (see Appendix 11 for exceptions, waivers, and modifications). Therefore, it provides greater protection to sage-grouse and other SSS that may inhabit these areas (e.g., pygmy rabbits) compared to Alternatives N and A but less protection than the Proposed RMP.

Leasable Minerals—Coal

Impacts would be the same as those described under the Proposed RMP.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under Alternative C, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable WSR corridors (12 segments—135 miles), and ACECs (886,810 acres), as determined through site-specific NEPA analysis. Alternative C could result in more potential impacts to SSS than Alternative D but less impacts than Alternative N or A or the Proposed RMP.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described for Alternative N. However, under Alternative C, the location, exploration, and

development of locatable minerals could occur throughout the RFO, except in areas withdrawn from mineral entry (331,100 acres). These areas would include Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable WSR corridors. SSS located in the withdrawn areas would be protected from surface-disturbing activities that could result from locatable minerals activities.

Salable Minerals

The types of impacts experienced from the disposal of salable minerals would be the same as those described for Alternative N. This alternative allows the sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted; it is unlikely that SSS occur in these areas. However, new sites would be subject to NEPA review and consultation with USFWS, which would protect SSS. Alternative C provides greater protection to sage-grouse habitats than Alternatives N and A, but less protection than the Proposed RMP.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative C, the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, Twin Corral Box Canyon, Fish Creek, Maidenwater Creek, Quitchupah Creek, and the Fremont River in Fremont Gorge and below Capitol Reef National Park to the Caineville ditch diversion would be designated as suitable WSRs. Management to protect their outstandingly remarkable values, tentative classification, and free-flowing nature (including closing to OHV use, closing to leasing, and withdrawing from mineral entry) would benefit the Mexican spotted owl and bald eagle.

Areas of Critical Environmental Concern

Under Alternative C, 16 areas (886,810 acres) would be designated as ACECs: Badlands, Bull Creek, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Old Woman Front, Parker Mountain, Quitchupah, Rainbow Hills, Sevier Canyon, Thousand Lakes Bench, and Special Status Species ACECs. These ACECs contain populations and habitat for all SSS within the RFO. ACECs provide protection for SSS by restricting many surface-disturbing activities, including mineral leasing, OHV use and other motorized recreational activities, wood cutting, and new ROWs.

The Special Status Species ACEC contains 15,100 acres of land that is specifically designated to protect SSS from surface-disturbing activities such as OHV use, adverse recreation impacts, land sales, new ROWs, vegetation treatments, open mineral leasing, and mineral disposals.

Alternative D

Impacts from Soil Resources

Impacts would be the same as those described under Alternative N.

Impacts from Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative C, except that fewer cultural resource sites would be allocated and managed for public use. This allocation, which emphasizes public education and interpretation of cultural resources, would increase visitation to sites. However, human disruption that cultural resource management would cause to SSS would affect only relatively small, localized areas and would occur in fewer areas than under any other alternative.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative D would be similar to those described under Alternative C, except that more acres would be designated as VRM Class I or II (1,196,300 acres, or 56% of the RFO), thereby protecting SSS by restricting surface-disturbing activities in these areas.

Under Alternative D, 355,100 acres (17%) would be designated as VRM Class III and 576,600 (27%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for SSS. This alternative designates far fewer acres as VRM Class III or IV than any other alternative, so impacts to SSS because of VRM class designations would be the least of all alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, non-WSA lands with wilderness characteristics (682,600 acres) would be protected from impacts that could degrade their wilderness values. This management would limit impacts to SSS and their habitat, where those species and habitat lie within the protected lands. For example:

- Of 635,100 acres within the RFO identified as potential brooding areas for the Greater sage-grouse, less than 1,000 acres are included within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics areas would have little impact on the sage-grouse.

- Of 365,500 acres of Mexican spotted owl critical habitat within the RFO, 157,300 acres (43%) are within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics areas would reduce or eliminate potential impacts to the owls and owl habitat within these areas.
- Of 364,300 acres of potential habitat for the Wright fishhook cactus, 206,400 acres (57%) are within the non-WSA lands with wilderness characteristics. Protecting the wilderness characteristics areas would likewise protect the cacti from surface-disturbing activities, notably cross-country OHV use, in more than half of the identified habitat.

Impacts from Forestry and Woodland Products

Forest and Woodland Products Harvesting

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N. However, under Alternative D, commercial and non-commercial harvesting would not be allowed in WSAs, suitable WSR corridors, or non-WSA lands with wilderness characteristics. Thus, impacts from this type of activity would occur over a much smaller area than under any other alternative, potentially providing the greatest benefit to SSS. However, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized.

Seed and Live Plant Collection

The types of impacts experienced as a result of seed and live plant collecting would be similar to those described under Alternative N, except that the designation of specific areas for seed collection (with the exception of WSAs, suitable WSR corridors, and non-WSA lands with wilderness characteristics) would be considered under Alternative D. The exclusion of these areas from live plant and seed collection activities would reduce the adverse impacts to SSS that occupy these areas. If specific areas that exclude occupied SSS habitat were designated for seed collection, adverse effects that would result from seed and plant collection activities could be reduced. If occupied SSS habitat was considered for seed collection, NEPA analysis and consultation under Section 7 of the ESA would be required, reducing the potential for adverse impacts. Alternative D would preclude more areas from seed and live plant collection than any other alternative, thus potentially providing the greatest benefit to SSS.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N, except that Alternative D would prohibit surface-disturbing activities associated with the construction and implementation of range improvements (both structural and non-structural) within non-WSA lands with wilderness characteristics (682,600 acres). This restriction would protect SSS in these areas by eliminating any potential for impact resulting from range-improvement construction.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative C, except that Alternative D would establish seven SRMAs (1,358,100 acres) to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use, thereby decreasing the potential for impacts to SSS from this type of use. As described under Alternative C, the development of facilities could have localized site-specific impacts, although consultation with USFWS and NEPA review would be required prior to construction of any facilities.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described for Alternative N, except that under Alternative D, no acres would be open to cross-country OHV use;

972,800 acres would be limited to designated routes; and 1,155,200 acres would be closed to OHV use. The fewest potential impacts that OHV use would cause to SSS would occur under Alternative D.

Alternative D would propose 3,043 miles of designated routes and 1,242 miles of routes that would be closed. Many of the restricted or closed routes would be in areas that contain most of the SSS within the planning area. Reducing access to these areas would reduce adverse effects to SSS that could result from OHV use. The least impacts that route designations would cause to SSS would occur under Alternative D.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Alternative D would recommend withdrawing from mineral entry all non-WSA lands with wilderness characteristics, all or parts of several ACECs, suitable WSR corridors, and developed recreation sites (903,900 acres, or 42% of the RFO)—the most under any of the alternatives. Several SSS, including Mexican spotted owl, Wright fishhook cactus, pygmy rabbit, Rabbit Valley gilia, bald eagle, Utah prairie dog, and Winkler pincushion cactus, are located in these areas. Withdrawing these areas from mineral entry would reduce adverse impacts to SSS in these areas that could result from mineral developments. More than any other alternative, Alternative D would reduce potential impacts from mining activity.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas (1,203,800 acres closed to leasing or open to leasing subject to major constraints (NSO), 12 suitable WSR segments, and 16 ACECs) would be proposed under Alternative D. Because consultation with USFWS and NEPA review would be required for any new ROWs or other land use authorizations, impacts to SSS would be negligible.

Wind and Solar Energy

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative D, 290,200 acres (14% of the RFO) would be open to leasing subject to the standard terms and conditions; 634,000 acres (30%) would be open to leasing subject to moderate constraints (TL, CSU); 43,300 acres (2%) would be open to leasing subject to major constraints (NSO); and 1,160,500 acres (54%) would be closed to leasing. SSS in areas that are open to leasing or open to leasing subject to moderate constraints (TL, CSU) include the Rabbit Valley gilia, Greater sage-grouse, and pygmy rabbit. Potential impacts to SSS from fluid mineral development would be least under Alternative D than under any other alternative.

Leasable Minerals—Coal

Impacts would be the same as those described under the Proposed RMP.

Geophysical

Under Alternative D, BLM would allow geophysical explorations outside of WSAs, non-WSA lands with wilderness characteristics, WSR corridors, and ACECs, as determined through site-specific NEPA

analysis. Potential impacts to SSS from geophysical exploration would be least under this alternative (of any alternative) because the least amount of land would be available for this type of activity.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described under Alternative N. However, under Alternative D, the location, exploration, and development of locatable minerals could occur throughout the RFO, except in areas withdrawn from mineral entry (903,900 acres). These areas would include Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, suitable WSR corridors, and non-WSA lands with wilderness characteristics. SSS located in the withdrawn areas would be protected from surface-disturbing activities that could result from locatable minerals activities. Potential impacts to SSS from locatable mineral development would be least under this alternative, compared to the other alternatives.

Salable Minerals

With the implementation of Alternative D, 1,160,500 acres would be closed to disposal of salable minerals (WSAs, non-WSA lands with wilderness characteristics, the Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs). The exclusion of these areas from surface-disturbing mineral materials activities would indirectly benefit SSS that are located within these areas. The disposal of mineral materials on other public lands would be allowed on a case-by-case basis. The potential impact to SSS from mineral material sales would be least under Alternative D (compared to the other alternatives).

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.9 Fish and Wildlife

The BLM manages public lands to provide suitable habitat for more than 600 fish and wildlife species. Species analyzed in this section include deer, elk, bison, antelope, bighorn sheep, and migratory birds. Impacts to fish and wildlife from other management programs include loss or alteration of native habitats, increased invasion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior leading to reduced reproductive fitness or increased susceptibility to predation, and direct mortality. Surface-disturbing actions that alter vegetation characteristics (e.g., structure, composition, or production) have the potential to affect habitat suitability for fish and wildlife, particularly when the disturbance removes or reduces cover or food resources. Even minor changes to vegetation communities have the potential to affect resident fish and wildlife populations.

Wildlife populations fluctuate, sometimes widely, in response to natural factors such as the abundance of prey base or extremes in seasonal weather (e.g., severe winters, drought). These factors make it difficult to discern potential impacts on wildlife resulting from specific management actions and from impacts caused by natural factors. Changes or stressors to habitat components (vegetation, water, soil, or air) are likely to cause direct and indirect effects on wildlife and fish. Therefore, potential effects on habitats are the principal focus of this assessment.

Impacts on fish and wildlife include actions that result in habitat alteration, fragmentation, or loss; wildlife displacement; and habitat maintenance and enhancement. Habitat alteration occurs when decisions change the existing habitat character. Surface-disturbing activities, development, or other activities that degrade habitat lead to habitat alteration, fragmentation, or loss. Habitat alteration, fragmentation, and loss affect the usable ranges and routes for wildlife movement. Wildlife displacement occurs when land use activities result in the movement of wildlife into other habitats, increasing stress on individual animals and increasing competition for habitat resources. Impacts to fish and wildlife from displacement depend on the location, extent, timing, or the intensity of the disruptive activity or human presence. Occurrence of these disruptive activities in areas adjacent to fish and wildlife habitat could cause displacement of wildlife. Impacts from displacement would be greater for wildlife species that have limited existing habitat or a low tolerance for disturbance. Habitat maintenance and enhancement can maintain or improve the condition of vegetation and levels of forage species or reduce soil loss through vegetation treatments and restrictions on surface-disturbing activities.

Methods and Assumptions

The analysis of potential impacts to fish and wildlife resources is based on the expertise of BLM resource specialists at the RFO and the Utah State Office. Combined, these staffs possess an extensive knowledge of fish and wildlife resources within the planning area. The impact analysis is also based on review of existing literature and information provided by non-planning team experts in the BLM, the National Park Service (NPS), and other agencies.

Quantifying these impacts is difficult because of the lack of monitoring data for most species. In the absence of quantitative data, best professional judgment was used. Impacts are sometimes described using ranges of potential impacts or in qualitative terms, if appropriate. The intensities of impacts are also described, when possible.

The following assumptions were used in this analysis:

- All surface-disturbing activities would include mitigation to reduce impacts to wildlife resources. Analysis of impacts includes any and all mitigation measures in place.

- Sufficient habitat exists to maintain current fish and wildlife population objectives.
- Disruptive activities would displace wildlife, though some wildlife adaptation would occur.

Environmental Consequences

Impacts to fish and wildlife would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on fish and wildlife.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Activities conducted under the soil management program are limited to monitoring, implementing support activities, providing information for other BLM programs, and recommending appropriate mitigation. Typical activities implemented under the soil resource program would include mapping soils, maintaining soil databases, identifying timing stipulations, and recommending protective measures for critical soils. For example, implementation of timing stipulations would reduce surface disturbance in areas with high seasonal erosion potential. Proposed decisions to increase soil productivity, reduce erosion, or maintain vegetation cover necessary to avoid accelerated erosion would maintain or improve wildlife habitat.

Implementation of water quality- and quantity-related actions would guide or advise other program actions and activities in a manner conducive to maintaining or improving surface water quality. These actions would be consistent with existing and anticipated uses and applicable state and federal water quality standards. Beneficial impacts include improved habitat for fish and wildlife (including migratory birds) and their associated prey.

Soil and water resources would be managed to avoid surface-disturbing activities within 500 feet of springs and streams, thus reducing or eliminating impacts to fish and wildlife species by preventing degradation of the water sources and associated wildlife habitat. In addition, goals to maintain or restore soil productivity, minimize accelerated soil erosion, and prevent flood or sediment damage would maintain or improve aquatic habitat and water quality for fish and wildlife species.

Impacts from Vegetation

Vegetation Treatments

Managing vegetation by using mechanical, chemical, and wildland or prescribed fire treatments could result in a mix of seral stages throughout the lands managed by the RFO. This management would provide cover, foraging, and nesting areas to maintain diverse wildlife populations. Treatments in pinyon-juniper woodlands, aspen, and sagebrush-steppe communities would return the treated areas to an earlier seral stage of succession, increasing vegetation species and structural diversity. Providing early seral habitats would foster small mammal populations, which serve as prey species for raptors and larger mammals. These habitats also would provide diverse forage and habitat for non-game, big game, prey species, and upland game birds and would create nesting habitat for birds. Vegetation treatments that result in mosaic patches of sagebrush of different ages and structures would benefit Greater sage-grouse. Vegetation manipulation to open closed-canopy communities and provide greater diversity in vegetation type and seral stage would benefit many species of birds and mammals, such as scrub jay and northern goshawk, while adversely affecting those species which prefer closed-canopy pinyon-juniper or sagebrush cover greater than 30%. Overall, proposed decisions for managing vegetation would have beneficial impacts on migratory birds and their habitats. Vegetation treatments could have short-term adverse impacts on migratory birds and their habitats because of loss of nesting habitats immediately following treatments, and could have long-term beneficial impacts as vegetation re-establishes.

Vegetation management activities include fencing, weed treatment, timber harvest, sagebrush management (spraying, mechanical treatment, or burning), and seeding of disturbed or weed-treated areas. Vegetation management activities, especially those using heavy equipment, would result in short-term adverse impacts to fish and wildlife and their habitat. Surface-disturbing activities could result in the alteration of habitat because of soil erosion or sedimentation. Large-scale vegetation management projects, such as sagebrush harrowing or juniper chaining, could impact fish and wildlife or their habitats in the sagebrush-steppe and pinyon-juniper woodlands vegetation types where such treatments would be conducted. No vegetation treatments are proposed in the non-vegetated and desert shrub vegetation types.

Under Alternative N, no acreage or treatment limitation is prescribed. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat; these impacts would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component would promote favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the Greater sage-grouse would reduce forage availability and canopy cover, rendering the sage-grouse vulnerable to predation.

Management Activities in Riparian and Wetland Areas

The purpose of the riparian and wetland management program is to maintain, restore, or improve riparian habitats. Proposed management actions that would be implemented to protect riparian areas include restrictions on time, space, placement, and the establishment of 500-foot buffer zones around riparian areas. (No surface-disturbing activities would be allowed around the outer edge of springs unless it could be shown that there were no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area.) These buffers would protect and enhance riparian vegetation communities that provide forage and cover for game and non-game mammals, as well as potential nesting sites for neo-tropical migratory birds, raptors, and waterfowl. However, the buffers could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Vegetation treatments and streambank stabilization projects would potentially result in short-term adverse impacts to fish and wildlife species whose habitat is located primarily in riparian and wetland areas. Streambank stabilization and habitat restoration projects could result in the removal of riparian vegetation in these areas. Impacts to fish and wildlife from these activities could include temporary disturbance or

loss of habitat from heavy equipment use, increased human presence, and associated noise. Vegetation treatments in riparian areas could include the use of herbicides, fire, or mechanical removal of exotic plant species such as tamarisk or Russian olive.

In the long term, vegetation treatments and streambank recontouring would likely benefit riparian obligate species by improving or enhancing riparian habitat. Additionally, beneficial impacts to upland species could result from maintaining or improving natural hydrologic watershed processes. Activities to maintain or improve riparian health; such as construction of livestock and recreation exclosures within riparian habitats and habitat rehabilitation projects, would have beneficial impacts on riparian obligate species.

All riparian areas are managed in accordance with the BLM Utah riparian policy. It is the objective of this riparian policy to improve or maintain riparian areas in proper functioning condition. Riparian areas are classified as in "proper functioning condition" when there is adequate vegetation and landform structure present to dissipate stream energy from high flows. This dissipation results in a reduction in erosion, improvement in water quality, filtration of sediment, capture of bedload, and aid in floodplain development. Properly functioning riparian areas also result in an improvement in flood water retention and groundwater recharge, development of root masses that stabilize streambanks against cutting action, development of diverse ponding and channel characteristics necessary for fish production and other uses, and greater support for biodiversity. Continuing to implement this policy would minimize impacts on wildlife species (including migratory birds) that inhabit riparian and wetland areas.

Invasive Species Management

Under Alternative N, approved weed control methods (including preventative management and mechanical, biological, and chemical techniques) would be allowed. Generally, controlling noxious and invasive species would be beneficial for wildlife habitat. However, some species considered invasive (e.g., tamarisk and Russian olive) provide important habitat components for neo-tropical songbirds. Treating noxious weeds could have short-term adverse and long-term beneficial impacts on some species of migratory birds. For example, removing tamarisk would result in lost habitat for Southwestern willow flycatcher and other riparian obligate species until willow communities were re-established.

Depending on the timing, location, and project size, weed treatments could have adverse or beneficial impacts on wildlife habitat; these impacts would be determined by site-specific environmental analysis. Use of herbicides or other chemicals to treat vegetation could impact fish and wildlife species by altering erosion patterns and introducing herbicides and chemicals into the hydrologic system. Increased sediment, loss of habitat integrity, fragmentation of hydrologic networks, and potential chemical introductions could impact water quality. Biological treatments would not cause short-term alteration or displacement of species because the treatments would be implemented over longer periods of time and would be host-specific.

Insect Pest Management

Wildlife could benefit from treatments that target destructive insects such as grasshoppers, cutworms, and Mormon crickets. Actions taken to remove destructive insects would reduce potential competition for available forage. Adverse impacts could also result from accidental chemical drift of pesticides used in nearby areas. Ingestion of pesticides could lead to direct mortality of individual animals or could cause decreased survival of young.

Control of insects in localized areas would likely result in adverse impacts to wildlife species in those areas. The reduction of some specific insect populations within special status bird habitats could alter foraging and nesting behavior by reducing the prey base and by requiring the birds to travel further to

forage. The short-term reduction in herbivorous insects could also result in changes to surrounding vegetation. If insect populations were substantially reduced over a long period, special status bird species could disperse from currently occupied areas, in an effort to find a larger forage base.

Impacts from Visual Resources

In general, VRM class designations would limit or allow surface-disturbing activities in certain areas, thereby affecting wildlife species. VRM Classes I and II, which preserve or retain the existing character of the landscape, would protect wildlife by restricting ground-disturbing activities; VRM Classes III and IV would provide less protection by allowing more changes to the landscape and by being less restrictive of ground-disturbing activities. Under Alternative N, none of the lands managed by the RFO would be classified as VRM Class I; 529,500 acres (25%) would be managed as VRM Class II; 569,000 acres (27%) would be managed as VRM Class III; and 1,029,500 acres (48%) would be managed as VRM Class IV. Managing areas as VRM Class II would reduce surface disturbance and retain existing vegetation, thereby protecting wildlife and wildlife habitat. However, meeting VRM Class II objectives could result in some adverse impacts to migratory birds and their habitats by limiting vegetation treatment options.

Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) wildlife habitat.

Impacts from Special Status Species

Implementation of the SSS program is designed to manage threatened, endangered, candidate, and sensitive species and their habitat. Activities associated with management of SSS could include conducting surveys, habitat improvement projects, and closing areas that contain populations or suitable habitat for SSS to OHV use or other surface-disturbing activities. Under this Alternative, surface-disturbing activities are prohibited near Greater sage-grouse leks from March 1 through July 15 and within nesting/brooding habitat from April 1 through June 15. These stipulations would benefit all wildlife inhabiting these areas. Similarly, protections afforded special status plant species from surface-disturbing and disruptive activities would benefit wildlife and their habitat. These decisions would, in general, minimize impacts that other resource and resource uses and surface-disturbing activities would have on fish and wildlife (including migratory birds) and associated habitat.

Impacts from Fish and Wildlife

Habitat manipulations, such as prescribed burns and chemical and biological controls, typically are used to improve habitat for wildlife. Although the continued maintenance or improvement of wildlife habitats could hold some long-term benefits, there could be short-term adverse impacts such as loss or fragmentation of habitat, loss of individuals because of redistribution of grazing herbivores, or hydrologic changes that could result in temporary sedimentation or changes in natural water regimes. An increase in sedimentation could be particularly harmful to aquatic species in drainages or wetland areas; however, these potential impacts would be localized.

Alternative N would propose restrictions or stipulations of surface-disturbing activities within crucial bison habitat, and crucial deer and elk habitats. These restrictions or stipulations would also benefit other wildlife species within the restricted areas, by reducing adverse effects incurred by surface disturbances that could harm wildlife species. Surface disturbance restrictions in place for other areas (such as WSAs and eligible WSR corridors) would also benefit wildlife species within these areas. In areas in which there are no surface disturbance restrictions, impacts (such as decreased air quality, erosion, soil compaction,

introduction of exotic and noxious weeds, crushing of plants, and habitat modification) could cause mortality to wildlife and disruption to foraging or reproductive behavior.

Alternative N would provide no seasonal or spatial restrictions on surface-disturbing activities in desert bighorn habitat but would require compliance with the *Desert Bighorn Sheep Management Plan.* This plan includes the following goals: 1) Establish optimum populations of bighorn sheep in all suitable habitats within the state; 2) provide good-quality habitat for healthy populations of bighorn sheep; and 3) provide high-quality opportunities for hunting and viewing of bighorn sheep. However, this management plan lacks specific direction on actions to protect bighorn sheep and their habitat from surface-disturbing activities (such as oil and gas development), so potential adverse impacts could be substantial.

Under Alternative N, wildlife reintroductions could be allowed into historic ranges. Wildlife reintroductions could increase species and genetic diversity, augment existing populations, and re-establish species that were previously extirpated.

Impacts from Wild Horses and Burros

Alternative N would allocate 100 AUMs for wild burros in the Canyonlands HMA. Burros compete with wildlife (notably antelope and bighorn sheep) for water and forage. In addition, authorized wild burro activities could impact wildlife habitat during the life of the Proposed RMP. The presence of wild burros and subsequent herd gathering-related actions could adversely impact wildlife through noise, construction of temporary gathering structures, and the trampling of habitat. Herd gathering is conducted by using hazing techniques such as low-flying helicopters, vehicles, and gathering pens. These activities could disrupt foraging behaviors.

Impacts from Fire and Fuels Management

The focus of this analysis is on fire management activities, including wildfire suppression, prescribed fire, and non-fire fuel treatments, rather than on the impacts of wildfire itself. Actions associated with fire management could adversely affect fish and wildlife species and their habitat.

Increased human activity and noise associated with wildland fire suppression and prescribed fire would affect nesting, foraging, or roosting behavior. Foraging, nesting, and communal winter roosting habitats could be lost through the use of heavy equipment, hand tools, and noise associated with intensive human activity. Some snags used for perching, roosting, or nesting could be lost because of suppression operations. However, these snags could be replaced as new snags result from fire mortality. The effects from wildland fire suppression could potentially become long term, depending upon the severity and extent of the activities conducted during a particular fire suppression operation. Although a large fire that requires extensive suppression operations, such as extensive staging areas and fire line construction, could result in long-term adverse effects to fish and wildlife, smaller fires that require less-extensive suppression operations would generally avoid these long-term adverse effects.

Fire suppression activities could adversely affect fish and wildlife species and could cause immediate post-fire alteration or damage of crucial or high-value habitats. Suppression operations could result in harassment, displacement, injury, or mortality during staging, fire-line construction, backburning, noise, or other human-caused disturbance. Any direct adverse effects would generally be short term, ending when or shortly after suppression actions are concluded. However, surface-disturbing operations conducted during fire suppression would result in a reduction or loss in quantity and quality of cover and forage habitat in both the grassland and sagebrush habitats. These activities would reduce forage availability, damage or destroy burrows or colonies, and remove the sagebrush and shrubs that provide above-ground vegetation cover. Despite the immediate initial loss of forage and shrub cover, some suppression tactics (e.g., backburning operations) or emergency restoration actions would actually stimulate vigorous regrowth of forb species in the following growing seasons. This regrowth would

benefit fish and wildlife species through improved forage quality and quantity as well as through greater visibility for detecting predators.

A large fire event and associated suppression activities could result in the deposition of large amounts of sediment and ash into local river systems. Aquatic species could experience water quality degradation for a short-term period. However, no long-term adverse impacts to the river system would be anticipated. Any fire retardant inadvertently deposited into the river system would likely dissipate and therefore not affect any aquatic species. Because prescribed fire-related actions tend to be limited in scope and smaller than major wildfires, no long-term impacts would be expected.

Fire management activities could adversely affect fish and wildlife species by trampling individuals or habitat. Fire suppression activities also have the potential to result in increased erosion. The construction of fire lines by using hand tools and heavy machinery, and the fire itself, could result in direct disturbance to individuals or the alteration of habitat. In addition, the presence of invasive weeds could result in fires burning in areas in which they did not previously burn.

Under Alternative N, prescribed fires and other treatment methods would be used to reduce hazardous fuels, with no acreage limitation established. Prescribed fire management activities, including fire-line construction and use of staging areas, could adversely affect fish and wildlife species by trampling individuals, crushing burrows, or altering habitat, as previously described. However, habitat manipulations resulting from the use of fire would also benefit species over the long term, through improved vegetative conditions.

Alternative N would include stabilization and rehabilitation efforts as needed for every wildland fire. Stabilization and rehabilitation efforts would benefit fish and wildlife species over the long term by decreasing erosion and restoring or improving habitat conditions following a fire event, although there could be short-term adverse impacts. The planting of non-native species that could out-compete native plant species used by wildlife species would alter habitat conditions and make them less favorable. The use of heavy equipment could result in the direct mortality of individuals and segmentation of populations. Increased human activity during construction efforts could cause bird species to alter foraging, nesting, and roosting behaviors.

Hazardous fuels reduction treatments would be allowed under Alternative N, with no acreage or treatment limitations prescribed. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat; these impacts would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component would promote favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the Greater sage-grouse would reduce forage availability and canopy cover, rendering the sage-grouse vulnerable to predation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

Forestry and woodland management actions would include the harvesting of firewood, poles, Christmas trees, pine nuts, timber, and seed collection. Commercial forestry activities (e.g., timber harvests and sales) would be restricted to upland forests. These activities could include the use of heavy equipment, helicopters, chemical applications, road construction, and culvert installation, and typically would result in increased traffic, noise, and human presence.

The implementation of forestry management actions that reduce pinyon-juniper woodland invasion would benefit those species that require open space. The clearing of old, dense, relatively less-productive woodlands could open up more productive areas that could be used by wildlife species.

Potential adverse impacts to bird species could include loss of habitat, increased human access to remote habitats because of new road construction, increased noise, increased human activity, overspray or drift of chemical treatments, and culvert installation or waterbar construction, all of which could alter riparian function. These activities could result in habitat loss or fragmentation, displacement of individuals, reduction in prey base, or direct mortality of individuals. Human activities associated with forestry and woodland actions could increase noise and visual stimulants in habitats, thereby disrupting nesting and foraging behaviors and possibly resulting in the species leaving the area or abandoning nests. These activities could also lead to individual nest failure and reduced reproductive success. A significant alteration of habitat could render suitable habitat uninhabitable for wildlife species.

Impacts from Livestock Grazing

The effects of livestock grazing on wildlife could include direct competition for forage, water, and space and indirect habitat alteration through range improvements. The impacts of livestock grazing management on stream processes and fish habitats include the short-term and site-specific loss of stabilizing riparian vegetation, which could lead to stream instability and an associated loss of habitat complexity; the loss of shading vegetation, which could lead to elevated stream temperatures and increased sediment delivery; and the loss of stream channel complexity provided by fluvial process and woody debris. These impacts could vary depending on livestock grazing intensity, site characteristics, and species habitat requirements. Improving livestock grazing allotments to meet the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would enhance fish and wildlife habitat in the long term by increasing the amount of desirable vegetation cover, structure, and species diversity, thereby improving water quality, aquatic species habitat, and wildlife species diversity. Meeting the Utah SRH would also result in some benefits to migratory birds and their habitat because of the SRH prescriptions for improving rangeland and riparian conditions.

The ability to adjust livestock numbers because of unforeseen conditions such as drought also would benefit wildlife species. During drought conditions, competition between livestock and wildlife is high, and undesirable vegetation is consumed. Livestock numbers that might have a beneficial effect or no effect to wildlife in wet years could have detrimental effects during drought conditions.

Domestic sheep can transmit diseases to bighorn sheep. Under Alternative N, domestic sheep grazing could continue in bighorn sheep habitat, thereby having potentially adverse effects on wildlife.

Impacts from Recreation

Any form of recreational activity that increases noise and dust could adversely impact fish and wildlife resources by disturbing breeding, feeding, or sheltering activities. Wildlife resources could be impacted by disturbance associated with commercial recreation or competitive events, depending upon the nature, location, and duration of the action. Some wildlife might be injured or killed as a result of such activities. Vehicular events, particularly those held during the time of year when species are rearing young, would have the greatest potential to affect wildlife. Animals could be injured or killed by collisions with vehicles on designated routes. Disturbance could lead to emigration or an increased risk of predation. Although Alternative N would include provisions to alter recreational activities that affect sensitive areas or species, such provisions would not be enforced until after monitoring had detected the impacts.

Foot traffic through sensitive areas could disturb, injure, or kill wildlife or prevent successful feeding or breeding activities. Recreational shooting activities might increase noise and trash in a localized area and could lead to injury or death of animals. Camping might cause minor-to-moderate impacts to wildlife

resources by disturbing animals, altering or removing habitat, increasing trash and debris in the area, and increasing the risk of wildfire. Animals might ingest foreign food substances that could cause illness or death. Camping activities in which pets are allowed to roam freely might also cause impacts to wildlife. Use restrictions on these types of activities should reduce or eliminate adverse effects to wildlife.

Recreationists often use riparian areas because of the presence of shade, water, aesthetic values, and opportunities for camping, fishing, boating, swimming, and other activities. Impacts to these habitats could be detrimental to riparian obligate species (such as migratory birds), by altering foraging, nesting, and mating behaviors. Extended recreational use in riparian areas could also result in sedimentation and compaction of soils, which could alter viable habitat for fish and other aquatic species.

Visitor use is expected to increase throughout the RFO. Under Alternative N, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) would be identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified. OHV use in particular could lead to inadvertent damage to wildlife species and their habitat because of ease of access across a large portion of the RFO. Increasing recreational uses could also have adverse impacts on migratory birds, displacing birds and degrading habitat, particularly in riparian areas.

SRPs are issued to control visitor use and protect resources. Stipulations for protecting wildlife resources (e.g., limiting camping near springs, protecting raptors or nests from rock climbing activities) could be included in SRPs, which would mitigate impacts to species and habitat.

Impacts from Travel Management

OHV use within wildlife habitat areas could adversely impact wildlife by harassing and displacing animals and damaging vegetation. OHV recreation use on big game crucial winter range could lead to loss or alteration of habitat and forage and could cause displacement and physiological stress during the winter. If the disturbance were to become chronic or continuous, these impacts could result in reduced animal fitness and reproductive potential (Geist 1978). Unregulated OHV use in sagebrush habitat could be detrimental to Greater sage-grouse populations. Although some birds might be able to adjust by using adjacent sagebrush habitats, sage-grouse hens show fidelity for nesting in the same general area (WGFD 2003). Limiting OHV recreation use to designated routes in sage-grouse breeding and nesting habitat would localize impacts. However, impacts associated with human presence and noise from OHVs would result in displacement or harassment during sensitive lifecycles and could also result in nest abandonment. In addition to sage-grouse, other sagebrush obligate species would be impacted by human presence, noise from OHVs, and habitat degradation.

Cross-country OHV recreation in open areas could result in modification of forage composition and habitat. This change in composition and structure could result in displacement of wildlife. This activity could impact raptor and Greater sage-grouse nesting sites, sage-grouse leks and brood rearing areas, big game fawning and calving areas, and all crucial winter habitats. Unrestricted OHV use could also impact migratory birds by causing harassment, direct mortality, nest abandonment, and habitat alteration. In addition, cross-country OHV recreation use could alter the landscape, resulting in indirect impacts such as increased erosion, siltation, sediment loading, and introduction of invasive species into riparian and aquatic habitats.

Designating areas as limited to designated roads or limited seasonally would provide greater protection for fish and wildlife and associated habitat than would designating open areas. Designated routes would minimize alteration and destruction that cross-country OHV use could cause to habitat components. Designating areas as closed to OHV recreation use would further reduce surface disturbance and habitat modification. This management action would remove potential impacts to fish and wildlife and associated

habitat by limiting alteration to habitat components and disturbance associated with OHV use and human presence.

Proposed decisions to designate areas as open, closed, or limited to OHV use could have impacts on migratory birds and their habitats as well. In areas open to cross-country travel, migratory birds could be adversely impacted by habitat alteration, habitat fragmentation, and direct mortality from vehicle use. Adverse impacts would be less in areas in which vehicles were limited to designated routes. Closed areas, in which vehicle use is prohibited, would protect migratory birds and their habitats from vehicle disturbance. Under Alternative N, 1,636,400 acres would continue to be open to cross-country OHV use. As stated previously, continued OHV use would result in adverse impacts to fish and wildlife species. It is anticipated that OHV use will continue to increase in the future. As a result, adverse impacts to fish and wildlife in the RFO would also increase.

Proposed decisions to designate existing routes open to vehicle use, particularly routes in riparian areas, could adversely impact migratory birds because of habitat degradation and fragmentation caused by the routes and because of direct mortality caused by vehicle use. Conversely, proposed decisions to close routes would benefit birds and habitat by reducing degradation, fragmentation, and direct mortality. Proposed decisions to close routes seasonally, primarily to protect wildlife species such as deer, elk, bison, and Greater sage-grouse, would benefit migratory birds to the extent that closures overlapped with bird breeding seasons. Under Alternative N, there would be 4,315 miles of routes available for motorized use and 65 miles of routes that would be closed. In addition, this alternative would continue to seasonally close routes in crucial bison habitat at Swap Mesa and Cave Flat from December 20 through March 20, thus limiting disturbance to all wildlife species in these areas during that time period. Alternative N does not take into account crucial or high-value wildlife habitats when considering OHV route designations because these designations are based on location of existing routes. Therefore, wildlife species could be adversely impacted overall by OHV use under this alternative.

Continuing to manage the existing Piute and Great Western Trail systems would limit effects on migratory birds and habitat to existing disturbed areas (trails). Impacts of new additions to the trail systems would be addressed by site-specific analysis.

Impacts from Lands and Realty

Land Tenure Adjustments

The effects of land tenure adjustments on fish and wildlife species would be determined through site-specific environmental analysis for any proposed land disposal. Land disposals could result in losses of wildlife habitat, whereas acquisitions could result in gains of habitat. Acquisition of habitat would benefit fish and wildlife species by providing protections that would not be afforded by non-federal ownership.

Withdrawals

Alternative N would recommend the four existing ACECs (14,780 acres) for mineral withdrawal in addition to the existing withdrawals (154,700 acres). Withdrawing these areas from mineral entry would reduce any adverse effects to fish and wildlife that could result from mineral development in these areas.

Rights-of-Way and Other Land Use Authorizations

Construction of ROWs or other land use authorizations (e.g., permits, leases, easements) could cause direct impacts to habitat through trampling and other surface disturbance. Other indirect impacts could include changes in hydrology or degradation of habitat that could be the result of increased sedimentation or habitat fragmentation. ROWs could also degrade habitat through the introduction of invasive weeds.

Surface disturbances associated with ROWs and other land use authorizations could cause habitat loss or changes in vegetation structure, which could alter bird breeding and migratory habitats at or near disturbance locations. In addition, the construction, operation, and maintenance of ROWs could increase noise and human presence in otherwise remote areas and could increase stress levels. Increased human presence could disturb bird foraging, nesting behavior, and prey abundance. The disturbance of individuals could result in reduced productivity or nesting success and increased likelihood of individual mortality.

Activities associated with ROW development (e.g., blading and grading of vegetation for construction of ROWs) could produce open areas that create ideal habitat for some wildlife species. Blading and grading of habitat could also be beneficial to these species by decreasing the vegetation height and therefore increasing visibility around existing colonies. When these disturbed areas were successfully reclaimed, the regrowth of native vegetation would provide ideal forage.

Construction and operation of roadway systems increase both traffic and visitation to otherwise remote areas. Increases in traffic and human presence could lead to increased mortality of wildlife species from vehicle collisions as well as from poaching (Laun 1957; Johnson and Collinge 2004).

ROW construction activities could result in short-term impacts to other wildlife species as well, including damage to burrows, temporary displacement, loss of forage, and direct mortality. Long-term impacts could include loss of habitat and disturbance from increased human presence, noise, and vehicular traffic on roadways.

Any new land use authorizations (e.g., ROWs, permits, leases, easements) would require NEPA review, which would minimize impacts to fish and wildlife species. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas. Exceptions would be granted only when the proposed authorization would not create substantial surface disturbance or would create only temporary impacts. Thus, impacts to fish and wildlife species in these avoidance areas would be negligible.

Wind and Solar Energy

The planning area has a low potential for development of wind and solar energy. Wind energy developments could potentially impact fish and wildlife species. Impacts to fish and wildlife species (including migratory birds) would include habitat disturbance, introduction of invasive weeds, individual mortality, erosion and runoff, fugitive dust, noise, exposure to contaminants, and interference with behavioral activities. Operational impacts of most concern to ecological resources would be those associated with bird and bat strikes to turbines and associated infrastructure (e.g., transmission lines, meteorological towers) and to a lesser extent, the electrocution of birds. Other concerns would include habitat fragmentation, noise, and disturbance caused by human and vehicle activity.

Alternative N would allow solar and wind energy exploration and development on a case-by-case basis. Any impacts to fish and wildlife species would depend upon the type of project proposed. For example, the use of solar panels could block plants from sunlight; the use of wind turbines could result in collisions with special status bird species.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Wildlife habitat areas that would be open or closed to leasing vary by species and by alternative (Table 4-16 through Table 4-20). Under all alternatives, as many as 454 oil and gas wells could be developed,

directly disturbing 3,080 acres. Sixty-three percent of the surface disturbance would be in the Sevier Frontal Zone Play (USGS Play-1907), which contains elk and mule deer habitat. The effects of oil and gas leasing would depend on the location and degree of disturbance, the proximity to crucial habitats, and the need to develop roads. However, under the Proposed RMP, exceptions, waivers, and modifications to seasonal restrictions would in some cases allow development activities to occur in occur in crucial habitat (Appendix 11). Human impacts associated with minerals exploration and associated development would include habitat and forage losses or alterations. Indirect impacts to big game could include displacement and physiological stress caused by human presence and activity during the winter (Bromley 1985). The impacts described previously would not occur in areas that were closed to leasing and would be minimal in areas that were open to leasing subject to major constraints (NSO).

Table 4-16. Oil and Gas Lease Stipulations in Bighorn Sheep Habitat

			Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Terms & Conditions	Acres	98,800	8,700	0	3,400	1,100
		% habitat	44%	4%	0%	1%	<1%
	Moderate Constraints (TL, CSU)	Acres	30,300	121,200	86,700	71,700	5,500
		% habitat	13%	53%	38%	32%	2%
	Major Constraints (NSO)	Acres	300	0	43,200	23,200	6,900
		% habitat	< 1%	0%	19%	10%	3%
Closed		Acres	97,900	97,400	97,500	129,000	213,800
		% habitat	43%	43%	43%	57%	94%

Table 4-17. Oil and Gas Lease Stipulations in Bison Habitat

			Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Terms & Conditions	Acres	89,400	200	0 ac	0 ac	0
		% habitat	36%	<1%	0%	0%	0%
	Moderate Constraints (TL, CSU)	Acres	44,600	134,300	120,000	84,400 ac	30,500
		% habitat	18%	54%	46%	34%	12%
	Major Constraints (NSO)	Acres	500	0	16,000	15,800 ac	4,700
		% habitat	<1%	0%	6%	6%	2%
Closed		Acres	116,400	116,400	122,600	150,700	215,700
		% habitat	46%	46%	47%	60%	86%

Table 4-18. Oil and Gas Lease Stipulations in Elk Habitat

			Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Terms & Conditions	Acres	82,300	100	0	100	100
		% habitat	39%	<1%	0%	<1%	<1%
	Moderate Constraints (TL, CSU)	Acres	124,900	212,100	263,900	201,000	172,700
		% habitat	59%	100%	99%	95%	81%
	Major Constraints (NSO)	Acres	4,900	0	2,500	10,500	10,500
		% habitat	2%	0%	1%	5%	5%
Closed		Acres	100	0	450	600	28,900
		% habitat	<1%	0%	<1%	<1%	14%

Table 4-19. Oil and Gas Stipulations in Mule Deer Habitat

			Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Terms & Conditions	Acres	225,400	400	0	100	100
		% habitat	40%	<1%	0%	<1%	<1%
	Moderate Constraints (TL, CSU)	Acres	243,800	477,300	689,400	412,800	300,000
		% habitat	43%	84%	87%	73%	53%
	Major Constraints (NSO)	Acres	8,500	0	36,500	31,200	15,500
		% habitat	1%	0%	5%	5%	3%
Closed		Acres	91,500	91,500	68,600	125,100	253,600
		% habitat	16%	16%	9%	22%	44%

Table 4-20. Oil and Gas Stipulations in Pronghorn Antelope Habitat

			Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Terms & Conditions	Acres	23,600	0	0	0	0
		% habitat	23%	0%	0%	0%	0%
	Moderate Constraints (TL, CSU)	Acres	73,300	102,700	204,000	102,700	102,700
		% habitat	71%	100%	98%	100%	100%
	Major Constraints (NSO)	Acres	5,300	0	4,700	0	0
		% habitat	5%	0%	2%	0%	0%

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Closed	Acres	500	0	0	0	0
	% habitat	1%	0%	0%	0%	0%

Leasable Minerals—Coal

The effects of coal resource development and production vary, depending on the location and degree of disturbance, the proximity to crucial habitats, and the need to develop roads that would cause surface disturbance. Surface mining of coal would impact crucial bison and mule deer habitat by disturbing surfaces and removing existing vegetation. Coal resource production sites often create areas of disturbed soil, providing areas for noxious weed infestations. However, this disturbance could convert vegetation to early seral stages, creating habitat for some wildlife species but reducing habitat for wildlife with mid-to-late seral habitat requirements. Seasonal restrictions on coal resource development would minimize stress to wildlife by limiting construction and other activities that could be disruptive to raptor nest sites, Greater sage-grouse leks, and wintering, calving, and lambing wildlife habitats. Migration/transition ranges and winter concentration areas for raptors could require intensive management to prevent the loss of habitat or to reduce stress. In any case, impacts to wildlife as a result of coal development would be addressed by site-specific environmental analysis.

Geophysical

Under Alternative N, BLM would allow geophysical explorations outside of WSAs and existing ACECs. Geophysical exploration would involve the use of OHVs and vehicles to lay geophones, to drill shot holes for charges, or to create a sound wave using all-terrain “thumper" vehicles instead of using charges. Vehicles also would be used to remove the geophones and reclaim the shot holes (if used). Exploration for oil and gas (including coalbed natural gas) might also include the drilling of one or more wells to test for the reservoir and its productive viability. During the exploration phase of drilling, surface-disturbing activities would include the construction of roads, well pads, reserve pits, and other facilities. Adverse impacts (including disturbance to reproductive and foraging activities, damage to habitat from use of vehicles, and direct mortality of individual animals) to wildlife species might result from surface-disturbing geophysical activities.

Locatable Minerals

The effects of locatable mineral resource development and production on wildlife could vary, depending on the location and degree of disturbance, the proximity to habitats, and the need to develop roads and other support facilities. Environmental contaminants associated with mining activities could affect wildlife species in many ways and at many levels within the ecosystem. Some contaminants (e.g., lead, arsenic, cyanide) associated with mines could cause acute or chronic effects on resident wildlife. Site-specific impacts to wildlife would be addressed in individual mining plans of operation. Under Alternative N, 169,480 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to fish and wildlife species.

Salable Minerals

Alternative N would allow sale of mineral materials (salable minerals) on 1,668,300 acres (78% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted, so it is likely that additional impacts to fish and wildlife species would be minimal in these areas. New sites would

involve only small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted.

Impacts from Special Designations

Wilderness Study Areas

Wilderness is important to the conservation of wildlife species that are prone to conflict with humans and vulnerable to human-caused mortality. Wilderness-dependent wildlife species are those vulnerable to human influence, whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely affect wildlife species. WSAs are closed to leasing, precluding any impact from oil and gas development on wildlife species within these areas, and are managed as VRM Class I, further restricting surface-disturbing activities. Species within the RFO that inhabit WSAs and benefit from the isolation and lack of disturbance afforded by these areas include bison and desert bighorn sheep.

Direction for managing wildlife in WSAs is prescribed by the IMP. The IMP allows the following: 1) stocking of native fish and wildlife species within their historical ranges, or exotics that were being stocked before October 21, 1976; and 2) introductions of threatened, endangered, or other SSS native to North America within their historical ranges. Permanent installations could be permitted, to maintain or improve conditions for wildlife and fish, if the benefiting native species enhance wilderness values. All proposed actions would need to be scrutinized to determine whether the action would be necessary to protect the physical, biological, and cultural resources, as well as the quality of the wilderness experience.

Wild and Scenic Rivers

Under Alternative N, the outstandingly remarkable values, tentative classification, and free-flowing nature of all eligible WSR segments would be protected. Fish and wildlife species would benefit from continuing these protections (which would protect riparian values) because no surface-disturbing activities would be allowed within the portions of their habitat located within these areas.

Areas of Critical Environmental Concern

The existing four ACECs would continue to be designated and managed to protect their relevant and important values under Alternative N. Management actions that restrict surface disturbances in North Caineville Mesa ACEC, South Caineville Mesa ACEC, and Gilbert Badlands ACEC would maintain existing forage and habitat composition and structure. In addition, protecting relict vegetation values in the North Caineville Mesa and South Caineville Mesa ACECs would indirectly maintain important areas for potential bird habitat. Managing Beaver Wash ACEC to protect the cold desert riparian ecosystem would protect important areas for wildlife feeding, breeding, and sheltering. This could result in a high degree of plant diversity along the riparian corridors, providing increased quality and quantity of forage for wildlife species.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to those under Alternative N. However, under Alternative A, soil and water resources would be managed to avoid surface-disturbing activities within 330 feet of streams, reducing or eliminating impacts to fish and wildlife species in these buffer zones. Thus, the area of protection from surface-disturbing activities would be reduced, compared to Alternative N.

Impacts from Vegetation

Vegetation Treatments

The types of impacts under Alternative A would be similar to those described under Alternative N. Vegetation treatments would be allowed under all alternatives, but the allowed methods would vary under each alternative. Large-scale vegetation management projects, such as sagebrush harrowing or juniper chaining, could impact fish and wildlife (or their habitats) in the sagebrush-steppe and pinyon-juniper woodlands vegetation type areas in which such treatments would be conducted. No vegetation treatments are proposed in the non-vegetated and desert shrub vegetation type areas.

Under Alternative A, an average of 73,600 acres of vegetation could be treated annually by using fire, mechanical, biological, manual, or chemical means. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat. These impacts would be determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component would promote favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the Greater sage-grouse would reduce forage availability and canopy cover, rendering the sage-grouse vulnerable to predation.

Management Activities in Riparian and Wetland Areas

Restoring riparian areas that are non-functioning or functioning at risk would improve the habitat quality or quantity for fish and wildlife species, by increasing vegetation species diversity, structure, and improving water quality. Soil, water, and riparian resources would be managed to achieve proper functioning condition, to avoid surface-disturbing activities within riparian and wetland habitat, and to provide buffer zones within 330 feet of streams, reducing or eliminating impacts to fish and wildlife species. In addition, goals to maintain or restore soil productivity, minimize accelerated soil erosion, and prevent flood or sediment damage would maintain or improve riparian-wetland habitat and water quality for fish and wildlife species. Closing and rehabilitating roads would have beneficial impacts to wildlife by reducing the potential for harassment and by providing additional habitat.

Invasive Species Management

The types of impacts experienced as a result of noxious weeds and invasive species management would be similar to those described under Alternative N. However, implementation of Alternative A would likely result in additional acres being managed for invasive and noxious weed control, compared with Alternative N. As a result, potential adverse short-term impacts to fish and wildlife could increase because of the additional areas to be treated. However, potential long-term benefits would also be greater as a result of weed control methods that would improve forage and habitat for fish and wildlife species. Habitat would also be improved by the removal of invasive and noxious weeds that compete for available space and resources.

Insect Pest Management

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative A would be similar to those described under Alternative N, except that 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I under Alternative A. Fish and wildlife species whose habitat overlaps with these areas would benefit because VRM Class I areas (which require preservation of the existing landscape) would restrict surface-disturbing activities.

Under Alternative A, none of the lands managed by the RFO would be designated as VRM Class II; 392,800 acres (18%) would be designated as VRM Class III; and 1,288,300 acres (61%) would be managed as VRM Class IV. Areas designated as VRM Class III or IV (79% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) fish and wildlife habitat. Alternative A would designate more acres as VRM Class III or IV than would any of the other alternatives.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N except that stipulations imposed under Alternative A to protect Greater sage-grouse habitat would be less restrictive than those under Alternative N. Therefore, benefits to other wildlife species located in sage-grouse habitat would be less under Alternative A than Alternative N.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N, except that mitigation could be required in deer and elk habitats from December 15 through April 15 and in crucial desert bighorn habitat from April 15 through June 15. Implementation of these mitigation measures could also benefit other wildlife species located in these areas.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under Alternative A would be similar to those described under Alternative N, except that under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually). Prescribed fires and wildland fires could adversely affect fish and wildlife species in the short term (for the reasons described under Alternative N). However, habitat manipulations through the use of fire could benefit fish and wildlife species over the long term, through improved vegetative conditions.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs) under Alternative A. Thus, impacts to wildlife species from this type of activity would occur over a larger area.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N, except that 36,950 more acres would be available for grazing under Alternative A. Thus, impacts to fish and wildlife could occur over a larger area. However, because livestock grazing would be managed to meet the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, impacts to fish and wildlife should not be significant. Modifying and improving livestock grazing management to meet these Standards and Guidelines would improve rangeland conditions that could also benefit wildlife habitat.

Impacts from Recreation

The establishment of and management associated with SRMAs would provide for management at popular recreation use areas. Management of these areas under Alternative A would decrease the potential for inadvertent damage of fish and wildlife species and their habitat, as compared to management under Alternative N.

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. This management would decrease the potential for impacts to fish and wildlife species. These impacts could include trampling, erosion, destruction of habitat, and the direct mortality of individual animals. Limiting OHV use in the Otter Creek Reservoir SRMA to designated routes would limit the extent of potential impacts.

The construction of recreation facilities in the Big Rock SRMA and the Sahara Sands SRMA would focus recreation use, minimizing impacts. Managing the Dirty Devil/Robbers Roost SRMA (290,000 acres) for primitive and semi-primitive recreation would reduce the potential for impacts to wildlife by limiting OHV recreation use to designated routes. Managing the Factory Butte SRMA (199,700 acres) for a motorized recreational opportunity and allowing moderate-to-extensive landscape modification could have major impacts and would result in continued impacts to wildlife. However, this area is receiving heavy motorized use currently.

Alternative A allows vehicles to pull off of designated routes (outside WSAs) as much as 100 feet to either side of centerline (for parking/staging) and as much as 300 feet to either side of centerline (for camping). This allowance could result in vehicles generally impacting wildlife species and their habitat in these areas.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that implementation of Alternative A would result in 449,000 acres that are open to OHV use. OHV use has the potential to lead to direct mortality of individual animals as well as disruption of reproductive and foraging activities. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation, soil disturbance) could increase the susceptibility of native plant communities to weed establishment and could modify soil conditions so that soils are unsuitable for establishment by native species.

Areas that would be closed to OHV use or in which OHV use would be restricted to designated routes would be protected from the surface-disturbing activities associated with OHV use. Alternative A, which would designate no areas as closed to OHV use and 1,679,000 acres as limited, would provide more protection to fish and wildlife species than would Alternative N because substantially fewer areas would be open to OHV use under Alternative A.

Alternative A proposes to limit OHV use to designated routes in crucial bison habitat and in Greater sage-grouse leks and nesting habitats. This designation would also benefit other wildlife species (including migratory birds) to the extent that these restricted areas overlap with bird breeding habitats. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats. Disturbance of birds and alteration of habitat could be caused by campers, particularly in riparian areas that are often important bird habitat as well as desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

The types of impacts experienced as a result of withdrawals would be similar to those described under Alternative N, except that fewer acres (154,700 acres) would be withdrawn from mineral entry under Alternative A. Thus, impacts to fish and wildlife species from mining-related surface-disturbing activities could be greater under this alternative.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of ROWs and other land use authorizations would be similar to those described under Alternative N, except that Alternative A would propose fewer ROW avoidance areas. Thus, impacts to fish and wildlife species from construction, operation, and maintenance of ROWs and other land use authorizations could be greater under Alternative A than under Alternative N.

Wind and Solar Energy

Implementation of Alternative A would allow wind and solar energy exploration and development throughout the RFO, except for in WSAs and VRM Class I areas. The restriction of wind and solar energy exploration and development within WSAs and VRM Class I areas could indirectly benefit fish and wildlife species by eliminating surface-disturbing activities within these areas.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative A, 57% of bighorn sheep habitat, 54% of bison habitat, 100% of elk habitat, 84% of mule deer habitat and 100% of pronghorn antelope habitat would be within areas open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) (Table 4-16 through Table 4-20). Consequently, these species would experience impacts from oil and gas development (particularly elk, mule deer, and pronghorn antelope because the majority of their habitat would be in these lease categories). Impacts would be the greatest under Alternative A. Other wildlife that occur within areas that are open to leasing subject to the standard terms and conditions or open to leasing standard to moderate constraints (TL, CSU) would also be adversely impacted by oil and gas development activities.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under Alternative A, geophysical explorations would be allowed throughout the RFO (with the exception of WSAs), as determined through site-specific NEPA analysis. Alternative A could therefore result in more potential impacts to fish and wildlife species than would Alternative N.

Locatable Minerals

The types of impacts experienced as a result of locatable minerals activities would be the same as those described under Alternative N. Under Alternative A, 154,700 acres would continue to be withdrawn from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these

types of activities could cause to fish and wildlife species. Alternative A would recommend the fewest acres for mineral withdrawal and therefore could result in the most potential impacts.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described under Alternative N. Alternative A would allow sale of mineral materials (salable minerals) on 1,681,100 acres (79% of the RFO). Existing areas of salable mineral disposals have already been substantially impacted, so it is likely that impacts to fish and wildlife species would be minimal in these areas. However, new sites would involve only small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible rivers would be recommended or managed as suitable. The outstandingly remarkable values, tentative classification, and free-flowing nature of these river segments would not be protected. Thus, fish and wildlife species would not receive any additional benefit.

Areas of Critical Environmental Concern

Under Alternative A, no ACECs would be designated. No special management to protect relevant and important values would be provided to fish and wildlife species or their habitat.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation

Vegetation Treatments

Impacts would be the same as those described under Alternative A.

Management Activities in Riparian and Wetland Areas

Impacts would be the same as those described under Alternative A.

Invasive Species Management

Impacts would be the same as those described under Alternative A.

Insect Pest Management

The types of impacts experienced as a result of insect pest management would be similar to those described under Alternative N, except that implementation of the Proposed RMP would allow for pest control treatments when the area's economic threshold is exceeded. This action would likely be implemented only during large insect outbreaks, such as outbreaks of grasshoppers or Mormon crickets. The use of insecticides during large outbreaks could benefit wildlife species by reducing competition for available food. However, adverse impacts would also be realized in the form of decreased plant pollinators and reduced forage base.

Impacts from Visual Resources

The types of impacts experienced under the Proposed RMP would be similar to those described under Alternative A, except that more acres would be designated as VRM Classes I and II (655,900 acres, or 31% of the RFO), thereby protecting fish and wildlife species by restricting ground-disturbing activities in these areas.

Under the Proposed RMP, 393,100 acres (18%) would be designated as VRM Class III and 1,038,200 (49%) would be managed as VRM Class IV. These areas, which could allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for fish and wildlife. The Proposed RMP would designate more acres as VRM Classes III and IV than would Alternative C or D but fewer acres than would Alternative N or A.

Impacts from Special Status Species

Generally, impacts would be the same as those described under Alternative N. However, the Proposed RMP would allow NSO within ½ mile of Greater sage-grouse leks and would prohibit surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exceptions, waivers, and modifications). These stipulations would benefit other wildlife species that occur within the restricted areas. Therefore, wildlife benefits under the Proposed RMP would be greater than under Alternatives N or A, but less than Alternatives C and D.

Impacts from Fish and Wildlife

Proposed actions such as habitat manipulations and range developments could result in short-term, adverse impacts to fish and wildlife and could detrimentally influence their behavior. Short-term, adverse impacts could result from vegetation treatments that require the use of heavy equipment. Human disturbance and noise associated with the use of heavy equipment could temporarily disperse wildlife from occupied habitats. Adverse direct impacts could also result from accidental chemical drift from pesticide use in nearby areas. These activities have the potential to remove suitable habitat or other desired vegetation for wildlife species. Vegetation treatments would likely benefit wildlife species and their prey over the long term, by providing additional forage.

Implementation of the Proposed RMP would result in seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their lifecycles. However, exceptions, waivers, or modifications could be granted on a case-by-case basis. Protective stipulations placed on crucial habitats would reduce adverse effects that surface-disturbing activities could cause to these species, as well as to other wildlife species that occupy the same areas.

Surface-disturbing activities could contribute to decreased air quality and increased soil erosion, soil compaction, introduction and spread of invasive and noxious weeds, crushing of plants, and habitat degradation. Restrictions or stipulations of surface-disturbing activities within wildlife habitats would also benefit other wildlife species that occur within the restricted areas. The Proposed RMP would prohibit surface-disturbing activities in deer and elk habitat from December 1 through April 15, and in crucial desert bighorn habitat from April 15 through June 15. Mitigation measures would be required for pronghorn antelope from May 15 through June 15. Implementation of these restrictions and stipulations would directly benefit other species by precluding surface-disturbing activities during reproductive periods, and would indirectly benefit wildlife located in these areas by limiting habitat disturbance.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described under Alternative N, except that the Proposed RMP proposes to manage the Canyonlands HMA for 60–100 wild burros. New burros could be introduced to maintain genetic variability. Activities under the Proposed RMP, including the introduction and gathering of wild burros, could adversely affect wildlife species, as described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under the Proposed RMP would be similar to those described under Alternative N, except that the Proposed RMP would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. As previously discussed, stabilization efforts would have the potential to benefit fish and wildlife species through decreased erosion and improved habitat and vegetation conditions, but would also result in short-term impacts that would alter habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

Managing 78,600 acres of non-WSA lands with wilderness characteristics to maintain their wilderness characteristics would provide habitat for wildlife species vulnerable to human influence, whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat. Management actions for non-WSA lands with wilderness characteristics would reduce surface disturbance and habitat fragmentation. Species within the RFO that benefit from the isolation and lack of disturbance afforded by these areas include bison and desert bighorn sheep.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and the one suitable WSR corridor proposed under the Proposed RMP). Thus, impacts from this type of activity would occur over a larger area than under Alternative N but a smaller area than under Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A, except that the Proposed RMP would establish five SRMAs (860,390 acres) to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. The Proposed RMP proposes only 24,400 acres at Factory Butte and 90 acres at Big Rocks as OHV SRMAs, decreasing the potential for impacts to wildlife, as compared to Alternative A.

The Proposed RMP would allow vehicles to pull off of designated routes (outside WSAs) as much as 50 feet to either side of the centerline (for parking/staging) and as much as 150 feet to either side of the centerline (for camping). Although this could result in vehicles impacting wildlife species, the area of potential impact would be localized and would be less than under either Alternative N or A.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that implementation of the Proposed RMP would result in 9,890 acres that are open to cross-country OHV use. OHV use could be more concentrated in this smaller area, and would likely have more adverse effects per acre. Impacts of OHV use on wildlife could involve habitat disturbance, as well as disturbance to individual animals during reproductive or foraging activities. The increasing use of OHVs on BLM land could also transport noxious and invasive weed seeds from infested areas to uninfested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) could increase the susceptibility of native plant communities to weed establishment and could modify soil conditions so that soils are unsuitable for establishment by native species.

Areas that are closed to OHV use or in which the use is restricted to designated routes would be protected from the surface-disturbing activities associated with OHV use. The Proposed RMP, which designates 209,900 acres as closed to OHV use and 1,908,210 acres as limited, would provide more protection to fish and wildlife species than would either Alternative N or A because substantially fewer areas are open to OHV use under the Proposed RMP.

Under the Proposed RMP, 4,277 miles of routes would be designated for use by the public, and 345 miles would be closed. The Proposed RMP designates routes to minimize harassment or significant disruption of wildlife. Limited or no access would reduce adverse effects that OHV use could cause to fish and wildlife species.

The Proposed RMP proposes the following travel restrictions in wildlife habitat areas: limit OHV use to designated routes on 806,700 acres and close 4,500 acres to OHV use within deer and elk crucial winter range; and limit OHV use to designated routes in crucial bison habitat and in all Greater sage-grouse habitats including breeding (leks), nesting, brood-rearing and wintering habitat. These limitations would also benefit other wildlife species (including migratory birds) to the extent that the restricted areas overlap with bird breeding habitat. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats because of disturbance of birds and alteration of habitat by campers, particularly in riparian areas that are often important bird habitat and desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Implementation of the Proposed RMP would include recommending for mineral withdrawals two ACECs (2,530 acres), one suitable WSR segment (5 miles), and developed recreation sites. Withdrawing these areas from mineral entry would reduce any adverse impacts to fish and wildlife species that could result from mineral developments in these areas.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that fewer ROW avoidance areas would be proposed under the Proposed RMP. Because site-specific NEPA review would be required, impacts to fish and wildlife species would be minimized or mitigated.

Wind and Solar Energy

Implementation of the Proposed RMP would result in the potential for wind and solar energy exploration and development in the majority of the RFO, with the exception of WSAs, ACECs, areas managed as open to leasing subject to major constraints (NSO) for oil and gas development, and VRM Class I or II areas. The restriction on wind and solar development within these areas would likely benefit bird species, including migratory species, by providing sites in which conflicts between birds and wind and solar facilities would be avoided.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, 38% of bighorn sheep habitat, 46% of bison habitat, 99% of elk habitat, 87% of mule deer habitat, and 98% of pronghorn antelope habitat would be within areas open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) (Table 4-16 through Table 4-20). Consequently, these species (particularly elk, mule deer, and pronghorn antelope because the majority of their habitat would be in these lease categories) would experience impacts from oil and gas development. However, impacts would be slightly less than under Alternative N. Other wildlife that occur within areas that are open to leasing or open to leasing subject to moderate constraints (TL, CSU) would also be adversely impacted by oil and gas development activities.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under the Proposed RMP, geophysical explorations would be allowed throughout the RFO with the exception of WSAs, suitable WSR corridors (1 segment–5 miles), and ACECs (2,530 acres), as determined through site-specific NEPA analysis. The Proposed RMP therefore could result in more impacts to wildlife than would Alternative N, C, or D but fewer impacts than would Alternative A.

Locatable Minerals

The types of impacts experienced as a result of minerals and energy would be similar to those described under Alternative N. Under the Proposed RMP, 176,200 acres would be recommended for withdrawal from mineral entry. Closing or withdrawing areas from mineral operations would prevent impacts that these types of activities could cause to fish and wildlife species. The Proposed RMP would recommend fewer acres for mineral withdrawal than would Alternative C or D but more acres than would Alternative N or A.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described under Alternative N. The Proposed RMP allows sale of mineral materials (salable minerals) on 1,680,700 acres (79% of the RFO). However, new sites would involve only small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted, and potential impacts would be mitigated.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under the Proposed RMP, one river segment with a tentative classification of Wild (the Fremont River in Fremont Gorge—5 total miles) would be recommended as suitable for WSR designation. Managing this area as suitable for inclusion in the NWSRS would benefit species such as migratory birds that use these areas, by protecting riparian values and ecological condition. A lack of potential for surface-disturbing activities would also result in the protection of habitat used by the prey of wildlife species.

Areas of Critical Environmental Concern

Under the Proposed RMP, two ACECs would be designated: North Caineville Mesa (2,200 acres) and Old Woman Front RNA (330 acres). The ACECs would provide protection for fish and wildlife species, by restricting many surface-disturbing activities. Special management of these ACECs would include closing to OHV use, managing as ROW avoidance areas, managing oil and gas leasing as open with NSO, unavailable for livestock grazing, and closed to harvesting of woodland products (Old Woman Front) These management prescriptions to protect relevant and important values would also protect the fish and wildlife species that occur in the ACECs. However, the total acreage contained within these ACECs (2,530 acres) is nominal, so designation of these areas would provide little additional protection to wildlife.

Alternative C

Impacts for Soil Resources and Water Resources

Impacts would be similar to those under Alternative N. However, under Alternative C, soil and water resources would be managed to avoid surface-disturbing activities within 660 feet of streams, reducing or eliminating impacts to fish and wildlife species in these buffer zones. Thus, the area of protection from surface-disturbing activities would be increased, compared to Alternative N. Alternative C (along with Alternative D) would best protect habitat for riparian-obligate species, provide and protect clean water sources for big game, protect aquatic invertebrates, and protect and promote riparian vegetation, which would provide habitat for songbirds. Closing and rehabilitating roads would have beneficial impacts to wildlife, by reducing the potential for harassment and by providing additional habitat.

Impacts from Vegetation

Vegetation Treatments

Impacts would be similar to those described under Alternative N. Under Alternative C, an average of 26,000 acres annually could be treated by using only prescribed or wildland fire and biological treatments. Depending on the timing, location, and project size, treatments could have adverse or beneficial impacts on wildlife habitat, as determined by site-specific environmental analysis. For example, in mule deer summer range, reducing the pinyon-juniper component would promote favorable forage conditions. Conversely, reducing sagebrush habitat that provides cover and forage for the Greater sage-grouse would reduce forage availability and canopy cover, rendering the sage-grouse vulnerable to predation. The limitation on treatment methods under Alternative C could preclude effective vegetation management for wildlife in some areas.

Management Activities in Riparian and Wetland Areas

The types of impacts experienced as a result of riparian management would be similar to those described under Alternative N, except that the size of the buffer zone in which no surface disturbance would be allowed would be 660 feet to each side of the riparian area under Alternative C (compared with 500 feet under Alternative N). Thus, Alternative C would protect a larger area around the riparian/wetland zones from surface-disturbing activities. This larger area would protect habitat for riparian-obligate species,

provide and protect clean water sources for big game, protect aquatic invertebrates, and protect and promote riparian vegetation, which would provide habitat for songbirds.

Invasive Species Management

The types of impacts experienced as a result of noxious weeds and invasive species management would be similar to those described under Alternative N, except that implementation of Alternative C would initiate an attempt to control noxious and invasive weeds through treatment methods that mimic natural processes. Implementation of Alternative C could make control of some invasive species difficult because of lack of suitable substitute treatments possibly allowing the spread of invasive species and displacement of desirable vegetation (Hart 1999). For example, using fire as a control tool for species such as tamarisk could increase the growth and spread of non-native, fire-adapted species that have more efficient recovery mechanisms than most native species. This growth could have indirect adverse effects on fish and wildlife species because noxious and invasive weeds would likely expand their range and could alter suitable fish and wildlife habitat and reduce available forage. The short-term adverse effects resulting from surface-disturbing activities (and discussed under Alternative A) would not be realized. Beneficial impacts resulting from weed control treatments through natural processes within fish and wildlife habitat would be limited.

Insect Pest Management

The types of impacts experienced as a result of insect pest management would be similar to those described under Alternative N, except that implementation of Alternative C would result in no immediate beneficial or adverse impacts from pest control treatments. However, wildlife species could be affected if insect pests proliferate to the point of changing the landscape/habitat by removing large amounts of potential forage.

Impacts from Visual Resources

The types of impacts experienced under Alternative C would be similar to those described under the Proposed RMP. However, Alternative C would designate more acres as VRM Classes I and II (677,500 acres, or 32% of the RFO), thus protecting fish and wildlife species by restricting ground-disturbing activities in these areas.

Under Alternative C, 509,100 acres (24%) would be designated as VRM Class III and 941,400 (44%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short-term) the habitat for fish and wildlife species. Alternative C would designate more acres as VRM Classes III and IV than would Alternative D but fewer acres than would Alternative N or A or the Proposed RMP.

Impacts from Special Status Species

Impacts would be similar as those described under the Proposed RMP. Although Alternative C does not include timing limitations on surface disturbing activities in sage grouse winter habitat, this habitat is mostly within crucial mule deer habitat which does have a timing limitation on such activities from December 15 through April 15.

Impacts from Fish and Wildlife

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under the Proposed RMP, except that Alternative C would implement seasonal and spatial stipulations to protect desert bighorn sheep habitats during lambing and other sensitive times during their lifecycles. Stipulations placed on crucial habitat management would reduce adverse effects caused by

surface-disturbing activities that could harm those species, as well as other species that occur within the same area.

Restrictions or stipulations of surface-disturbing activities within wildlife habitats would also benefit other wildlife species that occur within the restricted areas. Alternative C prohibits surface-disturbing activities in deer and elk habitat from December 1 through April 15, in crucial desert bighorn habitat from April 15 through June 15, and in crucial pronghorn antelope habitat from May 15 through June 15. Implementation of these restrictions and stipulations would directly benefit other species by precluding surface-disturbing activities during reproductive periods, as well as indirectly benefiting wildlife located in these areas by limiting habitat disturbance.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described under Alternative N, except that Alternative C proposes to manage the Canyonlands HMA for 120-200 wild burros. New burros could be introduced to maintain genetic variability. Activities under this alternative, including the introduction and gathering of wild burros, would have the potential to adversely affect wildlife species as described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced under this alternative would be similar to those described for the Proposed RMP, except that under Alternative C the average annual treatment limits would be less (26,000 acres). As stated previously, prescribed fires and wildland fires have the potential to adversely affect wildlife species. However, habitat manipulations with the use of fire could benefit wildlife over the long-term through improved vegetative conditions. With less acres treated under this alternative, there would be less potential adverse impacts, but also less potential beneficial impacts from habitat manipulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for fish and wildlife.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N, except that commercial and non-commercial harvesting would be allowed throughout the RFO (with the exception of WSAs and suitable WSR corridors). Thus, impacts from this type of activity would occur over a smaller area than Alternatives A or the Proposed RMP. In addition, the rejuvenating benefits to habitats from the clearing of woodland areas would not be realized in the areas in which forest and woodland products harvesting is precluded.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N, except that this alternative prohibits a change in kind of livestock from cattle to domestic sheep within all identified bighorn sheep habitat. Because domestic sheep can transmit diseases to bighorn sheep, this would provide protections for bighorn sheep within the RFO from livestock.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative A, except that four SRMAs (930,000 acres) would be established to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use under Alternative C, thereby decreasing the potential for impacts from this type of use to fish and wildlife species.

Managing the Dirty Devil/Robbers Roost SRMA (375,800 acres) for dispersed recreation in a primitive setting would indirectly reduce the potential for surface disturbance (and associated damage to fish and wildlife) caused by recreation. Managing the Henry Mountains SRMA (533,900 acres) for primitive and semi-primitive recreation and managing the Sevier Canyon SRMA (7,500 acres) for scenic values would indirectly maintain or reduce the potential for disturbance and impacts to fish and wildlife. Managing the Capitol Reef Gateway SRMA (12,800 acres) for a natural recreation experience and the development of facilities could have localized site-specific impacts, although NEPA review would be required prior to construction of any facilities.

Alternative C allows vehicles to pull off of designated routes (outside WSAs) as much as 25 feet to either side of the centerline (for parking/staging); camping would be allowed only in designated campsites, with travel between campsites allowed only on designated routes. Together, these restrictions would minimize disturbance to fish and wildlife species and would result in less disturbance than under Alternative N or A or the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N, except that under Alternative C, no acres would be open to cross-country OHV use; 1,445,000 acres would be limited to designated routes; and 683,000 acres would be closed to OHV use. By eliminating areas that are open to unrestricted OHV use, adverse impacts to fish and wildlife species would be substantially reduced.

Under Alternative C, there would be 3,192 miles of designated routes and 1,188 miles of routes that would be closed. Alternative C designates routes to minimize harassment or significant disruption of wildlife. Limited or closed areas would reduce adverse effects that OHV use could have on fish and wildlife species.

Alternative C proposes the following travel restrictions in wildlife habitat areas: Within deer and elk crucial winter range, limit OHV use to designated routes on 509,000 acres and close 142,000 acres to OHV use; within crucial bison habitat, limit OHV use to designated routes on 62,000 acres and close 189,000 acres to OHV use; and limit OHV use to designated routes in all Greater sage-grouse habitats including breeding (leks), nesting, brood-rearing and wintering habitat. These restrictions would also benefit other wildlife species (including migratory birds), to the extent that the restricted areas overlap with bird breeding habitat. Proposed decisions for allowing motorized access to campsites adjacent to designated routes could impact migratory birds and their habitats because of disturbance of birds and alteration of habitat by campers, particularly in riparian areas that are often important bird habitat and desirable places to camp.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Alternative C recommends withdrawing from mineral entry all or parts of several ACECs, suitable WSR corridors, and developed recreation sites (331,100 acres, or 16% of the RFO). Withdrawing these areas from mineral entry would reduce adverse impacts that mineral developments could have on fish and wildlife species in these areas.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas are proposed under Alternative C (735,000 acres closed to leasing or open to leasing subject to major constraints (NSO), 12 suitable WSR segments, and 16 ACECs). Because NEPA review would be required prior to issuing any land use authorization, impacts to fish and wildlife species would be minimal.

Wind and Solar Energy

Alternative C specifically excludes SSS habitats from wind and solar energy developments. This exclusion would help to protect other wildlife species (including bats, migratory birds, and raptors) that occur in these areas from any surface-disturbing action that could result from these developments.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, 33% of bighorn sheep habitat, 34% of bison habitat, 95% of elk habitat, 73% of mule deer habitat, and 100% of pronghorn antelope habitat are within areas open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) (Table 4-16 through Table 4-20). Consequently, these species (particularly elk and pronghorn antelope because almost all of their habitat would be in these lease categories) would experience impacts from oil and gas development, although the impacts would be less than under Alternative N or A or the Proposed RMP. Other wildlife that occurs within areas that are open to leasing or open to leasing subject to moderate constraints (TL, CSU) could also be adversely impacted by oil and gas development activities.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Geophysical

The type of impacts experienced as a result of geophysical exploration would be the same as those described under Alternative N, except that under Alternative C, geophysical explorations would be allowed throughout the RFO, with the exception of WSAs, suitable WSR corridors (12 segments—135 miles), and ACECs (886,810 acres), as determined through site-specific NEPA analysis. Alternative C could result in more potential impacts to wildlife species than Alternative D but less impacts than Alternative N or A or the Proposed RMP.

Locatable Minerals

The types of impacts that would be experienced from locatable mineral activities would be the same as those described under Alternative N. Under Alternative C, the location, exploration, and development of locatable minerals could occur throughout the RFO, except in areas withdrawn from mineral entry (331,100 acres), including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable WSR corridors. Wildlife species located in the withdrawn areas would be protected from surface-disturbing activities that could result from locatable minerals activities.

Salable Minerals

The type of impacts experienced from the disposal of salable minerals would be the same as those described under Alternative N. Alternative C allows sale of mineral materials (salable minerals) on 1,541,700 acres (72% of the RFO). However, new sites would involve only small areas of land and would be subject to NEPA review. Effects on wildlife would be addressed on a case-by-case basis before sales were permitted, and potential impacts would be mitigated.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative C, the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, Twin Corral Box Canyon, Fish Creek, Maidenwater Creek, Quitchupah Creek, and the Fremont River in Fremont Gorge and below Capitol Reef National Park to the Caineville ditch diversion would be designated as suitable WSRs. Management to protect their outstandingly remarkable values, tentative classification, and free-flowing nature would benefit species such as migratory birds that use these areas. (Management could include closing the areas to OHV us, closing the areas to leasing, and withdrawing the areas from mineral entry.) A lack of potential for surface-disturbing activities would also result in the protection of habitat used by the prey of wildlife species.

Areas of Critical Environmental Concern

Under Alternative C, 16 areas (886,810 acres) would be designated as ACECs: Badlands, Bull Creek, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Old Woman Front, Parker Mountain, Quitchupah, Rainbow Hills, Sevier Canyon, Thousand Lakes Bench, and SSS ACECs. ACECs provide protection for fish and wildlife by restricting many surface-disturbing activities, including mineral leasing, OHV use, wood cutting, new ROWs, or motorized camping. Those ACECs with relevant and important values related to fish and wildlife resource values and associated habitat would have special management to protect these resources, indirectly resulting in additional protection for big game species and Greater sage-grouse and associated habitat. In some areas, notably the Henry Mountains, vegetation manipulation projects could cause short-term adverse impacts to bird habitat. These effects would be mitigated in the long term by anticipated improvement in vegetation health and vigor.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative C.

Impacts from Vegetation

Vegetation Treatments

Impacts would be the same as those described under Alternative C.

Management Activities in Riparian and Wetland Areas

Impacts would be the same as those described under Alternative C.

Invasive Species Management

Impacts would be the same as those described under Alternative C.

Insect Pest Management

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts would be the same as described under Alternative C, except that Alternative D would designate more acres as VRM Classes I and II (1,196,300 acres, or 56% of the RFO), protecting fish and wildlife species by restricting ground-disturbing activities in these areas.

Under Alternative D, 355,100 acres (17%) would be designated as VRM Class III and 576,600 (27%) would be managed as VRM Class IV. These areas, which would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance, could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the habitat for fish and wildlife species. This alternative designates far fewer acres as VRM Classes III and IV than any other alternative, so impacts to fish and wildlife would be the least of all alternatives because of VRM class designations.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative C.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Protecting the non-WSA lands with wilderness characteristics would provide habitat for wildlife species that are vulnerable to human influence and whose continued existence is dependent on and reflective of wild, extensive, undisturbed habitat. Management actions for non-WSA lands with wilderness characteristics would reduce surface disturbance and habitat fragmentation. Species within the RFO that benefit from the isolation and lack of disturbance afforded by these areas include bison and desert bighorn sheep.

Impacts from Forestry and Woodland Products

The types of impacts experienced as a result of forest and woodland products harvesting would be similar to those described under Alternative N. However, under Alternative D, commercial and non-commercial harvesting would not be allowed in WSAs, suitable WSR corridors, and non-WSA lands with wilderness characteristics. Thus, impacts from this type of activity would occur over a much smaller area than under any other alternative, potentially providing the greatest benefit to fish and wildlife species. However, the rejuvenating benefits that the clearing of woodland areas would have on habitats would not be realized.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative C.

Impacts from Recreation

The types of impacts experienced as a result of recreation management would be similar to those described under Alternative C, except that Alternative D would establish seven SRMAs (1,358,100 acres) to manage recreational use and to mitigate impacts caused by this use. No SRMAs would be established for OHV use, thus decreasing the potential for impacts that this type of use could have on fish and wildlife species. As described under Alternative C, the development of facilities could have localized, site-specific impacts, although NEPA review would occur prior to construction of any facilities, thus mitigating and minimizing impacts to wildlife.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, under Alternative D, no acres would be open to cross-country OHV use; OHV use on 972,800 acres would be limited to designated routes; and 1,155,200 acres would be closed to OHV use. Of all the alternatives, Alternative D would have the least potential impacts that OHV use could cause to fish and wildlife species.

Under Alternative D, there would be 3,043 miles of designated routes, and 1,242 miles that would be closed. Reducing access would reduce adverse effects that OHV use could cause to fish and wildlife species. Route designations would cause the fewest impacts to fish and wildlife under this alternative.

Alternative D proposes the following travel restrictions in wildlife habitat areas: Within deer and elk crucial winter range, limit OHV use to designated routes on 393,000 acres and close 258,000 acres to OHV use; within crucial bison habitat, limit OHV use to designated routes on 44,000 acres and close 207,000 acres to OHV use; and limit OHV use to designated routes in all Greater sage-grouse habitats including breeding (leks), nesting, brood-rearing and wintering habitat. These restrictions would also benefit other wildlife species (including migratory birds) to the extent that the restricted areas overlap with bird breeding habitat. Proposed decisions for limiting motorized camping to designated campsites (and thereby limiting motorized access) would minimize impacts to migratory birds and their habitats because campsites would be designated only where compatible with other resources. Of all the alternatives, Alternative D would provide the most protection from impacts related to motorized travel.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be the same as those described under Alternative N.

Withdrawals

Alternative D would recommend withdrawing from mineral entry all non-WSA lands with wilderness characteristics, all or parts of several ACECs, suitable WSR corridors, and developed recreation sites (903,900 acres, or 42% of the RFO)—the most under any of the alternatives. Withdrawing these areas from mineral entry would reduce adverse impacts that mineral developments could cause to fish and wildlife species in these areas. More than any other alternative, Alternative D would reduce potential impacts caused by mining activity.

Rights-of-Way and Other Land Use Authorizations

The types of impacts experienced as a result of land use authorizations would be similar to those described under Alternative N, except that more ROW avoidance areas are proposed under Alternative D (1,203,800 acres closed to oil and gas leasing or open with NSO, 12 suitable WSR segments, and 16 ACECs). Because NEPA review would be required prior to issuing any land use authorization, impacts to fish and wildlife would be minimized.

Wind and Solar Energy

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative D, 2% of bighorn sheep habitat, 12% of bison habitat, 81% of elk habitat, 53% of mule deer habitat, and 100% of pronghorn antelope habitat would be within areas that would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) (Table 4-16 through Table 4-20). Consequently, these species (particularly elk, mule deer, and pronghorn antelope because the majority of their habitat would be in these lease categories) would experience impacts caused by oil and gas development, although the impacts would be significantly less for most of these species than under any of the other alternatives. Other wildlife that occurs within areas that are open to leasing or open to leasing subject to moderate constraints (TL, CSU) could also be adversely impacted by oil and gas development activities. Of all the alternatives, Alternative D would have the least potential impacts caused by oil and gas development to fish and wildlife.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Geophysical

Under Alternative D, BLM would allow geophysical explorations outside of WSAs, non-WSA lands with wilderness characteristics, WSR corridors, and ACECs as determined through site-specific NEPA analysis. Potential impacts that geophysical exploration could cause to fish and wildlife species would be least under this alternative because the least amount of land would be available for this type of activity.

Locatable Minerals

The types of impacts caused by locatable mineral activities would be the same as those described under Alternative N. However, under Alternative D, the location, exploration, and development of locatable minerals could occur throughout the RFO, except in areas withdrawn from mineral entry (903,900 acres), including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, Koosharem Picnic Area, Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and suitable WSR corridors and non-WSA lands with wilderness characteristics. Fish and wildlife species in the withdrawn areas would be protected from surface-disturbing activities that could result from locatable minerals activities. Of all the alternatives, Alternative D would have the least potential impacts caused by locatable mineral development.

Salable Minerals

With the implementation of Alternative D, 1,160,500 acres (WSAs, non-WSA lands with wilderness characteristics, Dirty Devil ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, Little Rockies ACEC, Rainbow Hills ACEC, and within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs) would be closed to disposal of salable minerals. The exclusion of these areas from surface-disturbing mineral materials activities would indirectly benefit fish and wildlife species within these areas. The disposal of mineral materials on other public lands would be allowed on a case-by-case basis. Of all the alternatives, Alternative D would have the least potential impact caused by mineral material sales to fish and wildlife species.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.10 Wild Horses and Burros

The goal of the Wild and Free-Roaming Horse and Burro Act is to manage wild horses and burros "in the area where presently [1971] found as an integral part of the natural system of the public lands." The Act and subsequent regulations direct that wild horses and burros be managed to ensure a thriving natural ecological balance with the minimum feasible management required to maintain the populations. Managing wild horse and burro populations at a sufficient size to be genetically viable is important to accomplish this goal. Some management decisions could impact the viability of wild horse or burro populations. Populations that would require long-term, intensive management would not comply with the minimum feasible management regulations and would therefore be noted as an impact.

Methods and Assumptions

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified when possible. Spatial analyses were conducted by using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to wild horses and burros would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Special Status Species
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on wild horses and burros. There are no WSR decisions that would impact wild and horse burro resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Reducing surface disturbance and erosion would help maintain and improve the quality and quantity of forage available for burros in the Canyonlands HMA. Reduction would be achieved through the application of BMPs such as reclaiming disturbed areas, minimizing the amount of access roads, requiring weed-free feed to reduce the potential for spread of noxious weeds, and others, as listed in Appendix 14.

Impacts from Special Status Species

Actions to preserve SSS could maintain forage resources, but some habitats or specific populations of SSS might be fenced or otherwise protected. In comparison to the HMA acreages, the impacts to these areas would not be significant if the fenced area was not a water source. Within this desert environment, fencing that excluded the burros from water could result in moderate-to-major impacts, depending on the number and locations of water sources involved.

Impacts from Wild Horses and Burros

The preliminary wild burro AML in the Canyonlands HMA would serve to maintain a population of wild burros within the genetically viable range. Although forage would not specifically be allocated to the wild burros, sufficient forage would be available for the AML, so no impacts would exist.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Because forage would not be allocated to livestock on the northeastern portions of the Canyonlands HMA, livestock grazing would cause no impact to wild burros in these areas. In the remainder of the Canyonlands HMA, competition for habitat resources (specifically forage and water) could continue between livestock and wild horses and burros. In the long term, this competition could change the distribution patterns or reproductive success of the wild burros in these areas. Impacts would be mitigated through monitoring and adjustments in forage use.

Impacts from Recreation

No developments, facilities, or SRMAs would be proposed within the Canyonlands HMA. Therefore, there would be no impact on wild horses and burros from these types of developments or management. Recreation use in the remote area of the Canyonlands HMA has increased, and that trend is expected to continue. In the long term, unstructured recreation use in this area could result in adverse impacts to the burros because of harassment by visitors, passage of motorized vehicles, and use of natural water sources.

Impacts from Travel Management

In the Canyonlands HMA, OHV use would be limited to existing routes on more than 50% of the HMA. The remaining acreage would mostly be open to cross-country OHV use, with a small southwest portion of the HMA (where the Dirty Devil WSA overlaps the HMA) closed to OHV use. The presence of OHV recreation users on 45 miles of designated routes in the HMA could temporarily displace wild burros from the proximity of riders. On those portions of the Canyonlands HMA that would be open to cross-country OHV use, vegetation loss resulting from cross-country travel could reduce available forage for wild horses and burros. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the wild and free-roaming nature of the herd would not likely be eliminated.

Impacts from Minerals and Energy

The Canyonlands HMA is located within lands predicted to have a low development potential for oil and gas. Impacts to burros would therefore be unlikely. More than 50% of the HMA overlaps portions of the Horseshoe Canyon North, Horseshoe Canyon South, French Spring/Happy Canyon, and Dirty Devil WSAs. These areas are managed according to the IMP and are closed to leasing, prohibiting the leasing of non-energy solid minerals and disposal of mineral materials. Therefore, the potential for mineral and energy development to impact burros is minimal.

Impacts from Special Designations

Wilderness Study Areas

Managing the Horseshoe Canyon North, Horseshoe Canyon South, French Spring/Happy Canyon, and Dirty Devil WSAs according to the IMP would preclude most surface-disturbing activities in these areas. Portions of these WSAs overlap more than 50% of the Canyonlands HMA. Precluding surface disturbance in these areas would maintain forage levels and preserve the free-roaming nature of the wild

burros in the Canyonlands HMA. However, managing according to the IMP could also make direct management, such as gathers, more difficult.

Areas of Critical Environmental Concern

No ACECs proposed under Alternative N would overlap with the Canyonlands HMA, resulting in no impacts to wild horses and burros.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would be proposed under Alternative N, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The entire Canyonlands HMA lies within the proposed Dirty Devil SRMA. Managing the Dirty Devil SRMA for a high probability of experiencing solitude with low interaction or evidence of other users would result in low levels of surface-disturbing developments and human presence, preserving the wild and free-roaming nature of wild burros in the Canyonlands HMA.

Impacts from Travel Management

Under Alternative A, no areas within the Canyonlands HMA would be open to cross-country OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of the wild burros. The entire Canyonlands HMA would be limited to designated routes. The presence of OHV recreation users on 45 miles of designated routes in the HMA could temporarily displace wild burros from the proximity of riders. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the wild and free-roaming nature of the herd would not likely be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

There would be no ACECs proposed under Alternative A, resulting in no impacts to wild horses and burros.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Wild Horses and Burros

The proposed wild burro AML of 60–100 burros in the Canyonlands HMA would establish and maintain a genetically viable population of wild burros. Sufficient forage would be allocated to wild burros, to meet the AML. The population of wild burros would remain stable, with normal population increases for the area. There would be no difference in this impact compared to Alternative N, except that a formal AML would be established and forage is allocated. Allowing introductions of individuals from other wild burro herds into the HMA would enhance the ability to manage viable populations and decrease the gather frequency.

Impacts from Non-WSA Lands with Wilderness Characteristics

The Canyonlands HMA overlaps portions of the Labyrinth Canyon and Horseshoe Canyon South non-WSA lands with wilderness characteristics. Because non-WSA lands are closed to leasing or open to leasing subject to major constraints (NSO), require motorized users to remain on designated routes, and are generally precluded from surface-disturbing activities, wild burros roaming in these areas would be less apt to encounter human activity. This management would reduce stress levels and allow for burros' free-roaming nature, with minimal human intervention and disturbance.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Impacts under the Proposed RMP would be similar to those described under Alternative A. No areas within the Canyonlands HMA would be open to cross-country OHV use; more than 50% of the HMA would be closed to OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of wild burros. OHV use in the remainder of the HMA would be limited to designated routes. As under Alternative N or A, the presence of OHV use on 45 miles of routes designated open in the Canyonlands HMA could temporarily displace wild burros from the proximity of use. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the burros' wild and free-roaming nature would not be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild Scenic Rivers

WSRs would have little or no impact on Wild Horses & Burros. The HMA does not overlap with any of the suitable or eligible WSR segments.

Areas of Critical Environmental Concern

No ACECs proposed under the Proposed RMP would overlap with the Canyonlands HMA, resulting in no impacts to wild horses and burros.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Wild Horses and Burros

Increasing the AML to 120–200 wild burros in the Canyonlands HMA would allow wild burros to be the predominant user of the area's resources. This AML, a 100% increase compared to the Proposed RMP, would allow for the population to be maintained well above the level needed for a genetically viable population. Sufficient forage (1,200 AUMs) to meet the AML would be allocated to wild burros. The population of wild burros would be allowed to increase, with water as the main limiting factor in the area.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would proposed under Alternative C, resulting in no additional protection for wild horses and burros.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

No areas within the Canyonlands HMA would be open to cross-country OHV use; more than 50% of the HMA would be closed to OHV use, eliminating OHV-related impacts to the wild and free-roaming nature of the wild burros. OHV use in the remainder of the HMA would be limited to designated routes. These impacts are the same as under the Proposed RMP; however, the presence of OHV use on designated routes would be reduced by 57% under Alternative C. Wild burros could be temporarily displaced by OHV use on only 19 miles of open routes. Given the size of the HMA, the limited number of routes, and the amount of anticipated use, the burros' wild and free-roaming nature would not be eliminated.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

A small portion of the proposed Dirty Devil ACEC and almost all of the proposed Horseshoe Canyon ACEC overlaps with the Canyonlands HMA. Management prescriptions for the protection of these ACECs' relevant and important values could impact wild burros. Proposed actions that would reduce surface disturbance and improve water and riparian resources would benefit the burros. These actions would include implementing VRM Class II designations, limiting OHV use, and restricting oil and gas leasing. However, fencing of riparian areas to exclude livestock would also exclude burros. Unless water was developed outside of the riparian area prior to fencing, this decision could result in loss of water sources for the burros. Within this desert environment, excluding the burros from water could result in moderate-to-major impacts, depending on the number and location of water sources involved.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

The Canyonlands HMA overlaps portions of the Labyrinth Canyon, Horseshoe Canyon South, and Dirty Devil/French Spring non-WSA lands with wilderness characteristics. Because non-WSA lands are closed to leasing, closed to OHVs, and generally precluded from surface-disturbing activities, wild burros roaming in these areas would be less apt to encounter human activity. This would reduce stress levels and allow for their free-roaming nature, without human intervention and disturbance.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under Alternative A. However, under Alternative D, the majority of the Dirty Devil SRMA would be closed to OHV use and closed to leasing, for the protection of WSAs and non-WSA lands with wilderness characteristics. Under Alternative D, more acres would also be managed for primitive to semi-primitive recreation opportunities. This management would result in additional acres being protected from surface-disturbing activities, resulting in additional benefits to the burros, compared with the other alternatives.

Impacts from Travel Management

Under Alternative D, the Canyonlands HMA would be closed to OHV use, eliminating all OHV-related impacts to the wild and free-roaming nature of the wild burros.

Impacts from Minerals and Energy

More than 50% of the HMA overlaps portions of the Horseshoe Canyon North, Horseshoe Canyon South, French Spring/Happy Canyon, and Dirty Devil WSAs. These areas are managed according to the IMP and are closed to leasing of oil and gas, leasing of non-energy solid minerals, and disposal of mineral materials. Under Alternative D, the remainder of the HMA, which lies within non-WSA lands with

wilderness characteristics, would also be closed to leasing. Mineral and energy development would cause no impact to burros.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

The impacts under Alternative D would be similar to those under Alternative C. However, management actions to protect non-WSA lands with wilderness characteristics within ACECs would further reduce the potential for surface disturbance, compared to Alternative C, thus resulting in increased benefits to wild burros. Fencing of riparian areas to exclude livestock would not be allowed on non-WSA lands within the ACECs, reducing the risk of excluding the burros from water sources. However, if long-term conditions resulted in these riparian areas failing or functioning at risk, loss of water could still cause adverse impacts to the burros.

4.3.11 Fire and Fuels Management

This analysis addresses potential impacts on fire and fuels management, caused by implementing the management actions under the alternatives described in Chapter 2. Impacts on resources, resource uses, and designations resulting from implementation of the fire management program are discussed in those particular resource sections in this chapter. This analysis focuses on those management alternatives or actions that affect fire intensity, frequency, and suppression efforts.

Many of the forest, woodland, and rangeland ecosystems in the RFO are not functioning properly because of lack of disturbance such as fire. Decisions proposed in Chapter 2 for managing the various resources and resources uses would impact BLM's ability to maintain or restore properly functioning vegetation and to manage hazardous fuel loads. The alternatives could also impact the ability to manage wildland fire use, wildfires, and prescribed fire programs.

Methods and Assumptions

Table 4-21 illustrates the assumptions for each fire management activity, by alternative.

Table 4-21. Average Annual Treatment Acreage by Alternative

Fire Management Activity	Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
Wildland Fire Use	25,000 acres	5,000 acres	25,000 acres	13,000 acres
Prescribed Fire Treatments	25,000 acres	35,000 acres	25,000 acres	11,000 acres
Non-Fire Fuels Treatments	23,600 acres	33,600 acres	23,600 acres	2,000 acres
Total Treatments	73,600 acres	73,600 acres	73,600 acres	26,000 acres
Estimated Wildfire	12,000 acres	4,000 acres	4,000 acres	4,000 acres
Post-Fire Rehabilitation	No annual acreage is listed. ESR would be conducted on any acreage that is determined to have been damaged and in need of rehabilitation.			

This analysis was based on the following assumptions:

- Fire is an important functional, natural disturbance in many of the ecological systems found in the RFO.
- A direct relationship exists between the density of human use within the RFO and the frequency of human-caused fires.
- Fire size and intensity are more likely to increase as fuel loading increases.
- Wildland fire use would not be expected to require rehabilitation. If inadvertent resource damage did occur, rehabilitation would be applied.
- Demand for fuels treatment will continue to increase over the life of the plan.

- All conservation measures pertaining to fire suppression operations would be followed, unless firefighter or public safety or the protection of property, improvements, or natural resources would render them infeasible during a particular operation. All conservation measures pertaining to fuels treatments would be followed when implementing wildland fire use, prescribed fires, and other vegetation treatments.

The analysis of potential impacts to fire and fuels management is based on the expertise of BLM resource specialists at the RFO, the Central Utah interagency fire and fuels management program, information in the Utah Statewide Land Use Plan Amendment for Fire and Fuels Management (BLM 2005e), and scientific literature. Effects were quantified, when possible. Best professional judgment was used when quantifiable data were unavailable.

In 2005, a Fire Management Plan (FMP) Environmental Analysis was completed for the Richfield District. The Final FMP amended the existing plans and proposed goals for desired conditions by using vegetation treatments including wildfire, prescribed fire, mechanical (including hand-cutting) and chemical treatments. The consequences analysis below discusses the effects that the various plan decisions would have on fire and fuels management.

Environmental Consequences

Impacts to fire and fuels management would result from actions proposed under the following resource management programs:

- Air Quality
- Vegetation
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on fire and fuels management.

Alternative N: No Action

Impacts from Air Quality

Maintaining State of Utah Air Quality Standards could result in fewer acres burned by using prescribed fires or wildland fire use because NAAQS cannot be exceeded. All projects must comply with the Utah Interagency Smoke Management Rule, which may limit the number of acres that could be burned or days on which burns could occur. If the air quality or Class I airsheds could be adversely impacted, wildland fire use and prescribed fires could be suspended. Consideration of regional haze could increase the restrictions on wildland fire use or prescribed fire. Potential effects to air quality would be addressed during development of the wildland fire implementation plan for each wildland fire use and in the burn

plan for each prescribed fire. Emissions from wildfire are considered acts of nature and are outside the scope of this analysis. Over time, air quality management could create minor-to-moderate impacts to the fire and fuels management program.

Impacts from Vegetation

Continuing to manage vegetation as proposed under Alternative N would move vegetation toward a more ecologically sustainable condition over a multiple-year period, as disclosed in the 2005 Land Use Plan Amendment. Over time, management would also lower the risk of losing key ecosystem components because of severe wildfires. The need for post-fire stabilization, rehabilitation, and restoration to control soil erosion, loss of wildlife habitat, and other risks would decrease. Vegetation management decisions would provide no adverse impacts to fire and fuels management under Alternative N.

Impacts from Cultural Resources

Proposed decisions for cultural resources could have some impact on the design of fuels treatment projects, as determined through site-specific environmental analysis. Projects would be designed with specific mitigations, as necessary, to inventory and protect cultural resources. Site-specific mitigations could change the design of and increase the costs of fuels treatment projects.

Cultural resources are often more at risk from impacts caused by fire suppression activities than from wildland fire itself. Suppression efforts such as fire line construction (hand or mechanical) or the establishment of helicopter bases, safety zones, and fire camps may be ground disturbing and have the potential to destroy artifacts and the integrity of cultural resource sites. Mitigations for cultural resources could have moderate-to-major impacts for prescribed fire and mechanical treatments under Alternative N.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, the types and scope of fuels treatments would be limited in VRM Classes I and II. Alternative N includes no VRM Class I areas and 529,500 acres (25% of the RFO) of VRM Class II areas. These designations would have negligible-to-moderate impacts on fire and fuels management, depending on the proposed site.

There may be a direct conflict with VRM Class II areas if the wildland/urban interface abuts them. The National Fire Plan directs the agency to reduce hazardous fuels on federal lands adjacent to or near wildland/urban interface areas.

Proposed decisions for VRM could have some impact on the design of non-fire fuels treatment projects. Impacts to visual resources would be determined through site-specific environmental analysis. Potential effects to visual resources would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Impacts from Special Status Species

Proposed decisions for SSS could impact the design of vegetation treatment projects, as determined through site-specific environmental analysis. Potential effects to SSS would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Under this alternative, surface disturbing activities would be prohibited near Greater sage-grouse leks from March 1 through July 15 and within sage-grouse brooding/nesting habitat from April 1 through June 15. These proposed decisions to protect Greater sage-grouse breeding and nesting habitat would have a minor impact on vegetation treatments in the sagebrush steppe vegetation type. Project design would be mitigated to accommodate sage-grouse stipulations, increasing design and survey costs. Projects would be designed to limit introduction of invasive understory species. Measures to mitigate fire management

actions in SSS habitats could increase suppression costs, limit suppression equipment choices and tactics, require additional effort from firefighters, and limit options for treating hazardous fuels in some areas. Reintroductions of SSS could increase the areas in which these measures would be required. Impacts of the measures and reintroductions could range from negligible to minor, depending on the area and frequency and intensity of fires. Implementing species-specific restrictions could impact fire suppression activities and fuels treatment implementation.

Limiting available tools could reduce the effectiveness and efficiency of fuels reduction treatments, potentially resulting in negligible-to-moderate impacts, depending on the type of fuels treated, size of the fuels treatment, and the threat of wildfire. A full analysis, by vegetation type, for each species can be found in the *2005 Utah Land Use Plan Amendment for Fire and Fuels Management* (BLM 2005e).

Impacts from Fish and Wildlife

Building new artificial water sources would provide water for fire suppression activities. Effects would be localized and would depend on whether fires occurred near the water developments. Impacts would range from negligible to minor.

Pronghorn antelope-passable fences would reduce some seasonal fuel loads by minimizing tumbleweeds piled along fences. Impacts would be negligible to minor, as this problem has not been significant in the past.

Impacts from Fire and Fuels Management

Projected annual acreage of fire management activity is shown in Table 4-21. Continuing wildland fire management as proposed under Alternative N would (if funded) allow fire to begin to be reintroduced to fire-adapted ecosystems, reduce hazardous fuels to meet vegetative desired conditions, suppress wildfires appropriately, and support a full emergency site rehabilitation program for ecosystem rehabilitation.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the Healthy Forest Restoration Act of 2003 would complement the ability to maintain or restore properly functioning vegetation and reduce hazardous fuels. This management assumes that activity-created fuels would be treated. Fire and fuels management activities often complement or work in conjunction with forestry and woodland programs to move toward vegetative desired conditions, especially in fire-adapted vegetative communities. Much of the current pinyon-juniper cover is more dense than the desired conditions. Fire and fuels reduction activities usually reduce density and convert cover types to a more desirable sagebrush-grass vegetative communities.

Impacts from Livestock Grazing

Livestock grazing could reduce fine-fuel loads and therefore the size and severity of wildland fires, which includes both prescribed fire and wildland fire use. During the planning phases of prescribed fire, non-use or reduced use could be requested to mitigate the lack of fine fuels in necessary areas. This does not address fine-fuel usage by wildlife. Impacts would depend on the timing, season, and location of the fire.

Impacts from Recreation

Proposed decisions regarding recreation management would have minor-to-moderate impacts on the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels. Recreational

use, such as hunting seasons and OHV special events, could limit the timing of prescribed and wildland fire use.

Increased participation in recreation activities and larger areas impacted by recreation would increase the potential for human-ignited fires. More and improved facilities and trailheads could cause an increased suppression workload, which would have a minor to moderate impact on fire and fuels management.

Impacts from Travel Management

The potential for human-ignited wildfires would increase with increased human use in the RFO. Areas accessible to motorized vehicles would likely be the most susceptible to human-ignited wildfires, but increased ignitions and acreage burned because of increased access would be difficult to quantify. Maintaining or upgrading designated routes could make these areas more accessible to fire suppression vehicles but would lead to increased public use. Increased mileage of roads and trails would result in less continuous fuels. In such areas, fires could not spread as rapidly as in areas in which fuels were more continuous, making it more difficult to restore fire to its historical role in fire-adapted vegetation.

Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing the potential for human-ignited wildfires over a large portion of the RFO and continued increase of user-developed trails. Motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; 214,000 acres (10%) of the RFO would be closed to motorized vehicle use. Under this alternative, 4,315 miles of unpaved routes in the RFO would be open to motorized use; the most under all the alternatives.

Impacts from Minerals and Energy

Development of oil and gas resources could create new facilities that would need to be protected from wildfire, thus limiting the ability to maintain or restore properly functioning vegetation through prescribed fire and wildland fire use and to reduce hazardous fuels. Impacts would range from negligible to major, depending on the actual location of the facilities and the type of vegetation onsite.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the IMP precludes the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels-reduction treatments. This preclusion could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in some areas, such as parts of the Henry Mountains. Prescribed fire and wildland fire use would still be available for treatments in appropriate areas. Fire might be used to move toward desired conditions.

If a fire must be suppressed, then the most effective methods of suppression that are also the least damaging to wilderness values, other resources, and the environment and that require the least expenditure of public funds (including rehabilitation of the area) would be used. Impacts would depend on the location and vegetation type in the WSA.

Wild and Scenic Rivers

Under Alternative N, all eligible river segments (12 segments—135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. Proposed treatments in these river corridors would be allowed only if it was determined that they would not result in impacts to the future suitability or classification of the river segment. This management could have some impact on the design of fuels treatment projects and could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in these areas.

Areas of Critical Environmental Concern

Alternative N continues the designation of four ACECs (14,780 acres). Vegetation was specifically identified as a relevant and important value in the Beaver Wash, North Caineville Mesa, and South Caineville Mesa ACECs. Allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas and would protect vegetation resources. Such management could include closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; making lands unavailable for livestock grazing in three of the four ACECs; and acquiring inholdings. However, opportunities for vegetation treatments could be limited, thus inhibiting or preventing attainment of ecological objectives and desired conditions in these areas. Beaver Wash and South Caineville Mesa ACECs are within WSAs, and management prescriptions are directed by the IMP. This would create minor impacts to the fire and fuels management program.

Alternative A

Impacts from Air Quality

Impacts would be similar to those described under Alternative N, because of compliance with state laws. Over time, air quality program management could create minor-to-moderate impacts to the fire and fuels management program.

Impacts from Vegetation

The types of impacts experienced as a result of vegetation management would be similar to those described under Alternative N. However, under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatment methods) and would complement the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels. However, differences between the two alternatives would be negligible to minor because vegetation and fire and fuels goals and objectives would be similar.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Generally, impacts would be the same as those described under Alternative N. However, this alternative does not include any stipulations on surface disturbing activities within Greater sage-grouse brooding/nesting habitat. Therefore, limitations on surface disturbing activities are less under this alternative compared to Alternative N.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

The types of impacts experienced as a result of fire and fuels management would be similar to those described under Alternative N. Projected annual acreage of fire management activity for Alternative A is shown in Table 4-21. Proposed decisions for wildland fire management would increase the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels. This alternative would allow the use of a full range of vegetation management tools, including mechanical, biological, manual, prescribed and wildland fire use, and chemical (herbicides). However, differences between the two

alternatives would be negligible to minor because vegetation and fire and fuels goals and objectives would be similar.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative A, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Alternative A proposes more recreational use and better access, which usually creates more human-ignited wildfires. This alternative proposes the most new facilities, which would need to be protected from wildfire. This need could increase the fire-suppression workload.

Increased access, either by trail or road, would break up the fuel continuity, making it more difficult to restore fire to its historical role in fire-adapted ecosystems. This lack of continuity could have a minor-to-moderate impact, depending on trail/road density and location.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A designates 449,000 acres (21%) of the RFO as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for human-ignited wildfires over a large portion of the RFO.

The remainder of the RFO would have motorized use limited to designated routes, thereby limiting the potential for human-ignited wildfires in the majority of the RFO. Fuels would be more discontinuous with increased mileage of roads and trails in fire-adapted vegetation. The public would have access to 4,312 miles of unpaved routes (slightly less than under Alternative N).

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative A, no eligible river segments would be recommended as suitable. Opportunities for fuels treatments would not be restricted by WSR management, thereby assisting in attaining ecological objectives and reduction of hazardous fuels in the river corridors. This alternative would allow the greatest flexibility for fuels treatments within the eligible river corridors.

Areas of Critical Environmental Concern

No ACECs would be designated under Alternative A. This would result in no impact on the fire and fuels management program.

Proposed RMP

Impacts from Air Quality

Impacts would be the same as those described under Alternative A.

Impacts from Vegetation

Impacts would be the same as those described under Alternative N.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, the types and scope of fuels treatments would be limited in VRM Classes I and II. The Proposed RMP would designate 446,900 acres as VRM Class I and 249,800 acres as VRM Class II. These designations could have some impact on the design of non-fire fuels treatment projects, particularly in VRM Class II areas in the Henry Mountains and near the towns of Torrey, Grover, and Teasdale. These impacts would make it more difficult to manage fire and fuels to achieve their goals in these areas. Potential effects to visual resources would be addressed during development of the wildland fire implementation plan for each wildland fire use.

Impacts from Special Status Species

Generally, impacts would be the same as those described under Alternative N. However, the Proposed RMP includes limitations on surface disturbing activities within Greater sage-grouse habitats that are more restrictive than those under Alternatives N and A. These limitations stipulations are expected to have a minor impact on implementation of vegetation treatments since treatments conducted within sage grouse habitat can be successfully completed outside the December 15 through July 15 timing limitation.

Impacts from Fish and Wildlife

Some of the goals of the Proposed RMP are to restore historic habitats and native plant species and to enhance, maintain, and protect ecological resources. Short-term adverse impacts would be offset by long-term effects of rehabilitation activities (built into this alternative for soil disturbing activities), protection of ecological resources (from effective fire suppression), and reduction of fuels (following prescribed fire, non-fire fuel treatment, or implementation of wildland fire use). The subsequent, gradual return to a more natural fire regime would result in long-term beneficial effects.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N; this alternative most closely resembles the previously amended plans in fire and fuels management. The combination of all types of fire and fuels treatments, if funded appropriately in the future, could lead to increased vegetation function and reduction of hazardous fuel loads to a maintenance level. Additionally, allowing temporary non-renewable use of targeted livestock grazing to reduce site-specific fuels or noxious and invasive weeds could maintain or improve upland fuel conditions and reduce cheatgrass, fine fuels, and other invasive weeds. In forests and woodlands, this action would reduce fine-fuel loads and noxious and invasive weeds, leading to improved health of these communities.

Impacts from Non-WSA Lands with Wilderness Characteristics

Managing 78,600 acres of non-WSA lands with wilderness characteristics to protect, preserve, and maintain their wilderness characteristics would limit the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments on these lands. These areas would be available for Healthy Lands Initiative projects. However, any projects and fuels treatments would be required to meet the management objectives for the area and would be required to be consistent with VRM Class II objectives. This management could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in some areas, such as parts of the Henry Mountains.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The Proposed RMP proposes to manage for a blend of motorized and non-motorized recreation opportunities. Less motorized access would limit the number of human-caused fires, possibly lessening the need for suppression actions. Fewer facilities (as compared to Alternative A) would also create less suppression needs.

Access to complete fuels treatments could be limited by the establishment of SRMAs, which emphasize primitive recreation. Currently about half of the fuels treatment program uses mechanical applications. These limitations could make it difficult to treat these areas with something other than fire. The Proposed RMP would have moderate-to-major impacts on the fire and fuels management program.

Impacts from Travel Management

The types of impacts from travel management would be similar to those described under Alternative A. However, the Proposed RMP designates only 9,890 acres (less than 1% of the RFO) as open to motorized vehicles, thereby limiting the potential for human-ignited wildfires. This alternative would close 209,900 acres (10% of the RFO) to motorized use, eliminating the potential for human-ignited wildfires in those areas. The remainder of the RFO (1,908,210 acres) would have motorized use limited to designated routes; the public would have access to 4,277 miles of unpaved routes (slightly less than under Alternative N).

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under the Proposed RMP, one suitable segment (5 miles) would be managed to protect its outstandingly remarkable values, free-flowing nature, and tentative classification. Proposed treatments in this river corridor would be allowed only if it was determined that they would not result in impacts to the suitability or tentative classification of the river segment. This management could have some impact on the design of fuels treatment projects and could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in this area. The Proposed RMP would allow flexibility for fuels

treatments on fewer miles of eligible river segments than under Alternative A but on more miles than under Alternative N, C, or D.

Areas of Critical Environmental Concern

Proposed management direction for ACECs would have no impact on managing vegetation and reducing hazardous fuels. Management of the Old Woman Front ACEC would provide for fire and fuels management activities. Proposed management to protect relict vegetation would have negligible impact on the fire and fuels management program.

Alternative C

Impacts from Air Quality

Impacts would be similar to those described under Alternative A. Although possibly fewer acres would be treated (both annually and over the life of this Proposed RMP), if the air quality or Class I airsheds could be adversely impacted, wildland fire use and prescribed fires could be suspended. Over time, air quality program management could create minor-to-moderate impacts to the fire and fuels management program.

Impacts from Vegetation

The types of impacts experienced as a result of vegetation management would be similar to those described under Alternative A, although under Alternative C, fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, Alternative C proposes using only natural processes to manage vegetation. These processes could be less effective than conventional vegetation treatments and would not be effective in all vegetation communities. This management would limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in some areas. Vegetation management decisions would have moderate-to-major impacts to fire and fuels management because the acreage treated would be limited.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Status Species

Impacts would be similar to those described under the Proposed RMP. However, Alternative C does not include a NSO stipulation within ½ mile of Greater sage-grouse leks or a timing limitation (December 15 through March 14) on surface disturbing activities in sage grouse winter habitat. Therefore there would be fewer limitations on doing vegetation treatments under Alternative C compared to the Proposed RMP.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Projected annual acreage of fire management activity is shown in Table 4-21. The types of impacts experienced as a result of fire and fuels management would be similar to those described under Alternative A, although under Alternative C, fewer acres would be treated annually (averaging 26,000 annually for all treatments). In addition, this alternative proposes using only natural processes to manage vegetation. These processes could be less effective than conventional vegetation treatments and would not be effective in all vegetative communities. Compared to Alternative A, Alternative C would limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in some areas,

thus potentially creating greater threats to life, property, and other resources by allowing larger and more severe wildfires.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no impacts to fire and fuels management.

Impacts from Forestry and Woodland Products

Commercial timber harvest would not be allowed under Alternative C, potentially resulting in increased fuel loading. The impact of this disallowance would be minor to moderate, as the quantity of forest and woodland products harvested commercially are relatively small in the RFO.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Alternative C proposes to manage for primarily primitive and semi-primitive recreation opportunities. Less motorized access would limit the number of human-caused fires, possibly lessening the need for suppression actions. Fewer facilities would also create less suppression needs.

Access to complete fuels treatments could be limited by the establishment of SRMAs. Currently about half of the fuels treatment program uses mechanical applications. This limitation could make it difficult to treat areas with something other than fire. Alternative C would have moderate-to-major impacts on the fire and fuels management program.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, Alternative C designates no areas as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized vehicle use. The lack of open areas would minimize the potential for human-ignited wildfires, reducing the fire suppression workload. It would also reduce the ability to treat vegetation with non-fire treatment methods. This reduction would have minor-to-moderate impacts because fire is not always the proper tool to initially treat vegetation.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N but would be reduced in scope because less area would be available for surface-disturbing activities under Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those discussed under Alternative N. All 12 suitable river segments (135 miles) would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative C. Proposed treatments in these river corridors would be allowed only if it were determined that they would not result in impacts to the suitability or tentative classification of the river segment. This management could have some impact on the design of fuels treatment projects

and could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in these areas.

Areas of Critical Environmental Concern

Some proposed wildlife decisions for managing ACECs could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels by using mechanical means. Proposed management direction (outside WSAs) for suppressing wildfires in the Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Parker Mountain, Rainbow Hills, and Sevier Canyon ACECs could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels. Fire would be limited from playing a natural role because of the wildlife limitations in crucial deer habitat; this fire limitation could have a moderate-to-major impact. Proposed management direction for other ACECs would have minor-to-moderate impact on managing vegetation and reducing hazardous fuels.

Alternative D

Impacts from Air Quality

Impacts would be the same as those described under Alternative C.

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Because fuels treatments would need to be compatible with VRM classes, fuels treatments would be limited in VRM Classes I and II (in which the existing character of the landscape must be preserved or retained). Alternative D would be the most restrictive to fire and fuels management because it has the most VRM Class I and II acres (1,196,300 acres combined or 56% of the RFO).

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, protecting the non-WSA lands with wilderness characteristics would preclude the use of mechanical (chaining, harrowing) and manual (chainsaw) fuels reduction treatments on these lands. This preclusion could limit the ability to maintain or restore properly functioning vegetation and to reduce hazardous fuels in some areas, such as parts of the Henry Mountains.

Impacts from Forestry and Woodland Products

Commercial timber harvest would not be allowed under Alternative D, potentially resulting in increased fuel loading. The impact of this loading would be minor to moderate, as the quantity of forest and woodland products harvested commercially are relatively small in the RFO.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under Alternative C, except there would be even less access under Alternative D. This would have moderate-to-major impacts to the fire and fuels management program.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized vehicle use. Lack of access would limit the number of human-ignited wildfires, reducing the fire suppression workload. However, it would also reduce the ability to treat vegetation with treatment methods other than those that mimic natural processes (fire and biological). This limitation would have moderate-to-major impacts because fire is not always the proper tool to initially treat vegetation.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N but would be reduced in scope. The least area would be available for surface-disturbing activities under Alternative D.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.3.12 Non-WSA Lands with Wilderness Characteristics

Non-WSA lands with wilderness characteristics are areas having 5,000 acres, or areas less than 5,000 acres that are contiguous to designated wilderness, WSAs or other administratively endorsed for wilderness management lands or, in accordance with the Wilderness' Act's language, areas "of sufficient size as to make practicable its preservation and use in an unimpaired condition". BLM used the same criteria for determining wilderness characteristics as in the 1979 wilderness inventory. The 5,000 acre value was helpful to BLM in making preliminary judgments, but it was not considered a limiting factor.

These areas also provide outstanding opportunities for solitude or primitive forms of recreation (non-motorized and non-mechanized activities in undeveloped settings). 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.

Lands with wilderness characteristics outside of existing WSAs in the RFO are identified in Chapter 3 and shown on Map 3-9, and include 29 areas within the RFO, totaling 682,600 acres or 32% of the RFO lands. These areas are concentrated on the east side of the RFO, with large blocks in the Henry Mountains and Dirty Devil regions and smaller areas immediately west of Capitol Reef National Park, in southeastern Sevier County, and in southern Piute County (Chapter 3, Non-WSA Lands with Wilderness Characteristics and Map 3-9). Management decisions under Alternatives N, A, and C would, to varying degrees, impact the wilderness characteristics of these lands. The PRMP/FEIS includes management prescriptions for 12 of the 29 areas, totaling 78,600 acres. Proposed decisions under Alternative D would best protect the naturalness and outstanding opportunities for solitude and primitive recreation within these areas. Table 4-22 shows an additive comparison of key proposed decisions under each alternative in Chapter 2 for acres of OHV area designations, miles of designated routes, acres of fluid mineral stipulation areas, acres of VRM class designations, and acres of proposed withdrawals that are within non-WSA lands with wilderness characteristics.

Table 4-22. Comparison of Key Decisions within Non-WSA Lands with Wilderness Characteristics

Resource /Resource Use		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
OHV Area Designations	Open	656,100 ac 96%	221,800 ac 32%	5,700 ac <1%	0 ac 0%	0 ac 0%
	Limited	5,000 ac 1%	460,800 ac 68%	642,650 ac 94%	473,100 ac 69%	0 ac 0%
	Closed	21,500 ac 3%	0 ac	34,250 ac 5%	209,500 ac 31%	682,600 ac 100%
OHV Route Designations	Miles of Designated Routes	51.2	360.7	429.2	99.7	0
Fluid Minerals	Standard	577,800 ac 85%	329,650 ac 48%	252,000 ac 35%	202,100 ac 30%	0 ac 0%
	TL, CSU	89,800 ac 13%	352,950 ac 52%	288,100 ac 51%	267,100 ac 39%	0 ac 0%
	NSO	6,000 ac 1%	0 ac	141,000 ac 13%	123,400 ac 18%	0 ac 0%

Resource /Resource Use		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
	Closed to Leasing	9,000 ac 1%	0 ac	1,500 ac 1%	90,000 ac 13%	682,600 ac 100%
Visual Resources	VRM Class I	0 ac 0%	0 ac 0%	0 ac 0%	0 ac 0%	682,600 ac 100%
	VRM Class II	161,265 ac 24%	0 ac 0%	184,465 ac 27%	163,765 ac 24%	0 ac 0%
	VRM Class III	144,955 ac 21%	213,660 ac 31%	117,555 ac 17%	152,955 ac 22%	0 ac 0%
	VRM Class IV	376,380 ac 55%	468,940 ac 69%	380,580ac 56%	365,880 ac 54%	0 ac 0%
Proposed Withdrawals		0 ac 0%	0 ac 0%	11,200 ac 2%	110,900 ac 16%	682,600 ac 100%

Methods and Assumptions

The following assumption regarding the future management of non-WSA lands with wilderness characteristics is made:

- Any new surface disturbing activities proposed would be subject to NEPA analysis. Activities proposed that would not initially meet wilderness characteristic objectives for an area being managed for those characteristics would be mitigated to the extent needed to meet the objectives for both the Proposed RMP and Alternative D.
- The Proposed RMP management actions would protect, preserve and maintain the wilderness characteristics on 78,600 acres through the following land allocations and prescriptions:
  - Designate as Visual Resource Management (VRM) Class II
  - Limit motorized use to designated routes
  - Retain lands in public ownership
  - Designate as an Avoidance Area for rights-of-way (ROW)
  - Designate leasing category as no surface occupancy (NSO), no exceptions, waivers, or modifications
  - Close to mineral material sales
  - Designate as unavailable for further consideration for coal leasing
  - Continue maintenance and use of existing facilities
  - Prohibit private or commercial woodland harvest or seed collection
  - Healthy Lands Initiative projects could be considered where they improve the overall goals and objectives for managing the wilderness characteristics of these areas
- The DRMP/DEIS Alternative D management actions would protect, preserve and maintain the wilderness characteristics on 682,600 acres through the following land allocations and prescriptions:
  - Designate as VRM Class I
  - Manage for primitive and semi-primitive non-motorized recreation
  - Close to motorized use
  - Retain land in public ownership
  - Designate as an Avoidance Area for ROWs
  - Propose for withdrawal from mineral entry

- Close to oil and gas leasing
- Close to mineral material sales
- Designate as unavailable for further consideration for coal leasing.

Environmental Consequences

Impacts to non-WSA lands with wilderness characteristics would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation
- Cultural Resources
- Paleontological Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on non-WSA lands with wilderness characteristics. There are no WSA decisions that would impact non-WSA lands with wilderness characteristics resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

No surface disturbance or occupancy would be permitted within the 100-year flood plain (or 500 feet of the bank full line) of perennial streams or perennial reaches of streams (with some exceptions). 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.

Under Alternative N, no surface disturbance or occupancy would be permitted within 500 feet of natural springs, to protect water quality. Prohibiting soil and vegetation disturbance or placement of structures around natural springs in non-WSA lands with wilderness characteristics would maintain or enhance the naturalness of small portions (approximately 18 acres around each spring) of the non-WSA lands. Protection of the water sources would maintain and enhance the wildlife populations that depend on the water, providing continued opportunities for primitive recreation—(wildlife viewing or hunting).

Impacts from Vegetation

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 lifecycles of many wildlife species (fish, amphibians, mammals, and birds). These areas are typically scenic and desired recreation settings. Maintenance and restoration of riparian zones, and retention of these zones in public ownership, 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. Coordination of these efforts with neighboring federal, state, tribal, and local governments and with private conservation groups would expand the cited benefits to a larger scale and broader reach.

Existing vegetation treatments would be maintained to provide suitable habitat for wildlife and adequate forage for livestock. In the long term, maintenance of vegetation treatment areas through fire would maintain or enhance wildlife habitat and populations of species (deer, elk, bison, Greater sage-grouse, Utah prairie dog, song birds) that are dependent on that habitat. 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. Furthermore, 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 were 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.

The use of aircraft for aerial reseeding of vegetation treatment areas, or the use of rangeland drills, would result in the presence and noise of people, vehicles, equipment, and aircraft that would diminish opportunities for solitude and would conflict with primitive recreational activities. When reseeding was complete, however, these disruptions of opportunities for solitude and primitive recreation would end, and the opportunities would return.

Under Alternative N, vegetation would be manipulated through the full range of treatment tools (including fire, mechanical, chemical, or biological) to achieve and maintain *Fundamentals of Rangeland Health* and the desired vegetation condition. In the long-term, vegetation treatments through fire would restore vegetation communities and a more natural composition of grasses, forbs, shrubs, 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. However, in the short term, a burning operation would result in disturbance of the landform and vegetation because of the 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 prescribed burning operation and reclamation. When the fire and reclamation operations were complete, these opportunities would return. Soil and vegetation disturbance for fire line construction would diminish the natural character of the non-WSA lands, by introducing an apparent human-made element to the landscape. However, reclamation would restore the natural conditions in a relatively short period.

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 on opportunities for solitude and primitive and unconfined recreation. Although restoration of vegetation communities would be beneficial

to the natural character of non-WSA lands with wilderness characteristics, the use of chainsaws, bulldozers, brush hogs, and so forth to accomplish the objective would leave an obvious imprint of human activity on the land, diminishing the natural character of the non-WSA area(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 experiencing solitude and primitive recreation.

Weed control through mechanical, biological, and chemical methods would have the same effects on naturalness, solitude, and primitive recreation as those described for vegetation treatments. Restoring vegetation communities to a more natural composition of plants would improve the natural character of non-WSA lands with wilderness characteristics. However, mechanical treatments would have similar effects on naturalness as described previously. Chemical and biological treatment would appear more natural. The noise and presence of people, vehicles, equipment, and aircraft used during treatment of weeds would temporarily reduce opportunities for solitude and would conflict with primitive recreational activities.

Impacts from Cultural Resources

Surface-disturbing actions (other than archaeological research) would not be authorized in the Bull Creek Archaeological District. This action would protect the natural character of 322 acres of the Mount Ellen non-WSA lands with wilderness characteristics by preventing new disturbance that other actions could cause to the land and vegetation. Because no new actions would be permitted to disturb the surface of the non-WSA lands, there would be no presence or noise of the people, vehicles, and equipment needed to implement a future action and thus, no reduction of opportunities for solitude or conflicts with primitive recreational activities.

Mitigation of impacts to cultural resources caused by activities authorized by the BLM would preserve knowledge of cultural resources and some sites. However, although project stipulations would mitigate impacts to cultural resources, they would not prevent implementation of the activity. Depending on the nature of the activity (e.g., surface-disturbing, placement of structures, motorized travel), implementation of the project could still degrade the natural character of non-WSA lands with wilderness characteristics and could conflict with opportunities for solitude and primitive recreation, if the activity took place in a non-WSA area. Consultation with Native American tribes regarding project mitigation would have the same effects as BLM mitigation of authorized activities on cultural resources, and thus on naturalness, solitude, and primitive recreation, as described previously.

Impacts from Paleontological Resources

Decisions on management of paleontological resources provide for inventory, mitigation of impacts to fossils resulting from BLM-authorized activities, interpretation of and education about 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 adds to the character of the setting that supports these recreational opportunities. However, collection of even common invertebrate fossils, although providing a primitive recreational experience, would remove an element of the natural landscape.

Impacts from Visual Resources

There are four objectives for VRM (VRM Classes I–IV) that provide for various levels of landscape protection and change. The objective of VRM Class I is to preserve the characteristic landscape; the

objective of VRM Class IV provides for landscape modifications (Chapter 3, Visual Resources). 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 (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 land in non-WSA areas. 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. 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. Because Class III and IV VRM objectives would not preserve an undeveloped setting, opportunities for both solitude and primitive recreation would be diminished.

Table 4-23 shows the VRM class designations by non-WSA area and by alternative.

Table 4-23. VRM Class Designations, by Non-WSA Lands with Wilderness Characteristics Area (Acres)

Non-WSA Area	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Bull Mountain					
Class I	0	0	0	0	3,800
Class II	65	0	65	65	0
Class III	55	0	55	55	0
Class IV	3,680	3,800	3,680	3,680	0
Bullfrog Creek					
Class I	0	0	0	0	33,700
Class II	0	0	0	0	0
Class III	5,700	0	5,700	5,700	0
Class IV	28,000	33,700	28,000	28,000	0
Dirty Devil/French Spring					
Class I	0	0	0	0	133,100
Class II	33,600	0	38,700	33,900	0
Class III	31,100	110,900	30,800	30,900	0
Class IV	68,400	22,200	63,600	68,300	0
Dogwater Creek					
Class I	0	0	0	0	3,500
Class II	3,500	0	3,500	3,500	0
Class III	0	3,500	0	0	0
Class IV	0	0	0	0	0
Fiddler Butte					
Class I	0	0	0	0	19,700
Class II	10,900	0	11,000	11,000	0
Class III	3,800	6,700	3,800	3,800	0
Class IV	5,000	13,000	4,900	4,900	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Flat Tops					
Class I	0	0	0	0	23,000
Class II	0	0	0	0	0
Class III	500	0	500	500	0
Class IV	22,500	23,000	22,500	22,500	0
Fremont Gorge					
Class I	0	0	0	0	16,000
Class II	2,200	0	2,200	3,400	0
Class III	3,400	5,100	3,400	12,600	0
Class IV	10,400	10,900	10,400	0	0
Horseshoe Canyon South					
Class I	0	0	0	0	20,600
Class II	3,600	0	13,600	3,600	0
Class III	16,300	20,600	7,000	16,300	0
Class IV	700	0	0	700	0
Jones Bench					
Class I	0	0	0	0	3,300
Class II	0	0	2,600	0	0
Class III	0	1,500	0	0	0
Class IV	3,300	1,800	700	3,300	0
Kingston Ridge					
Class I	0	0	0	0	10,200
Class II	100	0	100	100	0
Class III	2,700	0	2,700	2,700	0
Class IV	7,400	10,200	7,400	7,400	0
Labyrinth Canyon					
Class I	0	0	0	0	12,300
Class II	0	0	2,800	0	0
Class III	12,300	12,300	9,500	12,300	0
Class IV	0	0	0	0	0
Limestone Cliffs					
Class I	0	0	0	0	24,800
Class II	0	0	0	0	0
Class III	1,100	24,500	1,100	1,100	0
Class IV	23,700	300	23,700	23,700	0
Little Rockies					
Class I	0	0	0	0	23,200
Class II	13,100	0	16,900	13,500	0
Class III	8,900	0	6,000	8,500	0
Class IV	1,200	23,200	300	1,200	0
Long Canyon					
Class I	0	0	0	0	16,600
Class II	0	0	0	0	0
Class III	5,400	0	5,300	5,300	0
Class IV	11,200	16,600	11,300	11,300	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Mount Ellen—Blue Hills					
Class I	0	0	0	0	49,800
Class II	15,300	0	16,900	15,300	0
Class III	1,800	2,100	200	1,800	0
Class IV	32,700	47,700	32,700	32,700	0
Mount Hillers					
Class I	0	0	0	0	1,800
Class II	1,200	0	1,200	1,200	0
Class III	300	0	0	300	0
Class IV	300	1,800	600	300	0
Mount Pennell					
Class I	0	0	0	0	65,600
Class II	18,200	0	13,200	18,200	0
Class III	7,700	700	0	7,600	0
Class IV	39,700	64,900	52,400	39,800	0
Muddy Creek/Crack Canyon	0	0	0	0	61,800
Class I	14,500	0	8,100	14,500	0
Class II	11,800	0	11,800	11,800	0
Class III	35,500	61,800	41,900	35,500	0
Class IV					
Mussentuchit Badlands					
Class I	0	0	0	0	700
Class II	0	0	0	0	0
Class III	0	60	0	0	0
Class IV	700	640	700	700	0
Notom Bench					
Class I	0	0	0	0	8,000
Class II	8,000	0	8,000	8,000	0
Class III	0	8,000	0	0	0
Class IV	0	0	0	0	0
Phonolite Hill					
Class I	0	0	0	0	7,900
Class II	1,000	0	1,000	1,000	0
Class III	0	0	0	0	0
Class IV	6,900	7,900	6,900	6,900	0
Pole Canyon/Hunter Spring					
Class I	0	0	0	0	6,000
Class II	0	0	0	0	0
Class III	0	0	0	0	0
Class IV	6,000	6,000	6,000	6,000	0
Ragged Mountain					
Class I	0	0	0	0	25,900
Class II	15,700	0	15,700	15,700	0
Class III	0	15,400	0	0	0
Class IV	10,200	10,500	10,200	10,200	0

Non-WSA Area	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Red Desert					
Class I	0	0	0	0	40,700
Class II	1,900	0	10,200	1,900	0
Class III	18,200	0	16,200	18,200	0
Class IV	20,600	40,700	14,300	20,600	0
Rock Canyon					
Class I	0	0	0	0	1,300
Class II	0	0	0	0	0
Class III	0	0	0	0	0
Class IV	1,300	1,300	1,300	1,300	0
Rocky Ford					
Class I	0	0	0	0	6,700
Class II	400	0	400	400	0
Class III	100	0	0	100	0
Class IV	6,200	6,700	6,300	6,200	0
Sweetwater Reef					
Class I	0	0	0	0	6,200
Class II	0	0	0	0	0
Class III	6,200	0	6,200	6,200	0
Class IV	0	6,200	0	0	0
Wild Horse Mesa					
Class I	0	0	0	0	49,700
Class II	18,000	0	18,300	18,500	0
Class III	7,600	0	7,300	7,200	0
Class IV	24,100	49,700	24,100	24,000	0
Wildcat Knolls					
Class I	0	0	0	0	6,700
Class II	0	0	0	0	0
Class III	0	2,300	0	0	0
Class IV	6,700	4,400	6,700	6,700	0

Under Alternative N, 161,265 acres would be managed by VRM Class I and II objectives in all or parts of 17 non-WSA lands with wilderness characteristics areas, protecting the natural character of those lands. Conversely, 521,335 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 that every acre would be developed or changed. Thus, in those non-WSA lands managed by Class III and IV objectives, the natural character of the affected non-WSA lands could be lost. If the naturalness of these areas was lost, the opportunities for solitude and primitive recreation would be lost because the setting needed to support these opportunities would be altered.

Impacts from Special Status Species

Alternative N (along with all the other alternatives) includes management actions that focus on maintaining, protecting, and enhancing habitats for SSS. Decisions that could help protect non-WSA lands with wilderness characteristics include prohibiting actions that would destroy, adversely modify, or fragment the habitat of federally listed threatened or endangered species; maintaining the integrity of SSS habitats; and generally retaining habitats for federally listed and candidate species that occur in lands

under federal ownership. These decisions would help to maintain the natural character of non-WSA lands with wilderness characteristics, when they intersect with SSS habitat. Virtually all non-WSA lands with wilderness characteristics have SSS raptors and plants.

Depending on the method used, habitat improvement treatments conducted for SSS could degrade the naturalness of the non-WSA lands. While the habitat manipulation is being conducted, the opportunity for solitude and primitive recreation would be disrupted, and the naturalness of the area could be impaired.

Allowing for the introduction, augmentation, translocation, and transplantation of SSS, if done within non-WSA lands with wilderness characteristics, could enhance the wildlife-viewing opportunities often associated with primitive recreation experiences.

Impacts from Fish and Wildlife

A variety of actions would be implemented to restore, maintain, and enhance wildlife populations. Improved wildlife populations would augment the natural character of the land in all the non-WSA lands with wilderness characteristics. Furthermore, larger and healthier wildlife populations would expand opportunities for primitive and unconfined recreation, including wildlife viewing and hunting. In addition, strategies to avoid or reduce habitat fragmentation, such as collocating facilities, employing directional drilling, and reducing road densities, would be implemented. These strategies would help to maintain the natural character of non-WSA lands with wilderness characteristics, when they intersect with wildlife habitat.

Habitat treatments to meet terrestrial, aquatic, and riparian habitat objectives would be accomplished through the use of prescribed fire and chemical, biological, and mechanical methods. The use of fire or biological and chemical treatments would leave no apparent evidence of human intervention on the landscape. Thus, there would be no noticeable effect on the natural character of the non-WSA lands with wilderness characteristics, if those treatments were necessary in the non-WSA areas that have wilderness characteristics. Restoration of vegetative communities would result in a more natural vegetative community and thus a more natural condition of the non-WSA areas. The use of mechanical treatments for vegetation manipulations would leave a noticeable imprint of human work on the landscape and would degrade the natural character of non-WSA lands, if the treatments were to occur on those lands. Depending on the vegetative community treated (e.g., grassland and shrub land, a woodland or coniferous forest), the length of time that the evidence of mechanical treatments remained on the landscape before the surface and vegetation disturbances returned to a more natural or unmodified condition would vary.

Allowing for the introduction, augmentation, translocation, and transplantation of native or naturalized fish and wildlife species, if done within non-WSA lands with wilderness characteristics, could enhance the wildlife-viewing opportunities often associated with primitive recreation experiences.

The Henry Mountains bison and mule deer range overlays portions of the Mount Ellen—Blue Hills, Ragged Mountain, Mount Pennell, Bull Mountain, and Mount Hillers non-WSA lands with wilderness characteristics. No specific management for the Henry Mountains bison and mule deer habitat area is proposed under Alternative N; therefore, impacts to those non-WSA lands with wilderness characteristics that overlay the habitat cannot be determined.

Impacts from Wild Horses and Burros

The Canyonlands HMA would be managed to maintain herds for genetic viability. The Canyonlands HMA overlaps portions of the Labyrinth Canyon, Horseshoe Canyon South, and Dirty Devil/French Spring non-WSA lands with wilderness characteristics. Maintaining this HMA at existing levels would continue to provide opportunities for viewing of wild burros, which is often associated with primitive recreation experiences.

Impacts from Fire and Fuels Management

BLM would attempt to manage fire and fuels, where appropriate, to restore natural systems to their desired condition, considering the interrelated social and economic components. Restoration of fire to fire-dependent and fire-adapted ecosystems would restore a more natural vegetation community (in both species and composition), watershed conditions, and wildlife populations dependent on those communities. In the short term, a burned landscape may reduce opportunities for primitive recreation. However, in the long-term, a more natural landscape would benefit the natural character of non-WSA lands with wilderness characteristics and would enhance the setting and opportunities for primitive forms of recreation, including hiking, backpacking, hunting, wildlife viewing, and nature study.

The RFO would base its priorities for all aspects of fire management decisions on the General Risk Categories (Appendix 6), to determine where fire is or is not desired. Furthermore, ESR actions would be developed and implemented following any wildland fire event, as appropriate. Fuels treatment and management activities would be consistent with the resource goals and objectives in the Proposed RMP and might include mechanical treatments, manual treatments, prescribed fire, chemical spraying, or biological treatments and seeding.

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 fire-adapted ecosystems. When it is necessary to suppress fire in non-WSA lands with wilderness characteristics, developing and implementing the ESR plan would result in restoration of fire suppression-related disturbances (e.g., fire line construction), which would also restore the natural character of the non-WSA areas. 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, thus degrading the natural character of the non-WSA lands with wilderness characteristics.

In the short term, fire operations (e.g., aircraft over-flights, fire line construction) would degrade the natural landscape and character of the non-WSA lands with wilderness characteristics. The noise and presence of people, equipment, and operations would also diminish opportunities for solitude and primitive forms of recreation. However, in the long term, surface disturbance associated with the fire treatment would be restored, with little to no net effect on naturalness. The effects of fire operations on opportunities for solitude and primitive recreation would cease, and those opportunities would be restored.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative N, no specific actions would be prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no specific benefits to non-WSA lands with wilderness characteristics; because there are no prescriptions and technically no non-WSA lands with wilderness characteristics.

Impacts from Forestry and Woodland Products

Permits for commercial timber harvest would be prohibited east of Capitol Reef National Park, thereby protecting from surface-disturbing activities associated with timber harvest the wilderness characteristics within Long Canyon, Bullfrog Creek, Mount Pennell, Dogwater Creek, Notom Bench, Mount Ellen—Blue Hills, Red Desert, Muddy Creek/Crack Canyon, Wild Horse Mesa, Flat Tops, Sweetwater Reef, Labyrinth Canyon, Horseshoe Canyon South, Dirty Devil/French Spring, Fiddler Butte, Little Rockies, Mount Hillers, Ragged Mountain, and Bull Mountain non-WSA lands with wilderness characteristics (where timber resources may exist).

Non-WSA lands with wilderness characteristics that would be at risk for commercial timber harvest activities are within the Fremont Gorge, Jones Bench, Limestone Cliffs, Mussentuchit Badlands, Rock Canyon, Wildcat Knolls, Kingston Ridge, Phonolite Hill, Rocky Ford, and Pole Canyon areas, where timber resources may exist. Activities associated with commercial harvest, such as heavy equipment or chain saw use, construction of new roads, cutting of trees and leaving of stumps and debris, and human activity would diminish the wilderness characteristics values of naturalness, solitude, and primitive recreation opportunities within the areas being harvested.

Permits for non-commercial woodland products (primarily firewood cutting) would continue to be sold to the public in all 20 non-WSA areas east of Capitol Reef National Park. These areas would remain open for wood cutting. Where resources exist, wilderness characteristics might be compromised by surface-disturbing activities such as driving cross-country to the trees or cutting the trunks of trees and leaving stumps and debris, and by affecting the solitude and primitive recreation opportunities through the use of chain saws and surface disturbances associated with human activity.

Commercial live plant and seed collection would be allowed in all 29 non-WSA lands with wilderness characteristics areas. If permits were sold within the non-WSA lands, this activity could affect the natural character of these areas because of cross-country OHV travel to the specific areas of collection. This travel would crush vegetation and compact soil, and could lead to proliferation of new OHV routes in OHV open areas. In addition, surface disturbance associated with live plant collection could leave unnatural holes in the ground (from digging up plant roots). Temporary impacts associated with human activity and potential presence of mechanized equipment would affect solitude and primitive recreation opportunities while the collection crews were in the non-WSA areas.

Impacts from Livestock Grazing

Livestock grazing is guided by objectives set in the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*. Appropriate 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 because meeting these objectives would not permit degradation of the lands. When livestock use is properly managed, it does not affect the appearance of naturalness. Grazing assessments completed by RFO staff and any subsequent actions taken to remedy impending issues would enhance the natural character of non-WSA lands with wilderness characteristics. Furthermore, improved natural conditions would sustain the setting needed to support opportunities for primitive and unconfined recreation and the experience of solitude that visitors seek.

Although 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 to meet or maintain SRH and the implementation of *Guidelines for Grazing Management,* and the appearance of natural condition in these areas would continue. 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 effect would be seasonal. At other times of the year livestock would not be present, soils would recover and vegetation would regrow, reducing the impact on the visitor.

Impacts from Recreation

The decision to limit or control activities where long-term damage is observed or anticipated would help protect the naturalness values of wilderness characteristics under all alternatives. Such control could be implemented by designating campsites, providing permits, closing areas, or limiting the numbers of users and duration of usage in these areas. In addition, encouraging the location of public land recreational activities near population centers and highway corridors would help to maintain the naturalness of the more-remote lands with wilderness characteristics.

ERMAs

No specified management for ERMAs are described under Alternative N. Therefore wilderness characteristics values could be affected by any number of recreational activities in any of the non-WSA lands with wilderness characteristics.

SRMAs

Under Alternative N, no SRMAs that overlay non-WSA lands with wilderness characteristics would be established. Therefore there would be no impacts to wilderness characteristics because of SRMAs. Recreation activities would continue without the focused management provided by the establishment of SRMAs. Impacts from cross-county OHV use and other recreational surface-disturbing activities would affect naturalness and opportunities for solitude and primitive recreation.

Impacts from Travel Management

Cross-country motorized vehicle travel would adversely impact lands with wilderness characteristics by reducing opportunities for solitude and primitive recreation (through the presence and noise of machines) and by directly impacting soils and vegetation, which are elements of naturalness. Table 4-24 shows the OHV area designations by alternative within the non-WSA lands with wilderness characteristics.

Table 4-24. OHV Management in Non-WSA Lands with Wilderness Characteristics

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	Proposed RMP	C	D
Bull Mountain	3,800	Open	3,800	0	0	0	0
		Limited	0	3,800	3,800	3,800	0
		Closed	0	0	0	0	3,800
Bullfrog Creek	33,700	Open	33,700	0	0	0	0
		Limited	0	33,700	33,700	33,700	0
		Closed	0	0	0	0	33,700
Dirty Devil/French Spring	133,100	Open	122,200	13,100	0	0	0
		Limited	0	120,000	105,600	73,100	0
		Closed	10,900	0	27,500	60,000	133,100
Dogwater Creek	3,500	Open	3,500	0	0	0	0
		Limited	0	3,500	3,500	3,500	0
		Closed	0	0	0	0	3,500
Fiddler Butte	19,700	Open	19,700	200	0	0	0
		Limited	0	19,500	19,700	7,700	0
		Closed	0	0	0	12,000	19,700
Flat Tops	23,000	Open	23,000	200	0	0	0
		Limited	0	22,800	23,000	23,000	0
		Closed	0	0	0	0	23,000
Fremont Gorge	16,000	Open	14,200	10,900	0	0	0
		Limited	0	5,100	14,500	9,300	0
		Closed	1,800	0	1,500	6,700	16,000
Horseshoe Canyon South	20,600	Open	20,600	0	0	0	0
		Limited	0	20,600	20,500	17,700	0
		Closed	0	0	100	2,900	20,600

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	Proposed RMP	C	D
Jones Bench	3,300	Open	3,300	0	0	0	0
		Limited	0	3,300	3,300	3,300	0
		Closed	0	0	0	0	3,300
Kingston Ridge	10,200	Open	10,200	2,900	0	0	0
		Limited	0	7,300	10,200	10,200	0
		Closed	0	0	0	0	10,200
Labyrinth	12,300	Open	12,300	0	0	0	0
		Limited	0	12,300	12,300	12,300	0
		Closed	0	0	0	0	12,300
Limestone Cliffs	24,800	Open	24,800	0	0	0	0
		Limited	0	24,800	24,800	24,400	0
		Closed	0	0	0	400	24,800
Little Rockies	23,200	Open	19,500	200	0	0	0
		Limited	3,700	23,000	23,200	19,600	0
		Closed	0	0	0	3,600	23,200
Long Canyon	16,600	Open	16,600		0	0	0
		Limited	0	16,600	16,600	16,600	0
		Closed	0	0	0	0	16,600
Mount Ellen—Blue Hills	49,800	Open	45,000	21,400	0	0	0
		Limited	800	28,400	49,400	41,600	0
		Closed	4,000	0	400	8,200	49,800
Mount Hillers	1,800	Open	1,800	0	0	0	0
		Limited	0	1,800	1,800	1,800	0
		Closed	0	0	0	0	1,800
Mount Pennell	65,600	Open	64,600	0	0	0	0
		Limited	0	65,600	65,600	20,300	0
		Closed	1,000	0	0	45,300	65,600
Muddy Creek/Crack Canyon	61,800	Open	58,000	61,800	5,700	0	0
		Limited	0	0	51,400	41,600	0
		Closed	3,800	0	4,700	20,200	61,800
Mussentuchit Badlands	700	Open	700	0	0	0	0
		Limited	0	700	700	700	0
		Closed	0	0	0	0	700
Notom Bench	8,000	Open	8,000	0	0	0	0
		Limited	0	8,000	8,000	8,000	0
		Closed	0	0	0	0	8,000
Phonolite Hill	7,900	Open	7,900	7,700	0	0	0
		Limited	0	200	7,900	7,900	0
		Closed	0	0	0	0	7,900
Pole Canyon/Hunter Spring	6,000	Open	5,500	4,400	0	0	0
		Limited	500	1,600	6,000	6,000	0
		Closed	0	0	0	0	6,000
Ragged Mountain	25,900	Open	25,900	0	0	0	0

OHV Area Designations in Non-WSA Lands with Wilderness Characteristics			Alternative				
Non-WSA Area Name	Acres	OHV Category	N (No Action)	A	Proposed RMP	C	D
		Limited	0	25,900	25,900	500	0
		Closed	0	0	0	25,400	25,900
Red Desert	40,700	Open	40,700	40,700	0	0	0
		Limited	0	0	40,700	40,700	0
		Closed	0	0	0	0	40,700
Rock Canyon	1,300	Open	1,300	0	0	0	0
		Limited	0	1,300	1,300	1,300	0
		Closed	0	0	0	0	1,300
Rocky Ford	6,700	Open	6,700	6,700	0	0	0
		Limited	0	0	6,700	6,700	0
		Closed	0	0	0	0	6,700
Sweetwater Reef	6,200	Open	6,200	1,900	0	0	0
		Limited	0	4,300	6,200	6,200	0
		Closed	0	0	0	0	6,200
Wild Horse Mesa	49,700	Open	49,700	49,700	0	0	0
		Limited	0	0	49,700	25,200	0
		Closed	0	0	0	24,500	49,700
Wildcat Knolls	6,700	Open	6,700	0	0	0	0
		Limited	0	6,700	6,700	6,400	0
		Closed	0	0	0	300	6,700

Under Alternative N, 1,636,400 acres of the RFO would be open to cross-country travel, meaning that no restrictions would be placed on cross-country motorized use for game retrieval, use off of designated routes for the purposes of parking or staging, or motorized access to campsites. The RFO 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. The sights and sounds of vehicle travel would also conflict with solitude and primitive recreation experiences.

Current management designates 656,100 acres (96%) of the 29 non-WSA lands with wilderness characteristic areas as open to cross-country travel. Cross-country motorized travel in these non-WSA lands would result in surface disturbance to soils and vegetation, altering the landscape and diminishing the natural character of these non-WSA lands. Furthermore, the presence and noise of motorized vehicles would degrade a visitor's opportunity for solitude and would conflict with opportunities for primitive and unconfined recreation activities.

Under Alternative N, OHV use is limited to designated routes in 5,000 acres (1%) within 3 of the 29 non-WSA lands with wilderness characteristics. In these areas, 51.2 miles of routes would be designated (Table 4-25).

Table 4-25. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative N

Non-WSA Area Name	Miles of Routes
Little Rockies	7.8 miles
Mount Ellen—Blue Hills	30.4 miles
Pole Canyon/Hunter Spring	13 miles

Limiting OHV use would confine to existing routes the soil and vegetation disturbance caused by motor vehicles, and would result in no additional change to the natural character of the non-WSA lands. However, the presence and noise of vehicles using these routes would reduce the opportunity of visitors to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Currently, 21,500 acres (3%) within 5 of the 29 non-WSA lands with wilderness characteristics areas are closed to OHV use (Table 4-26).

Table 4-26. Acres Closed to OHVs in Non-WSA Lands with Wilderness Characteristics, Alternative N

Non-WSA Area Name	Closed Acres
Dirty Devil/French Spring	10,900 acres
Fremont Gorge	1,800 acres
Mount Ellen—Blue Hills	4,000 acres
Mount Pennell	1,000 acres
Muddy Creek/Crack Canyon	3,800 acres

Because these areas are closed, no routes would be designated so surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Furthermore, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

OHV open areas near communities would be considered and encouraged for leasing under authority of the Recreation and Public Purposes Act (R&PP), to allow local management of OHV play areas. Generally these areas would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics by allowing the surface-disturbing activity from motorized vehicles to continue. The sights and sounds of vehicle travel would also conflict with solitude and primitive recreation experiences.

Impacts from Lands and Realty

Land Tenure Adjustments

Land tenure adjustments (except for FLPMA Section 203 land sales) would be considered if they met the specific criteria outlined in Chapter 2. Non-WSA lands with wilderness characteristics could be disposed of if there is public demand for any of these lands and if they meet the land disposal criteria. If disposed

of, the lands would be outside of BLM's management control and protection of wilderness characteristics could be foregone.

Alternative N identifies no lands as available for FLPMA land sales within non-WSA lands with wilderness characteristics, resulting in no impacts to non-WSA lands.

Withdrawals

Under Alternative N, there are no existing or recommended withdrawals within non-WSA lands with wilderness characteristics. The non-WSA lands would be open to location and entry under the mining laws, new mining claims could be filed at any time, and new proposals for exploration and development could be submitted and reviewed under the surface management regulations for undue and unnecessary degradation. Therefore, the non-WSA lands could be impacted by denuding the naturalness and by creating loss of primitive recreation activities and solitude for those areas in which new mining activities might occur. If new mining development does occur within these areas, direct loss of wilderness characteristics would be unavoidable because of the major surface-disturbing activities associated with mining activities.

Rights-of-Way and Other Land Use Authorizations

No ROW corridors are proposed under Alternative N.

Non-WSA lands with wilderness characteristics that would remain open to granting of ROWs include all of 21 areas and portions of 8 areas, totaling 658,697 acres. Any surface-disturbing activity or placement of permanent facilities would detract from the natural character of the area and would disrupt the setting needed to support primitive forms of recreation.

Under Alternative N, 23,903 acres in eight non-WSA lands with wilderness characteristics areas would be protected, in part, from surface-disturbing actives because they would be within ROW avoidance areas (Table 4-27). Portions of the Dirty Devil/French Spring, Flat Tops, Fremont Gorge, Little Rockies, Mount Ellen—Blue Hills, Muddy Creek/Crack Canyon, Red Desert, and Wildcat Knolls non-WSA lands with wilderness characteristics would be within the ROW avoidance areas. These areas would be avoided but might be available for location of ROWs with special stipulations if the proposal meets the goals and objectives of other resources and uses in the LUP. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Table 4-27. Acres of Avoidance or Exclusion for ROWs in Non-WSA Lands with Wilderness Characteristics

Name of Non-WSA Land with Wilderness Characteristics	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D (all acres are exclusion areas)
Bull Mountain	0	0	0	2,821	3,800
Bullfrog Creek	0	0	0	0	33,700
Dirty Devil/French Spring	8,495	0	63,600	69,912	133,100
Dogwater Creek	0	0	3,100	3,438	3,500
Fiddler Butte	0	0	0	17,283	19,700
Flat Tops	3	0	3	12	23,000

Name of Non-WSA Land with Wilderness Characteristics	Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D (all acres are exclusion areas)
Fremont Gorge	2,230	6	1,500	15,941	16,000
Horseshoe Canyon South	0	0	13,680	3,310	20,600
Jones Bench	0	0	2,600	43	3,300
Kingston Ridge	0	0	0	2,126	10,200
Labyrinth Canyon	0	0	2,800	1	12,300
Limestone Cliffs	0	0	2	387	24,800
Little Rockies	8,116	0	9,500	15,596	23,200
Long Canyon	0	0	0	0	16,600
Mount Ellen—Blue Hills	165	0	4,100	33,981	49,800
Mount Hillers	0	0	0	1,758	1,800
Mount Pennell	0	0	4,600	52,217	65,600
Muddy Creek/Crack Canyon	4,037	0	3,800	17,735	61,800
Mussentuchit Badlands	0	0	0	0	700
Notom Bench	0	0	7,800	7,968	8,000
Phonolite Hill	0	0	0	7,900	7,900
Pole Canyon/Hunter Spring	0	0	0	0	6,000
Ragged Mountain	0	0	7,900	24,408	25,900
Red Desert	728	0	8,900	2,296	40,700
Rock Canyon	0	0	0	0	1,300
Rocky Ford	0	0	0	6,429	6,700
Sweetwater Reef	0	0	0	0	6,200
Wild Horse Mesa	0	0	8,700	26,375	49,700
Wildcat Knolls	129	0	0	231	6,700
Total Acres of Avoidance and Exclusion Areas	**23,903**	**6**	**142,500**	**312,168**	**682,600**
Total Acres Open for ROWs	**658,697**	**682,594**	**540,100**	**370,432**	**0**

The RFO would be available for other land use authorizations (such as film permits, leases, and easements) if the use associated with an authorization was compatible with other decisions throughout the Proposed RMP. Activities authorized under a permit, lease, or easement would need to be in conformance with OHV area designations, VRM management classes, and so forth. It is difficult to speculate where these activities might occur and what the proposed activity would entail. If the proposal was for a

minimally impactful activity, it is likely that no impacts to wilderness characteristics would occur from that activity. However, if the proposed activity involved ground disturbance and use of motorized vehicles, then wilderness characteristics would likely be affected, thus impacting naturalness of the area and creating loss of primitive recreation activities and solitude.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to leasing within non-WSA lands with wilderness characteristics (Table 4-28) and existing leases are discussed in the area-by-area analysis. Exploration and development activities could impact wilderness characteristics through the direct disturbance of natural terrain, consequently impacting solitude and opportunities for primitive recreation. Virtually all the lands with wilderness characteristics would be open to leasing under Alternative N.

Table 4-28. Non-WSA Lands with Wilderness Characteristics and Leasing Stipulations, by Alternative

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Proposed RMP	Alt. C	Alt. D
Bull Mountain	3,800	0	Standard	3,300	1,000	1,000	1,000	0
			TL, CSU	500	2,800	2,800	2,800	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	3,800
Bullfrog Creek	33,700	0	Standard	33,700	33,700	26,200	33,700	0
			TL, CSU	0	0	7,500	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	33,700
Dirty Devil/ French Spring	133,100	30,099	Standard	120,400	22,200	22,000	22,100	0
			TL, CSU	11,700	110,900	47,600	48,500	0
			NSO	0	0	63,500	34,900	0
			Closed	1,000	0	0	27,600	133,100
Dogwater Creek	3,500	0	Standard	3,000	0	0	0	0
			TL, CSU	500	3,500	400	0	0
			NSO	0	0	3100	3,500	0
			Closed	0	0	0	0	3,500
Fiddler Butte	19,700	0	Standard	18,200	11,700	9,900	2,400	0
			TL, CSU	1,500	8,000	9,800	0	0
			NSO	0	0	0	9,100	0
			Closed	0	0	0	8,200	19,700
Flat Tops	23,000	21,202	Standard	23,000	23,000	23,000	23,000	0
			TL, CSU	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	23,000
Fremont Gorge	16,000	0	Standard	10,900	0	0	0	0
			TL, CSU	2,900	16,000	14,500	13,000	0
			NSO	2,200	0	0	1,500	0
			Closed	0	0	1500	1,500	16,000
Horsesho	20,600	0	Standard	20,600	0	0	0	0

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Proposed RMP	Alt. C	Alt. D
e Canyon South			TL, CSU	0	20,600	7,100	17,300	0
			NSO	0	0	13,500	3,300	0
			Closed	0	0	0	0	20,600
Jones Bench	3,300	0	Standard	2,400	1,900	100	1,700	0
			TL, CSU	900	1,400	600	1,600	0
			NSO	0	0	2600	0	0
			Closed	0	0	0	0	3,300
Kingston Ridge	10,200	0	Standard	6,000	10,200	100	0	0
			TL, CSU	4,200	0	10,100	10,200	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	10,200
Labyrinth Canyon	12,300	0	Standard	12,300	0	0	0	0
			TL, CSU	0	12,300	9,400	12,300	0
			NSO	0	0	2,900	0	0
			Closed	0	0	0	0	12,300
Limestone Cliffs	24,800	0	Standard	17,400	300	100	0	0
			TL, CSU	7,400	24,500	24,700	24,800	0
			NSO	0	0		0	0
			Closed	0	0	0	0	24,800
Little Rockies	23,200	0	Standard	12,900	20,200	9,600	7,600	0
			TL, CSU	2,200	3,000	4,100	0	0
			NSO	100	0	9,500	15,200	0
			Closed	8,000	0	0	400	23,200
Long Canyon	16,600	0	Standard	16,600	16,600	14,600	16,600	0
			TL, CSU	0	0	2,000	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	16,600
Mount Ellen—Blue Hills	49,800	0	Standard	36,600	31,800	27,700	16,000	0
			TL, CSU	13,000	18,000	17,900	16,000	0
			NSO	200	0	4,200	9,000	0
			Closed	0	0	0	8,800	49,800
Mount Hillers	1,800	0	Standard	1,700	0	0	0	0
			TL, CSU	100	1,800	1,800	700	0
			NSO	0	0	0	1,100	0
			Closed	0	0	0	0	1,800
Mount Pennell	65,600	0	Standard	61,900	20,000	16,800	13,200	0
			TL, CSU	3,700	45,600	44,100	34,500	0
			NSO	0	0	4,700	17,400	0
			Closed	0	0	0	500	65,600
Muddy Creek/ Crack Canyon	61,800	0	Standard	36,800	61,800	51,100	32,900	0
			TL, CSU	21,500	0	6,800	11,200	0
			NSO	3,500	0	3,900	17,700	0
			Closed	0	0	0	0	61,800
Mussentuchit	700	0	Standard	700	650	600	0	0
			TL, CSU	0	50	100	700	0

Area Name	Total Acres	Currently Leased	Stipulation	Alt. N (No Action)	Alt. A	Proposed RMP	Alt. C	Alt. D
Badlands			NSO	0	0	0	0	0
			Closed	0	0	0	0	700
Notom Bench	8,000	0	Standard	6,400	100	0	0	0
			TL, CSU	1,600	7,900	200	0	0
			NSO	0	0	7,800	8,000	0
			Closed	0	0	0	0	8,000
Phonolite Hill	7,900	0	Standard	4,800	6,200	600	0	0
			TL, CSU	3,100	1,700	7,300	6,900	0
			NSO	0	0	0	1,000	0
			Closed	0	0	0	0	7,900
Pole Canyon/ Hunter Spring	6,000	0	Standard	5,600	0	0	0	0
			TL, CSU	400	6,000	6,000	6,000	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	6,000
Ragged Mountain	25,900	0	Standard	15,400	1,500	1,400	1,500	0
			TL, CSU	10,500	24,400	16,500	9,000	0
			NSO	0	0	8,000	0	0
			Closed	0	0	0	15,400	25,900
Red Desert	40,700	0	Standard	39,700	1,200	1,200	900	0
			TL, CSU	1,000	39,500	30,700	37,500	0
			NSO	0	0	8,800	1,300	0
			Closed	0	0	0	1,000	40,700
Rock Canyon	1,300	0	Standard	1,300	1,300	700	0	0
			TL, CSU	0	0	600	1,300	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	1,300
Rocky Ford	6,700	0	Standard	3,900	4,000	0	0	0
			TL, CSU	2,800	2,700	6,700	6,300	0
			NSO	0	0	0	400	0
			Closed	0	0	0	0	6,700
Sweetwater Reef	6,200	195	Standard	6,200	6,200	6,200	6,200	0
			TL, CSU	0	0	0	0	0
			NSO	0	0	0	0	0
			Closed	0	0	0	0	6,200
Wild Horse Mesa	49,700	80	Standard	49,400	49,700	38,600	23,300	0
			TL, CSU	300	0	2,300	0	0
			NSO	0	0	8,800	0	0
			Closed	0	0	0	26,400	49,700
Wildcat Knolls	6,700	0	Standard	6,700	4,400	500	0	0
			TL, CSU	0	2,300	6,200	6,500	0
			NSO	0	0	0	0	0
			Closed	0	0	0	200	6,700

The mineral assumptions for analysis and the RFD scenarios were used in the analysis of impacts to non-WSA lands with wilderness characteristics. The *Mineral Potential Report* (BLM 2005b) for the RFO describes the oil and gas occurrence potential and serves as the basis for the RFD. The RFD assumes that all potentially productive areas, except those areas designated as closed to leasing by law, regulations, or EO, are open to leasing subject to the standard terms and conditions. In the RFO, non-WSA lands with wilderness characteristics fall within two RFD areas.

The largest RFD area (Areas 1 and 2 of the RFD Report) incorporates the majority of non-WSA lands with wilderness characteristics (24 areas). This RFD area includes all of the lands in Piute, Wayne, and Garfield Counties within the Richfield planning area. These non-WSA areas total 645,800 acres within the 2,618,000 acres of this RFD area, or 25% of the RFD area (Table 4-29). This acreage does not include the acres closed to leasing by law, regulation, or EO (including WSAs and NPS lands, among others). The RFD scenario for oil and gas development in this RFD area predicts that during the next 15 years, approximately 45 exploratory wells (or 3 wells per year) would disturb a total of 540 acres (12 acres per well), and an additional 240 acres would be minimally disturbed by geophysical operations. There are four non-WSA areas with existing leases that total 51,510 acres. Most notable is the Flat Tops non-WSA area, which has 92% of its lands under existing leases.

Table 4-29. Non-WSA Lands with Wilderness Characteristics in Piute, Wayne, and Garfield Counties within RFD Areas 1 and 2

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Areas 1 and 2	Acres of Non-WSA Lands with Existing Leases (Percent Leased)
Bull Mountain	<1 %	0
Bullfrog Creek	1 %	0
Dirty Devil/French Spring	5 %	30,099 (23%)
Dogwater Creek	<1 %	0
Fiddler Butte	<1 %	0
Flat Tops	1 %	21,202 (92%)
Fremont Gorge	<1 %	0
Horseshoe Canyon South	1 %	0
Kingston Ridge	<1 %	0
Labyrinth Canyon	<1 %	0
Little Rockies	1 %	0
Long Canyon	<1 %	0
Mount Ellen—Blue Hills	2 %	0
Mount Hillers	<1 %	0
Mount Pennell	2.5 %	0
Muddy Creek/Crack Canyon	2.5 %	0
Notom Bench	<1 %	0
Phonolite Hill	<1 %	0
Pole Canyon/Hunter Spring	<1 %	0
Ragged Mountain	1 %	0

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Areas 1 and 2	Acres of Non-WSA Lands with Existing Leases (Percent Leased)
Red Desert	1.5 %	0
Rocky Ford	<1 %	0
Sweetwater Reef	<1 %	195 (3%)
Wild Horse Mesa	2 %	80 (<1%)

The other RFD area (Area 3 of the RFD Report) incorporates the remaining five non-WSA lands with wilderness characteristics (Wildcat Knolls, Rock Canyon, Mussentuchit Badlands, Limestone Cliffs, and Jones Bench), in Sevier County. These non-WSA areas total 36,800 acres within the 702,400 acres of this RFD area, or about 5% of the RFD area (Table 4-30). The RFD scenario for oil and gas activity in RFD Area 3 predicts that during the next 15 years, approximately 49 exploratory wells (or about 3 wells per year) would disturb a total of 1,100 acres (22 acres per well), and an additional 360 acres would be minimally disturbed by geophysical operations. There are no existing leases within the five non-WSA areas.

Table 4-30. Non-WSA Lands with Wilderness Characteristics in Sevier County within RFD Area 3

Name of Non-WSA Lands With Wilderness Characteristics Area	Percent of RFD Area 3	Acres of Non-WSA Lands with Existing Leases
Jones Bench	<1 %	0
Limestone Cliffs	3.5 %	0
Mussentuchit Badlands	<1 %	0
Rock Canyon	<1 %	0
Wildcat Knolls	1 %	0

A number of variables would determine the degree of impact to non-WSA lands with wilderness characteristics. These variables would include where surface-disturbing activities occur, landform or topography, vegetation type, oil and gas potential (as determined by exploration), sequence of exploration and development, and reclamation time. Soil types and climate would affect the time needed to reclaim disturbances.

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 that would degrade the naturalness and opportunities for primitive recreation and solitude 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.

The noise of construction and drilling wells, as well as the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and would conflict with primitive recreational opportunities in proximity to these activities. Such activities could affect wildlife distribution in addition to creating physical disturbances on the ground. As recreational visitors seeking solitude move away from the oil and gas activity, the sights and sounds of activity would diminish. If oil and gas is discovered, then

the oil and gas activity would be longer term. However, it can be expected that sights and sounds from exploration and development would reduce opportunities for solitude and primitive and unconfined recreation up to one-half mile beyond the area of surface disturbance and direct loss of natural character.

The RFD for combined Areas 1 and 2 and for Area 3 is 45 wells and 49 wells, respectively. Although a wildcat well could discover producible oil or gas, the RFD addresses wells without a prediction of production. Thus, the RFD is for well pads and access, not necessarily for facilities needed for production.

Under Alternative N, all or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. Of these, 667,600 acres are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). This acreage comprises about 98% of non-WSA areas. Two percent (15,000 acres) of the non-WSA lands with wilderness characteristics, spread between five areas, would be open to leasing subject to major constraints (NSO) or would be closed to leasing.

In RFD Areas 1 and 2, all or portions of 24 non-WSA lands with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. Of these, 630,800 acres are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). The other 15,000 acres are either closed to leasing or open to leasing subject to major constraints (NSO): 1,000 acres (1%) in Dirty Devil/French Spring; 8,100 acres (35%) in Little Rockies; 2,200 acres (14%) in Fremont Gorge; 200 acres (less than 1%) in Mount Ellen—Blue Hills; and 3,500 acres (6%) in Muddy Creek/Crack Canyon. There would be no waivers, exceptions, or modifications to the NSO stipulation under Alternative N.

Currently, the Flat Tops and Dirty Devil/Crack Canyon non-WSA areas contain the greatest percentage of leased non-WSA lands with wilderness characteristics. As stated previously, the projection for drilling for oil and gas is 45 wells during the 15-year RFD scenario. Under Alternative N, the non-WSA lands with wilderness characteristics in which surface-disturbing activities associated with oil and gas exploration would be allowed would comprise 24% of the RFD area. Assuming that the predicted wells are evenly distributed in the RFD area, then one-fourth of the predicted RFD of three wells per year—one well per year, or 15 wells during a 15 year period—could be drilled within any of these non-WSA areas. This drilling could disturb as much as 12 acres per year, or as much as 180 acres over the life of the plan. Leasing and subsequent exploration within these non-WSA areas would cause that portion of the non-WSA area to lose its natural character and opportunities for solitude and primitive recreation because of exploration for and development of oil and gas resources. However, it is not anticipated that any of these non-WSA 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 RFD area during the 15-year scenario.

In RFD Area 3, all five non-WSA lands with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 36,800 acres of non-WSA lands with wilderness characteristics in the RFD area. Given that the projection for drilling for oil and gas is 3 wells per year for the entire RFD area, and that only 5% of the RFD area encompasses non-WSA lands with wilderness characteristics areas, then 2 of the 49 wells (i.e., 5% of 49) would be drilled within the five non-WSA lands with wilderness characteristics during the 15-year RFD scenario. This drilling could disturb as much as 44 acres in the non-WSA lands over the life of the Proposed RMP. Given the size of the Limestone Cliffs non-WSA area, the two wells projected on non-WSA lands are assumed most likely to be within this area. However, the area represents

only 3.5% of the entire RFD area. Exploration and development within these non-WSA areas would cause that portion to lose its natural character and opportunities for solitude and primitive recreation because of 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 RFD area during the 15-year scenario.

Geophysical exploration activities would be authorized for all non-WSA lands with wilderness characteristics, subject to oil and gas leasing categories. Geophysical activities would have short-term, minimal impacts on naturalness because of crushed vegetation, tire tracks, and small drill holes and their cuttings. The presence of equipment, humans, noise, and work associated with geophysical exploration activities would impact solitude and primitive recreation opportunities in the short term. When the geophysical activity ceased, solitude and primitive recreation opportunities would resume and disturbances to the naturalness would be restored in the short term.

Leasable Minerals—Geothermal

About two-thirds of the Kingston Ridge non-WSA lands with wilderness characteristics area overlies a high-potential area for geothermal resources. Under Alternative N, this non-WSA area remains open for geothermal leasing, either open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). If the area was leased and developed, impacts to the wilderness value would occur. Loss of naturalness and opportunities for solitude and primitive recreation would result from drilling activities, pipeline development, road construction, power plants, and other infrastructure.

Leasable Minerals—Coal

Coal resources suitable for leasing are within the Henry Mountains coal field and underlie portions of the Mount Pennell, Wild Horse Mesa, and Mount Ellen—Blue Hills non-WSA lands with wilderness characteristics areas. This coal field includes both surface and subsurface coal resources. Other coal resources suitable for leasing are within the Emery coal field and include the Limestone Cliffs and Rock Canyon non-WSA lands with wilderness characteristics areas. All this coal has been determined suitable for subsurface coal mining only.

All non-WSA lands with wilderness characteristics underlain by coal resources suitable for leasing could potentially be leased and mined, pending a leasing EIS and further analysis. If leased, 4,925 acres in the Mount Ellen—Blue Hills non-WSA lands; 4,930 acres in the Mount Pennell non-WSA lands; and 82 acres in Wild Horse Mesa non-WSA lands could be available for leasing by surface mining methods. Surface mining for the coal resources would entail strip mining operations. The naturalness of those areas within the mining operations would be foregone, as vegetation would be stripped, soil and earth removed, and the coal resources mined. Heavy equipment and infrastructure support for mining operations, as well as motorized equipment noise and human activity, would degrade, if not preclude, opportunities for solitude and primitive recreation within those immediate areas. As much as 10% of the Mount Ellen—Blue Hills non-WSA area, 8% of the Mount Pennell non-WSA area, and less than 1% of the Wild Horse Mesa non-WSA area could forego their wilderness characteristics if the total surface coal resource was mined.

In addition to the surface coal resource, both Mount Pennell and Mount Ellen—Blue Hills have subsurface coal resources found suitable for mining. If leased, an additional 4,980 acres in the Mount Ellen—Blue Hills non-WSA area and 25,200 acres in the Mount Pennell non-WSA area could be available for leasing by subsurface mining methods. In the Emery coal field, underground coal resources suitable for leasing by underground mining methods encompass 3,970 acres in the Limestone Cliffs and

64 acres in the Rock Canyon non-WSA lands with wilderness characteristics. Subsurface mining for the coal resources would entail surface disturbance associated with portals, ventilation shafts, access roads, and other necessary facilities and infrastructure. None of these disturbances would be large scale or would encompass many acres. The naturalness in these disturbed areas would be impacted, but to a much smaller extent than through surface mining operations. The most significant impact would be caused by access roads. In addition, opportunities for solitude and primitive recreation would be foregone within these areas. It is important to note that although extensive acreage could be leased and mined for underground coal resources, relatively minor surface impacts would occur compared to surface-mining impacts.

Exploration activities for coal resources could be authorized within any of the non-WSA lands with wilderness characteristics. These activities could include the use of cross-county travel with drilling rigs and field crews, for not more than 2 years in an identified area. This travel could cause tracks from motorized use, crushed vegetation and compacted soil, and other surface disturbances. Pad construction might be an outcome of deep drilling. However, this disturbance would be temporary and reclamation would be required during the time that the exploratory activities occurred. Opportunities for solitude and primitive recreation would be affected in the short term, and naturalness would be impacted until the area was reclaimed.

Non-Energy Solid Leasable Minerals

Non-energy solid leasable minerals would be under the same restrictions as oil and gas resources. The same non-WSA lands with wilderness characteristics that would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would be available for exploration and development. Similarly, those non-WSA lands that would be closed to leasing or open to leasing subject to major constraints (NSO) would be unavailable for exploration and development (Table 4-28). The non-WSA lands with wilderness characteristics that would have the greatest potential for sodium or potassium occurrence are within portions of the Labyrinth Canyon, Horseshoe Canyon South, and Dirty Devil/French Spring areas. Where mining these resources would occur, impacts to wilderness characteristics would include drilling, road construction, evaporation ponds, human activities, and other necessary infrastructure. These impacts would degrade the wilderness characteristics through loss of naturalness and opportunities for primitive recreation and solitude.

Locatable Minerals

All 29 non-WSA lands with wilderness characteristics areas are located within high-potential areas for uranium and vanadium. Existing mining claims as of May 2007 have been located within the Mount Pennell, Mount Hillers, Bull Mountain, Ragged Mountain, Little Rockies, Dirty Devil/French Spring, Wild Horse Mesa, Muddy Creek/Crack Canyon, Mount Ellen—Blue Hills, Fremont Gorge, Rock Canyon, Limestone Cliffs, and Kingston Ridge areas. As of May 2007, recent mining-related activity had caused no surface-disturbing actions within the non-WSA lands. If new mining development were to occur within these areas, direct loss of wilderness characteristics would be unavoidable because of major surface-disturbing activities associated with mining activities. Under Alternative N, there would be no existing or recommended withdrawals within non-WSA lands with wilderness characteristics. (See withdrawal discussion under the Impacts from Lands and Realty section of this alternative.)

Salable Minerals

Salable minerals would be under the same restrictions as oil and gas resources. The same non-WSA lands with wilderness characteristics that would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would be available for salable mineral disposal. Similarly, those non-WSA lands that would be closed to leasing or open to leasing subject to major constraints (NSO) would be unavailable for salable mineral disposal (Table 4-28). The non-WSA

lands with wilderness characteristics that would have the greatest potential for sand and gravel occurrence overlie portions of the Little Rockies, Mount Hillers, Ragged Mountain, Bull Mountain, Mount Ellen—Blue Hills, Wild Horse Mesa, Fremont Gorge, and Rocky Ford areas. The non-WSA lands with wilderness characteristics that would have the greatest potential for stone occurrence overlie all the Fremont Gorge area. The non-WSA lands with wilderness characteristics that would have the greatest potential for humate occurrence overlie portions of the Wild Horse Mesa, Muddy Creek/Crack Canyon, and Limestone Cliffs areas.

All or portions of the 29 non-WSA lands with wilderness characteristics areas would remain open to salable mineral disposal. Of the 682,600 acres of non-WSA lands with wilderness characteristics, 667,600 acres would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). This acreage comprises about 98% of non-WSA areas. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone. If the gravel pits or building-rock quarries had associated support facilities, including roads and power lines, then soil and vegetation disturbance and the presence of permanent structures would degrade the natural characteristics of non-WSA lands with wilderness characteristics. The noise of the operations of sand and gravel pits or rock quarries, as well as the presence of work crews, vehicles, and equipment, would degrade opportunities for solitude and would conflict with primitive recreational opportunities in proximity to industrial development. As recreational visitors moved away from the sources of development, the sights and sounds of development would diminish. It can be expected that sights and sounds from development would reduce opportunities for solitude and primitive and unconfined recreation for as much as one-half mile beyond the direct area of loss of natural character, depending on topography.

Two percent (15,000 acres) of the non-WSA lands with wilderness characteristics spread between five areas would be open to leasing subject to major constraints (NSO) or would be closed to salable mineral disposal. 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. Thus, the wilderness characteristics of the areas would be maintained.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative N, 4 of the 29 non-WSA land areas intersect with eligible WSR segments, totaling 33.35 miles in those 4 areas. There are 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 5 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capital Reef National Park to Caineville Ditch Diversion), and 1.4 miles of Maidenwater Creek that would be managed to preserve their WSR eligibility. Protection of river values would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert, and Little Rockies non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile of the high water mark on each bank of the river segment).

Areas of Critical Environmental Concern

Under Alternative N, ACEC designation and management would continue for the four existing ACECs, to protect a variety of relevant and important values. Three of the four ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs are North Caineville Mesa, South Caineville Mesa, and Beaver Wash. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all the non-WSA lands within the ACECs.

A portion (2,200 acres) of the Muddy Creek/Crack Canyon non-WSA lands with wilderness characteristics lies within the existing 2,200 acre North Caineville Mesa ACEC. As a result of the management prescriptions for the ACEC, these non-WSA lands with wilderness characteristics would be closed to OHV use, open to leasing subject to major constraints (NSO), unavailable for livestock grazing, identified as unsuitable for surface coal mining, and recommended for withdrawal from mineral entry; also, inholdings would be acquired from willing sellers. These prescriptions would prevent surface disturbances, limit motorized uses, and protect the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation.

A small portion (4 acres) of the Mount Ellen—Blue Hills non-WSA lands with wilderness characteristics area lies within the existing 4,100 acre South Caineville Mesa ACEC. These non-WSA lands with wilderness characteristics would be closed to OHV use, open to leasing subject to major constraints (NSO), unavailable for livestock grazing, and identified as unsuitable for surface coal mining. These ACEC management prescriptions would prevent surface disturbances, limit motorized uses, and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

A portion (68 acres) of the Dirty Devil/French Spring non-WSA lands with wilderness characteristics lies within the existing 4,800 acre Beaver Wash ACEC. As a result of the management prescriptions for the ACEC, these non-WSA lands with wilderness characteristics would be closed to OHV use, closed to leasing, and recommended for withdrawal from mineral entry; also, land tenure adjustment, including acquisition of all state sections within the ACEC, would be pursued. These prescriptions would prevent surface disturbances, limit motorized uses, and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within 330 feet of natural springs, to protect water quality and riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres, compared to Alternative N.

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within approximately 330 feet of natural springs (based on geo-hydrological, riparian, and other factors) to protect riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres, compared to Alternative N.

When disturbance could not be avoided or mitigated onsite, compensatory offsite mitigation would maintain the total acreage of riparian vegetation in the RFO. However, protection of riparian zones would not necessarily occur in non-WSA lands, nor would it necessarily result in benefits to the naturalness or opportunities for solitude or primitive recreation of non-WSA lands. Compensation might occur either inside or outside the non-WSA lands.

Under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 annually for all treatments). Because no target treatment acreage limits (maximum or minimum) would be set under Alternative N, it is likely (based on historic trends) that in some years, fewer acres would be treated under

Alternative N, whereas in other years (when there are numerous wildland fires), more acres could be treated under that alternative.

Precise locations for vegetation treatments are not known at this time, but if these treatments were to occur in non-WSA lands, the types of impacts experienced would be similar to those described under Alternative N.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N for the Bull Creek Archaeological District. In addition, allocation of cultural sites to scientific, public, conservation, traditional, and experimental uses under Alternative A would increase knowledge of cultural resources and 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 areas would add to the enjoyment of these areas for primitive recreational purposes. Protection of cultural resources would add to the character of the setting that supports these recreational opportunities.

Providing Native American tribes access to public lands for traditional purposes might impact wilderness characteristics of non-WSA lands. If access is provided by motorized vehicle, the noise and presence of vehicles would reduce opportunities for solitude and would conflict with primitive forms of recreation.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under Alternative A, no non-WSA lands would be designated as VRM Class I or II to retain landscape character. All lands would be managed for uses and activities that might result in changes to the landscape. (However, this management does not mean that every acre would be developed or would change.) The natural character of the non-WSA lands could be lost. If the naturalness of these areas was lost, the opportunities for solitude and primitive recreation would be lost because the setting needed to support these opportunities would be altered.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N. In addition, under Alternative A, strategies would be employed that would avoid or reduce fragmentation of SSS habitat. These strategies could include collocating communication and other facilities, employing directional drilling for oil and gas, and closing and reclaiming roads. If a proposed project were located on non-WSA lands with wilderness characteristics, these strategies would help to consolidate surface-disturbing activities and would protect additional acres from loss of naturalness. However, any surface-disturbing activities would still impair the naturalness of the areas and could affect solitude and primitive recreation opportunities in the areas in which the strategies were employed.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative A, there would be no specific actions prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no impacts to non-WSA lands.

Impacts from Forestry and Woodland Products

Under Alternative A, commercial and non-commercial timber harvest would be allowed where feasible, sustainable, and compatible with restoring, maintaining, or improving forest health. All non-WSA lands with wilderness characteristics that have timber would be open to timber-harvest permitting. Activities associated with timber harvest would diminish the wilderness characteristics values of naturalness, solitude, and primitive recreation opportunities within the areas being harvested. These activities include the use of heavy equipment and chain saws, new road construction, cutting trees and leaving stumps and debris, and human activity.

Permits for commercial and non-commercial woodland products (primarily fire-wood cutting) would continue to be sold to the public in all 29 non-WSA areas (where the resources exist), which would remain open for such activities. If permits were sold within non-WSA lands, wilderness characteristics would be compromised by surface-disturbing activities such as driving cross-country to the trees and cutting the trunks of trees and leaving stumps and debris. The use of chain saws and the surface disturbances associated with human activity activities would affect solitude and primitive recreation opportunities.

Commercial live plant and seed collection impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

ERMAs

Public lands in the Fiddler Butte, Labyrinth Canyon, Mount Ellen—Blue Hills, and Little Rockies non-WSA areas would be managed in a primitive, naturally appearing setting for a high probability of experiencing solitude and closeness to nature. This management would be accomplished by preserving resources, managing access primarily as non-motorized, and providing minimum improvements and no onsite interpretive facilities. This management would protect the wilderness characteristics values of naturalness and would enhance opportunities for solitude and primitive recreation in portions of these non-WSA lands with wilderness characteristics.

Designating campsites and areas appropriate for large group events and camping at Sandy Creek Overlook would impact the naturalness and opportunities for solitude and primitive recreation in the northernmost portion of the Mount Pennell non-WSA lands with wilderness characteristics area. This impact would affect less than 1% of this 65,600 acre non-WSA area.

SRMAs

Three of the proposed SRMAs would overlap portions of eight non-WSA lands with wilderness characteristics. There would be 317,010 acres of non-WSA lands within the three SRMAs (or 46% of non-WSA lands).

The 290,000 acre Dirty Devil/Robbers Roost SRMA would encompass 110,860 acres within the Dirty Devil/French Spring non-WSA area; 20,640 acres of the Horseshoe Canyon South non-WSA area; and 12,283 acres of the Labyrinth Canyon non-WSA area. Because this SRMA would be managed for its primitive values and no competitive events would be permitted, the wilderness characteristics of this area would be maintained and opportunities for solitude and a primitive recreation experience would be protected.

The 199,700 acre Factory Butte SRMA and the 12,300 acre Sahara Sands SRMA would encompass 173,215 acres of the Mount Ellen—Blue Hills non-WSA area; 61,680 acres of the Muddy Creek/Crack Canyon non-WSA area; 40,550 acres of the Red Desert non-WSA area; 49,640 acres of the Wild Horse Mesa non-WSA area; and 25 acres of the Fiddler Butte non-WSA area. Both SRMAs would be managed as OHV open (cross-country) areas with developed facilities. This management would be in conflict with wilderness characteristic values because naturalness would be compromised through surface-disturbing activities, and opportunities for solitude and primitive recreation would be foregone because of OHV cross-country travel and associated noise. Facility development would also impair wilderness characteristics through surface-disturbing activities and reduction of natural values.

Impacts from Travel Management

Alternative A would designate 18 areas managed as open OHV play areas. Of these 18 open areas, 9 would comprise 221,800 acres (32%) within 14 of the 29 non-WSA lands with wilderness characteristics areas that would be open to cross-country travel:

- A portion (200 acres) of the Little Rockies non-WSA lands with wilderness characteristics lies within the 19,500 acre proposed Ticaboo Play Area.
- A portion (200 acres) of the Fiddler Butte non-WSA lands with wilderness characteristics lies within the 12,700 acre proposed Sahara Sands Play Area.
- Portions of the Dirty Devil/French Spring (13,100 acres), Flat Tops (200 acres), and Sweetwater Reef (1,900 acres) non-WSA lands with wilderness characteristics lie within the 19,700 acre proposed Roost Play Area.
- Portions of the Mount Ellen—Blue Hills (21,400 acres), Muddy Creek/Crack Canyon (61,800 acres), Red Desert (40,700 acres), and Wild Horse Mesa (49,700 acres) non-WSA lands with wilderness characteristics lie within the 200,100 acre proposed Factory Butte Play Area.
- A portion (10,900 acres) of the Fremont Gorge non-WSA lands with wilderness characteristics lies within the 9,800 acre proposed Miners Mountain and 5,000 acre proposed Beas Lewis Flat Play Areas.
- A portion (4,400 acres) of the Pole Canyon/Hunter Spring non-WSA lands with wilderness characteristics lies within the 4,600 acre proposed Hunter Spring Play Area.
- Portions of the Kingston Ridge (2,900 acres) and Phonolite Hill (7,700 acres) non-WSA lands with wilderness characteristics lie within the 102,700 acre proposed Antelope Range/Kingston Canyon Play Area.
- A portion (6,700 acres) of the Rocky Ford non-WSA lands with wilderness characteristics lies within the 12,900 acre proposed Rocky Ford Play Area.

Cross-country motorized travel in these non-WSA lands would result in surface disturbance to soils and vegetation and would alter the landscape and diminish the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade visitors' opportunity for solitude and would conflict with opportunities for primitive and unconfined recreation activities.

Under Alternative A, there are no specific management prescriptions for managing OHV use in non-WSA lands with wilderness characteristics. However, management actions for other resources and resource uses

would place limitations on OHV use in these areas. OHV use would be limited to designated routes in 460,600 acres (68%) within 25 of the 29 non-WSA lands with wilderness characteristics, as identified under Alternative D. In these areas, 360.7 miles of routes would be designated as shown in Table 4-31.

Table 4-31. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative A

Non-WSA Area Name	Miles of Routes
Bull Mountain	1.8 miles
Bullfrog Creek	20.7 miles
Dirty Devil/French Spring	146.2 miles
Dogwater Creek	0.1 miles
Fiddler Butte	3.3 miles
Flat Tops	26.2 miles
Fremont Gorge	11.5 miles
Horseshoe Canyon South	10.9 miles
Jones Bench	0.9 miles
Kingston Ridge	6.6 miles
Labyrinth Canyon	2.2 miles
Limestone Cliffs	14.1 miles
Little Rockies	8.3 miles
Long Canyon	2 miles
Mount Ellen—Blue Hills	30.4 miles
Mount Hillers	1.9 miles
Mount Pennell	30.8 miles
Mussentuchit Badlands	0 miles
Notom Bench	3.6 miles
Phonolite Hill	10.1 miles
Pole Canyon/Hunter Spring	13 miles
Ragged Mountain	11.1 miles
Rock Canyon	1.2 miles
Sweetwater Reef	3.8 miles
Wildcat Knolls	0 miles

Limiting OHV use would confine to designated routes the soil and vegetation disturbance caused by motor vehicles, thus resulting in no additional change to the natural character of the non-WSA lands. However, the presence and noise of vehicles using these routes would reduce visitors' opportunity to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Under Alternative A, motor vehicles would be allowed to pull off of a designated route as much as 100 feet to either side of the centerline (for parking/staging). Motor vehicles would be allowed to use existing spur routes for ingress and egress to established campsites within 300 feet of the centerline of designated routes but would be prohibited from traveling between multiple campsites, establishing motorized play areas or race tracks, or traveling across wet meadows or riparian areas. These actions would allow for parking and camping while confining the areas in which soil and vegetation disturbance would occur, thus resulting in limited change to the natural character of the non-WSA lands.

OHV open areas near communities would be considered and encouraged for leasing under authority of the R&PP, to allow local management of OHV play areas. Generally these areas would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics, by allowing the surface-disturbing activity from motorized vehicles to continue. The action would also conflict with opportunities for solitude and primitive recreation experiences away from the sights and sounds of vehicle travel.

Impacts from Lands and Realty

Land Tenure Adjustments

Alternative A identifies as available for FLPMA Section 203 sales three parcels (600 acres) of land in the Notom Bench, Red Desert, and Dogwater Creek non-WSA lands with wilderness characteristics. One parcel (80 acres) is in the Notom Bench non-WSA area; one parcel (160 acres) is in the Red Desert non-WSA area; and one parcel (360 acres) is in the Dogwater Creek non-WSA area. All three parcels are interspersed with private lands adjoining the Capitol Reef National Park boundary. Disposal of these lands would take them out of public ownership and would allow for development and surface-disturbing activities outside of BLM's control. The wilderness characteristics could be foregone because the lands would no longer be under BLM control.

Withdrawals

Impacts would be the same as those described under Alternative N.

Rights-of-Way and Other Land Use Authorizations

Four proposed ROW corridors would overlay small slivers of the exterior boundaries of nine non-WSA lands with wilderness characteristics areas. Each corridor would be 800 feet wide (400 feet to each side of the centerline). The proposed State Highway 24 ROW corridor would overlay the Wild Horse Mesa, Red Desert, Fremont Gorge, and Notom Bench non-WSA lands with wilderness characteristics. The proposed State Highway 95 and State Highway 276 ROW corridors would overlay slivers of Little Rockies and Fiddler Butte non-WSA lands with wilderness characteristics. The proposed State Highway 62 ROW corridor would overlay slivers of Rocky Ford, Phonolite Hill, and Kingston Ridge non-WSA lands with wilderness characteristics. Placement of future utility ROWs within these corridors would diminish the wilderness characteristics in the areas by creating surface-disturbing activities (and possibly by placing surface facilities) that would no longer maintain the wilderness characteristics values in those linear corridors.

Non-WSA lands with wilderness characteristics that would remain available for granting of ROWs include all of 28 areas and portions of 1 area, totaling 682,594 acres. Any surface-disturbing activity or placement of permanent facilities would detract from the natural character of the area and would disrupt the setting needed to support primitive forms of recreation.

Under Alternative A, 6 acres in one non-WSA lands with wilderness characteristics area would be protected in part from surface-disturbing actives because those acres would be within ROW avoidance

areas (Table 4-27). Portions of the Fremont Gorge non-WSA lands with wilderness characteristics would be within the ROW avoidance areas. These areas are to be avoided but might be available for location of ROWs with special stipulations if the proposal met the goals and objectives of other resources and uses in the LUP. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Impacts from issuance of other land use authorizations would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing within non-WSA lands with wilderness characteristics are listed in Table 4-28. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on solitude and opportunities for primitive recreation. Virtually all the lands with wilderness characteristics would be open to leasing under Alternative A. The types of impacts experienced as a result of oil and gas activities would be the same as those described under Alternative N.

All 29 non-WSA lands with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. All these acres would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU).

As described under Alternative N, the RFD scenario for oil and gas development in RFD combined Areas 1 and 2 predicts that during the next 15 years, approximately 45 exploratory wells (3 wells per year) would disturb a total of 540 acres (12 acres per well), and an additional 240 acres would be minimally disturbed by geophysical operations. In RFD Areas 1 and 2, 24 non-WSA wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. All acres would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). The non-WSA lands with wilderness characteristics that have the greatest percentage leased at this time would be in the Flat Tops and Dirty Devil/French Spring areas. The non-WSA lands open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) would make up 25% of the RFD area. This percentage is generally the same as under Alternative N. Thus, the same analysis as under Alternative N, portraying 1 well per year in the non-WSA areas (12 wells total during the 15-year RFD scenario) would be applicable for Alternative A.

The RFD scenario for oil and gas activity in RFD Area 3 predicts that during the next 15 years, approximately 49 exploratory wells (about 3 wells per year) would disturb a total of 1,100 acres (22 acres per well), and an additional 360 acres would be minimally disturbed by geophysical operations. In this RFD area, five non-WSA wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 36,800 acres of non-WSA lands with wilderness characteristics within this RFD area. All acres would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). Because well projections under Alternative A are the same as those under Alternative N, and because the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics, the same analysis (portraying two wells during the 15 year RFD scenario) would be applied.

Impacts for geophysical activities would be the same as those described under Alternative N.

Leasable Minerals—Geothermal

Impacts would be the same as those described under Alternative N.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Non-Energy Solid Leasable Minerals

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Impacts would be similar to those described under Alternative N, except that all 682,600 acres within the 29 non-WSA lands with wilderness characteristics areas would remain open to disposal of salable minerals under standard conditions or minor constraints.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative A, 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. Of all the alternatives, Alternative A would provide the lowest level of protection to non-WSA lands because no eligible river segments would be recommended for suitability.

Areas of Critical Environmental Concern

Under Alternative A, no WSR segments would be found suitable for inclusion in the NWSRS. 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. This alternative would provide the lowest level of protection to non-WSA lands because no ACECs are designated.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described under Alternative A for the 12 non-WSA areas (78,600 acres) managed for wilderness characteristics in the Proposed RMP. The proposed buffer zones for the protection of natural springs and maintenance or restoration of watershed health and soil productivity would improve the natural condition of these areas. However, some methods of treatment may not be consistent with the management goals and objectives for these non-WSA managed areas (VRM Class II, naturalness, solitude). Therefore, if potential impacts could not be mitigated, the long-term benefits of these types of projects may not be realized.

For the remainder of the non-WSA areas not being managed for wilderness characteristics, the impacts would be the same as those described under Alternative A.

Impacts from Vegetation

Impacts would be similar to those described under Alternative A for the protection of riparian areas except that the buffer zone would be larger. Maintenance and restoration of riparian zones, and retention of these zones in public ownership, would maintain and enhance opportunities for primitive recreation and other activities dependent upon water courses and riparian ecosystems. The non-WSA lands managed for wilderness characteristics in the Proposed RMP (78,600 acres) would be considered for Healthy Lands Initiative projects only where they improve the overall goals and objectives for managing the wilderness characteristics of these areas. As described under Alternative N, some methods of vegetation treatments, such as mechanical vegetation manipulation, would not be consistent with these management goals. Therefore, if potential impacts could not be mitigated by utilizing less surface disturbing treatment methods, the long-term benefits of these types of projects may not be realized.

For the remainder of the non-WSA areas not being managed for wilderness characteristics, the impacts would be similar to Alternative A except that the buffer zone for protection of riparian areas would be larger. The effects on the naturalness and opportunities for solitude and primitive recreation on non-WSA lands with wilderness characteristics would therefore occur on less acres as compared to Alternatives N and A.

Impacts from Cultural Resources

For the 12 non-WSA areas being managed for wilderness characteristics, the allocation of cultural sites to scientific, public, conservation, traditional and experimental uses under the Proposed RMP would increase knowledge of cultural resources and 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 areas all would add to the enjoyment of these areas for primitive recreational purposes. Protection of cultural resources would add to the character of the setting and complement the management of these non-WSA lands. Depending on site location and size, some surface disturbing activities associated with the allocated uses may not be consistent with the goals and objectives of the wilderness characteristic areas. Therefore, if potential impacts could not be mitigated, the long-term benefits of inventory efforts may not be realized.

Providing Native American tribes access to managed non-WSA areas for traditional purposes might impact wilderness characteristics of these non-WSA lands. If access is provided by motorized vehicle, the noise and presence of vehicles would reduce opportunities for solitude and would conflict with primitive forms of recreation.

For the remainder of the non-WSA lands not managed for wilderness characteristics, impacts would be similar to those described above except that proposals would not be required to maintain wilderness characteristics. Management of the Bull Creek Archaeological District with major constraints (NSO) and conducting resource inventories would provide additional protection to a portion of the Mount Ellen/Blues Hills and increase knowledge of cultural resources.

Impacts from Paleontological Resources

For the 12 non-WSA areas being managed for wilderness characteristics, increased knowledge of paleontological resources through inventory, interpretation and education, and protecting significant fossils from collection or damage would add to the enjoyment of these areas for primitive recreational purposes. However, some surface disturbing activities associated with the excavation of fossil localities with significant scientific value may not be consistent with the goals and objectives of the wilderness characteristic areas. The potential for conflicts between wilderness characteristic values and excavation impacts would depend on the location and size of the paleontological resource. If potential impacts could not be mitigated, the paleontological resource would continue to be at risk from theft, erosion and/or

vandalism and require additional on-the-ground monitoring. The lack of vehicle access into the managed non-WSA areas would reduce the potential for theft of these resources. Collection of common invertebrate fossils and botanical paleontological resources for personal use, while providing a primitive recreational experience, would remove an element of the natural landscape.

For the remainder of the non-WSA areas not being proposed for management of wilderness characteristics, impacts would be similar to those described under Alternative N except that more inventories and assessments are proposed within the Proposed RMP. This would result in increased beneficial impacts through the increased knowledge, interpretation and protection of paleontological resources within these areas.

Impacts from Visual Resources

The 12 non-WSA areas being managed for wilderness characteristics would be designated as VRM Class II. Management objectives for VRM Class II would protect, preserve, and maintain the natural character of these areas (78,600 acres).

For the remainder of the non-WSA lands, not managed for wilderness characteristics, the types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under the Proposed RMP, 105,865 acres would be designated as VRM Class II in all or parts of 17 non-WSA lands with wilderness characteristics, protecting the natural character of those lands. In addition, 498,135 acres would be designated as VRM Class III or IV, possibly adversely impacting the wilderness characteristics by allowing moderate or major modification to the characteristic landscape.

Impacts from Special Status Species

For the 12 non-WSA areas being managed for wilderness characteristics (78,600 acres), impacts would be similar to those described under Alternative A. The decision to retain habitat for Federally-listed and candidate species in Federal ownership would be beneficial to management of non-WSA areas. The management prescriptions for the 12 non-WSA areas in the Proposed RMP call for the retention of public lands in federal ownership. The Special Status Species decision also provides for the exception to consider exchanges with the State of Utah of Federally-listed and candidate species habitats. This exception would not be allowed if a proposed exchange overlapped with any of these non-WSA lands.

For the remainder of the non-WSA lands with wilderness characteristics, impacts would be the same as described under Alternative A.

Impacts from Fish and Wildlife

Impacts to the 12 non-WSA areas managed for wilderness characteristics (78,600 acres) would be the same as those described under Alternative N, with the exception that habitat manipulations would be allowed to benefit bison and mule deer in the Henry Mountains bison and mule deer range. The bison and mule deer range overlays portions of Mount Ellen—Blue Hills, Ragged Mountain, and Mount Pennell non-WSA lands with wilderness characteristics areas. These habitat manipulations, depending on the method used, could impact the naturalness of the non-WSA areas and could affect the solitude and primitive recreation opportunities in these areas, especially during the time of employment. Mechanical treatments would have the most long-term impacts because of the use of motorized equipment and surface-disturbing effects of the treatment. In addition, construction of new range projects that benefit wildlife, such as water developments and fencing of riparian areas, would impair the natural character of small areas (generally less than 5 acres) in the non-WSA lands with wilderness characteristics. These types of treatments would not be consistent with the management goals for these non-WSA areas. Therefore, if potential impacts could not be mitigated by utilizing less surface disturbing methods, the long-term benefits of these types of projects may not be realized.

For the remainder of the non-WSA lands not proposed for management of wilderness characteristics, the impacts would be the same as those described above except that all methods of treatments would be available. Impacts to naturalness, solitude and primitive recreation opportunities could occur in these areas. However, there would also be beneficial impacts from improved habitat conditions in the long-term.

Impacts from Wild Horses and Burros

The Proposed RMP would have similar impacts to wilderness characteristics as would Alternative N. The Canyonlands HMA would overlap portions of the Labyrinth Canyon and Horseshoe Canyon South non-WSA lands identified in the Proposed RMP for management of wilderness characteristics. Herd size might be augmented in the Canyonlands HMA because of higher allocations of AUMs for wild burros under the Proposed RMP, which would continue or improve the opportunities for viewing of wild burros.

Impacts from Non-WSA Lands with Wilderness Characteristics

The Proposed RMP would manage the following 12 non-WSA lands with wilderness characteristics areas (78,600 acres) to preserve, protect, and maintain their wilderness characteristics:

- Dirty Devil/French Spring (6,100 acres)
- Dogwater Creek (3,100 acres)
- Horseshoe Canyon South (12,200 acres)
- Jones Bench (2,600 acres)
- Labyrinth Canyon (2,800 acres)
- Little Rockies (9,500 acres)
- Mount Ellen-Blue Hill (3,900 acres)
- Mount Pennell (4,700 acres)
- Notom Bench (8,200 acres)
- Ragged Mountain (7,900 acres)
- Red Desert (8,900 acres)
- Wild Horse Mesa (8,700 acres).

These areas would be managed by the following prescriptions:

- Designate VRM Class II
- Limit motorized use to designated routes
- Designate oil and gas leasing as open to leasing subject to major constraints (NSO)
- Establish ROW avoidance areas
- Open areas to locatable minerals entry
- Retain public lands in federal ownership
- Maintain and use existing facilities and valid existing rights
- Prohibit woodland harvest
- Make areas available for Healthy Lands Initiative.

These prescriptions would prevent surface disturbances that would degrade the natural character of the non-WSA areas, prevent surface disturbances and uses that would be incompatible with primitive recreation activities, and protect the setting needed to support the experience of solitude. As discussed in the soil and vegetation sections of this analysis, some methods for Healthy Lands Initiative treatments would not be consistent with these management goals. Therefore, if potential impacts could not be mitigated by utilizing less surface disturbing treatment methods, the long-term benefits of these types of

projects may not be realized. The remainder of the non-WSA lands with wilderness characteristics areas (604,000 acres) would be managed pursuant to other resource decisions outlined in the Proposed RMP. Direct and indirect impacts would be included within the analysis for those resources.

Impacts from Forestry and Woodland Products

Under the Proposed RMP, the 12 non-WSA areas managed for wilderness characteristics would not be available for woodland harvest. Therefore, there would be no impacts to wilderness characteristics from woodland products. Timber harvest in association with improving forest health would only be allowed if it was consistent with management goals of these non-WSA areas. Mechanical treatments would have the most long-term impacts because of the use of motorized equipment and surface-disturbing effects of the treatment. Therefore, if potential impacts could not be mitigated by utilizing less surface disturbing treatment methods, the long-term benefits of these types of projects may not be realized.

For the remaining non-WSA areas not proposed for management of wilderness characteristics, impacts would be the same as those described under Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

ERMAs

Four of the 12 non-WSA areas (29,700 acres) identified for management of wilderness characteristics in the Proposed RMP would be located in ERMAs: Little Rockies, Red Desert, Wild Horse Mesa and Jones Bench. The Little Rockies area would be managed in a primitive, naturally appearing setting for a high probability of experiencing solitude and closeness to nature. This would be consistent with the protection of wilderness characteristic values for the non-WSA lands within the Little Rockies area. ERMAs would receive only custodial management with facilities, based on needs for resource protection and user demand. It is unlikely that such facilities would be necessary within the non-WSA management areas due to lack of motorized access. However, site-specific developments would be analyzed on a case-by-case basis and would be required to be consistent with management prescriptions of the non-WSA areas.

For the non-WSA lands not identified for management of wilderness characteristics which are located within the ERMAs (322,200 acres), impacts would be the same as those described under Alternative A.

SRMAs

Two of the proposed SRMAs would overlap eight of the 12 non-WSA areas proposed for management of wilderness characteristics in the Proposed RMP. There would be 48,900 acres of non-WSA lands within the two SRMAs within the Proposed RMP.

The 290,500 acre Dirty Devil/Robber's Roost SRMA would encompass all of the Labyrinth, Horseshoe Canyon and Dirty Devil-French Spring non-WSA areas managed for wilderness characteristics. Management of this SRMA for its primitive values would complement the proposed management for wilderness characteristics, therefore providing additional beneficial effects.

The 532,600 acre Henry Mountain SRMA would encompass all of the Mt. Ellen-Blue Hills, Mt. Pennell, Ragged Mountain, Dogwater Creek and Notom Bench non-WSA areas managed for wilderness characteristics. The Henry Mountains SRMA would have mixed management strategies for recreational opportunities. Some areas would be managed for their primitive opportunities, and some would be managed for group camping areas, developed facilities, and semi-primitive motorized recreation. It is unlikely that such facilities would be necessary within the non-WSA management areas due to lack of

motorized access. However, site-specific developments would be analyzed on a case-by-case basis and would be required to be consistent with management prescriptions for the non-WSA areas.

Some of the non-WSA areas not managed for wilderness characteristics under the Proposed RMP would be located within SRMAs which could provide some indirect protection of wilderness characteristics depending on the management objectives of the SRMA.

The Dirty Devil/Robbers Roost SRMA would encompass 122,700 acres of the remaining Dirty Devil/French Spring, Horseshoe Canyon South and Labyrinth Canyon non-WSA areas not specifically managed for wilderness characteristics. Because this SRMA would be managed for its primitive values, the wilderness characteristics of this area would be maintained and opportunities for solitude and a primitive recreation experience would be protected.

The Henry Mountains SRMA would contain 131,200 acres of the remaining non-WSA areas not specifically managed for wilderness characteristics, including all or portions of the Bull Mountain, Dogwater Creek, Mount Ellen-Blue Hills, Mount Hillers, Mount Pennell, Notom Bench, Ragged Mountain and Red Desert areas. The Henry Mountains SRMA would have mixed management strategies for recreation opportunities. Some areas would be managed for their primitive opportunities and some would be managed for group camping areas, developed facilities and semi-primitive motorized recreation. OHV activities would be limited to designated routes, temporarily affecting solitude and opportunities for primitive recreation when vehicles are in the area. Wilderness characteristics values could be compromised by construction of recreational facilities, placement of signs, and construction of trails and staging areas. However, wilderness characteristics would continue to be maintained within large areas of the Henry Mountains SRMA (because of its sheer size and interrelationship with existing WSAs and non-WSA lands managed for their wilderness characteristics).

Approximately 7,800 acres of the remaining non-WSA lands (Fremont Gorge) not specifically managed for wilderness characteristics fall within the Capitol Reef Gateway SRMA. The Capitol Reef Gateway SRMA would have mixed management strategies for recreation opportunities. Some areas would be managed for their primitive opportunities and some would be managed for group camping areas, developed facilities and semi-primitive motorized recreation. Wilderness characteristics values could be compromised by construction of recreational facilities, placement of signs, and construction of trails and staging areas. OHV activities would be limited to designated routes, temporarily affecting solitude and opportunities for primitive recreation when vehicles are in the area. However, wilderness characteristics would continue to be maintained within the immediate area of Fremont Gorge, which would be closed to OHV use. Approximately 20,100 acres of the 61,800 acre Muddy Creek/Crack Canyon non-WSA area not specifically managed for wilderness characteristics would fall within the Factory Butte SRMA. Because this SRMA promotes motorized recreation opportunities and opens a portion of the SRMA land to cross-county OHV use, that portion of the non-WSA area (less than 10% of the total Muddy Creek/Crack Canyon non-WSA area) could have a direct loss of natural condition through unrestricted OHV use. (Approximately 5,700 acres would be within the OHV Play Area Recreation Management Zone [RMZ].) Wilderness characteristics in the rest of the area would be protected by signing and protective fencing. The facilities would improve outstanding opportunities for solitude and primitive recreation, by keeping impacts from OHV use in the OHV Play Area RMZ.

Impacts from Travel Management

Under the Proposed RMP, motorized travel within the 12 non-WSA areas managed for wilderness characteristics (78,600 acres) would be limited to designated routes. In these areas, 25 miles of routes would be designated as shown in Table 4-32.

Table 4-32. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Proposed RMP

Non-WSA Area Name	Miles of Routes
Bull Mountain – Not managed for wilderness characteristics	1.8 miles
Bullfrog Creek – Not managed for wilderness characteristics	20.7 miles
Dirty Devil/French Spring – Managed for wilderness characteristics	0.3 miles
Dirty Devil/French Spring – Not managed for wilderness characteristics	117.5 miles
Dogwater Creek – Managed for wilderness characteristics	1.4 miles
Dogwater Creek – Not managed for wilderness characteristics	0.1 miles
Fiddler Butte - Not managed for wilderness characteristics	2.1 miles
Flat Tops- Not managed for wilderness characteristics	26.2 miles
Fremont Gorge- Not managed for wilderness characteristics	11.5 miles
Horseshoe Canyon South– Managed for wilderness characteristics	4.2 miles
Horseshoe Canyon South- Not managed for wilderness characteristics	10.2 miles
Jones Bench– Managed for wilderness characteristics	0.1 miles
Jones Bench- Not managed for wilderness characteristics	1 mile
Kingston Ridge- Not managed for wilderness characteristics	6.6 miles
Labyrinth Canyon– Managed for wilderness characteristics	0 miles
Labyrinth Canyon- Not managed for wilderness characteristics	2.2 miles
Limestone Cliffs- Not managed for wilderness characteristics	14.1 miles
Little Rockies– Managed for wilderness characteristics	0.1 miles
Little Rockies- Not managed for wilderness characteristics	8.3 miles
Long Canyon- Not managed for wilderness characteristics	2 miles
Mount Ellen-Blue Hills– Managed for wilderness characteristics	0.6 miles
Mount Ellen—Blue Hills- Not managed for wilderness characteristics	30.4 miles
Mount Hillers- Not managed for wilderness characteristics	1.9 miles
Mount Pennell– Managed for wilderness characteristics	1.7 miles
Mount Pennell- Not managed for wilderness characteristics	30.8 miles
Muddy Creek/Crack Canyon- Not managed for wilderness characteristics	31.9 miles
Mussentuchit Badlands- Not managed for wilderness characteristics	0 miles
Notom Bench– Managed for wilderness characteristics	5.6 miles
Notom Bench- Not managed for wilderness characteristics	3.6 miles
Phonolite Hill- Not managed for wilderness characteristics	9.7 miles
Pole Canyon/Hunter Spring- Not managed for wilderness characteristics	12.3 miles
Ragged Mountain– Managed for wilderness characteristics	1.9 miles
Ragged Mountain- Not managed for wilderness characteristics	11.1 miles
Red Desert– Managed for wilderness characteristics	1.1 miles
Red Desert- Not managed for wilderness characteristics	29.3 miles

Non-WSA Area Name	Miles of Routes
Rock Canyon- Not managed for wilderness characteristics	1.2 miles
Rocky Ford- Not managed for wilderness characteristics	3.9 miles
Sweetwater Reef- Not managed for wilderness characteristics	3.8 miles
Wild Horse Mesa– Managed for wilderness characteristics	8.1 miles
Wild Horse Mesa- Not managed for wilderness characteristics	35 miles
Wildcat Knolls- Not managed for wilderness characteristics	0 miles
Total miles of routes in areas managed for wilderness characteristics (Proposed RMP)	**25.1**
Total miles of routes in areas not managed for wilderness characteristics from Alternative D	**429.2**

Limiting OHV use would confine to designated routes the soil and vegetation disturbance caused by motor vehicles, resulting 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 visitors' opportunity to find solitude in the non-WSA areas, especially in proximity to the routes. These impacts to solitude would be short-term, while vehicles were in the area and reduce as visitors move away from the routes. Motorized uses could conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas. However, the miles of routes within the non-WSA areas managed for wilderness characteristics are low and would result in minimal impacts.

OHV open areas near communities would be considered and encouraged for leasing under authority of the R&PP, to allow local management of OHV play areas. Generally, these areas would include previously disturbed areas and would be considered on a case-by-case basis. The non-WSA lands managed for wilderness characteristics do not include areas where this type of cross-country use has been occurring and such use would not be consistent with management goals and objectives of the non-WSA areas.

In the remainder of the non-WSA lands not managed for wilderness characteristics, there would be 5,700 acres designated as open (Factory Butte Play Area), 564,050 acres limited to designated routes and 34,250 acres closed to motorized use. The Proposed RMP would designate four areas to be managed as open OHV play areas; including 5,700 acres within the Muddy Creek/Crack Canyon non-WSA lands with wilderness characteristics area. Cross-country motorized travel in these non-WSA lands would continue to result in surface disturbance to soils and vegetation, altering the landscape and diminishing the natural character of these non-WSA lands. Further, the presence and noise of motorized vehicles would degrade visitors' opportunity for solitude and would conflict with opportunities for primitive and unconfined recreation activities. The Factory Butte Play Area would be within the Factory Butte SRMA (24,400 acres). Management prescriptions for the SRMA (Appendix 18), establish Recreation Management Zones to accommodate various user groups. Educating visitors of these motorized and non-motorized opportunities would reduce conflicts and continue to provide non-motorized opportunities within the Landmarks RMZ.

Under the Proposed RMP, OHV use would be limited to designated routes in 564,050 acres (93%) of the remaining non-WSA lands with wilderness characteristics. In these areas, 25.1 miles of routes would be designated as shown in Table 4-32.

Limiting OHV use would confine to designated routes the soil and vegetation disturbance caused by motor vehicles, resulting 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 visitors' opportunity to find solitude in these areas, especially in proximity to the routes. These impacts to solitude would be short-term, while vehicles were in the area and reduce as visitors move away from the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in these non-WSA areas.

Under the Proposed RMP, motor vehicles would be allowed to pull off of a designated route as far as 50 feet to either side of the centerline (for parking/staging). Motor vehicles would be allowed to use existing spur routes for ingress and egress to established campsites within 150 feet of the centerline of designated routes but would be prohibited from traveling between multiple campsites, establishing motorized play areas and race tracks, or traveling across wet meadows or riparian areas. These actions would allow for parking and camping while confining the area in which soil and vegetation disturbance would occur, resulting in limited change to the natural character of the non-WSA lands.

The Proposed RMP would designate as closed to OHV use 34,250 acres (6%) within 5 of the non-WSA areas not proposed for management of wilderness characteristics (Table 4-33).

Table 4-33. Acres Closed to OHVs in Non-WSA Lands Not Proposed for Management of Wilderness Characteristics in the Proposed RMP

Non-WSA Area Name	Acres Closed
Dirty Devil/French Spring	27,500 acres
Fremont Gorge	1,500 acres
Horseshoe Canyon South	100 acres
Labyrinth Canyon	50 acres
Mount Ellen—Blue Hills	400 acres
Muddy Creek/Crack Canyon	4,700 acres

Some of these non-WSA lands with wilderness characteristics areas are located in SRMAs that are being managed for primitive and unconfined recreational experiences. Other areas as closed because of other resource management decisions.

Because these areas would be closed, no routes would be designated; surface disturbance caused by motorized travel and the resultant impacts to the natural character of the non-WSA areas would not occur. Further, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

OHV open areas near communities would be considered and encouraged for leasing under authority of the R&PP, to allow local management of OHV play areas. Generally, these areas would include previously disturbed areas and would be considered on a case-by-case basis. If an R&PP open area was leased and overlapped non-WSA areas, the action would continue to degrade the natural character of the non-WSA lands with wilderness characteristics, by allowing the surface-disturbing activity from motorized vehicles to continue. The action would also conflict with solitude and primitive recreation experiences because of the sights and sounds of vehicle travel.

Impacts from Lands and Realty

Land Tenure Adjustments

There would be no impacts to the 12 non-WSA areas managed for wilderness characteristics (78,600 acres) from land tenure adjustments. There are no parcels within these areas that have been identified for FLPMA Section 203 sales. Furthermore, the management objectives for the non-WSA lands include retaining the public lands in Federal ownership.

Impacts within the remaining non-WSA areas not proposed for management of wilderness characteristics would be the same as those described under Alternative A. Three parcels (600 acres) of land in the Notom Bench, Red Desert and Dogwater Creek non-WSA areas not managed for wilderness characteristics would be available for FLPMA Section 203 sales: One parcel in the Notom Bench area (80 acres), one parcel in the Red Desert area (160 acres), and one parcel in the Dogwater Creek area (360 acres). All three parcels are interspersed with private lands adjoining the Capitol Reef National Park boundary. Disposal of these lands would take them out of public ownership and allow for development and surface disturbing activities out of BLM's control. The wilderness characteristics could be foregone because the lands would no longer be under BLM control.

Withdrawals

No withdrawals are proposed within the 12 non-WSA areas managed for wilderness characteristics (78,600) acres. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. As of May 2007, there have been no surface disturbing actions within these non-WSA lands from recent mining related activity.

Within the remaining non-WSA lands not managed for wilderness characteristics, portions of two non-WSA areas would be recommended for withdrawal from mineral entry: Fremont Gorge (1,500 acres) for the protection of the Fremont Gorge Wild and Scenic River Segment, and Muddy Creek/Crack Canyon (2,200 acres) for the protection of the North Caineville ACEC. These 3,700 acres comprise less than 1% of all non-WSA lands. The withdrawal would continue to 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. Wilderness characteristics would be preserved, and naturalness would not be impacted because mining activities would be precluded on these lands. The remaining non-WSA lands not managed for wilderness characteristics, which would be open to mineral entry, would have the same impacts as those described under Alternative N.

Rights-of-Way and Other Land Use Authorizations

Within the Proposed RMP, management decisions for the 12 non-WSA units being managed for wilderness characteristics would make these right-of-way avoidance areas. These areas are to be avoided but may be available for location of rights-of-ways with special stipulations if the proposal meets the goals and objectives of other resources and uses in the land use plan. It is expected and assumed that the avoidance areas would protect, preserve, and maintain the natural character of the non-WSA lands managed for wilderness characteristics.

Three of the 12 non-WSA units being managed for wilderness characteristics are located adjacent to current rights-of-way. Two proposed right-of-way corridors which would be 800 feet wide (400 feet on each side of the centerline) occur along the exterior boundaries of the Red Desert and Little Rockies managed areas. The proposed State Highway 24 right-of-way corridor would occur adjacent to the Red Desert managed area. The boundary for this unit was adjusted to exclude the existing powerline, plus a 1,000 foot buffer for future use and expansion. The proposed State Highway 276 right-of-way corridor

would be adjacent to the Little Rockies managed area. The boundary for the Little Rockies managed area is also offset from the Highway and the opposite side of Highway 276 does not include managed non-WSA lands. The Notom Bench unit is adjacent to the Notom Road and existing powerline right-of-way. The boundary of the unit was adjusted to exclude the existing powerline, plus a 1,000 foot buffer for future use and expansion. Maintenance and use of these existing facilities have not impacted the natural condition of these areas and these uses would continue. Placement of future utility rights-of-way within these corridors could impact the wilderness characteristics along the exterior boundaries. The extent of the impact would vary depending upon the type of facilities proposed. The future use of these rights-of-way along the boundary would not be expected to impact the area as a whole.

The 12 non-WSA units being managed for wilderness characteristics would be available for other land use authorizations (such as film permits, leases and easements) if the use associated with this authorization is compatible with other decisions throughout the RMP. Activities would be analyzed on a case-by-case basis and must be in conformance with the goals and objectives of the non-WSA lands, i.e. naturalness, OHV area designation, VRM management class.

Within the remaining non-WSA lands not managed for wilderness characteristics in the Proposed RMP, two proposed right-of-way corridors which would be 800 feet wide (400 feet on each side of the centerline) would overlay slivers of the exterior boundaries of six non-WSA lands with wilderness characteristics areas. The proposed State Highway 24 right-of-way corridor would overlay the Wild Horse Mesa, Red Desert and Fremont Gorge non-WSA lands with wilderness characteristics. The proposed State Highway 62 right-of-way corridor would overlay slivers of Rocky Ford, Phonolite Hill, and Kingston Ridge non-WSA lands with wilderness characteristics. Placement of future utility rights-of-way within these corridors could impact the wilderness characteristics along the exterior boundaries by creating surface disturbing activities (and possibly placing surface facilities) that would no longer maintain the wilderness characteristics values in those linear corridors. The extent of the impact would vary depending upon the type of facilities proposed.

Under the Proposed RMP, 63,103 acres in six non-WSA lands with wilderness characteristics not proposed for management of wilderness characteristics areas would be protected in part from surface-disturbing activities because they would be within ROW avoidance/exclusion areas (Table 4-34). These areas would be avoided but might be available for location of ROWs with special stipulations if the proposal met the goals and objectives of other resources and uses in the LUP. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Table 4-34. Acres of Avoidance/Exclusion for Rights-of-Way in Non-WSA Lands Not Managed for Wilderness Characteristics in the Proposed RMP

Name of Non-WSA Land with Wilderness Characteristics	Proposed RMP
Dirty Devil/French Spring	57,500
Flat Tops	3
Fremont Gorge	1,500
Horseshoe Canyon South	1,500
Mount Ellen/Blue Hills	300
Muddy Creek/Crack Canyon	3,800
Total Acres of Avoidance Areas	**64,603**

Non-WSA lands not managed for wilderness characteristics that would remain available for granting of ROWs include all of 18 areas and portions of 6 areas, totaling 539,397 acres. Any surface-disturbing

activity or placement of permanent visible facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

Impacts to non-WSA lands not managed for wilderness characteristics from issuance of other land use authorizations would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

There would be no impact to the 12 non-WSA lands with wilderness characteristics managed for wilderness characteristics (78,600 acres) from oil and gas leasing or geophysical exploration activities. The lands would be open to leasing subject to major constraints (NSO).

Lands open to leasing within the remaining non-WSA lands with wilderness characteristics are listed in Table 4-28. There are 604,000 acres of non-WSA lands with wilderness characteristics within the RFD areas that would not be managed for wilderness characteristics. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequently impact solitude and opportunities for primitive recreation. Under the Proposed RMP, 142,500 acres, 21% of the non-WSA lands with wilderness characteristics not managed for wilderness characteristics would be open to leasing subject to major constraints (NSO) on the future leases or closed to leasing. If developed, there could be impacts to wilderness characteristics from current leases. There would be no impact to wilderness characteristics from oil and gas activities within these areas from future leases. The remaining non-WSA lands with wilderness characteristics not managed for wilderness characteristics areas (540,100 acres) would remain open to leasing and exploration and development as open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). This acreage comprises about 79% of non-WSA lands with wilderness characteristics in the RFD areas. In RFD Areas 1 and 2, 438,800 acres of the total 604,000 acres of the non-WSA wilderness lands with wilderness characteristics areas not being managed for wilderness characteristics would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). The other 84,700 acres are either closed to leasing or open to leasing subject to major constraints (NSO): 61,300 acres in Dirty Devil/French Spring (46% of the total of this non-WSA lands with wilderness characteristics area); 1,500 acres in Fremont Gorge (9%); 3,600 acres in Horseshoe Canyon South (17%); 2,300 acres in Mount Ellen—Blue Hills (5%); 1,300 acres in Mount Hillers (72%); 2,300 acres in Mount Pennell (4%); and 3,800 acres in Muddy Creek/Crack Canyon (6%). It is assumed that the various waivers, exceptions, and modifications under the NSO stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

The Flat Tops and Dirty Devil/French Spring non-WSA lands with wilderness characteristics areas have the greatest percentage of lands leased at this time. Given that the projection for drilling for oil and gas is 3 wells per year for the entire RFD area, and that the non-WSA lands with wilderness characteristics that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) make up 21% of the RFD area, 1 well per year—or 15 wells during a 15-year period—could be drilled within any of these open non-WSA areas. Because well projections under the Proposed RMP are the same as under Alternative N, and because the same percentage of lands in the RFD area generally encompass non-WSA lands with wilderness characteristics under both alternatives, the same analysis would be applied: 1 well per year in this area, or 12 wells during the 15-year RFD scenario. However, one difference under the Proposed RMP is that about half of the acreage for Dirty Devil/French Spring and about 72% of the Mount Hillers non-WSA areas would be closed to leasing or open to leasing subject to major constraints (NSO). This management for the protection of other resources would indirectly protect these non-WSA areas from surface-disturbing activities associated with oil and gas

activities. Therefore, wilderness characteristics values of naturalness and outstanding opportunities for solitude and primitive recreation would be preserved in these areas.

In RFD Area 3, all five non-WSA areas not managed for wilderness characteristics would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). Because well projections under the Proposed RMP are the same as under Alternative N, and because the same percentage of lands in the RFD area generally encompass these non-WSA lands with wilderness characteristics under both alternatives, the same analysis would be applied: Two wells over the 15-year RFD scenario.

The types of impacts for geophysical activities would be the same as those described under Alternative N. Geophysical exploration activities would be authorized for all non-WSA areas not managed for wilderness characteristics, subject to the oil and gas leasing categories identified above.

Leasable Minerals—Geothermal

None of the 12 Non-WSA lands (78,600 acres) being managed for wilderness characteristics in the proposed RMP would be impacted by Geothermal leasing. The lands would be open to leasing subject to major constraints (NSO); however, these areas do not have high potential for geothermal resources. Geothermal resources are subject to the oil and gas leasing restrictions with some exceptions. It is assumed that the exceptions would likely not be granted because the activities would not be compatible with other resource goals and objectives in these areas.

About two-thirds of the Kingston Ridge non-WSA lands which are not proposed for management protection of wilderness characteristics overlie a high potential area for geothermal resources. Impacts to the Kingston Ridge Non-WSA unit (10,200 acres) would be the same as described under Alternative N.

Leasable Minerals—Coal

Of the 12 Non-WSA units being managed for wilderness characteristics under the Proposed RMP, portions of Mount Pennell, Mount Ellen/Blue Hills and Wildhorse Mesa are likely to contain surface and subsurface coal. Other Non-WSA units not being managed for wilderness characteristics which may overlie mineable coal are Limestone Cliffs and Rock Canyon. Impacts to wilderness characteristics in these Non-WSA units would be the same as described under Alternative N.

Non-Energy Solid Leasable Minerals

Of the 12 Non-WSA units being managed for wilderness characteristics under the Proposed RMP, portions of Labyrinth Canyon. Horseshoe Canyon South and Dirty Devil/French Springs contain the highest potential for sodium or potassium occurrence. Impacts to wilderness characteristics in these Non-WSA units would be the same as described under Alternative N.

Locatable Minerals

Under the Proposed RMP, the 12 Non-WSA units being managed for wilderness characteristics will be open to locatable mineral entry. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. Impacts would be the same as described under Alternative N.

Salable Minerals

None of the 12 Non-WSA lands (78,600 acres) being managed for wilderness characteristics in the Proposed RMP would be impacted by Salable Minerals. These lands would have NSO stipulations to salable mineral disposal. It is assumed that the various waivers, exceptions, and modifications under the

NSO stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

For the remaining non-WSA lands not being managed for wilderness characteristics, impacts would be similar to those described under Alternative N. These areas would remain open to salable mineral disposal under standard conditions or minor constraints. Where surface disturbance would occur, naturalness and opportunities for primitive recreation and solitude would be foregone.

Impacts from Special Designations

Wild and Scenic Rivers

Under the PRMP/FEIS, five miles of the Fremont River is designated as suitable for inclusion in the Wild and Scenic Rivers System with a tentative classification of Wild. This five mile segment passes through the Fremont Gorge Non-WSA lands with wilderness characteristics which are not being managed for wilderness characteristics. The protective management for the Wild and Scenic River segment to preserve its outstanding remarkable values would limit or prevent uses and surface disturbances that would detract from the natural character of the Fremont Gorge Non-WSA lands within the wild and scenic river corridor. Protection of river values would prevent uses and surface disturbances that would detract from the natural character of the Fremont Gorge non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile from the high water mark on each bank of the river segment).

Areas of Critical Environmental Concern

Under the Proposed RMP, none of the 12 non-WSA lands being managed for wilderness characteristics are located in the areas where the Proposed RMP would designate ACECs. A portion (2,200 acres) of the Muddy Creek/Crack Canyon non-WSA lands with wilderness characteristics area lies within the 2,200 acre potential North Caineville Mesa ACEC. This non-WSA area would not be managed for wilderness characteristics but would benefit indirectly from the ACEC designation. As a result of the management prescriptions for the ACEC, these non-WSA lands with wilderness characteristics would be closed to OHV use, open to leasing subject to major constraints (NSO), unavailable for livestock grazing, identified as unsuitable for surface coal mining, identified to acquire inholdings from willing sellers, and recommended for withdrawal from mineral entry. These prescriptions would prevent surface disturbances, limit motorized uses, and protect the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within 660 feet of natural springs, to protect water quality and riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres under Alternative C, compared to Alternative N or A or the Proposed RMP.

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface disturbance or occupancy would be permitted within approximately 660 feet (based on geo-hydrological, riparian, and other factors) of natural springs to protect riparian vegetation. The effects on the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics would therefore occur on fewer acres under Alternative C, compared to Alternative N or A or the Proposed RMP.

Alternative C proposes to treat an average of 26,000 acres of vegetation annually, using only natural processes. The types of impacts that natural vegetation treatments methods would have on naturalness and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics as would be similar to those described under Alternative N, although less potential area would be affected under Alternative C. Applied over time, Alternative C would not result in enough disturbance to support disturbance-based ecosystems.

Impacts from Cultural Resources

Impacts would be the same as those described under the Proposed RMP.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N. Under Alternative C, 163,765 acres would be designated as VRM Class I or II in all or parts of 18 non-WSA lands with wilderness characteristics areas, protecting the natural character of those lands. Conversely, 518,835 acres would be designated as VRM Class III or IV, possibly adversely impacting the wilderness characteristics because the objectives of these classes would allow moderate or major modification to the landscape.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as described under Alternative A, with the exception that habitat manipulations to benefit bison and mule deer would use only prescribed fire and biological methods, thereby continuing to protect the naturalness of the non-WSA areas and the opportunities for solitude and primitive recreation. Construction of new range projects that would benefit wildlife could impair the natural character of small areas (generally less than 5 acres) in the non-WSA lands with wilderness characteristics. Such projects could include water developments and fencing of riparian areas.

Under Alternative C 8,200 acres in the Mount Ellen—Blue Hills non-WSA area and 25,400 acres in the Ragged Mountain non-WSA area would be closed to OHV use, to protect crucial bison habitat. This closure would help to maintain the opportunities for solitude and primitive recreation within the non-WSA lands with wilderness characteristics.

Impacts from Wild Horses and Burros

The types of impacts experienced as a result of wild horse and burro management would be similar to those described under the Proposed RMP, except that herd size would be doubled (as would AUM allocations) in the Canyonlands HMA. This management would provide greater opportunities for viewing wild burros, possibly enhancing primitive recreation experiences.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative C, no specific actions would be prescribed to directly protect the naturalness and opportunities for solitude or primitive recreation of the non-WSA areas, resulting in no specific benefits to non-WSA lands.

Impacts from Forestry and Woodland Products

Alternative C would preclude commercial timber harvest within all non-WSA lands with wilderness characteristics, so impacts associated with these activities would not occur in the non-WSA lands. However, commercial and non-commercial use of forest and woodland products and commercial live plant and seed collection would continue to be allowed on all non-WSA lands with wilderness characteristics. Impacts associated with such permitted activities would be the same as those described under Alternative A.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

ERMAs

Impacts would be the same as those described under Alternative A.

SRMAs

Three of the proposed SRMAs would overlap portions of 14 non-WSA lands with wilderness characteristics areas. There would be 327,560 acres (or 48%) of non-WSA lands within the three SRMAs.

The Dirty Devil/Robbers Roost SRMA would be managed the same as under Alternative A, except that an additional 16,930 acres within the Fiddle Butte non-WSA lands with wilderness characteristics would be incorporated into the SRMA. The subsequent analysis of impacts and protection of the non-WSA lands would be the same as under Alternative A, although the acreage would be augmented.

Under Alternative C, management of the Capitol Reef Gateway SRMA would be different than under the Proposed RMP, in that the interior of the SRMA would be managed to protect its naturalness and primitive recreation opportunities under Alternative C. The 7,770 acres of the Fremont Gorge non-WSA lands with wilderness characteristics that fall within this SRMA would be complemented by this management. The wilderness characteristics values of these non-WSA lands would be protected.

The 533,900 Henry Mountains SRMA would have mixed management strategies for recreational opportunities, as the SRMA would under the Proposed RMP. The same non-WSA lands and acreage would overlap this SRMA under both alternatives, and the same general management would be prescribed. Therefore, the same impacts described for the Proposed RMP would be applicable under Alternative C.

Impacts from Travel Management

Under Alternative C, no non-WSA lands with wilderness characteristics would be designated as open for cross-country travel. OHV use would be limited to designated routes in 473,100 acres (69%) of the 29 non-WSA lands with wilderness characteristics areas. In these areas, 99.7 miles of routes would be designated (Table 4-35).

Table 4-35. OHV Route Designations in Non-WSA Lands with Wilderness Characteristics, Alternative C

Non-WSA Area Name	Miles of Routes
Bull Mountain	0.5 miles
Bullfrog Creek	6.6 miles

Non-WSA Area Name	Miles of Routes
Dirty Devil/French Spring	13.3 miles
Dogwater Creek	0.1 miles
Fiddler Butte	0 miles
Flat Tops	7.5 miles
Fremont Gorge	11.3 miles
Horseshoe Canyon South	0 miles
Jones Bench	0 miles
Kingston Ridge	2.6 miles
Labyrinth Canyon	0 miles
Limestone Cliffs	14 miles
Little Rockies	3.9 miles
Long Canyon	2 miles
Mount Ellen—Blue Hills	2.2 miles
Mount Hillers	0 miles
Mount Pennell	1.8 miles
Muddy Creek/Crack Canyon	2.7 miles
Mussentuchit Badlands	0 miles
Notom Bench	0.8 miles
Phonolite Hill	8.2 miles
Pole Canyon/Hunter Spring	9.6 miles
Ragged Mountain	1.1 miles
Red Desert	1.6 miles
Rock Canyon	1.2 miles
Rocky Ford	2.3 miles
Sweetwater Reef	2.8 miles
Wild Horse Mesa	3.6 miles
Wildcat Knolls	0 miles

Limiting OHV use would confine to designated routes the soil and vegetation disturbance caused by motor vehicles, resulting in no additional change to the natural character of the non-WSA lands. However, the presence and noise of vehicles using these routes would reduce visitors' opportunity to find solitude in the non-WSA areas, especially in proximity to the routes. Motorized uses would conflict with primitive and unconfined recreation opportunities sought in the non-WSA areas.

Under Alternative C, motor vehicles would be allowed to pull off of a designated route as far as 25 feet to either side of the centerline (for parking/staging). Campsites would be designated for motor vehicle use, where compatible with other resources and resource uses. Motorized travel between multiple campsites, establishment of motorized play areas or race tracks, and travel across wet meadows or riparian areas would be prohibited. These actions would allow for parking and camping while confining the area in

which soil and vegetation disturbance would occur, resulting in limited change to the natural character of the non-WSA lands.

Alternative C would designate as closed to OHV use 209,500 acres (31%) within 12 of the 29 non-WSA lands with wilderness characteristic areas (Table 4-36).

Table 4-36. Acres Closed to OHVs in Non-WSA Lands with Wilderness Characteristics, Alternative C

Non-WSA Area Name	Acres Closed
Dirty Devil/French Spring	60,000 acres
Fiddler Butte	12,000 acres
Fremont Gorge	6,700 acres
Horseshoe Canyon South	2,900 acres
Limestone Cliffs	400 acres
Little Rockies	3,600 acres
Mount Ellen—Blue Hills	8,200 acres
Mount Pennell	45,300 acres
Muddy Creek/Crack Canyon	20,200 acres
Ragged Mountain	25,400 acres
Wild Horse Mesa	24,500 acres
Wildcat Knolls	300 acres

Because these areas would be closed, no routes would be designated; surface disturbance caused by motorized travel (and the resultant impacts to the natural character of the non-WSA areas) would not occur. Furthermore, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

Under Alternative C, requests for R&PP leases for OHV open play areas would not be considered, and use of game carriers would not be allowed off of designated routes. These actions would protect the natural character of the non-WSA lands with wilderness characteristics because no new surface-disturbing activity from motorized vehicles would be allowed.

Impacts from Lands and Realty

Land Tenure Adjustments

Impacts would be similar to those described under Alternative N. No lands would be considered for FLPMA Section 203 sales under Alternative C.

Withdrawals

Portions of 12 non-WSA lands with wilderness characteristics would be recommended for withdrawal from mineral entry: Dirty Devil/French Spring (34,100 acres), Fiddler Butte (10,800 acres), Fremont Gorge (3,400 acres), Little Rockies (11,600 acres), Mount Ellen—Blue Hills (6,200 acres), Mount Hillers (1,200 acres), Mount Pennell (11,400 acres), Muddy Creek/Crack Canyon (14,300 acres), Ragged Mountain (15,700 acres), Red Desert (600 acres), Wild Horse Mesa (1,600 acres), and Wildcat Knolls

(100 acres). These 110,900 acres that would be recommended for withdrawal from mineral entry comprise 16% of all non-WSA lands with wilderness characteristics. The withdrawal would continue to 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. Wilderness characteristics would be preserved, and naturalness would not be impacted because mining activities would be precluded on these lands. The other 84% of non-WSA lands, which would be open to mineral entry, would have the same impacts as described under Alternative N.

Rights-of-Way and Other Land Use Authorizations

Impacts from ROW corridors would be the same as those described under Alternative A.

Non-WSA lands with wilderness characteristics that would remain available for granting of ROWs would include all of 6 areas and portions of 22 areas, totaling 370,432 acres. Any surface-disturbing activity or placement of permanent facilities would detract from the natural character of the area and disrupt the setting needed to support primitive forms of recreation.

Under Alternative C, 312,168 acres in 23 non-WSA lands with wilderness characteristics areas would be protected, in whole or in part, from surface-disturbing actives because they would be within ROW avoidance areas (Table 4-27). All or portions of the Bull Mountain, Dirty Devil/French Spring, Dogwater Creek, Fiddler Butte, Flat Tops, Fremont Gorge, Horseshoe Canyon South, Jones Bench, Kingston Ridge, Labyrinth Canyon, Limestone Cliffs, Little Rockies, Mount Ellen—Blue Hills, Mount Hillers, Mount Pennell, Muddy Creek/Crack Canyon, Notom Bench, Phonolite Hill, Ragged Mountain, Red Desert, Rocky Ford, Wild Horse Mesa, and Wildcat Knolls non-WSA lands with wilderness characteristics would be within the ROW avoidance areas. These areas would be avoided but might be available for location of ROWs with special stipulations, if the proposal met the goals and objectives of other resources and uses in the LUP. It is expected and assumed that the avoidance areas would protect the natural character of the non-WSA lands in these areas.

Impacts from issuance of other land use authorizations would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to leasing within non-WSA lands with wilderness characteristics are listed in Table 4-28. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequently would impact opportunities for primitive recreation and solitude. Under Alternative C, 69% of non-WSA lands would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) and 31% would be open to leasing subject to major constraints (NSO) or closed to leasing. The types of impacts experienced as a result of oil and gas activities would be the same as those described under Alternative N.

All or portions of 27 non-WSA lands with wilderness characteristics areas would remain open to leasing and development as open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 682,600 acres of non-WSA lands with wilderness characteristics within the RFD areas. Of these, 469,200 acres are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). This acreage comprises about 69% of non-WSA areas. Thirty-one percent (213,700 acres) of the non-WSA lands with wilderness characteristics spread among 18 areas would be open to leasing subject to major constraints (NSO) on the future leases or closed to leasing. Two of those non-WSA areas (Dogwater Creek and

Notom Bench) would be completely closed to leasing, thus fully protecting the wilderness characteristics values from surface disturbance associated with oil and gas exploration and development.

In RFD Areas 1 and 2, all or portions of 22 non-WSA land with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). There are 645,800 acres of non-WSA lands with wilderness characteristics within the combined RFD areas. Of these, 432,600 acres in 16 non-WSA areas would be open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). The remaining 213,200 acres would be closed to leasing or open to leasing subject to major constraints (NSO): 62,500 acres in Dirty Devil/French Spring (47% of this non-WSA area); 3,500 acres in Dogwater Creek (100%); 17,300 acres in Fiddler Butte (88%); 3,000 acres in Fremont Gorge (19%); 3,300 acres in Horseshoe Canyon South (16%); 15,600 acres in Little Rockies (67%); 17,800 acres in Mount Ellen—Blue Hills (36%); 1,100 acres in Mount Hillers (61%); 17,900 acres in Mount Pennell (27%); 17,700 acres in Muddy Creek/Crack Canyon (29%); 8,000 acres in Notom Bench (100%); 1,000 acres in Phonolite Hill (13%); 15,400 acres in Ragged Mountain (59%); 2,300 acres in Red Desert (6%); 400 acres in Rocky Ford (6%); and 26,400 acres in Wild Horse Mesa (53%). These non-WSA lands that are open to leasing subject to major constraints (NSO) or closed to leasing comprise approximately 33% of the non-WSA lands with wilderness characteristics in this combined RFD area. It is assumed that the various waivers, exceptions, and modifications under the NSO stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas.

At this time, the Flat Tops and Dirty Devil/French Spring non-WSA lands with wilderness characteristics areas would have the greatest percentage leased. Given that the projection for drilling for oil and gas is 3 wells per year for the entire RFD area, and that the non-WSA lands with wilderness characteristics that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU) make up 17% of the RFD area, one well per year—or 15 wells over a 15-year period—could be drilled within the 22 non-WSA areas that are open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU). Although well projections under Alternative C are the same as those under Alternative N, 8% fewer non-WSA lands are available for oil and gas surface occupancy under Alternative C. Thirty-three percent of the non-WSA areas would be protected from surface-disturbing activities associated with oil and gas exploration and development, thereby preserving the naturalness and outstanding opportunities for solitude and primitive recreation in these areas. Sixty-six percent of the lands would be available for oil and gas exploration and development. However, this area has a low activity level (development potential); the same analysis as under Alternative N would be applied in these non-WSA areas: 1 well per year, or 12 wells during the 15-year RFD scenario. However, one difference under Alternative C is that two areas would be completely protected because they would be closed to leasing, and five areas would have well over 50% of their acreage protected.

In RFD Area 3, all of five non-WSA lands with wilderness characteristics areas would remain open to leasing subject to the standard terms and conditions or open to leasing subject to moderate constraints (TL, CSU), with the exception of 200 acres in Wildcat Knolls that would be closed to leasing. Because well projections under Alternative C would be the same as under Alternative N, and because the same percentage of lands in the RFD area would generally encompass non-WSA lands with wilderness characteristics under both alternatives, the same analysis (two wells during the 15-year RFD scenario) would be applicable.

Impacts for geophysical activities would be the same as those described under Alternative N.

Leasable Minerals—Geothermal

Impacts would be the same as described those described under Alternative N.

Leasable Minerals—Coal

Under Alternative C, 9,270 acres of non-WSA lands with wilderness characteristics, underlain by coal resources suitable for leasing, would be closed to leasing. This acreage includes 8,120 acres within the Mount Pennell non-WSA area (1,690 acres identified for surface mining; 6,430 acres identified for subsurface mining) and 1,150 acres within the Mount Ellen—Blue Hills non-WSA area (610 acres identified for surface mining; 540 acres identified for subsurface mining). All other non-WSA areas with coal resources suitable for leasing could be leased and mined, pending a leasing EIS and further analysis. If leased, 3,230 acres in Mount Ellen—Blue Hills; 4,320 acres in Mount Pennell; and 82 acres in Wild Horse Mesa non-WSA lands could be available for leasing by surface mining methods. Surface mining for the coal resources would entail strip mining operations. Impacts to the wilderness characteristics values would be the same as those described under Alternative N or A or the Proposed RMP. As much as 6% of the Mount Ellen—Blue Hills non-WSA area, as much as 7% of the Mount Pennell non-WSA area, and less than 1% of the Wild Horse Mesa non-WSA area could forego their wilderness characteristics if the total surface coal resource was mined.

In addition to the surface coal resource, both Mount Pennell and Mount Ellen—Blue Hills have subsurface coal resources found suitable for mining. If leased, an additional 4,440 acres in the Mount Ellen—Blue Hills and 18,770 acres in Mount Pennell non-WSA lands could be available for leasing by subsurface mining methods. In the Emery coal field, underground coal resources suitable for leasing by underground mining methods encompass 3,970 acres in the Limestone Cliffs and 64 acres in the Rock Canyon non-WSA lands with wilderness characteristics. The same impacts for subsurface mining described under Alternative N would occur in areas available for coal leasing under Alternative C.

Exploration activities for coal resources could be authorized within any of the non-WSA lands with wilderness characteristics. These activities could include the use of cross-county travel with drilling rigs and field crews, for not more than 2 years, in an identified area. This activity could cause tracks from motorized use, crushed vegetation and compacted soil, and other surface disturbances. Pad construction might be an outcome from deep drilling. This disturbance would be temporary and reclamation would be required. However, during the time that the exploratory activities were occurring, opportunities for solitude and primitive recreation would be affected in the short term, and naturalness would be impacted until the area was reclaimed.

Non-Energy Solid Leasable Minerals

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Impacts would be similar to those described under Alternative N, except that all or portions of 27 non-WSA lands with wilderness characteristics areas would remain open to salable mineral disposal under standard conditions or minor constraints. Of the 682,600 acres of non-WSA lands with wilderness characteristics, 469,200 acres would be open under standard terms or minor constraints. This acreage comprises about 69% of non-WSA areas.

Thirty-one percent (213,700 acres) of non-WSA lands with wilderness characteristics spread among 18 areas would have a NSO stipulation on the future leases, or would be closed to leasing. It is assumed that the various waivers, exceptions, and modifications under the NSO stipulation would not be granted because they would not be compatible with other resource goals and objectives in these areas. Two of the non-WSA areas (Dogwater Creek and Notom Bench) would be completely closed to leasing, thus fully

protecting the wilderness characteristics values from surface disturbance associated with mineral material disposal.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative C, 4 of the 29 non-WSA lands with wilderness characteristics areas would intersect with suitable WSR segments, totaling 33.35 miles in those 4 areas. Under this alternative, 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 5 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capitol Reef National Park to Caineville Ditch Diversion), and 1.4 miles of Maidenwater Creek would be managed to preserve WSR suitability. Protection of river values would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert, and Little Rockies non-WSA lands with wilderness characteristics areas within the half-mile river corridor (one-quarter mile of the high water mark on each bank of the river segment).

Areas of Critical Environmental Concern

Under Alternative C, 16 ACECs would be designated to protect a variety of relevant and important values; 11 of those ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs are Badlands, Bull Creek, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Quitchupah, and Thousand Lakes Bench. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all non-WSA lands within the ACECs.

Portions of the Mount Ellen—Blue Hills (6,214 acres), Muddy Creek/Crack Canyon (17,719 acres), Red Desert (834 acres), and Wild Horse Mesa (10,597 acres) non-WSA lands with wilderness characteristics lie within the 88,900 acre potential Badlands ACEC. These non-WSA lands with wilderness characteristics would be unavailable for grazing in the areas of North and South Caineville Mesas. Also, Class A scenery would be managed as VRM Class II. The mesa tops would be closed to OHV use, and the remainder of the ACEC would be limited to designated routes. The areas would be closed to leasing for oil and gas, and the Class A scenery outside the Mount Ellen—Blue Hills WSA would be recommended for withdrawal from mineral entry. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The occasional presence and noise of motorized use from vehicles traveling designated routes would reduce opportunities for solitude and conflict with primitive forms of recreation.

A small portion (321 acres) of the Mount Ellen—Blue Hills non-WSA lands with wilderness characteristics lies within the 4,800 acre potential Bull Creek ACEC. Within the non-WSA lands with wilderness characteristics that overlap the ACEC, motorized use would be limited to designated routes. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur only if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes. The management prescriptions would allow fencing for the protection of important cultural sites. These improvements would affect the natural character if placed within the non-WSA lands with wilderness characteristics areas.

Portions of the Dirty Devil/French Spring (58,051 acres), Fiddler Butte (12,027 acres), Flat Tops (8 acres), and Little Rockies (3,190 acres) non-WSA lands with wilderness characteristics lie within the 205,300 acre potential Dirty Devil ACEC. These non-WSA lands with wilderness characteristics would

be designated as VRM Class II in any areas containing Class A scenery, would be unavailable for livestock grazing in Beaver Wash, and would be closed to OHV use or limited to designated trails (to protect scenic values). VRM Class I or II areas would be designated ROW avoidance areas, inholdings would be acquired from willing sellers, Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be open for leasing subject to major constraints (NSO) for oil and gas. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The management prescriptions would allow fencing of riparian areas to exclude livestock, fencing for the protection of important cultural sites, water developments to benefit desert bighorn sheep, and camping facilities. These improvements could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas in which OHV use would be limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur when routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

The Fremont Gorge non-WSA lands with wilderness characteristics (15,941 acres) lie within the 34,300 acre potential Fremont Gorge/Cockscomb ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery, OHV use would be limited to designated routes (to protect scenic values), Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be open leasing subject to major constraints (NSO) for oil and gas. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The management prescriptions would allow fencing for the protection of important cultural sites, possibly affecting the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas in which motorized use would be limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur when vehicles were traveling the designated routes.

All of the Mount Hillers non-WSA lands with wilderness characteristics (1,757 acres) and portions of the Bull Mountain (2,821 acres), Mount Ellen—Blue Hills (17,771 acres), Mount Pennell (45,731 acres), and Ragged Mountain (24,408 acres) non-WSA lands with wilderness characteristics lie within the 288,200 acre potential Henry Mountains ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery and would be closed to OHV use or limited to designated routes. No Man's Mesa would be closed to OHV use, VRM Class I or II areas would be designated ROW avoidance areas, and inholdings would be acquired from willing sellers. The ACEC prescriptions also recommend withdrawing No Man's Mesa and Class A scenery from mineral entry and designating VRM Class II areas and No Man's Mesa as closed to leasing for oil and gas. These management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The management prescriptions would allow for maintenance of erosion control structures, fencing (to protect important cultural sites), and manipulation of habitat and range improvements (to benefit wildlife), all of which could affect the natural character if placed within the non-WSA lands with wilderness characteristics areas. In areas in which motorized use would be limited to designated routes, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would occur when routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

Portions of the Horseshoe Canyon South (2,934 acres) and Labyrinth Canyon (1 acre) non-WSA lands with wilderness characteristics lie within the 40,900 acre (RFO portion only) potential Horseshoe Canyon

ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery and closed to OHV use or limited to designated routes. No new ROWs would be authorized in VRM Class I and II areas, inholdings would be acquired from willing sellers, Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be managed as open to leasing subject to major constraints (NSO) for oil and gas. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The management prescriptions would allow fencing to protect important cultural sites and fencing of riparian areas to exclude livestock. Fencing could affect the natural character if fences were placed within the non-WSA lands with wilderness characteristics areas. In areas in which motorized use would be limited to designated trails, the occasional presence and noise of motorized use would reduce opportunities for solitude and conflict with primitive forms of recreation. This conflict would occur when routes were designated near or within non-WSA lands and when vehicles were traveling the designated routes.

All of the Phonolite Hill (7,908 acres) non-WSA lands with wilderness characteristics and portions of the Kingston Ridge (2,126 acres) and Rocky Ford (6,429 acres) non-WSA lands with wilderness characteristics lie within the 22,100 acre potential Kingston Canyon ACEC. Within the non-WSA lands with wilderness characteristics areas, inholdings in the riparian corridor would be acquired from willing sellers, and motorized use would be limited to designated routes and limited seasonally to protect wildlife habitat. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur only if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion (8,692 acres) of the Little Rockies non-WSA lands with wilderness characteristics lies within the 49,200 acre potential Little Rockies ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery. OHV use would be limited to designated routes, no new ROWs would be authorized in areas containing Class A scenery, inholdings would be acquired from willing sellers, areas containing Class A scenery would be recommended for withdrawal from mineral entry, and VRM Class II areas would be managed as closed to leasing subject to major constraints (NSO) for oil and gas. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and opportunities for solitude and primitive recreation. The management prescriptions would allow range improvements, primarily water developments, to benefit wildlife. If placed within the non-WSA lands with wilderness characteristics areas, these improvements could affect the natural character. The management prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur only if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion (15,778 acres) of the Wild Horse Mesa non-WSA lands with wilderness characteristics area lies within the 16,200 acre (RFO portion only) potential Lower Muddy Creek ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class II in any areas containing Class A scenery and closed to OHV use or limited to designated routes. ROWs would be authorized consistent with VRM Class II objectives, inholdings would be acquired from willing sellers, and the areas would be closed to leasing for oil and gas. These ACEC management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. The management prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of

recreation. This conflict would occur only if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes.

A portion (27 acres) of the Wildcat Knolls non-WSA lands with wilderness characteristics lies within the 180 acre potential Quitchupah ACEC. Within the non-WSA lands with wilderness characteristics that overlap the ACEC, motorized use would be limited to designated routes. This prescription would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur only if routes were designated near the non-WSA lands and when vehicles were traveling the designated routes. The management prescriptions would allow fencing to protect important cultural sites. If placed within the non-WSA lands with wilderness characteristics areas, these improvements could affect the natural character of those lands.

Portions of the Jones Bench (43 acres) and Limestone Cliffs (385 acres) non-WSA lands with wilderness characteristics areas lie within the 500 acre potential Thousand Lakes Bench ACEC. These non-WSA lands with wilderness characteristics would be designated as closed to OHV use or would limit OHV use to designated routes. These prescriptions would limit motorized uses. However, the occasional presence and noise of motorized use would reduce opportunities for solitude and would conflict with primitive forms of recreation. This conflict would occur only when vehicles were traveling the designated routes. The management prescriptions would allow fencing to protect important cultural sites. If placed within the non-WSA lands with wilderness characteristics areas, these improvements could affect the natural character of those lands.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative C.

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under the Proposed RMP.

Impacts from Paleontological Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Under Alternative D, 682,600 acres in all of the 29 non-WSA lands with wilderness characteristics would be designated as VRM Class I, protecting the natural character of those lands and the settings required to support opportunities for solitude and primitive forms of recreation.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative A. However, under Alternative D, surface-disturbing activities would not be permitted on non-WSA lands with wilderness characteristics, thereby protecting those values.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C. However, under Alternative D, habitat manipulations would be limited to fire or biological methods that would not impact the naturalness of the

non-WSA areas or affect the opportunities for solitude and primitive recreation in these areas. In addition, construction of new range projects that benefit wildlife would not be considered unless they meet VRM Class I objectives and meet the goals and objectives of protecting wilderness characteristics values. This management would continue to protect the natural values of the non-WSA lands with wilderness characteristics.

Under Alternative D, all lands within the Mount Ellen—Blue Hills, Bull Mountain, Ragged Mountain, Mount Hillers, and Mount Pennell areas would be closed to OHV use, to protect crucial bison habitat. This closure would help to maintain the opportunities for solitude and primitive recreation within these non-WSA lands with wilderness characteristics.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, all non-WSA lands with wilderness characteristics would be managed by the following prescriptions:

- Designate VRM Class I
- Manage for primitive and semi-primitive non-motorized recreation
- Close to OHV use
- Make unavailable for disposal
- Designate ROW exclusion areas
- Recommend for withdrawal from mineral entry
- Close to leasing for oil and gas
- Close to disposal of salable minerals (mineral materials)
- Make unavailable for further consideration for coal leasing

These prescriptions would prevent surface disturbances that would degrade the natural character of the non-WSA areas, prevent surface disturbances and uses that would be incompatible with primitive recreation activities, and protect the setting needed to support the experience of solitude.

Impacts from Forestry and Woodland Products

Under Alternative D, all 682,600 acres of non-WSA lands with wilderness characteristics in the 29 areas within the RFO would be restricted from commercial and non-commercial timber harvest, commercial and non-commercial use of forest and woodland products, and commercial live plant and seed collection. All wilderness characteristics values would therefore be protected from this activity and would maintain the natural character and opportunities for solitude and primitive recreation.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

ERMAs

Impacts would be similar to those described under Alternative A. However, no large group areas would be designated for campsites and group events in the Mount Pennell non-WSA area, thereby protecting the naturalness and opportunities for solitude and primitive recreation in this area.

SRMAs

Seven of the proposed SRMAs would overlap portions of 24 non-WSA lands with wilderness characteristics areas. There would be 634,070 acres (or 93%) of non-WSA lands within the seven SRMAs. The Capitol Reef, Dirty Devil/French Spring, East Fork Sevier River, Henry Mountains, Labyrinth Canyon, Little Rockies, and San Rafael Swell SRMAs would overlap all of the Bullfrog Creek, Dogwater Creek, Long Canyon, Mount Ellen—Blue Hills, Mount Pennell, Notom Bench, Red Desert, Dirty Devil/French Spring, Fiddler Butte, Flat Tops, Sweetwater Reef, Jones Bench, Kingston Ridge, Phonolite Hill, Rocky Ford, Bull Mountain, Mount Hillers, Ragged Mountain, Horseshoe Canyon South, Labyrinth Canyon, Little Rockies, Muddy Creek/Crack Canyon, and Wild Horse Mesa non-WSA lands with wilderness characteristics areas and about half of the Fremont Gorge non-WSA area.

Under each SRMA, management objectives would be to protect and preserve the wilderness characteristics values of the non-WSA lands. This management would include closing lands to OHV use and providing for primitive recreational experiences. All wilderness characteristics values would therefore be maintained under Alternative D.

Travel Management

Alternative D would designate all 682,600 acres (100%) of the 29 non-WSA lands with wilderness characteristic areas as closed to OHV use. Because these areas would be closed, no routes would be designated; surface disturbance caused by motorized travel, and the resultant impacts to the natural character of the non-WSA areas, would not occur. Further, the opportunities for conflict between primitive forms of recreation and motorized uses in these areas would not occur. The natural character and opportunities for solitude and primitive recreation of these non-WSA areas would be unaffected by OHV travel.

By closing all non-WSA lands with wilderness characteristics to OHV travel, Alternative D would provide the most protection for the naturalness and opportunities for solitude and primitive recreation of these lands.

Impacts from Lands and Realty

Land Tenure Adjustments

Under Alternative D, no non-WSA lands would be considered for sale or other land tenure adjustments because to do so would not be in conformance with the Proposed RMP decisions to protect non-WSA lands with wilderness characteristics. This management would continue to protect and preserve the wilderness characteristics values of these areas.

Withdrawals

Under Alternative D, all 682,600 acres within non-WSA lands with wilderness characteristics would be recommended for withdrawal from mineral entry. This withdrawal would preclude surface-disturbing activities that would be associated with mining and that would impact wilderness characteristics. The withdrawal would continue to preserve the naturalness and opportunities for both solitude and primitive forms of recreation in each of the non-WSA areas, by preventing mining claims and the noise and presence of surface disturbance, people, vehicles, and equipment associated with mining.

Should exploration or development be proposed on the existing mining claims in the 13 non-WSA lands with wilderness characteristics, then those values would be impacted as described under Alternative N.

Rights-of-Way and Other Land Use Authorizations

Under Alternative D, no ROW corridors that would impact non-WSA lands with wilderness characteristics would be designated, and all non-WSA lands would be managed as ROW exclusion areas (Table 4-27). Exclusion from future 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. The same protections would prevent corridor designations within any of the non-WSA lands with wilderness characteristics, thus protecting those values.

Under Alternative D, only land use authorizations that meet this alternative's Proposed RMP objective to protect non-WSA lands with wilderness characteristics would be authorized. Thus, the natural character of these lands would be protected, and the setting needed to support primitive forms of recreation and experiences of solitude would be preserved.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to leasing for oil and gas within non-WSA lands with wilderness characteristics are illustrated in Table 4-28. Exploration and development activities could impact wilderness characteristics through the direct disturbance of the natural terrain and consequent impacts on opportunities for solitude and primitive recreation.

Under Alternative D, all non-WSA lands with wilderness characteristics would be closed to leasing. However, existing leases would still remain in 4 of the 29 non-WSA lands with wilderness characteristics areas. All these leases would be within RFD Areas 1 and 2. Development of these leases could compromise wilderness characteristics values in these areas. The following is a breakdown of how or where that might occur, based on the RFD area and the predicted surface disturbance for oil and gas activity for Alternative D. Those non-WSA lands with wilderness characteristics that are not currently leased (including all of 20 areas in RFD Areas 1 and 2 and all of the areas in RFD Area 3) would be fully protected under the leasing closure of this alternative. This protection would preserve the naturalness of the areas and would maintain the outstanding opportunities for primitive recreation and solitude. When the leases within the four non-WSA areas expire, then those lands would be closed to any new leasing.

In RFD Areas 1 and 2, four non-WSA wilderness characteristics areas have portions under existing leases; these portions comprise 51,510 acres. There are 645,800 acres of non-WSA lands with wilderness characteristics within this combined RFD area. The Flat Tops and Dirty Devil/French Spring non-WSA lands have the greatest percentage of area leased at this time. Given that under Alternative D, the projection for drilling for oil and gas is 45 wells (or about 3 wells per year) for the entire RFD area and that 8% of the lands the RFD area encompasses are in non-WSA lands with wilderness characteristics that are leased (or 2% of the RFD area), 1 well could be drilled within the currently leased non-WSA areas. This action could disturb as much as 12 acres during the life of the plan. The leases, if not developed or held in production, would expire after 10 years. Development of any leases within the non-WSA areas could cause that portion to lose their natural character and opportunities for solitude and primitive recreation because of exploration for and development of oil and gas resources. Because of the small amount of acreage projected to be disturbed and the one well projected for the non-WSA leased lands in this RFD, it is anticipated that only a small portion of any of the non-WSA lands with wilderness characteristics could lose its wilderness characteristics. Far less than one percent of any of the non-WSA areas would be at risk of loss of wilderness characteristics.

In RFD Area 3, all 36,800 acres of non-WSA lands with wilderness characteristics would be closed to leasing. No oil and gas related surface-disturbing activities would be allowed, and wilderness values would be protected.

All non-WSA lands with wilderness characteristics would be closed to geophysical exploration, thereby protecting the wilderness characteristics of these areas.

Leasable Minerals—Geothermal

All non-WSA lands with wilderness characteristics would be closed to geothermal leasing, thereby protecting the wilderness characteristics from surface-disturbing activities.

Leasable Minerals—Coal

Under Alternative D, coal leasing or exploratory activities would not be considered within any non-WSA lands with wilderness characteristics. This management would protect those non-WSA lands with coal resources suitable for leasing (Mount Pennell, Mount Ellen—Blue Hills, Limestone Cliffs, and Rock Canyon) from surface-disturbing activities related to coal resources. Naturalness and opportunities for solitude and primitive recreation would be maintained.

Non-Energy Solid Leasable Minerals

Leasing would not be authorized for non-energy solid leasable minerals, thereby protecting the wilderness characteristics values.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Under Alternative D, 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 leasing closure under this alternative. This management would preserve the naturalness of the areas and would maintain the outstanding opportunities for primitive recreation and solitude.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative D, 4 of the 29 non-WSA land areas intersect with suitable WSR segments, totaling 33.35 miles in those 4 areas. There are 19.31 miles of Dirty Devil River, 0.12 miles of No Man's Canyon, 2.83 miles of Robbers Roost Canyon, 0.13 miles of Sam's Mesa Box Canyon, 1.39 miles of Twin Corral Box Canyon, 5 miles of Fremont River (Fremont Gorge), 3.26 miles of Fremont River (Capitol Reef National Park to Caineville Ditch Diversion), and 1.4 miles of Maidenwater Creek that would be managed to preserve their WSR suitability. Protection of river values would prevent uses and surface disturbances that would detract from the natural character of the Dirty Devil/French Spring, Fremont Gorge, Red Desert, and Little Rockies non-WSA lands with wilderness characteristics within the half-mile river corridor (one-quarter mile of the high water mark on each bank of the river segment).

Alternative D would provide the most long-term protection of the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics because it recommends the most miles of waterways for protection in the NWSRS. However, Alternative D would also allow for specific management to protect non-WSA lands with wilderness characteristics, in addition to management of the suitable WSRs.

Areas of Critical Environmental Concern

Under Alternative D, 16 ACECs would be designated to protect a variety of relevant and important values; 11 of these ACECs would overlay non-WSA lands with wilderness characteristics. Those ACECs

are Badlands, Bull Creek, Dirty Devil, Fremont Gorge/Cockscomb, Henry Mountains, Horseshoe Canyon, Kingston Canyon, Little Rockies, Lower Muddy Creek, Quitchupah, and Thousand Lakes Bench. The management prescriptions for these ACECs would protect naturalness and opportunities for solitude and primitive recreation in all the non-WSA lands within the ACECs.

Portions of the Mount Ellen—Blue Hills (6,214 acres), Muddy Creek/Crack Canyon (17,719 acres), Red Desert (834 acres), and Wild Horse Mesa (10,597 acres) non-WSA lands with wilderness characteristics lie within the 88,900 acre potential Badlands ACEC. These non-WSA lands with wilderness characteristics would be unavailable for grazing in the areas of North Caineville Mesa and South Caineville Mesa, would allow no fencing or other surface-disturbing activities, would be designated as VRM Class I, and would be closed to leasing for oil and gas. Furthermore, the mesa tops and wilderness characteristics lands would be closed to OHV use and the remainder of the ACEC would be limited to designated routes; and the wilderness characteristic lands and Class A scenery outside the Mount Ellen—Blue Hills WSA would be recommended for withdrawal from mineral entry. These management prescriptions would reduce surface disturbances and limit motorized uses, thereby protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

A small portion (321 acres) of the Mount Ellen—Blue Hills non-WSA lands with wilderness characteristics lies within the 4,800 acre potential Bull Creek ACEC. The non-WSA lands with wilderness characteristics would be closed to OHV use, and no fencing or other surface-disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

Portions of the Dirty Devil/French Spring (58,051 acres), Fiddler Butte (12,027 acres), Flat Tops (8 acres), and Little Rockies (3,190 acres) non-WSA lands with wilderness characteristics lie within the 205,300 acre potential Dirty Devil ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, would be unavailable for livestock grazing in Beaver Wash, would be closed to OHV use, would designate VRM Class I or II areas as ROW avoidance areas, would be recommended for withdrawal from mineral entry, and would be closed to leasing from oil and gas. Inholdings in these non-WSA lands would be acquired from willing sellers, No fencing of riparian areas or cultural sites and no water developments or camping facilities would be allowed within the wilderness characteristics lands. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

The Fremont Gorge (15,941 acres) non-WSA lands with wilderness characteristics area lies within the 34,300 acre potential Fremont Gorge/Cockscomb ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, recommended for withdrawal from mineral entry, and closed to leasing from oil and gas. No fencing or other surface-disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

All of the Mount Hillers (1,757 acres) non-WSA lands with wilderness characteristics area and portions of the Bull Mountain (2,821 acres), Mount Ellen—Blue Hills (17,771 acres), Mount Pennell (45,731 acres), and Ragged Mountain (24,408 acres) non-WSA lands with wilderness characteristics areas lie within the 288,200 acre potential Henry Mountains ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I and closed to OHV use. VRM Class I or II areas would be designated as ROW avoidance areas, and inholdings would be acquired from willing sellers.

The ACEC prescriptions also recommend withdrawing non-WSA lands with wilderness characteristics, No Man's Mesa, and areas with Class A scenery from mineral entry and designating wilderness characteristic lands, VRM Class II areas, and No Man's Mesa as closed to leasing for oil and gas. No maintenance of erosion-control structures, fencing of cultural sites, manipulation of habitat, or range improvements would be allowed within the wilderness characteristic lands. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

A portion (2,934 acres) of the Horseshoe Canyon South non-WSA lands with wilderness characteristics area lies within the 40,900 acre (RFO portion only) potential Horseshoe Canyon ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, recommended for withdrawal from mineral entry, and closed to leasing from oil and gas. New ROWs in VRM Class I and II areas would not be authorized, and inholdings would be acquired from willing sellers, No fencing of cultural sites or riparian areas would be allowed within the wilderness characteristics lands. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character and opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

All of the Phonolite Hill non-WSA lands with wilderness characteristics area (7,908 acres) and portions of the Kingston Ridge (2,126 acres) and Rocky Ford (6,429 acres) non-WSA lands with wilderness characteristics lie within the 22,100 acre potential Kingston Canyon ACEC. Within the non-WSA lands with wilderness characteristics areas, inholdings within the riparian corridor would be acquired from willing sellers, and the wilderness characteristics lands would be closed to OHV use. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

A portion (8,692 acres) of the Little Rockies non-WSA lands with wilderness characteristics area lies within the 49,200 acre potential Little Rockies ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, recommended for withdrawal from mineral entry, and closed to leasing from oil and gas. New ROWs in areas containing Class A scenery or in wilderness characteristics lands would not be authorized, inholdings would be acquired from willing sellers, and no surface-disturbing activities would be allowed. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character and the opportunities for solitude and primitive recreation of the non-WSA lands with wilderness characteristics.

A portion (15,778 acres) of the Wild Horse Mesa non-WSA lands with wilderness characteristics lies within the 16,200 acre (RFO portion only) potential Lower Muddy Creek ACEC. These non-WSA lands with wilderness characteristics would be designated as VRM Class I, closed to OHV use, and closed to leasing from oil and gas. New ROWs would be avoided, and inholdings would be acquired from willing sellers, These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

A portion (27 acres) of the Wildcat Knolls non-WSA lands with wilderness characteristics lies within the 180 acre potential Quitchupah ACEC. These non-WSA lands with wilderness characteristics would be closed to OHV use, and no fencing or other surface-disturbing activities would be allowed for the protection of cultural sites. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation. A portion of the Jones Bench

(43 acres) and Limestone Cliffs (385 acres) non-WSA lands with wilderness characteristics lie within the 500 acre potential Thousand Lakes Bench ACEC. These non-WSA lands with wilderness characteristics would be designated as closed to OHV use, and no fencing or other surface-disturbing activities would be allowed for the protection of cultural sites. These management prescriptions would reduce surface disturbances and limit motorized uses, thus protecting the natural character of the non-WSA lands with wilderness characteristics and the opportunities for solitude and primitive recreation.

Because it designates the most acres as ACECs, Alternative D would provide the most long-term protection to the naturalness and opportunities for solitude and primitive recreation of non-WSA lands with wilderness characteristics. However, Alternative D would also allow for specific management to protect non-WSA lands with wilderness characteristics, in addition to management of the ACECs.

4.4 IMPACTS TO RESOURCE USES

4.4.1 Forestry and Woodland Products

This analysis addresses potential impacts on forest and woodland products harvest, caused by implementing the management actions under the alternatives described in Chapter 2. This analysis focuses on those management actions that place limitations or affect the quantity or quality of products within the RFO. Impacts on forest and woodland health are discussed in the Impacts to Vegetation section of this chapter. In the absence of quantitative data, best professional judgment was used, and impacts are sometimes described by using ranges of potential impacts or in qualitative terms, if appropriate.

Methods and Assumptions

The analysis is based on the following assumptions:

- Several traditional woodland products (e.g., Christmas trees, posts, poles) may be harvested from tree species growing on sites not classified as forest or woodland.
- Demand for forest and woodland products is not anticipated to grow substantially during the planning period.
- Supply of forestry and woodland products would continue to substantially exceed demand.

Environmental Consequences

Impacts to forestry and woodlands would likely result from actions proposed under the following resource programs:

- Air Quality
- Soil Resources and Water Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products
- Recreation
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on forestry and woodland products. There are no WSA decisions that would impact forestry and woodland products.

Alternative N: No Action

Impacts from Air Quality

Proposed decisions for air would have minimal effect on harvesting of forest and woodland products. Burning of slash piles could be necessary, following some harvesting projects. Air quality requirements would need to be considered and smoke management would be implemented to meet air quality standards.

Impacts from Soil Resources and Water Resources

Current demand for forest and woodland products is low, and demand is expected to remain stable because of the remoteness of resources. In general, decisions proposed for managing soil and water resources would also improve forest and woodland health by providing for overall ecosystem health through the continued implementation of the *Fundamentals of Rangeland Health.* Based on current levels of forest and woodland harvest and limited areas available for harvest, road and trail construction (which would result in new soil disturbance) is not expected. Therefore, the impacts that soils and water decisions would cause to forest and woodland products harvesting under Alternative N would be minimal.

Impacts from Visual Resources

Under Alternative N, 529,500 acres would be managed to meet VRM Class II objectives, of which 446,900 acres are within WSAs in which forest and woodland harvest is prohibited. Managing the 82,600 acres outside of the WSAs to meet VRM Class II objectives could alter the size, type, and location of forest and woodland product harvest or forest health projects. However, not all of these 82,600 acres have forest and woodland resources. The remainder of the RFO (1,598,500 or 75%) would be managed as VRM Classes III and IV, which would allow for moderate (Class III) or major (Class IV) changes to the landscape. This management would allow flexibility for forest and woodland products harvest and management of forests and woodlands in most of the RFO lands to meet the objectives of the Healthy Forest Restoration Act (HFRA) of 2003.

Impacts from Special Status Species

Proposed management for SSS habitats could limit forest and woodland product harvest, but acreage amounts would be minimal. The majority of SSS present in the lands managed by the RFO either do not inhabit forest and woodland areas, are protected by topography, or inhabit WSAs in which harvest would not be allowed. Any forest management activities would necessarily be designed to avoid, mitigate, or improve the habitat for SSS.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife could restrict some harvest by location or season. Seasonal or spatial restrictions for bison, mule deer, and elk could impact the success of commercial product harvest and forest health projects. Prohibiting surface-disturbing activities from November 1 through May 15 (6 and one-half months each year) could make it difficult to complete some projects. Seasonal or spatial restrictions for other wildlife species would not affect the harvesting of forest and woodland products because few resources are located in these habitat areas. Habitat treatment projects could indirectly improve forest and woodland health and increase the availability of some woodland products, depending on the treatment method used. Overuse of wildland or prescribed fire as a treatment method could result in a reduction of woodland products for the public because of the uncontrollable nature of fire and the possible elimination of prime woodland product areas that could otherwise be protected. In some cases, forest management could be used as a tool for improving wildlife habitat, resulting in a benefit for both resources.

Impacts from Fire and Fuels Management

Suppressing all wildland fires could increase seedling/sapling survival, thus increasing stand density. The existing trend of pinyon-juniper woodland encroachment would continue under full fire suppression and fewer hazardous fuels treatment acres. Overall, this trend could lead to increasing fuel loading and the potential for uncharacteristically large or intense wildfires that would reduce the availability of forest and woodland products.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of HFRA would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Current management of timber and woodland products has not effectively improved forest and woodland health and has restricted areas available to harvest. The current trends would continue, possibly leading to hazardous fuels, insect infestations, and continued encroachment of pinyon-juniper. This trend is primarily because of low program activity, resulting from low demand for products, remoteness of the resource, and limited resources to complete needed actions.

Impacts from Recreation

The current recreation management would not affect the harvest of forest and woodland products. Developed recreation sites are not located in woodland harvest areas, and the majority of current recreation activity is of a dispersed nature, with little recreation occurring in woodland zones.

Impacts from Travel Management

Proposed decisions for OHV area and route designations could impact casual collection of forest and woodland products, by limiting off-road access. However, restrictions under Alternative N are the least of any alternative: 1,636,400 acres (77%) of the RFO would be open to motorized vehicles; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized vehicle use. The public would have access to 4,315 miles of unpaved routes in the RFO. Access for commercial activities, non-commercial permitted activities (firewood and Christmas tree cutting), and forest health projects is an administrative use that would be addressed in the permitting process.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Although some acres of the lands managed by the RFO and having forest and woodland resources would be open for leasing, the potential for impact is minimal because despite historical oil and gas exploration, no production in forested areas of the RFO has occurred. The same trend is expected to continue. If some production in woodland areas did take place, little impact would be expected because of the limited amount of disturbance that would occur. New roads built to wells could improve access to woodland areas for those harvesting woodland products.

Leasable Minerals—Coal

Development of a surface coal mine is unlikely during the life of the plan and therefore is not anticipated to affect forest and woodland products. Development of a subsurface coal mine is also unlikely during the life of the plan, and if developed would affect a much smaller surface area than a surface mine would.

Locatable Minerals

Little mining of locatable minerals is expected within the RFO during the next 15 to 20 years. Although it cannot be determined whether any potential mining would preclude harvest of forest and woodland products, the potential for impacts to forest and woodland products would be small. Most locatable minerals have historically been found in locations not conducive to woodland product harvest (e.g., high in the Henry Mountains).

Impacts from Special Designations

Wild and Scenic Rivers

Eligibility of WSRs would not impact harvesting of forest and woodland products because these resources are either not present or are very limited within the eligible WSR corridors.

Areas of Critical Environmental Concern

Management actions for protection of relevant and important values of ACECs may affect the availability of forest and woodland products harvest. Management prescriptions associated with ACEC designation that would affect visual resources include managing oil and gas leasing as closed to leasing or open to leasing subject to major constraints (NSO), more restrictive VRM designations, restricting livestock grazing, and travel limitations. Alternative N continues the designation of four ACECs (14,780 acres). Scenery was not one of the relevant and important values identified for these ACECs. However, allowing no uses that would cause irreparable damage to the relevant and important values in these areas would reduce surface-disturbing activities within those areas and protect visual resources. Such actions could include closing the areas to OHV use; managing the areas as closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; making the area unavailable for livestock grazing in three of the four ACECs; and acquiring inholdings.

Along with continuing the designations of Beaver Wash, North Caineville Mesa, and South Caineville Mesa ACECs, proposals under Alternative N would allow no uses that would cause irreparable damage to relevant and important values in those areas, would close the areas to OHV use, and would propose the areas for withdrawal from mineral entry. In addition to the above, Gilbert Badlands would be recommended to have no surface-disturbing activities allowed. However, because these areas are small in extent and do not have economically important forestry and woodland resources, there would be no effect on these resources.

Alternative A

Impacts from Air Quality

Impacts would be the same as those described under Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Under Alternative A, all acreage outside WSAs would be designated as VRM Classes III and IV (1,681,100 acres, or 79% of the RFO), allowing for moderate (Class III) or major (Class IV) changes to the landscape. This designation would allow slightly more flexibility than under Alternative N for forest and woodland products harvest and for management of forests and woodlands to meet the HFRA objectives. This increased flexibility would result from the increased land area available to implement management actions that would create visual changes on the landscape (e.g., cuttings, thinnings, and harrow treatments).

Impacts from Special Status Species

Impacts would be similar to those described under Alternative N, except that fewer areas would be restricted under Alternative A. For example, activities within Greater sage-grouse brooding/nesting habitat would be restricted from April 1 through June 15 under Alternative N, but no restrictions apply under Alternative A. Thus there would be increased opportunities for harvesting of forest and woodland products under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Using non-fire treatment methods to reduce hazardous fuels would increase the amount of biomass available. The use of prescribed fire and non-fire treatments would increase the opportunities for fuelwood and biomass harvest. Hazardous fuel reductions could alter the structure of forest and woodland areas by removing fire susceptible individuals and reducing stand density. Overall, these management actions could increase the economic value of forest products and reduce the risk of uncharacteristically large or intense wildfires in some areas. Alternative A would increase the availability of forest and woodland products, compared to Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative A, resulting in no impacts to forestry and woodlands.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of the HFRA would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Forestry management actions under Alternative A would provide for commercial and non-commercial timber and woodland product harvest when feasible, sustainable, and compatible with restoring, maintaining, and improving forest health. Availability of timber and woodland products would be increased, compared with Alternative N or C, and would allow for more flexibility towards meeting the objectives of the HFRA.

Impacts from Recreation

Proposed decisions regarding recreation management would not affect the harvest of forest and woodland products because proposed facilities that could preclude harvest would be expected to be minimal and to occur only when necessary to protect resources. SRMAs are proposed but do not include prescriptions to close the areas to harvest. If deemed in conflict with SRMA management, harvest restrictions would be addressed during completion of the individual SRMA activity plans.

Impacts from Travel Management

The type of impacts would be similar to those described under Alternative N, except that under Alternative A, less area (449,000 acres—21% of the RFO) would be open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79% of the RFO); and no areas would be closed to motorized vehicle use. The public would have access to 4,312 miles of unpaved routes in the RFO. Access would be restricted more under Alternative A than under Alternative N but would be less restricted than under Alternative C or D or the Proposed RMP.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

No river segments would be recommended as suitable WSRs under Alternative A.

Areas of Critical Environmental Concern

No ACECs would be proposed for designation under Alternative A.

Proposed RMP

Impacts from Air Quality

Impacts would be the same as those described under Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Under the Proposed RMP, 249,800 (12%) of the RFO would be designated as VRM Class II, meaning that only low levels of changes to the landscape could occur. Although designating these areas as VRM Class II could alter the size, type, and location of forest and woodland product harvest or forest health projects to meet the associated management objectives, forest and woodland products are not present on all of these acres. Sixty-seven percent of the RFO (1,431,300 acres) would be designated as VRM Classes III and IV, which allow for moderate (Class III) or major (Class IV) changes to the landscape and thus would allow more opportunities for forest and woodland product harvest. Slightly fewer acres would be designated as VRM Classes III and IV under the Proposed RMP than under Alternative N or A.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative N, except that there are different restrictions between the two alternatives in regards to Greater sage-grouse. Under Alternative N surface disturbing activities within sage-grouse breeding and brooding-rearing habitats would be restricted from March 1 through July 15; under the Proposed RMP, these activities would be restricted within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14. These restrictions could result in decreased opportunities for harvesting of forest and woodland products under the Proposed RMP, compared to Alternatives N and A. However because forested areas within sage-grouse habitat are generally limited, these restrictions are expected to have minimal impact on harvest of forest and woodland products. Also because 97 percent of sage-grouse winter habitat is within mule deer crucial habitat, which has a timing limitation on surface disturbing activities from December 15 through April 15, the sage-grouse winter timing limitation would only result in surface disturbing restrictions on an additional 2,200 acres.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, protecting the wilderness characteristics on 78,600 acres (4% of the RFO) would generally preclude the harvesting of forest and woodland products when they are present within these areas. Non-WSA lands with wilderness characteristics would be closed to woodland products harvesting, OHV and mechanized use would be limited to designated routes, and the areas would be designated as VRM Class II. These management actions would have beneficial and adverse impacts on woodland resources. Closing non-WSA areas with wilderness characteristics to woodland products harvesting and limiting OHV access would preserve the resource by beneficially reducing direct and indirect impacts caused by surface disturbances within these areas (e.g., soil compaction and erosion,

increased fire risks because of OHVs, increased potential of invasive species invasion, replacement of woodland resources). However, long-term, adverse impacts would be produced by the reduced opportunities for woodland harvesting for products use and by the restrictions on vegetation removal and treatments that could otherwise reduce understory fire risks and improve woodland ecological conditions.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described under Alternative A.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

The types of impacts would be similar to those described under Alternative N. However, under the Proposed RMP, substantially less area would be open to motorized vehicles (9,890 acres—less than 1% of the RFO); motor vehicles would be limited to existing, designated, and maintained routes on 1,908,210 acres (90% of the RFO); and 209,900 acres (10% of the RFO) would be closed to motorized vehicle use. The public would have access to 4,277 miles of unpaved routes in the RFO. Access would be more restricted under the Proposed RMP than under Alternative N or A but less restricted than under Alternative C or D.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under the Proposed RMP, two ACECs (2,530 acres) would be designated: North Caineville Mesa and Old Woman Front. Special management prescriptions for the North Caineville Mesa ACEC would include closing the area to OHV use; prescriptions for Old Woman Front would include prohibiting the harvesting of forest and woodland products and closing the area to OHV use. These prescriptions would affect the availability of these resources to the public, but because the total area involved would be so small, the overall effect to the program would be negligible.

Alternative C

Impacts from Air Quality

Impacts would be the same as those described under Alternative A.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative C would be similar to those described under Alternative A, except that the acreage designated as VRM Class II would increase to 230,600 (or 11% of the RFO), which is slightly more than under Alternative A. VRM Classes III and IV would be designated on 1,450,500 acres (68%) of the RFO, which would allow more opportunities for forest and woodland product harvest.

Impacts from Special Status Species

Impacts would be similar to those described under the Proposed RMP, however, there would be fewer restrictions on surface disturbing activities within Greater sage-grouse habitat. Because forested areas within sage-grouse habitat are generally limited, the restrictions that do exist under Alternative C are expected to have minimal impact on harvest of forest and woodland products.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N, except that there are additional restrictions for protection of wildlife habitat areas under Alternative C. For example, OHV use on 142,000 acres of deer and elk crucial winter range and on 189,000 acres of crucial bison habitat would be closed under Alternative C. This management could limit opportunities for harvesting of forest and woodland products compared to Alternative N.

Impacts from Fire and Fuels Management

The management actions to limit fuels treatments and included under Alternative C (such as allowing only fire and biological treatment methods) would allow increased ladder fuels, stand density, and pinyon-juniper encroachment. Indirectly, this management could increase the amount of biomass available from pinyon-juniper woodlands. However, current demands for biomass are low, so this increase could make the forest and woodland areas more vulnerable to mortality from wildfire, insects, and disease. Overall, this increase could lead to increased fuel loading and the potential for uncharacteristically large or intense wildfires, which could reduce the availability of forest and woodland products in the long term.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative C, resulting in no impacts to forestry and woodlands.

Impacts from Forestry and Woodland Products

Management actions implemented to support the objectives of HFRA would increase the long-term health and productivity of forest and woodlands and indirectly increase resistance to insect pest infestations. Under Alternative C, effects to woodland areas would be the same as under Alternative A. However, prohibiting commercial timber harvest could limit the ability to treat timbered acres and might not effectively improve forest and woodland health.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Under Alternative C, no areas would be open to motorized vehicles. This proposed decision could impact casual collection and non-commercial harvest of forest and woodland products by limiting off-road access. Motor vehicles would be limited to designated routes on 1,445,000 acres (68% of the RFO); and 683,000 acres (32% of the RFO) would be closed to motorized vehicle use. The public would have access to 3,192 miles of unpaved routes. This alternative would result in greater access restrictions and more difficulty harvesting forest and woodland products than under Alternative N or A or the Proposed RMP. However, Alternative C would be less restrictive than Alternative D. Access for commercial activities and forest health projects is an administrative use that would be addressed during permitting or project development.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under Alternative C, 16 ACECs (886,810 acres) would be designated. Special management prescriptions for ACEC could include closing the area(s) to OHV use and prohibiting the harvesting of forest and woodland products (depending on the particular ACEC). These prescriptions would affect the availability of these resources to the public, but because the ACECs tend to be in remote areas away from population centers (where little forestry and woodland products harvesting occurs), the overall effect to the program would be minimal.

Alternative D

Impacts from Air Quality

Impacts would be the same as those described under Alternative N.

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts experienced under Alternative D would be similar to those described under Alternative A, except that all non-WSA lands with wilderness characteristics (682,600 acres—32% of the RFO) would be designated as VRM Class I, precluding harvesting of forest and woodland products to meet the VRM management class objective of preserving the existing character of the landscape. Additionally, acres designated as VRM Classes III and IV would decrease to 931,700 acres. Together, this designation would limit the opportunities for forest and woodland product harvest, although the VRM Class I areas tend to be in remote areas away from population centers (where little forestry and woodland products harvesting occurs).

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C, except Alternative D provides additional restrictions for protection of wildlife habitat areas. For example, OHV use on 258,000 acres of deer and elk crucial winter range and 207,000 acres of crucial bison habitat would be closed under Alternative D. This management could limit opportunities for harvesting of forest and woodland products more than under any other alternative.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, protecting the wilderness characteristics on 682,600 acres (32% of the RFO) would generally preclude the harvesting of forest and woodland products when they are present within these

areas. Non-WSA lands with wilderness characteristics would be closed to woodland products harvesting, closed to OHVs, and designated as VRM Class I. These management actions would have beneficial and adverse impacts on woodland resources. Closing non-WSA areas with wilderness characteristics to woodland products harvesting and OHV access would preserve the resource by beneficially reducing direct and indirect impacts from surface disturbances within these areas (e.g., soil compaction and erosion, increased fire risks because of OHVs, an increased potential of invasive species invasion and replacement of woodland resources). Long-term, adverse impacts would be produced by the reduced opportunities for woodland harvesting for products use and by the restrictions on vegetation removal and treatments that could otherwise reduce understory fire risks and improve woodland ecological conditions.

Impacts from Forestry and Woodland Products

Impacts would be the same as those described under Alternative C.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Impacts would be similar to those under Alternative C, except that fewer acres would be limited to designated routes (972,800 acres), fewer miles of routes would be open to provide access to harvest areas (3,043 miles), and more acres would be closed to motorized vehicle use (1,155,200 acres) under Alternative D. Of all the alternatives, this alternative would result in the greatest access restrictions and the greatest potential for impacts to forestry and woodland resources.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C

4.4.2 Livestock Grazing

This section describes potential impacts on livestock grazing resulting from the implementation of management actions for other resource programs. Impacts on resources and resource uses resulting from implementation of the livestock grazing program are discussed in those particular resource sections of this chapter. Impacts on livestock grazing activities are generally the result of activities that affect forage levels, land use restrictions that affect the ability to construct range improvements, and human disturbance or harassment of livestock within grazing allotments. Conducting vegetation treatments would likely have the greatest effect on livestock grazing, as such treatments could increase vegetation production and forage available for livestock. Activities that result in surface disturbance (e.g., mineral development, ROW construction, and recreation) or management of resources that results in limiting surface disturbance (e.g., fish and wildlife, vegetation, and visual resources) would also impact livestock grazing by affecting forage levels. Management of fire and fuels and forest and woodlands products harvesting would affect livestock grazing by either preserving or increasing available forage for livestock over the long term. Impacts to livestock grazing operations also result from interaction with visitors, access provisions, and other management factors that limit or restrict livestock grazing in certain areas.

Methods and Assumptions

This analysis was based on the following assumptions:

- Livestock grazing would occur throughout the majority of the RFO.
- Livestock grazing would be managed in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration,* and Utah's SRH and *Guidelines for Grazing Management.*
- The type and amount of grazing use would be expected to remain approximately the same.
- Range improvements would continue to occur at current rates to reach rangeland improvement goals.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified when possible. Spatial analyses were conducted by using GIS data and analyses. Impacts are described by using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to livestock grazing would likely result from actions proposed under the following resource management programs:

- Soil Resources and Water Resources
- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management

- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on livestock grazing. There are no WSA decisions that would impact livestock grazing.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Implementing appropriate BMPs (Appendix 14) to minimize detrimental impacts that ground-disturbing activities could cause to soils and to maintain or enhance riparian areas (*Utah Riparian Management Policy,* 2005) through project design features or stipulations would help to reduce soil erosion, surface runoff, and sedimentation of streams. This reduction would help to maintain and enhance vegetation and water quality and increase channel stability, indirectly providing forage and water for livestock.

Impacts from Vegetation and Fire and Fuels Management

Management of vegetation resources would generally enhance vegetative conditions and indirectly affect livestock grazing, by increasing forage production. Applying the *Fundamentals of Rangeland Health* under the vegetation management program would help to manage surface uses and thereby enhance rangeland conditions and increase long-term forage production. However, managing rangelands according to the *Fundamentals of Rangeland Health* could also affect livestock operators on those allotments that do not meet standards for reasons attributed to grazing. Such adjustments could include season-of-use changes, forage allocation adjustments, implementation of grazing management practices (e.g., growing season deferment, riparian pastures, or exclosures), forage use limits, or conversions in kind or type of livestock. Management changes such as these could result in increased operating costs to the livestock operator. Over the long-term, achieving the standards would result in increased water availability and forage production, which would benefit livestock through improved animal distribution, increased weight gain and improved animal health.

Treatment of invasive species and noxious weeds would serve to control and contain weed species infestations, thereby maintaining forage production, diversity, and vigor. These actions could temporarily displace livestock and reduce available forage. BMPs for livestock grazing (such as requiring use of weed-free feed) would be implemented to discourage the introduction and spread of weeds.

Conducting vegetation treatments, particularly livestock rangeland treatments, would enhance vegetation conditions and indirectly affect livestock grazing, by increasing forage production. These treatments would have a short-term effect on livestock grazing by removing forage and by excluding livestock use for two growing seasons on treated areas, but enhanced rangeland conditions would be realized over the long-term. Conducting land treatments to reduce soil loss on identified areas and to improve watershed health and implementing erosion control measures in frail watershed areas would help to reduce soil erosion, surface runoff, and sedimentation of water sources and to reestablish grass/forb communities. This management would help to maintain and enhance vegetation conditions and water quality, which would indirectly provide forage and water for livestock.

Alternative N would allow for only limited treatment of vegetation, although a full range of tools (including mechanical, wildland or prescribed fire, and chemical methods) would be available. In the short term, these activities would decrease forage available for livestock use because treated areas are generally rested from livestock grazing for 2 years following the treatments. In the long-term, restoration activities would improve the watersheds and vegetation and provide additional forage for livestock. Areas in which vegetation treatments were not successful could be invaded by weed species or become

reestablished by other undesired vegetation communities, which would reduce available livestock forage over the long term.

In the short term, wildland fires could decrease forage available for livestock use and would require changes in and restrictions to livestock grazing use during emergency fire rehabilitation. (Livestock generally are not grazed in those areas until vegetation is reestablished—generally 2 years.) In the long term, forage quality and quantity available to livestock could potentially increase. Wildland fires could also damage range improvements such as fences, corrals, enclosures, monitoring studies, and above-ground pipelines.

Impacts from Cultural Resources

Activities associated with the management of cultural resources would affect relatively small, localized areas and would not have measurable effects on livestock forage. Mitigating adverse impacts to cultural resources and allowing for preservation and interpretation of such resources could include excavation of known sites, resulting in soil disturbances and forage removal. Restrictions on surface-disturbing activities near cultural sites could prevent the removal of forage in these areas, although it could also result in the modification or relocation of range improvements.

Impacts from Visual Resources

New range improvements, such as structures or vegetation treatments, would be required to meet VRM class objectives. VRM Classes I and II would be aimed at greater retention of existing landscape character than would Classes III or IV. The class designation could affect range-improvement design (functionality and cost) or prohibit the construction of improvements such as pipelines and water storage tanks necessary to properly manage or improve livestock grazing management practices. Under Alternative N, none of the lands managed by the RFO would be classified as VRM Class I; 529,000 acres (25%) would be managed as VRM Class II; 569,000 acres (27%) would be managed as VRM Class III; and 1,029,500 acres (48%) would be managed as VRM Class IV. Areas managed as VRM Class III or IV (75% of the RFO under this alternative) would be subject to actions that allow for greater landscape modification, thus having minimal effects on range improvements.

Impacts from Special Status Species and Fish and Wildlife

Management actions to enhance wildlife habitat could affect livestock grazing by improving vegetation conditions and indirectly maintaining or increasing forage production. However, implementing decisions to increase populations of SSS, implementing conservation measures for listed and sensitive species, and prohibiting or restricting ground-disturbing activities within buffer zones (identified in Appendices 10 and 14) for SSS could also restrict opportunities for range improvements and other grazing management actions.

Management and restoration of native wildlife populations into their historic ranges could have negligible to minor short- and long-term impacts on livestock operations by creating conflict with space, forage use, and water. However, the two activities have mutual goals. Water developments designed to provide new water sources for wildlife would in some situations increase water availability for livestock, promoting improved distribution of both livestock and wildlife.

Reintroductions, transplants, augmentation, and reestablishment of certain wildlife species (e.g., introducing bighorn sheep in domestic sheep range) could eliminate use of livestock in those areas. In addition, complying with the *Desert Bighorn Sheep Management Plan* would preclude converting cattle permits to sheep permits in bighorn sheep habitat (which is located in the eastern portion of the RFO). However, this would have no effect on total acres available for livestock grazing.

Impacts from Wild Horses and Burros

Under Alternative N, 100 AUMs are allocated to burros in the Canyonlands HMA, although no AML is established. These relatively small numbers would pose minimal conflicts with livestock grazing.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

Under Alternative N, 138,952 acres would continue to be unavailable to livestock grazing, whereas 1,989,048 acres would continue to be available to grazing. No changes to current grazing management would be proposed. Continued adherence to the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would result in maintaining plant vigor and increasing litter accumulation, resulting in the maintenance or improvement of organic matter content, soil structure, permeability, productivity, and riparian-wetland function. All of these impacts would provide beneficial impacts to forage production for livestock.

Impacts from Recreation

Recreation activities would continue to directly impact livestock grazing operations through human disturbance, including animal displacement, livestock respiratory problems caused by airborne dust, animal displacement and harassment, and the injury or death of animals caused by vehicle collisions. Cross-country recreational OHV use could damage and remove forage resources and increase dust levels in high-use areas, thereby causing dust to coat forage and subsequently lowering forage palatability. Vandalism to range projects and leaving gates open would also have an impact on livestock grazing operations. These impacts would likely increase over the life of the plan because of the increasing level of visitation in the RFO.

Overall impacts from recreation on livestock grazing would be moderate under Alternative N and would be less intense compared to the other alternatives, which would expand recreational opportunities and place restrictions on types of uses (including motorized access).

Impacts from Travel Management

Generally, the more area that is open to OHV use, the greater the potential for trampling of vegetation, which would reduce the amount of forage available for livestock. Limiting travel to designated routes confines the impacts to areas already disturbed or hardened for vehicle use. Under Alternative N, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing potential impacts to vegetation over a large portion of the RFO; motor vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO; and 214,000 acres (10%) of the RFO would be closed to motorized vehicle use.

Under Alternative N, the most miles of roads would remain open and the least amount would be closed. This alternative would facilitate livestock management by allowing continued access to livestock grazing operations. However, it is expected that visitation to the RFO would continue to grow during the life of this plan. Easy access afforded by the most miles of open roads would allow for increased interaction of the public with livestock and livestock developments (e.g., fences, corrals, and water developments). This would increase the occurrences of livestock harassment, gates being inappropriately left open or closed, and range improvements being damaged.

Providing the greatest miles of roads under Alternative N would also facilitate dispersed visitor use. This use, in turn, would diffuse impacts to livestock and related facilities instead of concentrating such impacts

on particular allotments or areas. Overall, Alternative N would cause the fewest impacts to livestock grazing operations from travel management decisions, compared to the other alternatives.

Impacts from Lands and Realty

Land tenure adjustments (land disposals and acquisitions) would be processed based on specific requests; the demand for these actions is unknown at this time. The loss of public land through land disposals (e.g., Section 203 land sales, exchanges, R&PP patents) could reduce the forage available for livestock use on some allotments. Under Alternative N, 280 acres would be identified for sale. At 8 acres per AUM, this could result in the loss of approximately 35 AUMs, which is less than 1% of the total AUMs available within the RFO. Acquired lands within a grazing allotment would be added to the allotment, but these lands would likely also involve only a small amount of AUMs. Retaining lands in federal ownership (e.g., habitat for listed and candidate species, eligible WSR segments, ACECs) would continue to provide rangelands for livestock in these areas (except where identified as unavailable for grazing).

Construction activities related to the development of land use authorizations (e.g., ROWs, permits, leases, easements) would remove a small amount of vegetation over the short term and would increase the potential for the introduction and proliferation of noxious weeds and invasive species, thereby causing a loss of livestock forage and associated AUMs. Increased vehicle travel on new roads would also increase the potential for the spread of weeds and harassment of and injury to livestock. However, an increase in improved roads could facilitate livestock management operations by increasing access to remote locations within allotments. Under Alternative N, all ACECs (14,780 acres), eligible WSR corridors (12 segments—135 miles), areas closed to leasing from oil and gas (459,700 acres), and areas open to leasing subject to major constraints (NSO) (22,600 acres) would be managed as ROW avoidance areas where none of the aforementioned impacts would occur. Exceptions would be granted only when the proposed authorization would not create substantial surface disturbance or would create only temporary impacts.

Impacts from Minerals and Energy

Surface-disturbing activities associated with the development of leasable, locatable, and salable minerals could disturb soils, remove vegetation, and increase the potential for the introduction and proliferation of noxious weeds, thereby causing a loss of livestock forage and associated AUMs. As specified in Appendix 12, surface disturbance caused by geophysical exploration activities would amount to 5,100 acres (much of it on private lands) and oil and gas development (roads, pipelines, and drill pads) would disturb an estimated 3,080 acres, resulting in a loss of livestock forage in these areas. At 20 acres per AUM, available forage could be reduced by 154 AUMs. However, about 80% of the initial disturbance would be reclaimed within the planning horizon, so only 20% of the disturbed area would be devoid of vegetation for the life of the well. Given that livestock grazing occurs across most of the RFO, the loss of forage in these areas would result in relatively minor impacts to livestock grazing.

Mineral development activities would also increase the potential for livestock harassment and livestock loss from vehicle collisions. However, the improvement of roads associated with mineral development could facilitate livestock management operations by improving access to remote locations within allotments.

Impacts from Special Designations

Wild and Scenic Rivers

Management of river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification would include surface use restrictions. Such restrictions would preclude surface disturbance and related forage removal and could help to maintain AUMs for livestock. Under Alternative N, all 12 eligible river segments (135 miles) would receive protection. However, these additional land use restrictions could also increase constraints on options for range improvements. The restrictions on

constructing range improvements within eligible WSR corridors could reduce management options to correct deficiencies in areas that are not meeting RHS, or in meeting other resource objectives. This reduction could lead to reductions in grazing use or changes in season of use.

Areas of Critical Environmental Concern

Alternative N continues the designation of four ACECs (14,780 acres). Two of these ACECs (North Caineville Mesa and South Caineville Mesa) are unavailable for livestock grazing. The feasibility of grazing these areas is questionable, given their difficult access and lack of water. Management of the other two ACECs would have little or no impact on livestock grazing because livestock grazing was not identified as a threat to any relevant or important values, so no special management prescriptions that affect grazing operations would be implemented.

Alternative A

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative N. However, under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 acres annually for all treatments). Although no maximum treatment acreage limits would be set under Alternative N, it is likely that fewer acres would actually be treated under that alternative because it generally mandates full suppression of wildland fires and allows only for limited treatment of vegetation. Additionally, full suppression of wildland fires is not mandated under Alternative A. Increasing the acres of vegetation treated would increase the short-term displacement of livestock following the treatments. Over the long term, increasing treatments would increase and improve vegetation types that are valuable for livestock grazing. However, as there is no requirement to treat a set acreage, there could be no short-term decreases in forage. If little or no vegetation treatments were implemented, the existing active-use AUMs would likely decrease as pinyon-juniper woodlands continued to expand, invading sagebrush steppe vegetation types and reducing understory forage species.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N, except that under Alternative A most cultural resource sites would be allocated and managed for public use. This allocation would emphasize public education and interpretation of cultural resources, increasing visitation to sites and possibly causing increased conflicts between livestock and people. This conflict would affect only relatively small, localized areas and would not have significant impacts on livestock.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM would be similar to those described under Alternative N, except that more areas would be designated as VRM Classes III and IV (1,681,100 acres, or 79% of the RFO) under Alternative A. Designating more areas in these VRM classes would result in larger areas of moderate-to-major modifications in the existing character of the landscape, thereby reducing impacts on design, construction, and installation of range improvements, compared to Alternative N.

Impacts from Special Status Species and Fish and Wildlife

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N. However, Alternative A would include additional strategies to avoid or reduce

fragmenting habitat. (Strategies could include employing directional drilling for oil and gas, closing and reclaiming roads, and mitigating the effects of proposed projects that could cause long-term or permanent impacts or losses of habitat.) All these actions would maintain forage cover and reduce forage loss, thus maintaining AUMs for livestock. Alternative A also would include less restrictions on OHV use in crucial wildlife habitats, possibly removing forage resources and increasing dust levels (which could affect palatability of forage) in high-use areas. Alternative A also has less restrictions on surface disturbing activities (e.g., implementation of range improvement projects) within Greater sage-grouse brooding/nesting habitat compared to Alternative N.

Impacts from Wild Horses and Burros

In general, the greater the number of burros, the greater the possibility of adverse impacts on soil resources. Under Alternative A, no AUMs would be allocated to burros in the Canyonlands HMA, and the AML would be set at zero. Keeping the AML at zero would eliminate impacts to soils caused by trampling, compaction, and reduced vegetation cover.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would be proposed under Alternative A, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

The types of impacts experienced as a result of livestock grazing management would be similar to those described under Alternative N, except that an additional 36,950 acres would be available for grazing under Alternative A. This acreage represents only a 3% increase over Alternative N. Although this increase in total available acres is minimal, it could represent lands that would be important to individual livestock operations. Therefore, impacts would be minor areawide but could be moderate in specific areas.

Impacts from Recreation

Under Alternative A, five SRMAs (514,500 acres) would be established to manage recreational use and to mitigate impacts caused by this use, such as uncontrolled camping, parking, and other activities. Management of the Factory Butte SRMA (199,700 acres), Big Rocks SRMA (9,300 acres), and Sahara Sands SRMA (12,300 acres) for motorized use would emphasize this type of recreational opportunity available in the RFO and consequently would increase the potential for livestock displacement, harassment, or injury. However, implementing surface use restrictions within the SRMAs would help to reduce the degree of impact from recreational and other uses. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in the Dirty Devil and Otter Creek SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative A would designate 449,000 acres (21% of the RFO) as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, could still result in livestock displacement, harassment, or injury caused by vehicle use in those areas.

Under Alternative A, there would be 4,312 miles of designated routes (slightly more than under Alternative N) and 68 miles of closed routes (only 3 miles less than under Alternative N). This management would facilitate livestock management by allowing essentially unchanged access to livestock grazing operations. As stated previously, it is expected that visitation to the RFO would

continue to grow during the life of this plan. Thus, easy access to the public lands would allow for increased interaction of the public with livestock and livestock developments (e.g., fences, corrals, water developments). This interaction would increase the occurrences of livestock being harassed, gates being inappropriately left open or closed, and range improvements being damaged.

Impacts from Lands and Realty

The types of impacts experienced as a result of lands and realty would be similar to those described under Alternative N, except that Alternative A proposes more acres (13,400 acres) for disposal through FLPMA land sales. At 20 acres per AUM, this increase could result in the loss of approximately 670 AUMs (1% of the total AUMs available within the RFO), which would result in an insignificant impact to livestock grazing. In addition, Alternative A proposes fewer ROW avoidance and exclusion areas (459,700 acres) within which no construction activities related to the development of land use authorizations (e.g., ROWs, permits, leases, easements) would occur. Vegetation would be retained and the potential for the introduction and proliferation of noxious weeds and invasive species (which could cause a loss of livestock forage and associated AUMs) would be minimized in these areas. Within these areas, there would be no new roads that could increase vehicle travel and the potential for harassment of and injury to livestock.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

There would be no impacts to livestock grazing from WSRs because no eligible river segments would be determined suitable. Thus, no segments would be managed to protect outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative A.

Areas of Critical Environmental Concern

Under Alternative A, no areas would be designated as ACECs. Thus, no actions that specifically protect relevant and important values but that could restrict management of grazing would occur, resulting in no impact to livestock grazing.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative A, except that fewer cultural resource sites would be allocated and managed for public use, thereby decreasing visitation to sites and possibly decreasing conflicts between livestock and people, compared to Alternative A.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under the Proposed RMP, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 249,800 acres (12%) would be managed as VRM Class II; 393,100 acres

(18%) would be designated as VRM Class III; and 1,038,200 acres (49%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (potentially resulting in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying minimal impacts on range improvements), less of the RFO would be designated in these VRM classes than under Alternative N or A.

Impacts from Special Status Species and Fish and Wildlife

Impacts from SSS management actions would be the same as those described under Alternative A. However, the Proposed RMP has more restrictions on surface disturbing activities within Greater sage-grouse habitat. For example, Alternative A has no stipulation on surface disturbing activities within sage-grouse brooding/nesting habitat, while the Proposed RMP prohibits surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15 and in sage-grouse winter habitat from December 15 through March 14. Limitations on surface disturbing activities within Greater sage-grouse habitat are greater under the Proposed RMP than under any of the other alternatives.

Impacts from fish and wildlife management actions under the Proposed RMP would be similar to those described under Alternative A. However, the Proposed RMP also proposes temporal (winter and/or spring, depending on species) restrictions on surface-disturbing activities (to protect wildlife during critical life stages) and restricts OHV use in deer and elk crucial habitats. These management actions could restrict opportunities for constructing or maintaining range improvements and other grazing management actions.

Impacts from Wild Horses and Burros

Under the Proposed RMP, 600 AUMs would be allocated to burros in the Canyonlands HMA, to meet an AML upper limit of 100. These numbers are greater than under Alternative N or A but less than under Alternative C or D (which establish a herd size of between 120 and 200 head). Because more burros result in a greater possibility of competition for forage between burros and livestock, the Proposed RMP could impact grazing management more than would Alternative N or A but less than would Alternative C or D.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres in 12 non-WSA areas with wilderness characteristics would be protected from impacts that could degrade their wilderness values. Management decisions to protect these values would include prohibiting range projects that would not meet VRM Class II objectives and limiting OHV use to designated routes. These decisions could increase constraints on options for range improvements and decrease opportunities for access to remote locations within allotments. These decisions would make management of grazing operations more difficult.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under Alternative A, except that more lands (860,390 acres) would be established as SRMAs to manage recreational use and to mitigate impacts caused by this use. Under the Proposed RMP, less area would be managed for motorized use; management of the Factory Butte SRMA (24,400 acres) and Big Rocks SRMA (90 acres) for motorized use would emphasize this type of recreational opportunity available in the RFO and consequently would increase the potential for livestock displacement, harassment, or injury. However, implementing surface use restrictions within all or portions of the SRMAs would help to reduce the degree of impact from recreational and other uses. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas

development and cross-country OHV use in the Henry Mountains, Dirty Devil, and Capitol Reef Gateway SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, the Proposed RMP designates only 9,890 acres (less than 1% of the RFO) as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,908,210 acres (90%) of the RFO; and 209,900 acres (10%) would be closed to motorized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would still result in the potential for livestock displacement, harassment, or injury caused by vehicle use in those areas. However, increased restrictions on OHV use would decrease forage loss and decrease dust levels (which could affect palatability of forage) in high-use areas.

Under the Proposed RMP, there would be 4,277 miles of designated routes (3% less than under Alternative N), with 345 miles of routes closed. Therefore, the Proposed RMP could affect livestock management by restricting access to livestock grazing operations substantially more than would Alternative N.

Impacts from Lands and Realty

Impacts from land tenure adjustments (acquisitions and disposals) would be the same as those described under Alternative A.

The types of impacts from land use authorizations would be similar to those described under Alternative N. However, the Proposed RMP proposes more ROW avoidance and exclusion areas (601,800 acres closed to leasing or open to leasing subject to major constraints (NSO), one suitable WSR segment—5 miles, and two ACECs—2,530 acres). Within these ROW avoidance and exclusion areas, no construction activities related to the development of land use authorizations (e.g., ROWs, permits, leases, easements) would remove vegetation or increase the potential for the introduction and proliferation of noxious weeds and invasive species, (which otherwise could cause a loss of livestock forage and associated AUMs). Within these ROW avoidance and exclusion areas there would also be no increased vehicle travel on new roads (which otherwise could increase the potential for harassment of and injury to livestock).

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts from managing WSRs would decrease under the Proposed RMP as compared to Alternative N and increase as compared to Alternative A because only one eligible segments (5 miles) would be recommended as suitable and managed (with surface use restrictions) to protect outstandingly remarkable values, free-flowing nature, and tentative classification. These surface use restrictions would preclude surface disturbance and related forage removal and could help to maintain AUMs for livestock. However, these additional land use restrictions could also increase constraints on options for range improvements.

Areas of Critical Environmental Concern

The Proposed RMP would designates two ACECs (2,530 acres). Both of these ACECs would be unavailable for livestock grazing. The feasibility of grazing the North Caineville Mesa ACEC is questionable, given its difficult access and lack of water. The Old Woman Front ACEC encompasses only

330 acres; its small size would not result in the loss of a significant amount of AUMs, so the overall RFO grazing program would not be affected substantially.

Alternative C

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

The types of impacts experienced as a result of vegetation and fire and fuels management would be similar to those described under Alternative A, although fewer acres would be treated annually under Alternative C (averaging 26,000 annually for all treatments). In addition, Alternative C proposes using only treatment methods that mimic natural processes (e.g., fire, biological, hand cutting), which would likely not be as effective as conventional vegetation treatments and could result in a slower process of vegetation enhancement and related forage increases. Although vegetation conditions described under Alternative A could be reached over the long term, the rate of recovery following individual treatments would likely be reduced under Alternative C. This reduction would increase the time that livestock would be precluded following treatments.

Impacts from Cultural Resources

Impacts would be similar to those described under the Proposed RMP, except that fewer cultural resource sites would be allocated and managed for public use, thereby decreasing visitation to sites and potentially decreasing conflicts between livestock and people, compared to the Proposed RMP.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative C, 446,900 acres (21% of the lands managed by the RFO) would be designated as VRM Class I; 230,600 acres (11%) would be managed as VRM Class II; 509,100 acres (24%) would be designated as VRM Class III; and 941,400 acres (44%) would be designated as VRM Class IV. Although the majority of the RFO would be designated as VRM Class III or IV (which could result in large areas of moderate-to-major modifications in the existing character of the landscape, with accompanying minimal impacts on range improvements), less of the RFO would be designated in these VRM classes under Alternative C than under Alternative N or A or the Proposed RMP.

Impacts from Special Status Species and Fish and Wildlife

The types of impacts experienced as a result of SSS management would be similar to those described under the Proposed RMP. However, limitations on surface disturbing activities within Greater sage-grouse habitat are less under Alternative C than under the Proposed RMP.

The types of impacts experienced as a result of fish and wildlife management would be similar to those described under Alternative A. However, Alternative C would propose restricting surface disturbance or surface occupancy within 660 feet of riparian areas (compared with 330 feet under Alternative A), includes more restrictions on OHV use in crucial wildlife habitats, and designates an ACEC in the Henry Mountains (288,200 acres) for the protection of wildlife values. These additional land use restrictions would further help to improve vegetation conditions and increase forage production but could also increase constraints on options for range improvements.

Impacts from Wild Horses and Burros

Under Alternative C, 1,200 AUMs would be allocated to burros in the Canyonlands HMA to meet an AML upper limit of 200. These numbers are greater than under Alternative N or A or the Proposed RMP.

Because more burros result in a greater possibility of competition for forage between burros and livestock, Alternative C could impact grazing management more than would Alternative N or A or the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs would be proposed under Alternative C, resulting in no impacts to livestock grazing.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under the Proposed RMP, except that under Alternative C, more lands (930,000 acres) would be established as SRMAs to manage recreational use and to mitigate impacts caused by this use, and no areas would be managed for motorized use. This management would decrease the potential for livestock displacement, harassment, or injury. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in all of the SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative N. However, Alternative C designates no acres as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,445,000 acres (68%) of the RFO; and 683,000 acres (32%) would be closed to motorized vehicle use. This alternative would therefore limit the potential for livestock displacement, harassment, or injury caused by vehicle use to those areas designated as limited. Increased restrictions on OHV use would also decrease forage loss and decrease dust levels (which could affect palatability of forage) in high-use areas.

Under Alternative C, there would be 3,192 miles of designated routes (26% less than under Alternative N), with 1,188 miles of routes closed (18 times the amount closed under Alternative N). This management could affect livestock management by restricting access to livestock grazing operations substantially more than would Alternative N.

Impacts from Lands and Realty

Under Alternative C, no lands would be identified as available for FLPMA land sales. Thus, no AUMs would be lost because of this type of lands action.

The types of impacts caused by land use authorizations would be similar to those described under Alternative N. However, Alternative C proposes more ROW avoidance and exclusion areas (735,000 acres closed to leasing or open to leasing subject to major constraints [NSO], 12 suitable WSR segments—135 miles, and 16 ACECs). Within these ROW avoidance and exclusion areas, no construction activities related to the development of land use authorizations (e.g., ROWs, permits, leases, easements) would occur. Thus, vegetation would be retained in these areas and the potential for the introduction and proliferation of noxious weeds and invasive species (which could cause a loss of livestock forage and associated AUMs) would be minimized. Within these ROW avoidance and exclusion areas, there would also be no new roads that could increase vehicle travel and the potential for harassment of or injury to livestock.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wild and Scenic Rivers

Management of river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification would include surface use restrictions. Such restrictions would preclude surface disturbance and related forage removal and could help to maintain AUMs for livestock. Under Alternative C, all 12 eligible river segments (135 miles) would be recommended as suitable and would be managed (with surface use restrictions) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. These surface use restrictions would preclude surface disturbance and related forage removal and could help to maintain AUMs for livestock. However, these additional land use restrictions could also increase constraints on options for range improvements.

Areas of Critical Environmental Concern

Alternative C designates 16 ACECs (886,810 acres). Portions of the Badlands ACEC (North and South Caineville Mesas) are already unavailable for livestock grazing in the current LUP; the feasibility of grazing these areas is questionable given their difficult access and lack of water. Old Woman Front ACEC encompasses such a small area (330 acres) that prohibiting grazing would not result in the loss of a significant amount of AUMs, so the overall RFO grazing program would not be substantially affected. Of the remaining ACECs, three (Dirty Devil, Henry Mountains, and Little Rockies) preclude converting cattle permits to sheep permits. However, this preclusion would have no effect on total acres or AUMs available for livestock grazing because cattle could still be grazed.

Allowing no uses that would cause irreparable damage to the relevant and important values in the ACECs would preclude surface disturbance and related forage removal and could help to maintain AUMs for livestock. Such decisions could include closing the areas to OHV use; managing the areas as either closed to leasing or open to leasing subject to major constraints (NSO), depending on the ACEC; and designating the areas as VRM Class II. However, these additional land use restrictions could also increase constraints on options for range improvements and access to allotments for management purposes.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of VRM decisions would be similar to those described under Alternative N. Under Alternative D, 1,129,600 acres (53% of the lands managed by the RFO) would be designated as VRM Class I; 66,700 acres (3%) would be designated as VRM Class II; 355,100 acres (17%) would be designated as VRM Class III; and 576,600 acres (27%) would be designated as VRM Class IV. With the majority of the RFO designated as VRM Classes I and II (where the existing character of the landscape must be preserved or maintained), the ability to implement range improvements would be precluded or constrained, thus potentially affecting the ability to treat vegetation (and improve forage condition) or to construct improvements for distribution of livestock.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described under Alternative C, except that there would be additional restrictions on motorized use in deer, elk, and bison habitat under Alternative D. These restrictions would increase constraints on access to allotments for management purposes.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, non-WSA areas with wilderness characteristics would be protected from impacts that could degrade their wilderness values. Management decisions to protect these values would include prohibitions on range projects that would not meet VRM Class I objectives (including construction of new fences, water structures, and other facilities that may be needed for proper livestock distribution) and closing the areas to OHV use. These prohibitions could increase constraints on options for range improvements and decrease opportunities for access to remote locations within allotments. These decisions would make management of grazing operations more difficult.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under Alternative C, except that Alternative D would establish more lands (1,358,100 acres) as SRMAs to manage recreational use and to mitigate impacts caused by this use; none of these areas would be managed for motorized use. This management would decrease the potential for livestock displacement, harassment, or injury. Encouraging primitive types of recreation and prohibiting surface disturbance from oil and gas development and cross-country OHV use in all of the SRMAs would help to reduce effects related to recreational use.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. However, Alternative D designates 972,800 acres (46% of the RFO) as limited to designated routes and 1,155,200 acres (54%) as closed to motorized vehicle use. More than any other alternative, Alternative D would limit the potential for livestock displacement, harassment, or injury from vehicle use. Increased restrictions on OHV use would also decrease forage loss and dust levels (which could affect palatability of forage) in high-use areas.

Under Alternative D, there would be 3,043 miles of designated routes (the least of any alternative), with 1,242 miles of routes closed (the most of any alternative). This management could affect livestock management by restricting access to livestock grazing operations substantially more than any other alternative would.

Impacts from Lands and Realty

Impacts from land tenure adjustments would be the same as those described under Alternative C.

The types of impacts from land use authorizations would be similar to those described under Alternative N. However, Alternative D proposes more ROW avoidance and exclusion areas (1,203,800 acres closed to leasing or open to leasing subject to major constraints [NSO], non-WSA lands with wilderness characteristics, 12 suitable WSR segments, and 16 ACECs). Within these ROW avoidance and exclusion areas, no surface-disturbing activities related to the development of land use authorizations (e.g., ROWs,

permits, leases, easements) would occur. Thus, vegetation would be retained in these areas and the potential for the introduction and proliferation of noxious weeds and invasive species would be minimized, causing no loss of livestock forage and associated AUMs. Within these ROW avoidance and exclusion areas, there would also be no new roads that could increase the potential for harassment of and injury to livestock from motorized vehicles.

Impacts from Minerals and Energy

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative C; the same ACECs are designated in both alternatives. However, management prescriptions of some ACECs would be more restrictive under Alternative D. For example, under Alternative D, all non-WSA lands with wilderness characteristics within the ACECs would be designated as closed to OHV use and would be designated as VRM Class I. This designation could increase constraints on options for range improvements as well as decrease opportunities for access to remote locations within allotments, compared with Alternative C.

4.4.3 Recreation

This section presents potential impacts on recreation resources, opportunities, and experiences from management actions for other resource programs. Recreation uses within the decision area include backpacking, recreational OHV use, hiking, camping, sightseeing/viewing nature, hunting, fishing, mountain biking, rock climbing, and horseback riding. Impacts could occur through potential changes to visitor preferences (activities, experiences, benefits), recreation setting conditions (physical, social, administrative), recreation management (resources, signing, facilities), recreation marketing (visitor services, information, interpretation and environmental education), recreation inventory and monitoring, and recreation administration (permits, fees, visitor limits and regulations). These recreation features are interrelated and connected to access. For example, changes in recreation settings would result in corresponding changes in the opportunities to achieve desired recreation experiences and associated benefits. These opportunities and benefits are influenced by access.

Recreational experiences and the potential attainment of a variety of beneficial outcomes are vulnerable to any management action that would alter the settings and opportunities in a particular area. Recreation settings are based on a variety of attributes, such as remoteness, the amount of human modification in the natural environment, evidence of other users, restrictions and controls, and the level of motorized vehicle use. Management actions that greatly alter such features within a particular portion of the planning area could affect the capacity of that landscape to support appropriate recreation opportunities and beneficial outcomes.

Methods and Assumptions

The analysis is based on the following assumptions:

- Recreation use within the planning area will continue to increase during the life of the plan.
- The incidence of resource damage and conflicts between recreationists involved in motorized and non-motorized activities will increase with increasing use of public lands.
- The existing transportation network will be sufficient to meet the demand of recreational OHV opportunities.
- There will be sufficient opportunities to meet the demand for non-motorized recreation (e.g., hiking, mountain biking, equestrian).
- Demands for all types of recreation experiences will increase—particularly demands for semi-primitive motorized, semi-primitive non-motorized, and primitive recreation.
- Demand for Special Recreation Permits (SRP) will increase during the life of the plan.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified when possible. In absence of quantitative data, best professional judgment was used. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to recreation would likely result from actions proposed under the following resource programs:

- Water Resources
- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species

- Fish and Wildlife
- Wild Horses and Burros
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on recreation. There are no WSA decisions that would impact recreation.

Alternative N: No Action

Impacts from Water Resources

Decisions proposed for water quality and the protection of groundwater would also benefit recreational uses by maintaining the quality and quantity of public water sources and natural springs. Maintaining a 500-foot buffer zone of no surface disturbance and/or occupancy around natural springs would continue to restrict commercial permit holders from camping in these areas. General recreation visitors would also be displaced where fencing is constructed to maintain these buffer zones. However, in most cases there are adequate opportunities for camping away from natural springs. The impacts from potential displacement would range from negligible to minor. In the long term, recreational opportunities such as birding and hunting could be enhanced because habitat within the buffer zone and water quality would be improved.

Impacts from Vegetation and Fire and Fuels Management

Depending on the type, scope, and intensity, vegetation treatments and fire and fuels management could directly impact recreation settings and the associated visitor experiences as well as the possible realization of specific benefits. Impacts in treated areas could range from negligible to moderate. The duration of the impacts would be dependent on the type of treatment being applied as well as the acreage and success of ESR treatments. In the long term, managing vegetation resources to achieve *Fundamentals of Rangeland Health* and desired vegetation conditions, including the control of noxious weeds, invasive species, and insects, would improve the condition of the landscape and enhance recreation experiences and settings. Vegetation treatments would also indirectly improve wildlife-related recreation opportunities as a result of improved wildlife habitat.

Impacts from management activities in riparian areas, specifically buffer zones along streams, would be the same as discussed for this alternative in Impacts from Water.

Impacts from Visual Resources

Managing the RFO according to VRM classes could impact recreation experiences depending on the VRM class assigned and the experience desired. Any new facilities, new types of commercial activities, or other surface-disturbing activities would be analyzed on a case-by-case basis and would be required to meet VRM objectives or be relocated.

Under this alternative, 529,500 acres (25% of the lands within the RFO) would continue to be managed to meet VRM Class II objectives. The character of the landscape would be maintained in these areas and enhance the recreation experience, especially for those users seeking a more undeveloped setting. Some projects could still be allowed that could result in localized impacts to the landscape and thus the recreation experience, which would range from negligible to minor, depending on the type of project.

Managing 569,000 acres (27% of the RFO) as VRM Class III would allow moderate changes to the landscape. While specific impacts would depend on the type and location of projects, they would range from minor to moderate. Class III areas should still support a wide variety of recreational opportunities and experiences. The remaining area, 1,029,500 acres (48% of the RFO), would continue to be managed as VRM Class IV, which allows for major modification of the landscape. Class IV areas would allow for development of recreation-related facilities, if necessary, and would continue to support and possibly enhance motorized recreation opportunities such as driving for pleasure, vehicle-supported camping, and OHV riding. The non-motorized recreation experience could be diminished in areas in which the surface is disturbed and the landscape altered. Impacts would be long term, and depending on what projects are proposed, could range from minor to major.

Impacts from Special Status Species

SSS were not specifically addressed in existing plans. All federal actions would be subject to the requirements of the Endangered Species Act of 1973, as amended. For recreation resources, this would include such things as facility construction, issuance of Special Recreation Permits, or trailhead improvements. Any action potentially affecting any listed threatened or endangered species would require the appropriate level of Section 7 consultation with U.S. Fish and Wildlife Service (USFWS). Necessary mitigation, such as timing and avoidance, would be implemented to protect listed plant and animal species. If adequate mitigation could not be applied to the proposal, it would be relocated or denied.

Impacts from Fish and Wildlife

Improving wildlife habitat would help maintain or improve fish and wildlife populations, which would be beneficial for recreation opportunities such as wildlife viewing, hunting, and fishing. Depending on the scope and intensity of habitat improvement efforts, impacts to recreational opportunities could be mixed. Modification of physical recreational settings could have impacts similar to those described in the Impacts to Vegetation section. Impacts could range from negligible to moderate.

Impacts from Wild Horses and Burros

The Canyonlands Herd Management Area (HMA) would continue to be managed as a wild burro HMA, resulting in the opportunity for the public to view the wild burros while in the Robbers Roost area. Although considered a negligible benefit because few visitors seek that experience alone and only a portion see the wild burros, it could enhance their recreation experience.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Limiting or controlling recreation activities to support the *Standards for Public Land Health* and *Guidelines for Recreation Management* for BLM Lands in Utah and to protect resources could result in some localized closures or limitations on public use. The impacts would be dependent on the extent of the closures/limitations necessary, but they would be expected to be negligible to minor.

Continuing to manage a large portion of the RFO as an ERMA would allow a variety of recreational opportunities in a less structured setting. No new SRMAs would be established. Yuba Reservoir SRMA would continue to be managed by the Fillmore FO (and is therefore not addressed in this Proposed RMP revision). Under this alternative, emphasis would be placed on maintaining a non-structured setting, subject to change as recreation uses change. Special management objectives to maintain the desired recreational opportunities and settings for specific areas would not be realized. In the long term, moderate

impacts could result as visitation increases and new recreation activities develop. Potential user conflicts and degradation of the resource settings due to overuse are possible.

SRPs would continue to be issued on a case-by-case basis with no management plan direction for issuance of commercial, competitive, organized group, and vending permits. Given substantial increases in workload as permit applications increase, the current case-by-case authorization is inefficient. This process may eventually preclude some recreation providers from making available certain recreation opportunities. This could lead to minor-to-moderate impacts, which could increase as demand for SRPs increase.

Impacts from Travel Management

Under Alternative N, 1,636,400 acres (77% of the RFO) would continue to be open for cross-country vehicle travel, the most of any alternative. Conflicts between motorized and non-motorized users and the potential for resource degradation would continue to increase, which could result in a long-term, moderate impact to recreation settings and opportunities. Recreation settings would be maintained and protected within the 277,600 acres (13%) designated as limited for OHV use and the 4,315 miles of routes open to motorized use would provide access. The 214,000 acres (10%) of the RFO designated as closed to OHV use would further maintain and protect the semi-primitive to primitive setting in those areas.

No restrictions would be placed on motorized use off of designated routes for parking/staging and access to campsites, except within WSAs. There are also no decisions for the use of motorized vehicles for retrieval of game kills. This would continue to enhance some motorized activities but could result in long-term minor-to-major impacts to resources and recreation settings.

Impacts from Lands and Realty

Land tenure decisions include criteria regarding the disposal and acquisition of lands with high-value recreation opportunities. These decisions could enhance the recreation opportunities and management of areas if high-value recreation and access are considered.

The four ACECs and five developed recreation sites in the Henry Mountains would be proposed for withdrawal from mineral entry, making the total withdrawn and proposed withdrawal acreage 169,480 (8% of the RFO). This could protect existing recreational opportunities within the ACECs and protect investments at the recreation sites.

If wind or solar energy were developed in the lands managed by the RFO, it could adversely affect the recreation setting. Introducing large wind structures and solar arrays would be noticeable. Depending on the setting and opportunities in the area, this type of development could displace some recreational visitors. The impact would range from minor to major, depending on the extent of development of these energy alternatives.

Impacts from Minerals and Energy

Recreation settings, opportunities, and experiences could be impacted during all phases of minerals development. Minerals-related exploration, development, and access road and infrastructure construction would create surface disturbances, noise, and light pollution. These impacts would be greatest if development occurred in semi-primitive to primitive areas with natural-appearing landscapes. Concentrations of wells or other mineral infrastructure could also result in localized changes to the recreational opportunities and experiences available in that area.

Adherence to best management practices outlined in mining laws, plans of operation, pertinent restrictions, standard terms and conditions, etc., would help minimize such impacts. Closing 459,700

acres to fluids mineral leasing, withdrawing 169,480 acres to mineral entry, and closing 459,700 acres to mineral material disposal would eliminate risks to recreation settings from minerals management within those areas. The potential for development varies within different portions of the planning area (Table 4-39). However, development potential is low in the eastern portion of the planning area, where the majority of the primitive to semi-primitive, natural-appearing landscapes occur and where development would be most likely to impact recreation settings and experiences.

Overall, impacts to recreation would be minor.

Impacts from Special Designations

Wild and Scenic Rivers

Management of the 12 eligible Wild and Scenic River segments (135 miles)—to protect their outstandingly remarkable values, free-flowing nature, and tentative classification—would maintain the recreation settings along those segments. The majority of these segments are tentatively classified as "wild" and the decision would support the semi-primitive and primitive recreation opportunities. Portions of the Dirty Devil River, Robbers Roost Canyon, Twin Corral Box Canyon, and all of the Beaver Wash Canyon, No Mans Canyon, Larry Canyon, and Sams Mesa Box Canyon overlap with WSAs that provide similar protection of recreation settings. Overall, the impact from this decision would be negligible.

Areas of Critical Environmental Concern

Continuing the present management of the four existing ACECs would maintain the primitive and semi-primitive non-motorized recreational opportunities in those areas.

Alternative A

Impacts from Water Resources

Impacts would be similar to those discussed under Alternative N. The buffer zone around natural springs would be reduced to 330 feet, increasing the camping opportunities slightly over Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Impacts from vegetation and fire and fuels management would be similar to those discussed under Alternative N except that maximum treatment acreage limits would be established (averaging 73,600 annually for all treatments). This may result in greater success for restoring the landscape to its natural condition, further enhancing recreation experiences and settings.

In addition, the buffer zone along streams would be reduced to 330 feet, increasing the camping opportunities slightly over Alternative N.

Impacts from Visual Resources

Under Alternative A, 446,900 acres (21% of the RFO) would be designated as VRM Class I (these acres are within the WSAs). The character of the landscape in these areas would be maintained and enhanced, especially for those users seeking the opportunity for solitude and primitive/unconfined recreation in an undeveloped landscape. Recreation projects and developments would only be allowed if they were consistent with VRM class objectives. Any impacts would be localized and would range from negligible to minor, depending on the type of project. There would be 392,800 acres (18% of the RFO) designated as VRM Class III, slightly less than Alternative N. The remaining 1,288,300 acres (61% of the RFO) would be designated as VRM Class IV, the most of any alternative.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities. The level of impact would depend on the number of roads closed or the amount of recreation use the road receives. Proposed management for SSS and raptor habitats would result in species-specific buffers and seasonal, temporal, and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. If restrictions become necessary in areas managed as open to cross-country OHV use, the effect on the recreational opportunities would have a minor to moderate effect. Under this alternative, the opportunities for cross-country OHV use (e.g., open OHV areas) have been reduced by 56% from Alternative N. These closures of open OHV areas would be more noticeable to those recreational users seeking a cross-country experience.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N. Cross-country OHV use would be limited in some habitat areas, which would restrict public land users from creating new routes in these areas, thus protecting the general recreation setting and decreasing conflicts between users. The impact would be minor to moderate.

Impacts from Wild Horses and Burros

Impacts would be the same as those described for Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Impacts under this alternative would be similar to Alternative N in regards to decisions supporting rangeland health and protecting resources.

Under Alternative A, 514,500 acres (24% of the RFO) would be managed under five SRMAs. Management objectives through the development of activity plans would provide visitors with higher quality recreation opportunities through the more focused and effective management of the desired settings, activities, and experience opportunities appropriate for each SRMA. Factory Butte, Big Rocks, and Sahara Sands SRMAs would focus on motorized recreation opportunities and provide a variety of riding experiences (e.g., Mancos Shale hill climbs, rock crawling, and sand dunes). The Dirty Devil and Otter Creek SRMAs would maintain the dispersed recreation opportunities. Impacts to recreation settings would range from negligible to moderate, as these SRMAs would maintain the experiences and opportunities currently occurring in these areas. The remainder of the lands would be managed as an extensive recreation management area, which would continue to support a variety of recreational opportunities in a less structured setting. However, with 1,613,500 acres (76%) of the area receiving no specific management direction for recreation opportunities, there would continue to be conflicts between user groups seeking varied experiences that may be viewed as incompatible. These impacts could range from minor to moderate and would continue to increase as recreation uses grow and change.

The use of management decisions for the issuance of SRPs provides direction regarding the types of permits that would be issued, areas in which some types of permits would not be appropriate, and thresholds for organized group permits. These decisions would allow for a variety of SRPs to be issued while providing greater resource protection. Processing would also be streamlined by having management

plan criteria to compare to applications. The benefits to applicants would be minor to moderate, depending on the complexity of their proposal.

Impacts from Travel Management

Alternative A would designate 449,000 acres (21% of the RFO) as open to cross-country OHV use. These managed open play areas would provide a variety of motorized opportunities scattered throughout the management area. The areas identified as open include most of the areas currently being used for cross-country OHV recreation, which would be beneficial for motorized users. The remainder of the management area, 1,679,000 acres (79% of the RFO), would be limited to designated routes with a total of 4,312 miles of routes, similar to Alternative N. Limiting OHV use to designated routes within a larger portion of the area would maintain and enhance the recreation experiences for the majority of users and reduce conflicts. Opportunities for cross-country motorized use would be reduced; however, the impacts from this alternative would be negligible to minor. Designating no closed areas could reduce opportunities for solitude and primitive/unconfined recreation. Areas within WSAs currently closed to any motorized use would be available for limited OHV use on designated, inventoried routes consistent with the IMP. This would be an increase of 18 miles of inventoried routes available over Alternative N. The overall impacts would be minor, due to the low number of miles, but could potentially impact opportunities for primitive recreation along those routes.

Management decisions to limit parking/staging and motorized access for camping would continue to provide those recreation opportunities while maintaining the overall recreation settings. Allowing non-motorized, wheeled game carriers to retrieve game kills outside of WSAs would continue to enhance hunting opportunities.

Impacts from Lands and Realty

The impacts would be the same as described for Alternative N.

Impacts from Minerals and Energy

The impacts would be similar to those described under Alternative N. Areas closed or withdrawn for minerals are slightly less in this alternative: 446,900 acres closed to oil and gas leasing, 154,700 acres withdrawn from mineral entry, and 446,900 acres closed to salable mineral disposal. Overall, impacts to recreation would still be minor.

Impacts from Special Designations

Wild and Scenic Rivers

No eligible river segments would be managed as suitable for inclusion in the National Wild and Scenic River System under Alternative A. However, 98 of the 135 miles of eligible WSR segments are within WSAs that would continue to be managed under the IMP, providing protection of the recreation settings. The majority of the eligible Dirty Devil River segment and all of the eligible Robbers Roost Canyon, Twin Corral Box Canyon, Beaver Wash Canyon, No Mans Canyon, Larry Canyon and Sams Mesa Box Canyon segments would receive management protection from the proposed Dirty Devil SRMA, retaining the semi-primitive to primitive recreation settings in those areas. Overall, the potential for impacts to recreation under this alternative would be negligible.

Areas of Critical Environmental Concern

No ACECs are proposed for designation under Alternative A. There would no longer be protective ACEC management for the four existing ACECs. However, three of the four existing ACECs are within WSAs, which would continue to protect the relevant and important values and preserve the recreation setting in those areas. Removing protective ACEC management prescriptions for North Caineville Mesa could

result in changes to the recreation setting and opportunities if surface disturbance and development were to occur. However, due to the topography and lack of access, the probability of impacts would be low.

Proposed RMP

Impacts from Water Resources

Impacts would be the same as described under Alternative A.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as described under Alternative A.

Impacts from Visual Resources

Under the Proposed RMP, the acreage and impacts for VRM Class I lands would be the same as described under Alternative A (446,900 acres, or 21% of the RFO). Under this alternative, 249,800 acres (12% of the RFO) would be designated as VRM Class II; 393,100 acres (18% of the RFO) would be designated as VRM Class III; and the remaining 1,038,200 acres (49% of the RFO) would be designated as VRM Class IV. The VRM Class II and III acres would be less than in Alternatives N and C, but more than Alternatives A and D. VRM Class IV acreage would be more than in Alternatives N, C, and D, but less than Alternative A. Although future recreation-related projects would be restricted in Class I and II areas, this would maintain the recreation settings and the visual components of the landscape. Any adverse impacts to recreation would be localized and would range from negligible to minor.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities. The level of impact would depend on the number of roads closed or the amount of recreation use the road receives. Proposed management for SSS and raptor habitats would result in species-specific buffers and seasonal, temporal, and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. If restrictions become necessary in areas managed as open to cross-country OHV use, the effect on the recreational opportunities would be minor to moderate. Under this alternative, the opportunities for cross-country OHV use in open OHV areas have been reduced by 77% from Alternative N. Therefore, further closures of open OHV areas would be noticeable to those recreational users seeking a cross-country experience. Conflicts between motorized users and safety concerns could increase by further concentrating motorized use into smaller open areas.

Impacts from Fish and Wildlife

Impacts would be less than those described under Alternative A. Cross-country OHV use would be limited to designated routes in most wildlife habitat areas, protecting the general recreation setting and decreasing conflicts between users in additional areas.

Impacts from Wild Horses and Burros

Impacts would be similar to those described under Alternative N. As management prescriptions would increase the burro herd and its genetic viability, the potential for viewing the burros could also increase, increasing beneficial impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 78,600 acres (4% of the RFO) would be managed with the goal of protecting, preserving, and maintaining the wilderness characteristics of non-WSA lands with wilderness characteristics. Motorized uses would be limited to designated routes, resulting in areas that currently

exist as semi-primitive motorized settings becoming semi-primitive and non-motorized in terms of remoteness, reducing motorized recreational opportunities in some areas. Other areas as closed because of other resource management decisions. Coupled with the adjoining WSAs, the Proposed RMP would result in 525,500 acres (25% of the RFO) being managed for semi-primitive motorized use along designated routes to primitive recreation away from these routes. This would be a beneficial impact for the recreationists seeking a more semi-primitive to primitive experience. Maintaining OHV use along designated routes would maintain access into many of these areas, although there would be portions of these areas that would become more difficult and physically unfeasible for many visitors, which would impact those who seek motorized recreation opportunities. A total of 3,739 miles of routes would be limited to designated routes with seasonal closures or size/width restrictions for motorized travel under the Proposed RMP, a reduction of 576 miles from Alternative N. The need to hike for long distances across dry benchlands to reach preferred destinations could displace some users seeking a semi-primitive to primitive experience.

Impacts from Recreation

Impacts under the Proposed RMP would be similar to Alternative A, with the exception that the acreage and locations of the proposed SRMAs change somewhat. Under the Proposed RMP, 860,390 acres (40% of the RFO) would be managed under five SRMAs. Factory Butte and Big Rocks SRMAs would focus on motorized recreation opportunities and provide a variety of riding experiences (e.g., Mancos Shale hill climbs, rock crawling).

Some users of the proposed Factory Butte SRMA are repeat visitors, but many are visiting the area for the first time and will need to have information available at entrance points and on the ground in order to comply with the motorized designations. Providing increased information on the ground through kiosks and improved signage would better educate the public regarding the types of uses they can participate in, helping them avoid illegal use or reducing misconceptions for visitors from out of the area that illegal use is taking place. It also allows them to choose an area where the recreation uses are consistent with the experience they seek.

While it is preferable that topographic barriers be used when possible—which is the case with a portion of the boundary for the Factory Butte OHV Play Area RMZ—the majority of the boundaries there are not distinct topographic barriers; therefore, fencing or carsonite posts would be necessary (Appendix 18). The proposed Factory Butte OHV Play Area RMZ includes the Swing Arm City Open Area (2,600 acres) and Caineville Cove Inn Open Area (100 acres). Providing clear and enforceable boundaries for the OHV open areas would lead to less confusion among riders as to where the boundary is located, resulting in greater compliance with management prescriptions and a reduction in possible citations that negatively impact the recreational experience.

The addition of improved amenities should provide a positive benefit for visitors to the area. The addition of improved access into the OHV open area, loading/unloading ramps, and restrooms would be beneficial for the health and safety of visitors to the area. Providing one all-weather access road into the OHV Play Area RMZ would improve the safety for visitors. There are currently several user-developed access routes—two of which are close to a curve in the highway, making visibility an issue. In addition, during inclement weather, this area can quickly become impassable, making it difficult to get off of Highway 24. The improved access road would allow visitors to get safely off of the highway before stopping, parking, or unloading. Providing loading/unloading ramps would give visitors a safer option to unload machines on a surface level with their truck or trailer bed. Although some visitors to the OHV open area are in self-contained camping units, other visitors to the OHV open area and surrounding areas do not have self-contained units. The addition of restrooms would provide for appropriate sanitation and help protect the health and safety of all visitors to the area.

The Henry Mountains, Dirty Devil, and Capitol Reef Gateway SRMAs would focus on dispersed recreation opportunities. These SRMAs would maintain the experiences and opportunities currently occurring in these areas, which range from semi-primitive motorized to primitive. The remainder of the lands, 1,267,610 acres (60% of the RFO), would be managed as an extensive recreation management area that would continue to support a variety of recreational opportunities in a less structured setting. This alternative provides more of a balance and variety of structured (SRMA) and non-structured (ERMA) opportunities than any of the other alternatives and should reduce the potential for conflicts between user groups seeking varied experiences.

Impacts from Travel Management

Less than 1% (9,890 acres) of the RFO would be open to cross-country OHV use under this alternative. Conflicts between non-motorized and motorized users would be reduced overall but would continue due to motorized users being displaced from historical use areas. Conflicts between motorized users and safety concerns could increase by concentrating motorized use into small, managed open areas. This alternative would result in moderate-to-major impacts to motorized users seeking a cross-country motorized experience. Designating 1,908,210 acres (90% of the RFO) as limited and 209,900 acres (10% of the RFO) as closed to OHV use would maintain and enhance the recreation experiences in those areas. Designation of 4,277 miles of routes would be a reduction from what is available in Alternatives N and A. Limiting OHV use to designated routes within a larger portion of the area would maintain and enhance the recreation experiences for the majority of users and reduce conflicts. Opportunities for primitive recreation would be greater than in Alternative A through the designation of some closed acres.

Management decisions to limit parking/staging and motorized access for camping and game retrieval would be similar to Alternative A. Distances for motorized access would be reduced from 300 feet in Alternative A to 150 feet in the Proposed RMP, which would reduce opportunities slightly.

Impacts from Lands and Realty

The impacts would be similar to those described under Alternative N. The two potential ACECs, one suitable wild river, and five developed recreation sites in the Henry Mountains would be proposed for withdrawal from mineral entry; combined with the existing withdrawals, a total acreage of 176,200 (9% of the RFO) would be withdrawn from mineral entry and be precluded from surface disturbance due to mining activity. This would be a slight increase over Alternatives N and A and would help maintain the recreation settings and protect investments at developed recreation sites. Limiting the areas in which these developments take place would reduce the potential for impacts from wind and solar energy development. These criteria would protect areas in which these types of developments would have the greatest impact on recreational opportunities (e.g., WSAs, WSR corridors, ACECs, areas open to oil and gas leasing with NSO, and VRM Class I and II areas).

Impacts from Minerals and Energy

The impacts would be similar to that described under Alternative A. Areas closed or proposed for withdrawal for minerals are slightly more than Alternative A: 447,300 acres closed to oil and gas leasing, 176,200 acres withdrawn from mineral entry, and 601,800 acres closed to salable mineral disposal.

Impacts from Special Designations

Wild and Scenic Rivers

The impacts from WSR decisions would be similar to those discussed under Alternative N. Under this alternative, only the Fremont River (Fremont Gorge) would be recommended and managed for suitability as a WSR. Some other eligible segments would still receive protective management from overlapping WSAs. Overall, impacts would be negligible.

Areas of Critical Environmental Concern

Under this alternative, two ACECs would be designated: North Caineville Mesa and Old Woman Front. Management prescriptions to protect the relevant and important values for these 2,530 acres, such as closing the areas to OHV use and NSO for minerals would preserve the semi-primitive-non-motorized to primitive recreation opportunities in these areas. Overall, the impact would be negligible.

Alternative C

Impacts from Water Resources

Impacts would be similar to those discussed under Alternative N. The buffer zone around natural springs would be increased to 660 feet, reducing the camping opportunities slightly over Alternative N.

Impacts from Vegetation and Fire and Fuels Management

Under Alternative C, impacts would be similar to those discussed under Alternative N except that only treatment methods that mimic natural processes would be used to achieve or maintain *Fundamentals of Rangeland Health* and desired vegetation condition, including control of noxious weeds and invasive species. No control measures would be implemented to control insect pests. These processes would be the least disturbing and may not alter recreational patterns in the short term as much as other techniques. However, these treatment methods could be ineffective for managing vegetation or controlling invasive species in some areas, resulting in repeat treatments and impacting the recreation setting and experiences in the long term.

Impacts would be similar to those discussed under Alternative N. The buffer zone along streams would be increased to 660 feet, reducing the camping opportunities slightly over Alternative N.

Impacts from Visual Resources

Under Alternative C, the acreage and impacts for lands designated as VRM Class I would be the same as described under Alternative A and the Proposed RMP (446,900 acres, or 21% of the RFO). Under this alternative, 230,600 acres (11% of the RFO) would be designated as VRM Class II; 509,100 acres (24% of the RFO) would be designated as VRM Class III; and the remaining 941,400 acres (44% of the RFO) would be designated as VRM Class IV. Designating the majority of the RFO as VRM Class III or IV could result in large areas of moderate to major modifications in the existing character of the landscape, which could alter the recreation settings. However, less of the RFO would be designated in these VRM classes than in Alternatives N, A, or the Proposed RMP, resulting in less potential impacts to recreation as compared to those alternatives.

Impacts from Special Status Species

Closing and reclaiming roads to avoid or reduce habitat fragmentation could have a minor to moderate effect on recreational opportunities (e.g., reducing access while improving semi-primitive to primitive opportunities). The level of impact would depend on the number of roads closed or the amount of recreation use the road receives. Proposed management for SSS and raptor habitats would result in species-specific buffers and seasonal, temporal, and spatial restrictions. These restrictions would likely have the greatest effect on commercial recreation permit holders, making some proposed trips uneconomical to offer and difficult logistically, but impacts are expected to be minor. There would be no effects to recreational users from SSS restrictions in open OHV areas because none are proposed in this alternative.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no impacts to recreation.

Impacts from Recreation

Impacts under this alternative would be similar to the Proposed RMP. Under this alternative, 930,000 acres (44% of the RFO) would be managed under four SRMAs. Management of the Henry Mountains, Dirty Devil, Capitol Reef Gateway, and Sevier Canyon SRMAs would provide specific direction to maintain and enhance the semi-primitive motorized and primitive recreation settings in those areas. No SRMAs would be established to emphasize cross-country motorized opportunities because there are no open OHV areas proposed in this alternative. This alternative would result in minor-to-moderate impacts and could result in increased conflict by displacing some users whose activities may no longer be consistent with the types of SRMAs proposed.

Impacts from Travel Management

Under Alternative C, no areas would be available for cross-country OHV use. This would result in a major impact to motorized users seeking a cross-country motorized experience. That specific recreation opportunity would no longer exist within the RFO. Designating 1,445,000 acres (68% of the RFO) as limited and 683,000 acres (32% of the RFO) as closed to OHV use would maintain and enhance the recreation experiences in those areas. Designation of 3,192 miles of routes would be a reduction of 1,123 miles of routes from what is available under Alternative N, resulting in minor-to-moderate impacts for access to recreation destinations. The potential for primitive recreation opportunities would be enhanced over Alternatives N, A, and the Proposed RMP by having additional acres closed to OHV use.

Management decisions to limit parking/staging off of designated routes would be reduced to 25 feet, and campsites with motorized access would be designated. This alternative would preclude the use of mechanized game carriers. These decisions would further protect resources and semi-primitive to primitive settings but would displace some users. These decisions would result in minor-to-moderate impacts to recreational opportunities that are dependent on access, dispersed camping, and game retrieval by potentially limiting these opportunities.

Impacts from Lands and Realty

The impacts would be similar to those described under the Proposed RMP. The acreage recommended for withdrawal from mineral entry would increase to 331,100 acres (16% of the RFO) and include all or parts of eight ACECs, all suitable WSR segments, and the five developed recreation sites in the Henry Mountains. This is a 7% increase over the Proposed RMP, which would further reduce surface disturbance, maintain the recreation settings, and protect investments at the recreation sites.

Impacts from Minerals and Energy

The impacts would be similar to those described under the previous alternatives. The areas closed or withdrawn from mineral entry would increase over the previously discussed alternatives, providing additional protection of the recreation settings in the more undeveloped portions of the planning area: 586,300 acres closed to oil and gas leasing; 331,100 acres withdrawn from mineral entry; and 586,300 acres closed to salable mineral disposal.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs would be designated, totaling 16 areas with 886,810 acres (42% of the RFO). Management prescriptions to protect the relevant and important values—such as closing or limiting areas to OHV use, designating Class A scenery outside WSAs as VRM Class II, and NSO for minerals—would complement other recreation decisions and preserve the recreation settings in those areas. Overall, the impact would be negligible to minor.

Alternative D

Impacts from Water Resources

Impacts would be the same as those described under Alternative C.

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Under Alternative D, the acreage designated as VRM Class I would be 1,129,600 acres (53%), the most of any alternative. This alternative would designate 66,700 acres (3%) of the RFO as VRM Class II; 355,100 acres (17%) as VRM Class III; and the remaining 576,600 acres (27%) as VRM Class IV. This alternative would have the most VRM Class I and II acreage of any of the alternatives, providing the most protection for undeveloped recreation settings and the visual components of the landscape. VRM Class III and IV acreage would be the least under this alternative, providing the least opportunities for the development of facilities for those visitors seeking a more developed setting or if facilities are necessary for resource protection. This may result in moderate site-specific impacts.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Wild Horses and Burros

Impacts would be the same as those described under the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 682,600 acres (32% of the RFO) would be managed with the goal of protecting or preserving the wilderness characteristics of non-WSA lands with wilderness characteristics. Implementation of this alternative would result in major impacts to recreational settings and opportunities. These areas would be closed to motor vehicle use, resulting in large areas that currently exist as semi-primitive motorized settings becoming semi-primitive, non-motorized in terms of remoteness, effectively reducing motorized recreational opportunities. Coupled with the adjoining WSAs, this alternative would result in 1,129,500 acres (53% of the RFO) being managed for semi-primitive to primitive non-motorized recreation. This would be a beneficial impact for the recreationists seeking a more semi-primitive to primitive experience. However, it should be noted that because of the large areas that would be closed to OHV use, access into many of these areas would become more difficult and physically unfeasible for

many visitors, which would impact those who seek motorized recreation opportunities. A total of 3,043 miles of routes would be designated as open for motorized travel under this alternative, a reduction of 1,272 miles from Alternative N. This would include access routes to some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon, and Horseshoe Canyon [Deadman's Trail]). The need to hike for long distances across dry benchlands to reach canyon destinations would also displace some users seeking a semi-primitive to primitive experience.

Impacts from Recreation

Impacts would be similar to Alternative C except that the SRMA acreage is much larger under Alternative D than in any other alternative. Under this alternative, 1,358,100 acres (64% of the RFO) would be managed under seven SRMAs. Management of the Henry Mountains, Dirty Devil, portions of the Capitol Reef Gateway, portions of East Fork Sevier River, San Rafael Swell, Little Rockies, and Labyrinth Canyon SRMAs would be managed to maintain and enhance primitive and semi-primitive recreation. The remainder of the Capitol Reef Gateway and E. Fork Sevier River SRMAs would be managed for dispersed recreation. Managing 64% of the FO for semi-primitive to primitive recreation with large areas closed to OHV use would benefit those recreationists seeking that type of experience. However, some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon, and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by vehicle, and some primitive recreationists may be displaced because of longer hiking distances on the dry benchlands to reach destinations in the canyons. These impacts would be greatest in the Henry Mountains, Dirty Devil, and San Rafael Swell SRMAs. No SRMAs would be established to emphasize cross-country motorized opportunities because there are no open OHV areas proposed in this alternative. This alternative would result in moderate-to-major impacts and could result in increased conflict by displacing users whose activities may no longer be consistent with the types of SRMAs proposed.

Impacts from Travel Management

The impacts of Alternative D would be similar to Alternative C. However, there would be minor to moderate beneficial and adverse impacts from designating 1,155,200 acres (54% of the RFO) as closed to OHV use. Managing large closed areas would maintain a primitive recreation setting and provide improved opportunities for non-motorized experiences, solitude, and unconfined recreation. This management would benefit recreationists seeking a primitive recreation experience. However, some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon, and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by vehicle, and some primitive recreationists may be displaced because of longer hiking distances to reach destinations in the canyons. There would continue to be 972,800 acres (46% of the RFO) designated as limited to OHV use. Designated routes would total 3,043 miles, the least of any alternative. This would improve semi-primitive to primitive opportunities but would displace motorized users, including those wanting to access existing trailheads to more remote areas. The potential effects to all recreationists using motorized vehicles to access the area would be greatest in this alternative.

The impacts in this alternative for parking/staging and motor vehicle access to campsites and game retrieval would be the same as described under Alternative C.

Impacts from Lands and Realty

The impacts would be similar to those described under the Proposed RMP. The acreage recommended for withdrawal from mineral entry would increase to 903,900 acres (42% of the RFO) and include all or portions of eight ACECs, all suitable WSR segments, and the five developed recreation sites in the Henry Mountains. It would also include all non-WSA lands with wilderness characteristics, which would ensure protection of wilderness characteristics and the setting needed to support primitive and unconfined forms

of recreation in these areas. This would significantly reduce surface disturbance, maintain semi-primitive to primitive recreation settings, and protect investments at the recreation sites.

Impacts from Minerals and Energy

The impacts would be similar to those described under Alternative C. This alternative would provide the most protection of recreation settings by closing 1,160,500 acres to fluids mineral leasing, withdrawing 903,900 acres to mineral entry, and closing 1,160,500 acres to mineral material disposal. Overall, the impacts to recreation would be negligible to minor under Alternative D.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under this alternative, the impacts from ACEC designations would be similar to those discussed for non-WSA lands with wilderness characteristics. ACEC management prescriptions would be adjusted in this alternative for consistency with management decisions for non-WSA lands (e.g., restrictions on surface disturbances and OHV use).

4.4.4 Travel Management

This section describes potential impacts on travel management resulting from the implementation of management actions for other resource programs. Impacts on resources and resource uses resulting from implementation of the travel management program are discussed in those particular resource sections of this chapter.

The travel management program provides for ingress, egress, and access in the RFO. The transportation network consists of 4,380 miles of roads and trails, mostly unpaved, that provide access into and across the RFO. Various individuals rely on this network to access livestock operations, mining properties, utility and communication facilities, range and wildlife developments, wildfire prevention/management and suppression, recreation sites, as well as the public lands in general for a myriad of recreational activities, and intermingled private and state-owned lands. Management decisions that involve changes to miles of roads open for public or administrative use, number of acres open to off-road travel, or specific travel restrictions (vehicle size, seasonal restrictions, etc.) would affect access into and across the RFO. The following discussion of the effects on transportation and access focuses on management actions that restrict or facilitate travel management opportunities. Impacts on opportunities for OHV use are addressed in the recreation impact analysis.

This analysis describes the degree of access and the extent of usable transportation systems within the RFO and its effects on both motorized travel. This includes decisions that would limit the degree of travel opportunities and the ability to access certain portions of the decision area. The majority of motorized access issues are related to OHV use; this form of transportation provides a major source of travel opportunities. Mechanized travel involves primarily mountain bikes but could also include other forms of non-motorized vehicles.

Impacts to travel management, as defined above (e.g., via state-maintained highways and BLM-maintained system roads) would be anticipated primarily from route designations and the implementation of management actions that consolidate public land through purchases, exchanges, and disposal of isolated tracts.

Methods and Assumptions

The analysis was based on the following assumptions:

- The transportation network, as defined by alternative, will remain in place throughout the life of the plan.
- The BLM will evaluate RS-2477 assertions under a separate process and criteria than this planning process.

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources in the RFO, review of existing literature, and information provided by other agencies. Effects are quantified when possible. In absence of quantitative data, best professional judgment was used. Spatial analyses were conducted using GIS data and analyses. Impacts are described using ranges of potential impacts or in qualitative terms, if appropriate.

Environmental Consequences

Impacts to travel management would likely result from actions proposed under the following resource programs:

- Special Status Species

- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on travel management.

Alternative N: No Action

Impacts from Special Status Species

No special management is proposed in Alternative N to protect SSS. However, current policy and practices call for the protection of threatened and endangered species habitat by mitigating disturbances and prohibiting activities that destroy, adversely modify, or fragment critical habitat. Extensive limitations are not anticipated. Therefore, the overall impact to travel management would be negligible.

Impacts from Fish and Wildlife

Management strategies to avoid or reduce habitat fragmentation would include such practices as reclaiming redundant roads, reclaiming roads no longer serving intended purpose, and reducing road densities. There could be some effects on travel management, depending on the number of roads reclaimed and the existing uses of those roads, but extensive limitations are not anticipated. Motorized use would continue to be seasonally closed in the Swap Mesa and Cave Flat areas from December 20 through March 20 for the protection of bison crucial habitat. Overall, impacts to travel management and access would be negligible.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

No recreation management decisions are proposed in Alternative N that would affect travel management. The entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities, including OHV use.

Impacts from Travel Management

Under Alternative N, the majority of public lands (1,636,400 acres, 77% of the RFO) are open to motorized cross-country vehicle travel. While not all of these acres are used for cross-country travel, there are certain uses and activities that take users off established routes. Harvesting fuelwood, pine nut, and other woodland products; wildlife viewing; livestock management; and dispersed camping and hunting are some of the reasons other than motorized adventure riding that these open OHV areas are used. There are 277,600 acres (13% of the RFO) designated as limited for the protection of various resources (e.g., cultural, soils, wildlife, and plant habitats) including portions of WSAs. Of the total routes identified for the planning area, 4,315 miles are open to motorized travel, including 42 miles of inventoried routes in WSAs that would continue to be available for travel. There would be 65 miles of routes closed. Within the open and limited OHV areas, there would be no restrictions on motorized use off of designated routes for the purposes of parking/staging and access to campsites, except within WSAs. The remainder of the

RFO (214,000 acres, or 10%) is closed to OHV use. It should be noted that route designations are implementation decisions and that the resulting transportation network could change over time.

Travel throughout the RFO is expected to increase due to population growth and increased demand for recreation opportunities on public lands. One of the growing demands is for access to open areas for OHV use. As more of the public lands throughout the state restrict cross-country access, the large areas left open in the RFO could draw more interest, putting other resources at risk. In the long term, this could result in area closures (either through plan amendment or emergency order) if unacceptable impacts to resources are determined to be occurring. Impacts to travel management would be negligible to minor in the short term but could increase if additional closures become necessary.

Impacts from Lands and Realty

The disposal of 280 acres identified in the Mountain Valley Management Framework Plan (MFP) would reduce the overall amount of BLM lands available to the public for access. Due to the extremely small acreage involved, impacts would be negligible. The development of wind or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if significant development took place. Exploration and development would be considered on a case-by-case basis. Impacts would be site specific.

Impacts from Special Designations

Wilderness Study Areas

In this alternative, the use of motorized vehicles would be limited to existing routes in 259,900 acres of the WSAs, with 42 of the 60 inventoried miles of routes designated for use by motorized vehicles. The routes that are open in WSAs would continue to allow for public access to valid existing rights, grandfathered rights, recreational and trailhead access, and for general use, in accordance with the IMP. The remaining 187,000 acres of the WSAs would be closed to motorized use. The development of new routes would not be authorized within these areas.

Wild and Scenic Rivers

The 135 miles of eligible river segments would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification. No management decisions are proposed to restrict access in these areas. Motorized use within these segments would be according to existing OHV designations. Many of the segments are remote and are within WSAs where motorized access is closed or limited to inventoried routes. Only 35 miles of routes exist within the eligible river segments. Therefore, the overall impact to access and travel management would be minor.

Areas of Critical Environmental Concern

The four existing ACECs would continue to be managed for the protection of their relevant and important values. These areas are and would continue to be closed to OHV use, which would not provide any additional opportunities for this type of use.

Alternative A

Impacts from Special Status Species

The impacts from the protection of threatened and endangered species habitat would be similar to Alternative N. Strategies incorporated into this alternative (e.g., closing and reclaiming roads; using species-specific buffers; and seasonal, temporal, and spatial restrictions) could affect travel management within habitat areas, but extensive limitations are not anticipated. Management actions would limit OHV use to designated routes in sage-grouse lek and nesting habitats but do not include area closures or seasonal restrictions. Route restrictions proposed in this alternative for protection of all SSS resources

total 249 miles (6% of the total designated route miles). These restrictions would have minor, site-specific impacts on travel and access in the RFO.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under Alternative N. Management actions would limit OHV use to designated routes in bison crucial habitat but do not include area closures or seasonal restrictions. Overall, impacts to travel management and access would be minor.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

Decisions to maintain and improve the Piute, Great Western, and other motorized trail systems would benefit OHV users and maintain and improve access in these areas.

Five SRMAs, totaling 514,500 acres (24% of the RFO), are proposed under Alternative A. Management of these SRMAs would provide for public access in some SRMAs and would enhance motorized use (specifically cross-country access) in other areas.

Motorized use would be limited to designated routes in a portion of the Otter Creek SRMA (1,900 acres) and all of the Dirty Devil SRMA (290,000 acres). Portions of the Dirty Devil SRMA that were closed in Alternative N would be limited to designated routes (inventoried routes within WSAs) improving access slightly.

Factory Butte (199,700 acres), Big Rocks (9,300 acres), Sahara Sands (12,300 acres), and a portion of the Otter Creek (1,300 acres) SRMAs would be managed as OHV open areas to enhance a motorized recreational experience and provide additional support (signing, interpretation, and facilities) for these motorized activities as necessary. Enhanced management would support travel management decisions for these areas. The overall impacts to travel management from recreation decisions in this alternative would be minor.

Impacts from Travel Management

Under Alternative A, 449,000 acres (21% of the RFO) would be open to motorized cross-country vehicle travel. These OHV areas would be managed as designated open areas with a variety of riding opportunities: sand dunes, Mancos Shale hill climbs, trials motorcycle, rock crawling, and community play areas. This would be a reduction in OHV open areas of 1,187,400 acres from Alternative N. While not all of these acres are used for cross-country travel, there are traditional uses that take users off established routes. Reducing the open acreage from 77% in Alternative N to 21% in this alternative significantly reduces the opportunities for cross-country OHV use and some historical uses. Fuelwood, pine nut, and other woodland products harvesting; wildlife viewing; livestock management; and dispersed camping and hunting are some of the uses other than motorized adventure riding that currently take place in these open OHV areas. As travel throughout the RFO increases, including demand for open OHV areas, this alternative may not sufficiently meet the needs for off-road access for OHV and other casual uses. However, cross-country use could still be allowed for permitted uses such as livestock management and products harvesting. If open OHV areas are not large enough to absorb the levels of use, conflicts between OHV users and safety concerns could increase. Impacts to travel management in the RFO would be moderate.

The remainder of the RFO (1,679,000 acres, or 79%) would be limited to designated routes and trails. Of the total route miles, 4,063 miles would be designated as open for use in this alternative, 249 miles of routes would be designated with seasonal closures or size/width restrictions, and 68 miles would be closed. The total designated route miles include 60 miles of inventoried routes within WSAs. Motor vehicles would be allowed to pull off of a designated route up to 100 feet on either side of the centerline for the purposes of parking/staging and to use existing spur routes for the purpose of accessing established campsites within 300 feet of the centerline of designated routes except in WSAs. This would allow for safe passage of vehicles on routes and continued access to many historic camping sites. These designations would continue to provide access within the majority of the RFO. Under this alternative, only 3 fewer miles of routes would be open to the public compared to Alternative N. It should be noted that route designations are implementation decisions, and the resulting transportation network could change over time. Impacts for general access using a road network would be negligible.

Impacts from Lands and Realty

The availability of approximately 13,400 acres for disposal could reduce the overall amount of BLM lands available to the public for access. Due to the small acreage involved, impacts would be minor and site specific. The development of wind or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if significant development took place. Impacts would be site specific and dependent on future interest in this type of development.

Impacts from Special Designations

Wilderness Study Areas

The impacts would be similar to those described in Alternative N, except that OHV use within all 466,900 acres of the WSAs would be limited to designated routes. All 60 miles of inventoried ways within the WSAs would be designated as available for motorized use, in accordance with the IMP. This would be an increase of 18 miles of ways from the designations in Alternative N. This would slightly increase public access into these areas. Overall, impacts would be negligible to minor.

Wild and Scenic Rivers

No eligible river segments are recommended for suitability under this alternative, and no protective measures are proposed, resulting in no impact to travel management.

Areas of Critical Environmental Concern

There are no ACECs proposed for designation under this alternative, resulting in no impact to travel management.

Proposed RMP

Impacts from Special Status Species

The impacts would be similar to those described under Alternative A. Under the Proposed RMP, route restrictions are proposed with a total of 538 miles (11% of the total designated routes) of designated routes, an increase of 277 miles over Alternative A (Table 4-37). Management actions would limit OHV use to designated routes in all Greater sage-grouse habitats including breeding (leks), nesting, brood-rearing, and wintering, but would not include area closures. These restrictions would have site-specific impacts on travel and access in the RFO.

Table 4-37. Impacts from Special Status Species on Travel Management, by Alternative

	Alternative N	Alternative A	Proposed RMP	Alternative C	Alternative D
Miles of Restricted Routes	Subject to existing laws and regulations	249	538	591	591
Percent of the Total Designated Routes	-	0	11%	19%	19%
Increase in Miles Over Alternative A	-	0	+277	+342	+342

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under Alternatives N and A. Management actions would limit OHV use to designated routes in 806,700 acres of deer and elk crucial winter range and close 4,500 acres; and limit OHV use to designated routes in bison crucial habitat but do not include area closures. Seasonal restrictions would be addressed on a case-by-case basis. Overall impacts would depend on the number of restricted miles necessary, but extensive limitations are not anticipated.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, motorized use on the 12 non-WSA lands with wilderness characteristics 78,600 acres (4% of the RFO) would be limited to designated routes for the preservation, protection, and maintenance of wilderness characteristics. Therefore, there would be no impacts to motorized users from this management. However, in these non-WSA lands with wilderness characteristics, mechanized use would also be limited to designated routes. This would reduce mechanized access in these areas, resulting in minor impacts.

Impacts from Recreation

Decisions to maintain and improve the Piute, Great Western, and other motorized trail systems would benefit OHV users and maintain and improve access in these areas.

Five SRMAs, totaling 860,390 acres (40% of the RFO), are proposed under the Proposed RMP, an increase of 345,890 acres over Alternative A. In most cases, the proposed SRMA areas and acreages are different than in Alternative A. Management of these SRMAs could restrict public access in some SRMAs and would continue to enhance motorized use (specifically cross-country access) in other SRMAs.

The Dirty Devil SRMA (290,500 acres) would propose to close the canyons within the SRMA to OHV use, with the remainder of the area limited to designated routes. Impacts to travel management would be similar to Alternative N. The majority of the routes that would be closed is within current closed WSA acreage or areas closed by the OHV Management Plan for the Henry Mountains.

The Capitol Reef Gateway SRMA (12,800 acres) proposes to close the Fremont Gorge WSA and Fremont Gorge itself to OHV use, with the remainder of the area limited to designated routes. Impacts to travel management would be similar to Alternative N. The Fremont Gorge WSA is closed in both alternatives. Few route miles exist within the Fremont Gorge.

The Henry Mountains SRMA (532,600 acres) does not include specific management prescriptions for motorized use. It would be managed according to the OHV area designations in Chapter 2 of this PRMP/FEIS.

The overall impacts to travel management from the proposed Dirty Devil, Capitol Reef Gateway, and Henry Mountains SRMAs would range from negligible to minor.

The Factory Butte (24,400 acres) OHV Play Areas RMZ (8,500 acres) and Big Rocks (90 acres) SRMAs would continue to be managed as OHV open areas to provide a motorized recreational experience and to allow for additional support (signing, interpretation, and facilities) of these motorized activities as necessary. However, the total acreage of these SRMAs is significantly less than that proposed for support of OHV open areas in Alternative A (221,300 acres), resulting in substantially less open areas in the Proposed RMP. While fencing in the Factory Butte SRMA (Appendix 18) would affect cross-country travel, it would assist visitors in knowing where boundaries are located. Additionally, several user-developed access routes have been established off of Highway 24 into the Swing Arm City OHV Open Area. This presents a safety hazard, especially with the two access routes to the east, which are near a curve in the Highway. Access into the Swing Arm City OHV Open Area would be restricted to one upgraded entrance off of Highway 24. Although the additional user-developed routes would no longer be available for travel, developing one entrance that is properly marked would help alleviate the current safety hazard. Also, by upgrading the surface of the one access road to an all-weather gravel surface for a distance into the open area, visitors would be able to get completely clear of the highway before stopping, parking, unloading, etc. Overall impacts to cross-country access under this alternative would range from moderate to major.

Impacts from Travel Management

Under the Proposed RMP, 9,890 acres (less than 1% of the RFO) would be open to motorized cross-country vehicle travel. These OHV areas would be managed as designated open areas with a variety of riding opportunities: Mancos Shale hill climbs, trials motorcycle, rock crawling, and community play areas. However, reducing the open acreage from 77% in Alternative N to less than 1% in this alternative significantly reduces the opportunities for cross-country OHV use and some historical uses. As travel throughout the RFO increases, including demand for open OHV areas, this alternative may not sufficiently meet the needs for off-road access for OHVs and other casual uses. Open OHV areas may not be large enough to absorb the levels of use, resulting in conflicts between OHV users and safety concerns. Impacts to off-road travelers would be moderate to major.

This alternative would designate 1,908,210 acres (90% of the RFO) as limited to designated routes and trails, the largest acreage of all the alternatives. Of the total route miles, 3,739 miles would be designated as open in this alternative and 538 miles of routes would be designated with seasonal closures and/or size/width restrictions. The total designated route miles include 59.5 miles of inventoried ways within WSAs. There would be 345 miles of routes closed to motorized use. Motor vehicles would be allowed to pull off of a designated route up to 50 feet on either side of the centerline for the purposes of parking/staging and to use existing spur routes to access established campsites within 150 feet of the centerline of designated routes. This would allow for safe passage of vehicles on routes and continued access to many historic camping sites. In the long term, the significant reduction of open acres and miles of routes could increase the traffic on the remaining designated routes. This could increase the number of conflicts and safety concerns on certain heavily used routes. Impacts would range from minor to moderate.

There would be 209,900 acres (10% of the RFO) closed to OHV use under this alternative. The majority of these acres are within WSAs where few inventoried ways occur. The overall impacts would be negligible to minor.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative A.

Impacts from Special Designations

Wilderness Study Areas

The acres of WSAs designated as limited and closed to OHV use would be the same as Alternative N. Of the 60 miles of total inventoried ways within the WSAs, 45 miles would be designated as open for motorized use as long as use is non-impairing, in accordance with the IMP. This would be an increase of 3 miles of designated ways over Alternative N and a slight decrease from Alternative A. Overall, the impact to access and travel management would negligible to minor.

Wild and Scenic Rivers

Under the Proposed RMP, one river segment totaling 5 miles would be recommended as suitable for inclusion in the National Wild and Scenic River System. Management prescriptions would close this river segment to OHV use within one-quarter mile of the high water mark on each bank of the river.

Areas of Critical Environmental Concern

Under this alternative, two ACECs would be designated: North Caineville Mesa and Old Woman Front. Management prescriptions to protect the relevant and important values for these 2,530 acres would close the areas to OHV use. There are no routes identified within these areas, and there would be no impact to travel management.

Alternative C

Impacts from Special Status Species

The impacts would be similar to those described under the Proposed RMP since management actions would limit OHV use to designated routes in all Greater sage-grouse habitats including breeding (leks), nesting, brood-rearing, and wintering, but would not include area closures. Under this alternative, proposed route restrictions would increase to 591 miles (19% of the total designated routes), which is an increase of 342 miles over Alternative A and 108 miles more than in the Proposed RMP.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under the previous alternatives. Under this alternative 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed to OHV use, 26% of the total closed acres under this alternative. These management decisions would reduce motorized access and result in site-specific, minor impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness character on those lands outside of WSAs are proposed under this alternative, so no impacts to travel management would occur.

Impacts from Recreation

Four SRMAs, totaling 930,000 acres (44% of the RFO), are proposed, which would be slightly higher than under the Proposed RMP. However, under this alternative, all SRMAs could restrict public access and no SRMAs would be proposed to enhance motorized use (specifically cross-country access) because there are no areas open to cross-country motorized travel.

The Dirty Devil SRMA would be increased to 375,800 acres, 85,300 acres more than under the Proposed RMP. Proposed management prescriptions would close the WSR segments to OHV use except for the Poison Springs/North Hatch Canyon road corridor. Where the SRMA overlaps WSAs and the Dirty Devil ACEC, the travel management decisions for those areas would apply. The remainder of the SRMA would be limited to designated routes. Impacts to travel management and access from this proposed SRMA would be moderate.

Impacts from the proposed Capitol Reef Gateway SRMA (12,800 acres) would be similar to those discussed under the Proposed RMP. The area closed to OHV use would increase by including the VRM Class II areas, but few routes occur in these areas.

Impacts from the proposed Henry Mountains SRMA (533,900 acres) would be the same as discussed under the Proposed RMP.

Management decisions for the proposed Sevier Canyon SRMA (7,500 acres) would limit OHV use to designated routes. Impacts to travel management from this proposed SRMA would be negligible.

Impacts from Travel Management

Under Alternative C, vehicle travel would be allowed only on designated routes, with no areas open to motorized cross-country travel. All 1,636,400 acres previously open (Alternative N) would be limited to designated routes or closed. This would be a decrease of 9,390 acres open to OHV use as compared to the Proposed RMP. Traditional uses that take public land visitors off designated routes (e.g., wood products harvesting, wildlife viewing, dispersed camping and hunting), along with motorized adventure riding, would be greatly limited in this alternative. Impacts to off-road travelers would be moderate to major.

This alternative would designate 1,445,000 acres (68% of the RFO) as limited to designated routes and trails, fewer acres than in Alternatives A or the Proposed RMP. The remainder of the area (683,000 acres, 32% of the RFO) would be closed to motorized travel, including all WSAs. Of the total route miles, 2,601 miles would be designated as open in this alternative and 591 miles of routes would be designated with seasonal closures or size/width restrictions. There would be 1,188 miles of routes closed to motorized use, 984 more miles of closed routes than in the Proposed RMP. In the long term, allowing no open acreage for cross-country OHV travel and significantly reducing the miles of routes available for public uses could increase the traffic on those designated routes. Motor vehicles would be allowed to pull off of a designated route up to 25 feet of either side of the centerline for the purposes of parking/staging. Depending on the location and factors such as viewing distance along the road, 25 feet may not allow for vehicles to park and still safely allow for the passage of other vehicles on the road. Restricting camping with motorized access to designated campsites would limit access and possibly restrict use of some historic camp areas. This could increase the number of conflicts and safety concerns on certain heavily used routes. Impacts would range from moderate to major.

Impacts from Lands and Realty

Under this alternative, no lands would be available for FLPMA Section 203 sales, which would result in no reduction in the overall amount of BLM lands available to the public for access.

The development of wind or solar energy could adversely affect access and travel management if access were restricted into those areas or through voluntary displacement if significant development took place. Impacts would be site specific and dependent on future interest in this type of development.

Impacts from Special Designations

Wilderness Study Areas

In Alternative C, all WSAs and all of the 60 miles of inventoried routes within WSAs would be closed. Closing these routes would affect access by the public for recreational and trailhead access, as well as general use. Impacts would be most noticeable in locations where routes to existing trailheads, such as those accessing the Dirty Devil River and Horseshoe Canyon, would no longer be available for use by motorized vehicles. The impacts would be site specific and range from minor to moderate, depending on the length and destination of the route.

Wild and Scenic Rivers

Under Alternative C, all 12 eligible river segments, totaling 135 miles, would be recommended as suitable for inclusion in the National Wild and Scenic River System. Management prescriptions would close these river segments to OHV use within one-quarter mile of the high water mark on each bank of the river segment. The exception would be the Poison Spring road that crosses the Dirty Devil River, which would remain open for motorized travel. Many of the segments are remote and occur within WSAs. Only 35 miles of routes exist within the eligible river segments. Therefore, the overall impact to access and travel management would be minor.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs (16 areas totaling 886,810 acres, or 42% of the RFO) would be designated. Management prescriptions to protect the relevant and important values include closing or limiting the ACECs to OHV use.

Portions of the Badlands and Henry Mountains ACECs would be closed to OHV use by ACEC management prescriptions. Within the Badlands ACEC, the mesa tops would be closed to OHV use; within the Henry Mountains ACEC, No Man's Mesa would be closed to OHV use. All of the potential Old Woman Front ACEC would be closed to OHV use. However, these areas do not contain motorized routes, so there would be no impact.

All of the potential Rainbow Hills ACEC (4,000 acres), including 26 miles of routes, would be closed to OHV use by ACEC management prescriptions. Due to the number of routes within this relatively small area, this could result in site-specific, moderate impacts for access and travel management.

Alternative D

Impacts from Special Status Species

The impacts would be similar to those described under Alternative C. The total miles of designated routes would be lower under this alternative. The proposed miles of route restrictions would be 591 (19% of the total designated routes), which would be the same as in Alternative C.

Impacts from Fish and Wildlife

Impacts from management strategies to avoid or reduce habitat fragmentation would be the same as described under the previous alternatives, except that this alternative would have the most acreage closed for fish and wildlife protection. Under this alternative, 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed to OHV use. These management decisions would greatly reduce motorized access and result in moderate impacts.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, all non-WSA lands with wilderness characteristics (682,600 acres, 32% of the RFO) would be closed to OHV use for the protection of those values. Closures to motorized use would

increase by 472,200 acres over Alternative C due to this proposed management decision, greatly reducing motorized access and resulting in moderate impacts.

Impacts from Recreation

Seven SRMAs, totaling 1,358,100 acres (64% of the RFO) are proposed, which would be the most acreage of any of the alternatives and 20% higher than under Alternative C. Under this alternative, all SRMAs would restrict public access and no SRMAs would be proposed to enhance motorized use (specifically cross-country access) because there are no acres open to cross-country motorized travel.

The East Fork Sevier River SRMA (59,500 acres) would close non-WSA lands with wilderness characteristics to OHV use.

The San Rafael Swell SRMA (127,100 acres) would close the mesa tops and non-WSA lands with wilderness characteristics to OHV use.

The Dirty Devil SRMA would be increased to 383,900 acres, 8,100 acres more than under Alternative C, and would close WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Capitol Reef Gateway SRMA would be increased to 168,800 acres, 156,000 acres more than under Alternative C, and would close the Fremont Gorge WSA, Fremont Gorge WSR corridor, and non-WSA lands with wilderness characteristics to OHV use.

The Henry Mountains SRMA would be decreased to 479,500 acres. Management actions would close the WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Labyrinth Canyon SRMA (75,300 acres) would close WSAs and non-WSA lands with wilderness characteristics to OHV use.

The Little Rockies SRMA (64,000 acres) would be closed to OHV use for the protection of WSA and non-WSA lands with wilderness characteristics.

Managing 64% of the RFO as SRMAs emphasizing primitive and semi-primitive recreation with large areas closed to OHV use would impact travel management and all access into these areas. Some existing trailheads (e.g., Angel Trail East, Robbers Roost Spring, Larry's Canyon, and Horseshoe Canyon [Deadman's Trail]) would no longer be accessible by motorized vehicles. The overall impact to travel management would range from moderate to major under this alternative.

Impacts from Travel Management

The impacts of this alternative would be similar to Alternative C. Vehicle travel would be allowed only on designated routes, with no areas open to motorized cross-country travel. All 1,636,400 acres currently open (Alternative N) would either be limited to designated routes or closed. Alternative D proposes the most acreage to be closed, including all WSAs and non-WSAs with wilderness characteristics (1,155,200 acres, or 54% of the RFO). Alternative D would also designate the least miles of routes as open or open with restrictions and the most closed route miles. Of the total route miles, 2,493 miles would be designated as open, 550 miles would be designated with seasonal closures or size/width restrictions, and 1,242 miles of routes would be closed to motorized use. Restrictions on parking/staging and motorized access to campsites would be the same as Alternative C. The potential for traffic, accidents, and conflicts experienced by travelers on the designated routes would be greater than that experienced under the other alternatives due to the limited miles of routes open to the public. The decisions in this alternative could result in a major impact to travel and access within and across the RFO for the recreating public, permitted users, researchers, and federal and state agencies.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative C.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Under this alternative, all potential ACECs (16 areas totaling 886,810 acres, or 42% of the RFO) would be designated. Management prescriptions to protect the relevant and important values include closing or limiting areas to OHV use.

As in Alternative C, the mesa tops in the Badlands ACEC, No Man's Mesa in the Henry Mountains ACEC, and all of the Old Woman Front and Rainbow Hills ACECs would be closed to OHV use. The impacts would be the same as discussed for Alternative C.

Under Alternative D, management prescriptions would also close portions of the Badlands, Bull Creek, Fremont Gorge/Cockscomb, Henry Mountains, Kingston Canyon, Little Rockies, Quitchupah, and Thousand Lakes Bench ACECs, and all of the Dirty Devil, Horseshoe Canyon, and Lower Muddy Creek ACECs that include non-WSA lands with wilderness characteristics. The overall impacts to travel management from closure of non-WSA lands were discussed above under the Impacts from Non-WSA Lands with Wilderness Characteristics section.

4.4.5 Lands and Realty

The following discussion highlights the primary differences between alternatives and their anticipated impacts on the lands and realty program. Included in the lands and realty program are land-tenure adjustments (e.g., sales, exchanges, acquisitions); withdrawals, classifications, and segregations; and ROWs and other land use authorizations (e.g., leases, easements, and permits). This section focuses on how other resources potentially impact the lands and realty program by limiting or preventing realty actions.

The purpose of the lands and realty program is to facilitate management of the RFO's lands and resources. The program adapts according to changing land management and resource needs and issues. As such, lands and realty program actions generally result in beneficial impacts within the RFO with regard to multiple use objectives. In addition, the presence of other resources could prevent lands and realty actions from being carried out and, thus, they are considered adverse impacts on the lands and realty program.

The only types of direct impacts to the lands and realty program occur when other resources prevent or make it considerably more difficult to complete a transaction. For example, mitigating measures to protect resource values required for a ROW substantially increases processing costs and timeframes required to complete the transaction and temporarily delays the transaction. Generally, there are no indirect impacts to the lands and realty program.

Methods and Assumptions

The analysis was based on the following assumptions:

- The BLM would continue to process land tenure adjustments.
- Lands identified for FLPMA Section 203 sale may be sold or otherwise disposed of within the life of the plan.
- Disposal of small, isolated parcels of public land would decrease the cost of public land administration in the RFO and enhance efficient management of remaining public lands.
- The disposal of small, isolated parcels would decrease conflicts between public land users and private landowners.
- Lands and interests in lands could be acquired from willing landowners by purchase, exchange, or donation.
- Non-federal land, interests in land (including access and conservation easements), and water rights would be considered for acquisition when they are within administratively designated areas or contain important resources (e.g., WSAs, ACECs, critical habitat, lands supporting listed species, riparian-wetland areas).
- Existing withdrawals would continue.
- The demand for communication sites and ROW corridors would increase within the life of this plan.
- ROW holders may maintain their use and access at their discretion consistent with the terms of their ROW grant.

Environmental Consequences

Impacts to lands and realty would likely result from actions proposed under the following resource programs:

- Visual Resources

- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on lands and realty.

Alternative N: No Action

Impacts from Visual Resources

Implementing VRM guidelines would increase the design and siting requirements for ROWs and other land use authorizations and affect associated costs on new or amended ROWs. Such restrictions may also restrict placement and could possibly delay availability of energy supply (by restricting pipelines, transmission lines, and wind and solar projects) and could create dead zones or delay availability of communications service. Such requirements could require utility lines and communication sites to be installed in less desirable locations or areas with more restrictions on accessibility or construction. There would also be an increased potential that requests for new or amended and renewed ROWs at existing sites would be denied as available space decreases.

ROWs would not occur in VRM Class I areas and would generally not occur in Class II areas because of the requirements to preserve or retain the existing character of the landscape. Under this alternative, none of the lands managed by the RFO are classified as VRM Class I. ROWs and other land use authorizations proposed on the 529,500 acres (25% of the RFO) within VRM Class II areas would be redesigned, moved, or otherwise restricted.

Managing for VRM Classes III and IV would allow the greatest flexibility for ROWs and other land use authorizations. VRM Classes III and IV allow more changes to the landscape and are less restrictive of ground-disturbing activities. Under this alternative, 569,000 acres would be managed as VRM Class III and 1,029,500 acres would be managed as Class IV. Thus, the majority of the RFO (75%) would be available for siting of ROWs.

Impacts from Special Status Species

Land tenure adjustments would be affected by the management decision to generally retain all habitat for federally-listed and candidate species in federal ownership. The presence of SSS may preclude the issuance of some land use authorizations and place restrictions on others (such as timing restrictions on construction or other ground-disturbing activities, or siting restrictions to avoid habitat areas). For example, under this alternative, surface disturbing activities are prohibited near Greater sage-grouse leks from March 1 through July 15 and within sage grouse brooding/nesting habitat from April 1 through June 15.

Seasonal limitations within 1 mile of bald eagle nest sites, within one-half mile of bald eagle winter concentration areas, and year-round restrictions on ground-disturbing activities within one-half mile of bald eagle nest sites could limit access and could delay project construction of new ROWs or reconstruction of existing ROWs.

The reintroduction of endemic or non-endemic SSS may potentially impact lands and realty depending upon the species and the use restrictions or conservation measures applied.

Impacts from Fish and Wildlife

Proposed decisions for fish and wildlife could restrict some ROWs and other land use authorizations by location or season. In order to avoid or reduce habitat fragmentation, ROW applicants would be encouraged (or even required, in some locations) to collocate facilities. Seasonal or spatial restrictions for bison, mule deer, and elk could delay construction of new ROWs or reconstruction of existing ROWs. Prohibiting surface-disturbing activities from November 1 through May 15 (6½ months each year) could make it difficult to complete some projects. Where seasonal restrictions limit the time available to complete activities, relocation of surface facilities could be required. Impacts to issuance of ROWs would likely be minimal because areas in which habitat restrictions apply are likely not areas in which demand for ROWs is high.

Impacts from Fire and Fuels Management

Wildland fire use, appropriate management response, and prescribed fire suppression activities could potentially adversely impact ROWs (e.g., power lines and communication sites), facilities, and adjacent non-BLM lands; however, long-term impacts could be beneficial due to the reduction of high-severity fires. Post-fire rehabilitation improvements could affect adjacent non-BLM lands (e.g., reduced erosion and less chance of alien plant invasion). Impacts to lands and realty would be minor.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restriction on lands and realty.

Impacts from Travel Management

Impacts to lands and realty from travel management would result from reduced access to the public lands, and, therefore, reduced opportunities for land use authorizations. Generally, the more area open to OHV use, the greater the opportunity for activities authorized under a land use permit or ROW. Under this alternative, 1,636,400 acres (77%) of the RFO would be open to motorized vehicles, allowing opportunities for these types of activities over a large portion of the RFO.

Motorized vehicles would be limited to existing, designated, and maintained routes on 277,600 acres (13%) of the RFO, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,315 miles of routes in the RFO would be open to motorized use.

The remainder of the RFO (214,000 acres, or 10% of the RFO) would be closed to motorized vehicle use, which would result in restrictions on land use authorizations beyond the restrictions that already would occur as a result of avoidance or exclusion areas for land use authorizations. Land use authorizations that do not require motorized vehicle use (such as minimum impact filming activities) would not be affected.

Impacts from Lands and Realty

Under this alternative, 280 acres identified as available for FLPMA Section 203 sale in the existing land use plans would continue to be available pending site-specific environmental analysis. Inholdings within the wilderness study areas and four existing ACECs would be priorities for acquisition.

The purpose of designating corridors is to reduce or eliminate resource and land use conflicts. One major inhibitor to the timely review and approval of ROWs for a major energy facility is the effort involved in selecting a suitable route for the facility while minimizing the environmental impacts created by its construction, operation, and continued maintenance. This includes the requirement that suitable alternative routes be identified and reviewed at the same level of scrutiny as the preferred route. One way

to help alleviate this inhibitor and help streamline the authorization process is to identify and designate utility corridors in RMPs. If a corridor is designated as such in the plan, then it has already been determined to be the "preferred route" and other alternative routes need not be addressed. If the project proponent uses the designated corridor as the proposed route, then the proponent would only be required to do on-the-ground environmental studies to determine if the route is suitable for the construction of the project. This simplifies the permitting process and can save considerable time as well as costs.

This alternative designates no utility corridors. Therefore, the benefits described above to the lands and realty program would not be realized.

Impacts from Special Designations

Wilderness Study Areas

Continued management of WSAs under the IMP would limit surface-disturbing actions that could result in impairment of wilderness values. Thus, WSAs are exclusion areas for ROWs and are unavailable for land disposals. However, land use authorizations that would not impair wilderness values (such as minimum impact filming) could be authorized and. in fact. would provide the appropriate setting for these types of activities. Inholdings within the WSAs would be a priority for acquisition, consolidating federal land ownership and improving manageability of public lands in these areas.

Wild and Scenic Rivers

Management actions to protect the outstandingly remarkable values, free-flowing nature, and tentative classification of all eligible river segments affect the availability of these areas for lands and realty actions. As such, these river corridors (12 segments, 135 miles) would be managed as avoidance areas for ROWs, which could result in denying ROWs or requiring realignment of the proposed ROW around the avoidance area. These restrictions would increase the cost of construction or preclude authorization of the ROW altogether. However, because these areas are remote in location, impacts to lands and realty should be negligible.

Areas of Critical Environmental Concern

Management actions for protection of relevant and important values of ACECs affect the availability of these areas for lands and realty actions. Along with continuing the designations of Beaver Wash Canyon, North Caineville Mesa, and South Caineville Mesa ACECs, proposals under Alternative N would allow no uses that would cause irreparable damage to relevant and important values. As such, these ACECs (14,780 acres) would be managed as avoidance areas for ROWs. However, because these areas are small in extent and are remote in location, impacts to lands and realty should be negligible.

Land tenure adjustments would focus on acquisition of non-federal land within the ACECs. Over time, this would lead to a consolidated land pattern within these special designations, a benefit to other resource programs.

Alternative A

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described under Alternative N. This alternative designates fewer areas as VRM Classes I and II (446,900 acres as VRM Class I, and 0 acres as VRM Class II). This alternative designates more acres as VRM Classes III and IV than any of the alternatives, which would provide the least restrictions on design and siting of ROWs and other land use authorizations.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative N, except that there are fewer restricted areas under Alternative A. For example, surface-disturbing activities within sage-grouse brooding habitat would be restricted from April 1 through June 15 in Alternative N, but no restrictions apply in Alternative A. This would result in increased opportunities for land use authorizations under Alternative A. However, impacts to the lands and realty program would be minimal because areas in which habitat restrictions apply are likely not areas in which demand for ROWs is high. Land use authorizations that do not involve surface-disturbing activities would not be affected by these restrictions.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restrictions on lands and realty.

Impacts from Travel Management

The types of impacts that would be experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates 449,000 acres (21%) of the RFO as open to motorized vehicles; motor vehicles would be limited to designated routes on 1,679,000 acres (79%) of the RFO; and 0 acres would be closed to motorized vehicle use. The amount of open areas, although greatly reduced as compared to Alternative N, would provide relatively unrestricted opportunities for land use authorizations.

The remainder of the RFO would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,312 miles of routes in the RFO would be open to motorized use.

No areas would be closed to motorized/mechanized use, with no accompanying restrictions (at least from travel decisions) on land use authorizations.

Impacts from Lands and Realty

One hundred and eighteen parcels totaling 13,400 acres are identified as available for sale under FLPMA Section 203 and could be sold pending site-specific environmental analysis. These sales would improve the manageability of the public land estate by disposing of parcels isolated or difficult to manage and could provide opportunities for community expansion. Conversely, grazing land, open space, wildlife habitat, and land available for other public land uses would be lost. Inholdings within the wilderness study areas would be priorities for acquisition, consolidating federal land ownership and improving manageability of public lands in these areas.

Under this alternative, 25 utility corridors would be designated (Appendix 5). Of these, 12 would be one-half mile in width and the remaining 13 would be 800 feet in width. These corridors follow existing utility lines or highway corridors. This would minimize adverse environmental impacts and the proliferation of separate ROWs in these areas, as well as help streamline the process for the authorizing energy transmission facilities and other utility ROWs.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

No river segments are recommended as suitable WSRs under this alternative.

Areas of Critical Environmental Concern

No ACECs are proposed for designation under this alternative.

Proposed RMP

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described under Alternative A, except that more acres would be designated as VRM Classes I and II (696,700 acres, or 33% of the RFO), and fewer areas as VRM Classes III and IV (1,431,300 acres). This would result in less area where ROWs and other land use authorizations could be sited, which could affect associated costs to the ROW/permit applicant by requiring relocation or changes in project design to meet the VRM class objectives. This could also restrict or delay availability of communications service if suitable sites cannot be found.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative N, except that the Proposed RMP has more restrictions on surface disturbing activities in Greater sage-grouse habitat including oil and gas leasing subject to major constraints (NSO) within ½ mile of leks and prohibiting surface disturbing or otherwise disruptive activities within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exception, waivers, and modifications). However, because 97 percent of sage grouse winter habitat is within mule deer crucial habitat, which has a timing limitation on surface disturbing activities from December 15 through April 15, the sage grouse winter timing limitation would only result in surface disturbing restrictions on an additional 2,200 acres. The restrictions could limit access and could delay project construction of new ROWs or reconstruction of existing ROWs, or result in siting restrictions. Restrictions on surface disturbing activities within Greater sage-grouse habitat are greater under the Proposed RMP than under any of the other alternatives. However, impacts to the lands and realty program are expected to be minimal because sage-grouse habitats are not typically areas in which demand for ROWs is high. Land use authorizations that do not involve surface-disturbing activities would not be affected by these restrictions.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N, except that there are more restricted areas under the Proposed RMP. For example, activities within crucial desert bighorn sheep habitat would be restricted from April 15 through June 15 in the Proposed RMP, but no restrictions on surface-disturbing activities within bighorn sheep habitat would apply in Alternative N. However, impacts to the lands and realty program would be minimal because areas in which habitat restrictions apply are likely not areas in which demand for ROWs is high. Land use authorizations that do not involve surface-disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Approximately 78,600 acres within the RFO would be managed to maintain non-WSA wilderness characteristics. In addition to managing these areas as ROW avoidance areas, they would not be available for disposal and would be designated as VRM Class II. Avoiding placement of ROWs and associated surface disturbance in order to protect the wilderness values in these areas could re-route pipelines, power lines, and other infrastructure that may be needed for mineral-related activities, community enhancement, or development of inholdings.

Within the Proposed RMP, the boundaries of the Red Desert and Notom Bench non-WSA lands managed to maintain wilderness characteristics have been adjusted to exclude the existing powerline rights-of-way, plus a 1,000 foot buffer for future use and expansion. The boundary of the Little Rockies non-WSA area has been off-set from the adjacent State Highway 276 right-of-way corridor. These adjustments would minimize potential impacts to future ROW corridors.

Impacts from Travel Management

The types of impacts that would be experienced as a result of travel management would be similar to those described under Alternative N. However, this alternative designates only 9,890 acres (less than 1% of the RFO) as open to cross-country motorized vehicle use. This could limit the opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purposes). In addition, motorized users seeking that type of recreational opportunity would be concentrated into that relatively small area, which could result in conflicts with the holder of the land use authorization.

This alternative would close 209,900 acres (10% of the RFO) to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized vehicle access. The remainder of the RFO (1,908,210 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 4,277 miles of routes in the RFO would be open to motorized use.

Impacts from Lands and Realty

One hundred and eighteen parcels totaling 13,400 acres are identified as available for sale under FLPMA Section 203 and could be sold pending site-specific environmental analysis (same as Alternative A). These sales would improve the manageability of the public land estate by disposing of parcels that are isolated or difficult to manage and could provide opportunities for community expansion. Conversely, grazing land, open space, wildlife habitat, and land available for other public land uses would be lost. Inholdings within WSAs, one suitable WSR corridor (Fremont River in Fremont Gorge), and two ACECs (North Caineville Mesa and Old Woman Front) would be priorities for acquisition, consolidating federal land ownership and improving manageability of public lands in these areas.

The same utility corridors designated under Alternative A would also be designated in the Proposed RMP, resulting in the same impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Management actions to protect the outstandingly remarkable values, free-flowing nature, and tentative classification of all suitable river segments affect the availability of these areas for lands and realty actions. Under this alternative, one river corridor (5 miles) is recommended as suitable and would be managed as an avoidance area for ROWs, which could result in denying ROWs or requiring realignment of the proposed ROW around the avoidance area. These restrictions would increase the cost of construction or preclude authorization of the ROW altogether. However, because these areas are remote in location, impacts to lands and realty should be negligible.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative N, except that fewer areas would be designated as ACECs (two ACECs, totaling 2,530 acres). Thus, potential impacts on the lands and realty program (in the form of fewer ROW avoidance areas and fewer focus areas for acquisition of inholdings) would be reduced.

Alternative C

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described under the Proposed RMP, except that fewer acres would be designated as VRM Classes III and IV (1,450,500 acres). This would result in less area where ROWs and other land use authorizations could be sited, which could affect associated costs to the ROW/permit applicant. This could also restrict or delay availability of communications service if suitable sites cannot be found.

Impacts from Special Status Species

Impacts would be similar to those described under the Proposed RMP.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative N, except that there are additional restrictions for protection of wildlife habitat areas under Alternative C. For example, OHV use on 142,000 acres of deer and elk crucial winter range and 189,000 acres of crucial bison habitat would be closed under this alternative. This could limit opportunities for land use authorizations that require motorized vehicle use for access. However, impacts to the lands and realty program should be minimal because areas in which habitat restrictions apply are likely not areas in which demand for ROWs is high. Land use authorizations that do not involve surface-disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional restrictions on lands and realty.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under the Proposed RMP. However, this alternative designates no areas as open to motorized vehicles. The lack of open areas would eliminate opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purposes).

This alternative would close 683,000 acres (32% of the RFO) to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized vehicle access. The remainder of the RFO (1,445,000 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 3,192 miles of routes in the RFO would be open to motorized use.

Impacts from Lands and Realty

No lands are identified as available for sale under FLPMA Section 203; hence, there would be no beneficial or adverse impacts to the federal land ownership pattern. Inholdings within the WSAs, all suitable WSR corridors, and all ACECs would be priorities for acquisition, which would consolidate the ownership pattern in these special designations.

The same utility corridors designated under Alternative A would also be designated in the Proposed RMP, resulting in the same impacts.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would the same as those described under Alternative N.

Areas of Critical Environmental Concern

The types of impacts experienced from the designation of ACECs would be similar to those described under Alternative N, except that significantly more areas would be designated as ACECs (16 areas, totaling 886,810 acres). Thus, potential impacts on the lands and realty program (in the form of many more ROW avoidance areas and more focus areas for acquisition of inholdings) would be substantially greater.

Alternative D

Impacts from Visual Resources

The types of impacts experienced under this alternative would be similar to those described under Alternative C, except that even fewer acres would be designated as VRM Classes III and IV (931,700 acres). This alternative would be the most restrictive on where ROWs and other land use authorizations could be sited and would be most likely to affect associated costs to the ROW/permit applicant, and most likely to delay or restrict availability of communications service in some areas.

Impacts from Special Status Species

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C, except that there are additional restrictions for protection of wildlife habitat areas under Alternative D. For example, OHV use on 258,000 acres of deer and elk crucial winter range and 207,000 acres of crucial bison habitat would be closed under this alternative. This alternative could limit opportunities for land use authorizations that require motorized vehicle use for access—the most of any alternative. However, impacts to the lands and

realty program should still be minimal because areas in which habitat restrictions apply are likely not areas in which demand for ROWs is high. Land use authorizations that do not involve surface-disturbing activities would not be affected by these restrictions.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Approximately 682,600 acres within the RFO would be managed to preserve non-WSA wilderness characteristics. In addition to managing these areas as ROW exclusion areas, they would not be available for disposal and would be designated as VRM Class I. Prohibiting ROWs and associated surface disturbance in order to protect the wilderness values in these areas would preclude pipelines, power lines, and other infrastructure that may be needed for mineral-related activities, community enhancement, or development of inholdings.

In order to protect wilderness characteristics values, lands identified for disposal in the Notom Bench and Dogwater Creek non-WSA lands with wilderness characteristics would be retained in federal ownership. This would preclude the augmentation of contiguous private ranchlands in these areas.

All 682,600 acres of non-WSA lands with wilderness characteristics would be proposed for mineral withdrawal under this alternative. This would preclude extraction of all locatable minerals, including uranium and vanadium, from these lands, subject to valid existing rights.

Protecting wilderness characteristics lands would preclude designation of the full widths of ROW corridors along Highway 24 within Wild Horse Mesa, Red Desert, Fremont Gorge, and Notom Bench non-WSA lands with wilderness characteristics. In addition, corridor widths would be limited to outside non-WSA lands along State Highways 95, 276, and 62 within Little Rockies, Fiddle Butte, Rocky Ford, Phonolite Hill, and Kingston Ridge non-WSA lands. Narrowing the corridors could preclude some future ROWs, especially large electrical lines, because lines would have to be sited too close together, which could result in sparking and other electrical interference.

Impacts from Travel Management

The types of impacts experienced as a result of travel management would be similar to those described under Alternative C. Similar to Alternative C, this alternative designates no areas as open to motorized vehicles, which would eliminate opportunities for land use authorizations if the connected activity required cross-country travel (unless administrative access was granted for such purposes).

This alternative would close significantly more (1,155,200 acres, or 32%) of the RFO to motorized use, which would eliminate all opportunities for land use authorizations requiring motorized vehicle access. The remainder of the RFO (972,800 acres) would have motorized/mechanized use limited to designated routes, which would limit opportunities for land use authorizations to areas along those designated routes if the activity required motorized vehicle access for construction, operation, or maintenance (unless administrative access was granted for such purposes). Under this alternative, 3,043 miles of routes in the RFO would be open to motorized use. This alternative would provide the least opportunity for land use authorizations requiring motorized vehicle access.

Impacts from Lands and Realty

No lands are identified as available for sale under FLPMA Section 203; hence, there would be no beneficial or adverse impacts to the federal land ownership pattern. Inholdings within non-WSA lands

with wilderness characteristics areas, WSAs, suitable WSR corridors, and ACECs would be priorities for acquisition, which would consolidate the ownership pattern in these areas.

Under this alternative, the same utility corridors designated under Alternative A would also be designated in the Proposed RMP, except that widths for four of the corridors (along State Highways 95, 276, and 62) would be narrower to avoid non-WSA lands. As described above (in the Non-WSA Lands with Wilderness Characteristics section), narrowing the corridors could preclude some future ROWs, especially large electrical lines, because lines would have to be sited too close together. Impacts from designating the other 21 corridors would be the same as described under Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.4.6 Minerals and Energy

4.4.6.1 Leasable Minerals

Oil and Gas

Oil and gas resources within the RFO would be available for leasing under the alternatives, as depicted in Table 4-38. Alternative A would make the most land (79% of the lands managed by the RFO) available for oil and gas leasing; Alternative D, the least (45%). Likewise, Alternative A would impose the fewest restrictions on exploration and development; Alternative D would be the most restrictive. Maps 2-34, 2-35, 2-36, 2-37, and 2-38 show the leasing categories by alternative.

Table 4-38. Oil and Gas Leasing Categories, Acres, and Percentage of RFO

Leasing Categories		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Standard Lease Terms	1,236,500 ac 58%	860,600 ac 40%	608,700 ac 29%	491,900 ac 23%	290,200 ac 14%
	Controlled Surface Use or Timing Stipulations	409,200 ac 19%	820,500 ac 39%	917,500 ac 43%	901,100 ac 42%	634,000 ac 30%
Open	No Surface Occupancy	22,600 ac 1%	0 ac 0%	154,500 ac 7%	148,700 ac 7%	43,300 ac 2%
	Total Open	1,668,300 ac 78%	1,681,100 ac 79%	1,680,700 ac 79%	1,541,700 ac 72%	967,500 ac 46%
Closed to Leasing		459,700 ac 22%	446,900 ac 21%	447,300 ac 21%	586,300 ac 28%	1,160,500 ac 54%

Mineral potential for oil and gas is assessed in the *Mineral Potential Report for Sanpete, Sevier, Wayne, and Garfield Counties, Richfield Field Office* (BLM 2005b), which is available for review on the planning project website at http://www.blm.gov/ut/st/en/fo/richfield/planning.html. In addition, a Reasonably Foreseeable Development (RFD) scenario was developed for oil and gas activities in the planning area in conformance with IM 2004-089 (Appendix 12). The RFD is a prediction of the number of wells to be drilled, acreage of surface disturbance, and a rating of activity (development potential), based on the assumptions and analysis in the Mineral Potential Report. Table 4-39 is a summary of the RFD. The RFD does not differentiate between activities on public versus non-public lands. In the RFD, the planning area is divided into four areas, based on USGS oil and gas plays and predicted activity within the plays.

Table 4-39. Reasonably Foreseeable Development for Oil and Gas

Defined Area	General Area	Number of Wells Predicted	Surface Disturbance Geophysical (Acres)	Surface Disturbance Wells (Acres)	Oil and Gas Occurrence Potential*	Development Potential*
Areas 1 & 2	Piute, Wayne, and Garfield counties	45 wells	240 ac	540 ac	Wayne and Garfield Counties and Eastern Piute	Low

Defined Area	General Area	Number of Wells Predicted	Surface Disturbance Geophysical (Acres)	Surface Disturbance Wells (Acres)	Oil and Gas Occurrence Potential*	Development Potential*
					County Are High Potential; Western Piute County and the Antimony Area Are Moderate	
Area 3	Eastern Sevier and Sanpete Counties—Wasatch Plateau Area	49 wells	360 ac	1,100 ac	High	Moderate
Area 4	Western Sevier and Sanpete Counties—Sevier and Sanpete Valleys	360 wells	4,500 ac	1,440 ac	High**	High
Total		**454 wells**	**5,100 ac**	**3,080 ac**		

* Oil and gas occurrence potential and development potential are based on the *Mineral Potential Report* and RFD, respectively. In the RFD, development potential is defined as the relative likelihood of activity, not development per se. The *Mineral Potential Report* stated that development is likely in Areas 3 and 4 and unlikely in Areas 1 and 2. The RFD modified the development potential, based on published information available after the completion of the *Mineral Potential Report*.
**Area 4 includes the Sevier Frontal Thrust play and other plays. Given the overlap of the plays, the potential is based on the thrust play.

Most oil and gas activity is predicted in the western part of the planning area in Area 4 in association with the Sevier Frontal play, also referred to as the Central Utah Thrust play, which generally encompasses the Sevier and Sanpete Valleys and adjacent ranges. Area 3 is located in the vicinity of the Wasatch Plateau and includes conventional gas as well as coalbed methane gas. Areas 1 and 2 include the southern parts of the planning area in Piute, Wayne, and eastern Garfield counties, as well as several plays associated with the Paradox Basin province and the Permo-Triassic Unconformity play.

Methods and Assumptions

The analysis for impacts to oil and gas assumes:

- Oil and gas activity—exploration, drilling, and production, if paying quantities of oil or gas are discovered—would be managed according to applicable law, federal regulations, and onshore orders and would be managed to mitigate impacts to other resources according to BMPs appropriate to the site/location.
- The RFD is a reasonable prediction of oil and gas activity for the planning horizon.

Environmental Consequences

Impacts to oil and gas activity would most likely result from actions proposed for the management of the following resources:

- Soil Resources and Water Resources
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on oil and gas leasing and development.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Managing public lands to protect soil and water would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as a Notice of Intent (NOI) for Geophysical Exploration or Application for Permit to Drill (APD), is received by the BLM. Most mitigation would be required based on the federal regulations, the standard lease terms, and best management practices. Oil and gas operations would be restricted by a major leasing constraint on lands with steep slopes, canyon walls, or muddy and wet conditions, and where watersheds may be impaired. These areas are specifically:

- Moroni Slopes, Blue Hills, and Dirty Devil River Canyons (no occupancy or other surface disturbances where grades of slopes are greater than 50%)
- Dirty Devil River canyons (no occupancy within the canyon)
- Municipal water supplies (no occupancy or other surface disturbance)
- Live water (no occupancy or other surface disturbance within 500 feet).

The slope restriction would have an adverse impact on exploration and development by disallowing occupancy for drilling and surface facilities. Vertical drilling is preferred over directional, as vertical wells are less expensive to drill and are more likely to be successful. The above areas are specified by legal description and are protected by a lease stipulation, which has provisions for exceptions, waivers, or modifications in some areas.

Impacts from Cultural Resources

Managing public lands to protect cultural resources would impact oil and gas activity as mitigations or restrictions would be developed that would modify proposed oil and gas operations when an application, such as an NOI for Geophysical Exploration or APD, is received by the BLM. Archaeological sites and sites eligible for the National Register would be avoided, and mitigation would be required as consistent with the federal laws and regulations and the standard lease terms. Modifying proposed exploration and development would have adverse impacts by delaying the time required for approval.

Oil and gas operations would be subject to NSO in the following areas:

- Bull Creek Archaeological District
- Susan Rockshelter Archaeological Site
- Fish Cove Archaeological Site.

NSO would preclude drilling or other facilities on the above sites and would have an adverse impact on exploration and development. If the proposed subsurface target is beneath one of the above sites, the drilling would need to be by directional methods, which would increase drilling costs and would decrease the likelihood of successful exploration.

Cultural resources within four existing ACECs—Beaver Wash Canyon, North Caineville Mesa, South Caineville Mesa, and the Gilbert Badlands—would be protected by additional management prescriptions for those designated areas. The existing ACECs are open to leasing subject to major constraints (NSO), except for Beaver Wash Canyon, which is closed to leasing.

Impacts from Visual Resources

Managing visual resources on public lands would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as an NOI for Geophysical Exploration or APD, is received by the BLM. Based on the VRM class, mitigations would be developed consistent with the guidelines of the VRM classes and the federal laws and regulations and standard lease terms. The VRM guidelines for the RFO are VRM Class I, 0 acres, which is 0% of public land within the RFO; VRM Class II, 529,000 acres, which is 25%; VRM Class III, 569,000 acres, which is 27%; and VRM Class IV, 1,029,500 acres, which is 48%. The WSAs (446,900 acres) would be managed as VRM Class I, although they may be designated in other VRM classes. An area designated VRM Class II would allow for minimal change to its landscape character, thus oil and gas activity would be very restricted, or activities may need to be redesigned or moved depending on the proposed oil and gas operation. This restriction would preclude drilling on the surface and preclude surface facilities, unless these meet the VRM objective. The restriction could require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. Areas designated VRM Class IV would allow for major modifications of the landscape, thus oil and gas activity would be minimally impacted compared to VRM Class II.

The following areas are designated as NSO:

- Utah Highway 24 in places in the vicinity of Torrey
- Utah Highway 95 at North Wash
- Notom Road east of Capitol Reef National Park.

The land subject to NSO is within 1,320 feet of the centerline of the roadway unless the oil and gas activity is not visible from the highway or road. NSO would preclude drilling or other facilities within the above highway corridors and would have an adverse impact on exploration and development. If a proposed subsurface target is within one of the above corridors, the drilling would need to be by directional methods from adjacent land, which would increase drilling costs and would decrease the likelihood of successful exploration.

Impacts from Special Status Species

All oil and gas federal actions would be subject to the requirements of the Endangered Species Act of 1973, as amended. Any action potentially affecting any listed threatened or endangered species would require the appropriate level of Section 7 consultation with (USFWS). Necessary mitigation, such as timing and avoidance, would be implemented to protect listed plant and animal species, subject to applicable federal laws, regulations, and lease terms. Applicable lease notices for subject SSS that may be present would be attached to a lease when authorized. The mapped sage-grouse strutting (leks) and nesting (brooding) areas within the Parker Mountain planning area would be subject to a seasonal restriction for oil and gas exploration and development. Surface disturbing activities would be prohibited near Greater sage-grouse leks from March 1 through July 15 and within sage grouse brooding/nesting

habitat from April 1 through June 15. Distance or timing restrictions for SSS would have an adverse impact on oil and gas operations. Requirements for SSS inventories may result in relocating proposed well sites or other surface facilities and delays in permitting oil and gas operations. Seasonal restrictions would have adverse impacts to oil and gas exploration and development if a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets. Distance restrictions would require directional drilling instead of vertical drilling, which would increase drilling cost, and directional drilling in wildcat areas would have less likelihood of success. Because the Parker Mountain planning area, where Greater sage-grouse leks are located, has low oil and gas development potential, impacts resulting from sage-grouse stipulations are expected to be low. There are currently only four sage-grouse leks in this area although that number could increase in the future.

Impacts from Fish and Wildlife

Management of wildlife habitat would have an impact to oil and gas exploration and development through imposing restrictions for when oil and gas activity would be allowed. Crucial winter range for deer, elk, antelope, and bison have seasonal restrictions for when exploration and development may occur. In addition, pronghorn (antelope) kidding range and bison yearlong range are seasonally restricted for oil and gas activity. These timing restrictions affect when oil and gas exploration and development would be allowed. Seasonal restrictions would have adverse impacts to oil and gas exploration and development, as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews, would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, the seasonal restrictions would preclude drilling deep targets when the well could not be feasibly drilled and completed within the open season. Habitat for these animals that is open to leasing subject to minor constraints, such as timing restriction, would be open or closed as shown in Table 4-40 below.

Table 4-40. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat—Alternative N

			Deer	Pronghorn	Bison	Elk
Open	Standard Lease Terms	Acres	225,400 ac	23,600 ac	89,400 ac	82,300 ac
		% Habitat	40%	23%	36%	39%
Open	Timing or Controlled Surface Use Restrictions	Acres	243,800 ac	73,300 ac	44,600 ac	124,900 ac
		% Habitat	43%	71%	18%	59%
	No Surface Occupancy	Acres	8,500 ac	5,300 ac	500 ac	4,900 ac
		% Habitat	1%	5%	<1%	2%
Closed		Acres	91,500 ac	500 ac	116,400 ac	100 ac
		% Habitat	16%	1%	46%	<1%

The CSU, NSO, and Closed designations are not necessarily imposed for the protection of wildlife but because the wildlife habitat is enclosed within those areas. This alternative would have the least impact on oil and gas exploration, as the land subject to habitat restrictions or closure would be the least under this alternative.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impact to oil and gas exploration and development.

Impacts from Recreation

Under this alternative, no SRMAs would be established. The following areas would be subject to NSO:

- Jet Basin
- Pink Cliffs
- Star Springs
- Fremont River Gorge
- Otter Creek.

The NSO designation reduces the opportunity for oil and gas exploration and development because drilling and surface facilities would be disallowed. If subsurface targets beneath the above sites were drilled, then directional drilling would be necessary. Drilling directional wells is more expensive than drilling vertical wells, and directional drilling is less likely to be successful in wildcat areas.

The following areas would be closed to leasing:

- Little Rockies
- Beaver Wash Canyon.

In closed areas, oil and gas resources would not be explored and would not be available for development.

Impacts from Lands and Realty

The following areas would be open to leasing subject to major constraints (NSO):

- Cemeteries
- Landfills, existing and closed
- Lands managed under Recreation and Public Purpose Act lease.

The following areas would be closed to leasing:

- Incorporated municipalities.

Limiting the above areas subject to NSO or closure to leasing would affect oil and gas exploration and development. The NSO areas would reduce the opportunity for oil and gas exploration and development because drilling from the NSO-restricted surface and other surface facilities would be disallowed. If subsurface targets beneath the above sites were drilled, then directional drilling would be necessary. Drilling directional wells would be more expensive than drilling vertical wells, and directional drilling would be less likely to be successful than vertical drilling in wildcat areas. In closed areas, undiscovered oil and gas resources would not be explored and would not be available for development.

Impacts from Special Designations

Wilderness Study Areas

WSAs, encompassing 446,900 acres, would be closed to leasing for oil and gas exploration and development. The WSAs are within the low activity area (low development potential area) in the RFD scenario for oil and gas, where the prediction is for one well per year or 45 wells for the planning horizon.

However, none of those wells were predicted for WSAs, as the RFD does not apply to lands that are closed to leasing by law, which is the case for WSAs. Closing WSAs to leasing is required by law; therefore, the decisions in this PRMP/FEIS would not impact oil and gas exploration and development within WSAs.

Wild and Scenic Rivers

Managing 12 eligible WSR corridors totaling 135 miles would affect oil and gas exploration and development by limiting surface-disturbing activities within the river corridors. No decision would be made under this alternative for suitability. There are 98 miles (73% of the total miles) of the eligible river segments that are within WSAs, which are closed to leasing. The management prescription for the 37 miles of river segments outside of WSAs would vary in management from open subject to standard terms to closed to leasing. The eligible rivers are within areas with high potential for the occurrence of oil and gas with a predicted low activity level (development potential), except Quitchupah Creek, which has a predicted moderate activity level. The protected corridor for WSRs, where designated as such, is one-quarter mile of the high water mark on each bank of the river segment. The management of WSRs outside of WSAs would have adverse impacts to oil and gas exploration and development. The NSO segments would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. In the segments closed to leasing, oil and gas resources would not be explored and would not be available for development.

Areas of Critical Environmental Concern

The four existing ACECs would affect oil and gas exploration and development. At Beaver Wash, 4,800 acres are closed to leasing. At Gilbert Badlands, 3,680 acres, and at North and South Caineville Mesas, 2,200 and 4,100 acres, respectively, are subject to NSO. At Beaver Wash, which would be closed to leasing, oil and gas resources would not be explored and would not be available for development. At Gilbert Badlands and the Caineville Mesas ACECs, oil and gas exploration and development would be impacted by requiring the relocation of well sites and surface facilities. The relocation of well sites would require directional drilling. Such impacts would increase the cost of exploration and would affect the likelihood of successful exploration.

Alternative A

Impacts from Soil Resources and Water Resources

Managing public lands to protect soil and water would have an impact on oil and gas activity as mitigations would be developed that would modify proposed oil and gas operations when an application, such as an NOI for Geophysical Exploration or APD, is received by the BLM. Most mitigation would be required based on the federal regulations, the standard lease terms, and best management practices. In order to protect soil and water, controlled surface use would establish the following minor constraints:

- Exploration and development would not be allowed within 330 feet of live water
- Exploration and development would not be allowed within 330 feet of a spring
- Exploration and development would not be allowed within zones of hydric soils
- Exploration and development within areas of high potential for wind erosion, as identified by the Natural Resources Conservation Service (NRCS), would require plans for soil stabilization or signing
- Exploration and development on slope gradients that are 30% or greater would require appropriate design in the surface use plan of operations.

The above CSU requirements would have provisions for exceptions, modifications, and waivers as addressed in Appendix 11, but they could require redesign or result in the inability to develop oil and gas in some locations.

Slopes that have a gradient that is greater than 30% would be subject to CSU. This moderate constraint would be subject to exception or modification, based upon adequate design for the control or reduction of erosion.

Managing for the above soil and water conditions would add costs and delays to permitting oil and gas exploration activities, although most of the above-stated conditions would require a relocation of less than 660 feet. Where the relocation is more than 660 feet for a proposed drilling site, directional drilling would be required instead of vertical, which would increase costs and decrease the likelihood of successful exploration.

Impacts from Cultural Resources

Impacts to oil and gas activity from the management of cultural resources would be similar to those described under Alternative N, except designated areas with specific protection for cultural resources (e.g., ACECs with culturally relevant and important values) are not proposed in this alternative. Oil and gas exploration and development would be mitigated by requirements imposed for site-specific applications as consistent with the federal laws and regulations and the standard lease terms. Mitigation would require avoidance of cultural resources and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Impacts from Visual Resources

The types of impacts experienced from visual resource management would be similar to, but slightly less than, those described under Alternative N, due to the following changes to the designated VRM classes: VRM Class I, 446,900 acres (21% of the RFO); VRM Class II, 0 acres (0%); VRM Class III, 392,800 acres (18%); and VRM Class IV, 1,288,300 acres (61%). VRM Class I would impact oil and gas exploration as surface disturbance would be disallowed, unless appropriate mitigation met the objective of this VRM class; however, the VRM Class I lands are also WSAs that are closed to oil and gas leasing. Thus VRM Class I designations, in effect, do not impact oil and gas. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as use of appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. The impacts to oil and gas activity from visual resources would be the least in Alternative A.

Impacts from Special Status Species

The types of impacts experienced from management of SSS would be similar to those described under Alternative N, except a one-quarter mile seasonal buffer (March 15 through June 1) for no surface disturbance or permanent structure would be imposed around sage-grouse leks. In this alternative, there would not be a timing restriction for brooding (nesting) areas imposed as a lease stipulation, thus any timing or distance restriction would be imposed at the time of an application for exploration and development, based on applicable federal laws and regulations and the standard lease terms. Requiring the one-quarter mile seasonal buffer would result in delaying development activities or relocating wells or facilities and could result in directional drilling to a subsurface target. Completing species inventories, selecting relocated sites, and directional drilling would increase delays in permitting and the costs of exploration and development, and directional drilling would decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season,

precluding drilling deep exploration targets. Because the Parker Mountain planning area, where sage-grouse leks are located, has low oil and gas development potential, impacts resulting from sage-grouse stipulations are expected to be low. There are currently only four sage-grouse leks in this area although that number could increase in the future. This alternative would be the least restrictive for oil and gas exploration and development and would thus result in the least impacts to those activities.

Impacts from Fish and Wildlife

Under this alternative, there would be no special stipulations for oil and gas leasing. However, mitigation may still be applied for wildlife crucial habitats at the time of exploration and development, and mitigation for desert bighorn sheep would also be included under this alternative. Although the CSU, NSO, and closed acreage within Table 4-41 below are not necessarily imposed for the protection of wildlife, wildlife habitat is enclosed within those areas. The requirement of mitigation for wildlife species, if necessary, would most likely occur for the acres in the CSU category, which is the most CSU acres of any of the alternatives, and could result in impacts to oil and gas exploration and development. Seasonal restrictions would have adverse impacts to oil and gas exploration and development, as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season.

Table 4-41. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat—Alternative A

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	400 ac	0 ac	200 ac	8,700 ac	100 ac
		% Habitat	<1%	0%	<1%	4%	<1%
	Timing or Controlled Surface Use Restrictions	Acres	477,300 ac	102,700 ac	134,300 ac	121,200 ac	212,100 ac
		% Habitat	84%	100%	54%	53%	100%
	No Surface Occupancy	Acres	0 ac	0 ac	0 ac	0 ac	0 ac
		% Habitat	0%	0%	0%	0%	0%
Closed		Acres	91,500 ac	0 ac	116,400 ac	97,400 ac	0 ac
		% Habitat	16%	0%	46%	43%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as for Alternative N.

Impacts from Recreation

Under this alternative, five SRMAs would be established: Dirty Devil/Robbers Roost, Big Rocks, Sahara Sands, Otter Creek, and Factory Butte. Only Dirty Devil/Robbers Roost would be specifically managed for semi-primitive and primitive recreation. However, other than the portion of this SRMA within designated WSAs, the lands would be subject to standard lease terms and minor constraints for oil and

gas activity. Thus, the SRMAs would generally not impose stricter restrictions on oil and gas exploration and development.

Impacts from Lands and Realty

Impacts would be the same as described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Under this alternative, no eligible river segments would be recommended as suitable for wild and scenic designations. There would be no impact to oil and gas activity.

Areas of Critical Environmental Concern

No ACECs would be designated, and the four existing ACECs in Alternative N would no longer be designated as such. There would be no impacts to oil and gas from ACEC designations. Relevant and important values for the potential ACECs would be protected by applicable federal laws and regulations and the standard lease terms.

Proposed RMP

Impacts from Soil and Water

The impacts would be the same as those described under Alternative A.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative N, except designated areas with specific protection for cultural resources are not proposed in this alternative. Thus, no impacts associated with those restrictions would occur. Oil and gas exploration and development would be mitigated by requirements imposed at the time of review of site-specific applications as consistent with federal laws and regulations and the standard lease terms. Mitigation, if required, would include avoidance of cultural resources and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Two ACECs would be designated and the management prescription for those two areas would provide additional protection for cultural resources. These ACECs would be open to leasing subject to major constraints (NSO), which could make development of oil and gas unfeasible. These ACECs are:

- North Caineville Mesa
- Old Woman Front.

NSO would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration, as directional drilling is more expensive and less successful for exploration than vertical drilling.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as those described under Alternative N, except the designated VRM classes are changed as follows: VRM Class I, 446,900 acres (21% of the RFO); VRM Class II, 249,800 acres (12%); VRM Class III, 393,100 acres

(18%); and VRM Class IV, 1,038,200 acres (49%). VRM Classes I and II would impact oil and gas exploration, as surface disturbance would be disallowed, unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands are also WSAs that are closed to the leasing of oil and gas; thus VRM Class I designations, in effect, do not impact oil and gas. VRM Class II would preclude drilling on the surface and preclude surface facilities, unless it meets the VRM objective, and the restriction could require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. This alternative has more VRM Classes I and II acres than Alternatives N or A, which would result in more restrictions to oil and gas activities.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under Alternative N, except that the Proposed RMP has greater restrictions on surface disturbing activities within Greater sage-grouse habitat. These restrictions include managing the area as open to oil and gas leasing subject to major constraints (NSO) within ½ mile of Greater sage-grouse leks and prohibiting surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exceptions, waivers, and modifications). However, because 97 percent of sage grouse winter habitat is within mule deer crucial habitat, which under the Proposed RMP has a timing limitation on surface disturbing activities from December 15 through April 15, the sage grouse winter timing limitation would only result in surface disturbing restrictions on an additional 2,200 acres. The NSO and the 2-mile buffer would require relocating wells or facilities at a greater distance than in Alternatives N and A, and could require directional drilling to a subsurface target. Completing species inventories, selecting relocated sites, and directional drilling would increase delays in permitting and the costs of exploration and development, and the greater distance for directional drilling would further decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets. The winter timing limitation is not expected to affect oil and gas development since access to this winter habitat is limited. Because Parker Mountain, where sage-grouse leks are located, has low oil and gas development potential, impacts resulting from sage-grouse stipulations to protect breeding and brood-rearing habitat are expected to be low. There are currently only four sage-grouse leks on BLM land on Parker Mountain although that number could increase in the future.

Impacts from Fish and Wildlife

The impacts to oil and gas exploration and development from wildlife management would be similar to Alternative N, except the acreage of habitat under each open or closed designation changes, and habitat has been added for desert bighorn sheep which would impose restrictions on oil and gas exploration and development (Table 4-42). Exceptions, waivers and modifications to the seasonal restrictions (Appendix 11) in some cases would allow development activities to occur. Maps 3-5, 3-6, and 3-7 show crucial wildlife habitat for the alternatives. Seasonal restrictions would have adverse impacts to oil and gas exploration and development, as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews, would not necessarily be available during the open season. Delays in permitting proposed operations and delays in contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, seasonal restrictions would preclude drilling deep targets, when the well could not be feasibly drilled and completed within the open season. Designated NSO areas would require directional drilling and no surface facilities, which would increase

cost and would decrease the likelihood of successful exploration. In the areas closed to leasing, oil and gas resources would not be explored and would not be available for development.

Leasing stipulations within crucial wildlife habitat are shown in Table 4-42 below:

Table 4-42. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat—Proposed RMP

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	0 ac	0 ac	0 ac	0 ac	0 ac
		% Habitat	0%	0%	0%	0%	0%
	Timing or Controlled Surface Use Restrictions	Acres	689,400 ac	204,000 ac	120,000 ac	86,700 ac	263,900 ac
		% Habitat	87%	98%	46%	38%	99%
	No Surface Occupancy	Acres	36,500 ac	4,700 ac	16,000 ac	43,200 ac	2,500 ac
		% Habitat	5%	2%	6%	19%	1%
Closed		Acres	68,600 ac	0 ac	122,600 ac	97,500 ac	450 ac
		% Habitat	9%	0%	47%	43%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, a total of 78,600 acres of non-WSA lands with wilderness characteristics would be managed to protect, preserve, and maintain the naturalness and outstanding opportunities for solitude and primitive recreation within these areas. The 12 non-WSA lands with wilderness characteristics would require NSO stipulations that could limit exploration and development of oil and gas resources. These non-WSA lands with wilderness characteristics encompass approximately 4% of the acreage of public lands in the RFO and are located in the eastern part of the RFO.

The planning area has been divided into four geographic areas, defined by USGS plays and assessment units. These are (1) the eastern portion of Wayne and Garfield counties (generally east of R. 12 E.), which is underlain by true Paradox Basin plays (USGS-2101, USGS-2102, USGS-2103, and USGS-2105); (2) the southern part of the planning area, as defined by the Permo-Triassic Unconformity Play (USGS-2106); (3) the Wasatch Plateau, defined by the Cretaceous Sandstone Play (USGS-2107), but also including CBNG in the Ferron, Emery, and Blackhawk coals; and (4) the area from the eastern boundary of the Sevier Frontal Zone Play (USGS-1907) to the western boundary of the planning area.

All of the non-WSA land with wilderness characteristics managed to maintain their wilderness characteristics (approximately 78,600 acres) would be in the low activity RFD area, Areas 1 and 2 combined. No non-WSA lands with wilderness characteristics would be managed to specifically maintain those characteristics within the moderate or high activity RFD areas, Areas 3 and 4 respectively. Although only three wells per year are predicted in RFD Areas 1 and 2 during the plan life (45 in the low activity areas), the restrictions on leasing could affect the opportunity to explore for oil and gas resources and to develop any resources that may be discovered.

Impacts from Recreation

Under this alternative, five SRMAs would be established—Henry Mountains, Dirty Devil/Robbers Roost, Capitol Reef Gateway, Factory Butte, and Big Rocks—which would result in greater impacts to oil and gas than under Alternatives N and A. The Henry Mountains, Dirty Devil/Robbers Roost, and Capitol Reef Gateway SRMAs would provide opportunities for primitive and semi-primitive motorized and non-

motorized recreation. The portion of the Dirty Devil/Robbers Roost SRMA with Class A scenery, outside of WSAs, would be subject to NSO. These SRMAs are within a low activity RFD area (Areas 1 and 2 combined) that is predicted to have 3 wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas and would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration.

The Factory Butte and Big Rocks SRMAs would provide opportunities for cross-country OHV use. Providing opportunities for OHV recreation would not preclude oil and gas exploration and development, although there could be delays in permitting any proposal for drilling or other surface facilities and requirements to relocate such.

The NSO area within the Dirty Devil/Robbers Roost SRMA, in part, overlaps existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and the drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005 is in progress by the BLM. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to permitting wells in areas with NSO would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases.

Impacts from Lands and Realty

Impacts would be the same as described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

One eligible segment would be recommended for suitability with a tentative classification of wild. The Fremont Gorge of the Fremont River would be closed to leasing Given that the corridor would be one-quarter mile from the high water mark on each bank of the Fremont River, oil and gas activity would be precluded from the Fremont Gorge. The Proposed RMP would result in greater impacts to oil and gas than Alternative A but less than Alternatives N, C, and D.

Areas of Critical Environmental Concern

North Caineville Mesa would remain a designated ACEC (2,200 acres), and Old Woman Front ACEC (330 acres) would be designated. Both would restrict oil and gas activity through an NSO constraint that would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. This alternative would result in greater impacts to oil and gas than Alternative A but less than Alternatives N, C, and D.

Alternative C

Impacts from Soil Resources and Water Resources

The types of impacts would be the same as Alternative A, except the buffer around live water and springs would increase to 660 feet.

Impacts from Cultural Resources

Management of cultural resources would impact oil and gas activity the same as Alternative N, including Bull Creek Archaeological District for the protection for cultural resources but not the Susan Rockshelter site. Oil and gas exploration and development would be mitigated by requirements imposed at time of

review of site-specific applications as consistent with the federal laws and regulations and the standard lease terms. Mitigation, if required, would include avoidance of cultural resources, and such mitigation would impact oil and gas exploration and development through an increased cost for cultural resource inventories and relocation of proposed wells and surface facilities.

Sixteen ACECs would be designated and the management prescription for these areas would provide additional protection for cultural resources. Those ACECs are:

- Badlands (includes North and South Caineville Mesas and Gilbert Badlands)
- Bull Creek Archaeological District
- Dirty Devil (includes Beaver Wash Canyon)
- Fremont Gorge/Cockscomb
- Henry Mountains (includes No Man's Mesa)
- Horseshoe Canyon
- Kingston Canyon
- Little Rockies
- Lower Muddy Creek
- Old Woman Front
- Parker Mountain
- Quitchupah
- Rainbow Hills
- Sevier Canyon
- Thousand Lakes Bench
- Special Status Species.

Impacts to oil and gas exploration and development from the designation of these ACECs are addressed under that section.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as described under Alternative N. The designated VRM classes are changed as follows: VRM Class I, 446,900 acres (21% of the RFO); VRM Class II, 230,600 acres (11%); VRM Class III, 509,400 acres (24%); and VRM Class IV, 941,400 acres (44%). VRM Classes I and II would impact oil and gas exploration, as surface disturbance would be disallowed unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands are also WSAs that are closed to the leasing of oil and gas; thus VRM Class I designations, in effect, do not impact oil and gas. VRM Class II would preclude drilling on the surface and preclude surface facilities, unless they meet the VRM objective, and the restriction would require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in a manner that blends better with the landscape, and other minor changes in operations. The acres within VRM Classes I and II that would result in the greatest restrictions to oil and gas activities are similar to the acreages in the Proposed RMP.

Impacts from Special Status Species

The types of impacts experienced as a result of SSS management would be similar to those described under the Proposed RMP, although Alternative C has fewer restrictions on surface disturbing activities in

sage grouse habitat. Completing species inventories, selecting relocated sites, and directional drilling which may be required to protect SSS, would increase delays in permitting and the costs of exploration and development, and the greater distance for directional drilling would further decrease the likelihood of successful exploration. Seasonal restrictions would have adverse impacts to oil and gas exploration and development when a proposed deep well could not be feasibly drilled and completed within the open season, precluding drilling deep exploration targets. Because Parker Mountain, where sage-grouse leks are located, has low oil and gas development potential, impacts resulting from sage-grouse stipulations are expected to be low. There are currently only four sage-grouse leks on BLM land on Parker Mountain although that number could increase in the future.

Impacts from Fish and Wildlife

Impacts would be similar to those described under the Proposed RMP. The habitat acres open to leasing with restrictions would be reduced to 73% of the mule deer habitat, 34% of bison habitat, 32% of Desert bighorn sheep habitat, and 95% of the elk habitat. The habitat acres designated as NSO and closed to oil and gas leasing would increase, varying from 0-67% depending on the species, resulting in a greater impact to oil and gas exploration and development over the Proposed RMP. Seasonal restrictions would have adverse impacts to oil and gas exploration and development, as a company would need to schedule activities during the open season. Equipment, such as drill rigs and work crews, would not necessarily be available during the open season. Delays in permitting proposed operations and contracting necessary equipment and crews would increase costs for exploration and development. On deeper wells, seasonal restrictions would preclude drilling deep targets when the well could not be feasibly drilled and completed within the open season. Designated NSO areas would require directional drilling and no surface facilities, which would increase costs and would decrease the likelihood of successful exploration. In the areas closed to leasing, oil and gas resources would not be explored and would not be available for development.

Leasing stipulations within crucial wildlife habitat are shown in Table 4-43 below:

Table 4-43. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat—Alternative C

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	100 ac	0 ac	0 ac	3,400 ac	100 ac
		% Habitat	<1%	0%	0%	1%	<1%
	Timing or Controlled Surface Use Restrictions	Acres	412,800 ac	102,700 ac	84,400 ac	71,700 ac	201,000 ac
		% Habitat	73%	100%	34%	32%	95%
	No Surface Occupancy	Acres	31,200 ac	0 ac	15,800 ac	23,200 ac	10,500 ac
		% Habitat	5%	0%	6%	10%	5%
Closed		Acres	125,100 ac	0 ac	150,700 ac	129,000 ac	600 ac
		% Habitat	22%	0%	60%	57%	<1%

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Under this alternative, four SRMAs would be established: The Henry Mountains, Capitol Reef Gateway, Dirty Devil/Robbers Roost, and Sevier Canyon. In the Henry Mountains SRMA, Class A scenery would be closed to leasing and areas within the viewshed of Capitol Reef National Park would be NSO; in the Dirty Devil/Robbers Roost SRMA, Class A scenery would be NSO or closed to leasing; in the Capitol Reef Gateway SRMA, the Fremont Gorge would be NSO; and in the Sevier Canyon SRMA, the Highway 89 corridor within the bottom of the canyon would be NSO. The portion of these SRMAs that are designated as NSO or closed to leasing, outside of WSAs, is within a low activity RFD area (Areas 1 and 2 combined) that is predicted to have three wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas that would require directional drilling, resulting in increased costs and decreased likelihood of successful exploration. The areas closed to leasing would preclude any opportunities for oil and gas exploration and development. This alternative would result in greater impacts to oil and gas from recreation than Alternatives N, A, and the Proposed RMP.

The NSO and closed areas within the Dirty Devil/Robbers Roost SRMA, in part, overlaps existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and the drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005 is in progress by the BLM. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to permitting wells in areas with NSO would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases. The closure to leasing would be in conflict with the terms of the pending leases.

Impacts from Lands and Realty

Impacts would be the same as described under Alternative N.

Impacts from Special Designations

Impacts from Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Under this alternative, 12 eligible river segments would be recommended as suitable as WSRs, resulting in greater impacts to oil and gas than Alternatives N, A, and the Proposed RMP. All 12 of the segments would be closed to leasing, which would preclude any oil and gas activity, including any development of oil and gas resources.

Areas of Critical Environmental Concern

Sixteen ACECs encompassing approximately 886,810 acres would be designated. The specific relevant and important values and management prescriptions would vary by ACEC. Major constraints and areas closed to leasing would impact oil and gas activity, as the ACECs overlap lands that have a high potential for oil and gas with a predicted low activity level (development potential). In this alternative, ACEC management prescriptions would result in 516,199 acres being closed to leasing, 73,511 acres being subject to NSO, and 297,100 acres being open with standard lease terms, seasonal restrictions, or controlled surface use. Closure to leasing would preclude any oil and gas exploration and development of such resources. NSO designations would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. Relocation of a well may eliminate a reasonable chance of success, by moving the well site too far from the drilling target.

Approximately 882,300 acres of the ACECs would be in the low activity RFD area, Areas 1 and 2 combined. Although only three wells per year are predicted (45 for the plan life), the designation of ACECs with major constraints and closure to leasing would affect the opportunity to explore for oil and gas resources and to develop any resources that may be discovered. In addition, existing leases overlap, in part, ACECs in the vicinity of the Dirty Devil River, Awapa Plateau (Parker Mountain), Kingston Canyon, and Marysvale Canyon (Sevier Canyon). The existing leases in the vicinity of the Dirty Devil River are leases that have been pending conversion to a combined hydrocarbon lease since 1984 and the current, ongoing drafting of an EIS for tar sand leasing under the Energy Policy Act of 2005. The Sevier Canyon ACEC is almost totally leased at this time and would be subject to valid existing rights. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

RFD Area 3 would contain only 510 acres of ACECs. The opportunity for oil and gas exploration would be minimally impacted by the ACEC designations.

RFD Area 4 would be impacted by the management decision for NSO at the Rainbow Hills ACEC that encompasses 4,000 acres. The ACEC is presently encompassed by authorized oil and gas leases, and the producing oil field in this RFD area overlaps this ACEC. The existing leases are valid existing rights to the ACEC designation, and those leases are not subject to NSO. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation. Although directional drilling has been used as a BMP at the Covenant field, NSO, if followed, would decrease opportunities for exploration and development in the lands designated as an ACEC.

Alternative D

Impacts from Soil Resources and Water Resources

The types of impacts would be similar to those described under Alternative A, except the buffer around live water and springs would increase to 660 feet.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

The types of impacts experienced as a result of visual resource management would be the same as described under Alternative N, except the designated VRM classes are changed as follows: VRM Class I, 1,129,600 acres (53% of the RFO); VRM Class II, 67,700 acres (3%); VRM Class III, 355,100 acres (17%); and VRM Class IV, 576,600 acres (27%). The impacts to oil and gas activity from visual resources would be the greatest in this alternative. VRM Classes I and II would impact oil and gas exploration, as surface disturbance would be disallowed unless appropriate mitigation met the objective of these VRM classes. The VRM Class I designated lands include WSAs, which are closed to the leasing of oil and gas. However, under this alternative, approximately 700,000 additional acres would be designated as VRM Class I, which would disallow any change to the landscape character. VRM Class II would preclude drilling on the surface and surface facilities, unless they meet the VRM objective, and the restriction would require drilling to be by directional methods from adjacent land, which would increase cost and would decrease the likelihood of success of wildcat wells. Relocation of a well, depending on the distance, may move the well site too far from the drilling target to have a reasonable chance of success. This alternative contains the most VRM Classes I and II acres, resulting in the greatest impacts to oil and gas exploration and development. VRM Classes III and IV designated lands would have minimal impact on oil and gas, although there could be some delays and added costs to develop mitigations, such as appropriate paint colors, building facilities in manner that blends better with the landscape, and other minor changes in operations.

Impacts from Special Status Species

Impacts would be the same as described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be similar to those described under the Proposed RMP, except that the habitat acres open to leasing with restrictions would be reduced to 53% of the deer habitat, 12% of bison habitat, 2% of bighorn sheep habitat, and less than 1% of elk habitat. The habitat acres closed to oil and gas leasing would increase, varying from 0-94% depending on species. Alternative D would result in the most acres closed and the greatest impact to oil and gas exploration and development of all the alternatives. Leasing stipulations within crucial wildlife habitat are shown in Table 4-44 below.

Table 4-44. Oil and Gas Leasing Stipulations within Crucial Wildlife Habitat—Alternative D

			Deer	Pronghorn	Bison	Bighorn	Elk
Open	Standard Lease Terms	Acres	100 ac	0 ac	0 ac	1,100 ac	100 ac
		% Habitat	<1%	0%	0%	<1%	<1%
	Timing or Controlled Surface Use Restrictions	Acres	300,000 ac	102,700 ac	30,500 ac	5,500 ac	172,700 ac
		% Habitat	53%	100%	12%	2%	81%
	No Surface Occupancy	Acres	15,500 ac	0 ac	4,700 ac	6,900 ac	10,500 ac
		% Habitat	3%	0%	2%	3%	5%
Closed		Acres	253,600 ac	0 ac	215,700 ac	213,800 ac	28,900 ac
		% Habitat	44%	0%	86%	94%	14%

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, a total of 682,600 acres of non-WSA lands with wilderness characteristics would be managed to protect the naturalness and outstanding opportunities for solitude and primitive recreation within these areas. All non-WSA lands with wilderness characteristics would be closed to leasing, which would preclude exploration and development of oil and gas resources. The non-WSA lands with wilderness characteristics encompass approximately 33% of the acreage of public lands in the RFO and are mostly located in the eastern part of the RFO.

Most of the non-WSA land with wilderness characteristics (approximately 667,360 acres) would be in the low activity RFD area, Areas 1 and 2 combined, and approximately 94% of the non-WSA lands with wilderness characteristics would be concentrated in the general geographic area of the Henry Mountains, Awapa Plateau, and the canyon lands of the Colorado Plateau. Approximately 19,240 acres are within the moderate activity RFD area, Area 3. Non-WSA lands with wilderness characteristics are not identified within the high activity RFD area, Area 4. Although only three wells per year are predicted in the low and moderate activity RFD areas during the plan life (45 or 49 total in the low or moderate activity areas, respectively), the closure to leasing would affect the opportunity to explore for oil and gas resources and to develop any resources that may be present. Managing the non-WSA lands as closed to oil and gas leasing could reduce the opportunity to discover oil and gas resources in 33% of the RFO.

In addition, non-WSA lands with wilderness characteristics, in part, encompass existing federal oil and gas leases at Dirty Devil/French Springs, Flat Tops, and Wild Horse Mesa. The Flat Tops area is mostly leased for oil and gas. These leases have pre-existing rights to the use of the surface for exploration and development. However, there would be issues related to location of wells and surface facilities in areas with wilderness characteristics that could delay approval and would impose stricter environmental standards than currently addressed under the lease terms of these pre-existing leases. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

In addition, the non-WSA lands in the eastern part of the Dirty Devil/French Springs area encompass authorized oil and gas leases that are within the Tar Sands Triangle Special Tar Sands Area (STSA). These leases have been pending conversion to combined hydrocarbon leases since 1984, and BLM is currently drafting an EIS for tar sand leasing under the Energy Policy Act of 2005. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to the location of wells and surface facilities in areas with wilderness characteristics could delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases.

Impacts from Recreation

Under this alternative, seven SRMAs would be established—Henry Mountains, Dirty Devil, Capitol Reef Gateway, East Fork Sevier River, San Rafael Swell, Little Rockies and Labyrinth Canyon—resulting in the greatest potential for impacts to oil and gas of any of the alternatives. The Henry Mountains, Capitol Reef Gateway, Dirty Devil/Robbers Roost, Little Rockies, San Rafael Swell, and Labyrinth Canyon SRMAs would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation; the East Fork Sevier River SRMA would be for primitive and semi-primitive and roaded natural recreation. Most of the acreage in each of these SRMAs, except the East Fork Sevier River, would be closed to leasing. There would be areas open subject to NSO, minor constraints, and standard lease terms. The portion of these SRMAs that are designated as NSO or closed to leasing, outside of WSAs, is within a low activity RFD area (Areas 1 and 2 combined) that is predicted to have three wells per year or 45 wells during the plan life. The NSO designation would reduce the opportunity for exploration and development by requiring no surface disturbance within those designated areas and would require directional drilling and no surface facilities, which would increase cost and would decrease the likelihood of successful exploration. The areas closed to leasing would preclude any opportunities for oil and gas exploration and development.

The NSO and closed areas within the Dirty Devil/Robbers Roost SRMA, in part, overlap existing oil and gas leases. These leases have been pending conversion to combined hydrocarbon leases since 1984, and BLM is currently drafting an EIS for tar sand leasing under the Energy Policy Act of 2005. These pending leases have pre-existing rights to the use of the surface for exploration and development. Issues related to the location of wells and surface facilities in areas with NSO and closed to leasing would delay approval and would impose stricter environmental standards than currently addressed under the lease terms of the pending leases. The closure to leasing would be in conflict with the terms of the pending leases. An attempt to impose NSO on a pre-existing lease or an attempt to revoke a pre-existing lease could lead to litigation.

Impacts from Lands and Realty

Impacts to oil and gas would be the same as for Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative C, except that additional acres within the ACECs (33% of the RFO) would be closed to oil and gas leasing for the protection of non-WSA lands with wilderness characteristics (discussed in detail for that resource). This alternative would result in the greatest impacts to oil and gas.

Energy Policy and Conservation Act (EPCA) Evaluation by Alternative

The environmental consequences of proposed decisions on oil and gas resources were determined according to Energy Policy and Conservation Act guidance, per IM 2003-233.

In the EPCA, Congress required federal agencies to estimate oil and gas resources in five oil and gas provinces in the western United States and assess impediments to development. Two of the provinces, the Greater Paradox Basin and the Green River Basin, overlap the lands managed by the RFO.

The results of the EPCA analysis relative to the lands managed by the RFO are displayed below. Oil and gas resource data (volumetric data on the amounts of undiscovered oil and gas resources within the EPCA basins within the lands managed by the RFO) are shown for all alternatives, and data on leasing stipulations that would be imposed under the alternatives are shown for Alternative A, the Proposed RMP, and Alternative C. These estimates are mathematical projections, based on geologic and production parameters, and broad-based, regional assumptions.

Alternative N. Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-45.

Table 4-45. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas—Alternative N

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Open Subject to No Surface Occupancy	22,600	36	0–20,000	0–1	0–500,000,000	0–18
Closed	459,700	719	0–20,000	0–14	0–500,000,000	0–359

1. Includes oil, natural gas liquids, and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from U.S. Department of the Interior (USDI), U.S. Department of Agriculture (USDA), U.S. Department of Energy (USDOE) 2003, p. 2–15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2–20.

The land managed by the RFO is predominantly rated as high potential for oil and gas and subordinately as moderate potential with different confidence ratings. (Refer to the *Mineral Potential Report* [BLM 2005b].) In addition, activity related to oil and gas has been forecast in an RFD scenario (Appendix 12). In the RFD, the western part of the lands managed by the RFO in the vicinity of the Sevier and Sanpete Valleys is most likely to see oil and gas development related to the Sevier Frontal play (also referred to as

the Central Utah Thrust play), and this part of the land managed by the RFO is predominantly open to leasing with standard lease terms or a seasonal stipulation for wildlife critical habitat. The timing stipulations for wildlife habitat could impact proposed operations by altering the timing of exploration; however, the stipulation would not disallow most exploration.

Most of the public lands open to oil and gas leasing subject to NSO or closed to leasing are in the eastern part of the lands managed by the RFO. Allowing NSO or closing areas to leasing would have greater impacts to exploration and development than standard lease terms or controlled surface use or timing stipulations. Exploration would be precluded in the closed areas and could be precluded in the areas with NSO. At this time, oil and gas development is not foreseen in the eastern part of the RFO; however, in any wildcat area, when oil or gas are discovered in paying quantities, a forecast for exploration can quickly change from exploration to development.

Alternative A. Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-46 and on Map 4-1.

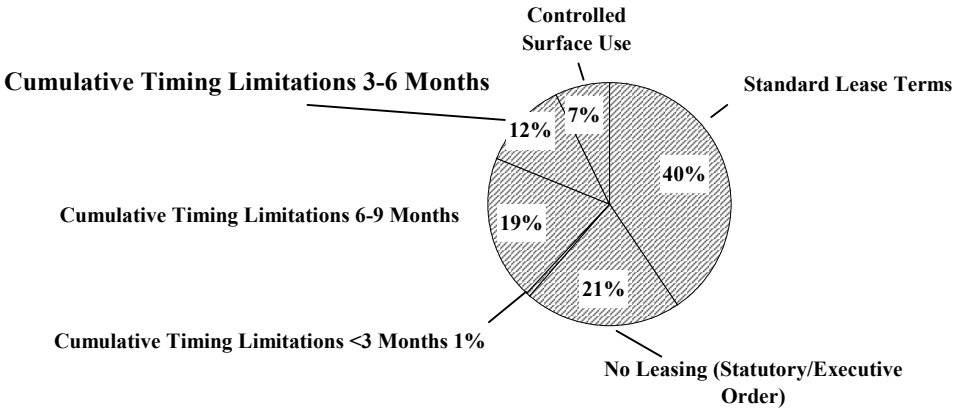
Table 4-46. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas—Alternative A

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Millions of Barrels of Oil	Cubic Feet per Square Mile[4]	Billions of Cubic Feet of Gas
Open Subject to NSO	0	0	0–20,000	0	0–500,000,000	0
Closed	446,900	695	0–20,000	0–14	0–500,000,000	0–348

1. Includes oil, natural gas liquids (NGLs), and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from USDI, USDA, USDOE 2003, p. 2–15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2–20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-1. Among the alternatives, management of other resources under Alternative A would result in the most acres in the Standard Lease Terms category, thus having the least impact to oil and gas exploration and development.

Figure 4-1. Percentage of Public Lands in each Open and Closed Designation—Alternative A



Proposed RMP. Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-47 and on Map 4-2.

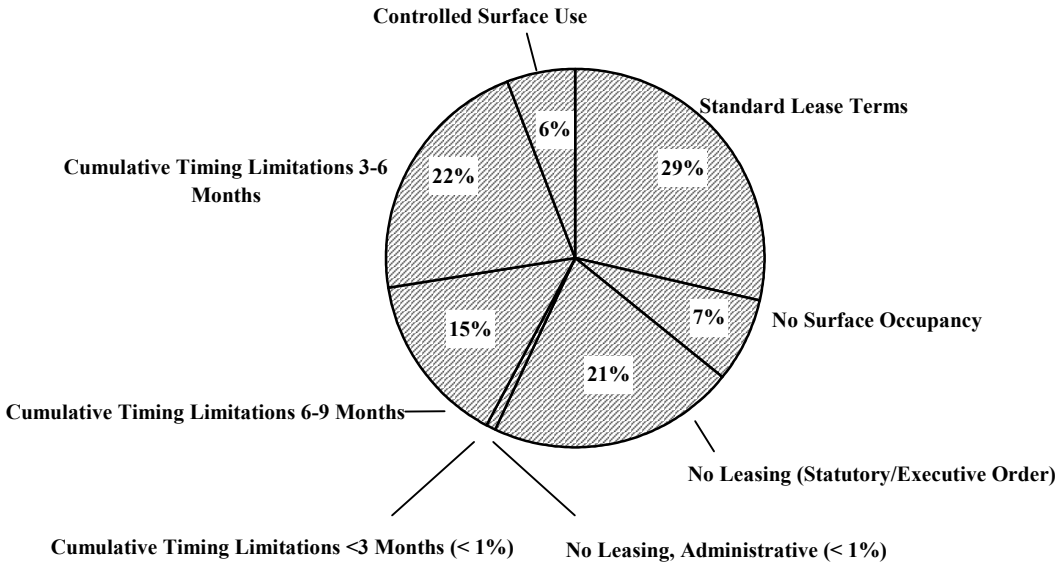
Table 4-47. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas—Proposed RMP

Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Unrecoverable NSO	28,900	45	0–20,000	0.8	0–500,000,000	1.2
Closed to leasing	447,300	699	0–20,000	6.9	0–500,000,000	8.0

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from USDI, USDA, USDOE 2003, p. 2–15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2–20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-2. Under this alternative, less acreage would be leased with standard lease terms and some areas would be NSO. In this alternative, proposed decisions for other resources would have more impact to oil and gas exploration and development than Alternatives N and A, but less than Alternative C.

Figure 4-2. Percentage of Public Lands in each Open and Closed Designation—Proposed RMP



Alternative C. Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-48 and on Map 4-3.

Table 4-48. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas—Alternative C

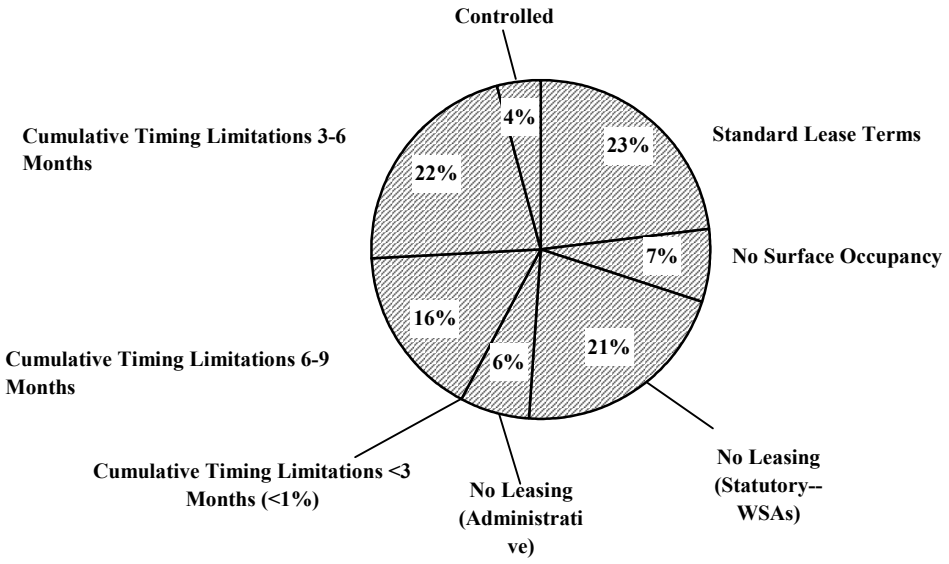
Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Open Subject to NSO	148,700	233	0–20,000	0–5	0–500,000,000	0–116
Closed	586,300	916	0–20,000	0–18	0–500,000,000	0–458

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from USDI, USDA, USDOE 2003, p. 2–15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2–20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-3. As stated under Alternative N, the *Mineral Potential Report* and the RFD show oil and gas potential and a reasonable forecast of oil and gas activity in the lands managed by the RFO. Under Alternative C, management of other resources would have more impact to oil and gas exploration and development as compared to Alternatives N, A, and the Proposed RMP. There would be less acreage leased with standard terms and more acres leased with NSO or closed to leasing. Within NSO

areas, this would result in increased costs, decreasing the likelihood of successful exploration. Closed areas would preclude oil and gas exploration and development.

Figure 4-3. Percentage of Public Lands in each Open and Closed Designation—Alternative C



Alternative D. Based on the 2003 EPCA report, the estimated oil and gas resources in each oil and gas leasing designation are summarized in Table 4-49 and on Map 4-4.

Table 4-49. Technically Recoverable, Undiscovered Resources in Designated Open and Closed Areas—Alternative D

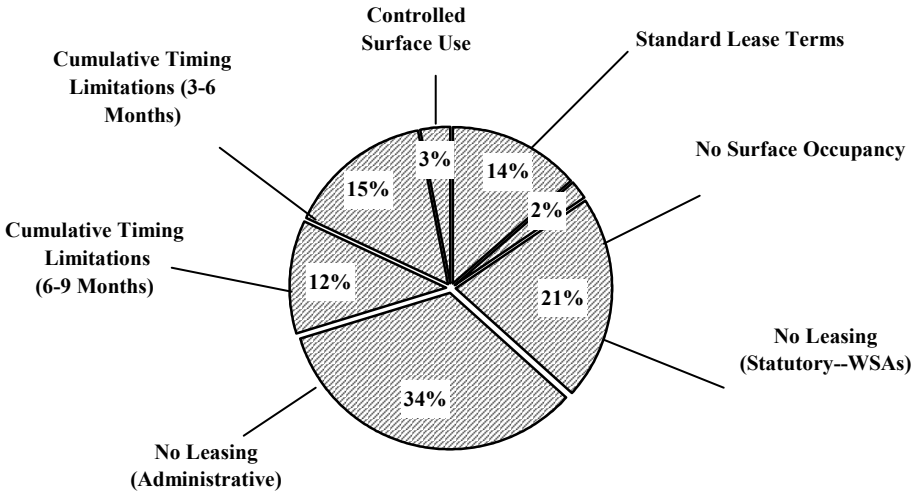
Oil and Gas Leasing Designation	Area		Total Liquids[1]		Total Natural Gas[2]	
	Acres	Square Miles	Barrels per Square Mile[3]	Million Barrels of Oil	Cubic Feet per Square Mile[4]	Billion Cubic Feet of Gas
Open Subject NSO	43,300	68	0–20,000	0–1	0–500,000,000	0–34
Closed	1,160,500	1,811	0–20,000	0–36	0–500,000,000	0–906

1. Includes oil, NGLs and liquids associated with natural gas reservoirs.
2. Includes associated dissolved and non-associated natural gas.
3. Estimate from USDI, USDA, USDOE 2003, p. 2–15.
4. Estimate from USDI, USDA, USDOE 2003, p. 2–20.

In addition, the percentage of the lands managed by the RFO in each open and closed oil and gas designation is shown in Figure 4-4. Among the alternatives, management prescriptions under Alternative D would have the greatest impact on the opportunities for oil and gas exploration and development. This

alternative would allow the least acres leased with standard terms. This alternative would have the most acres closed to leasing (55% of the RFO), precluding oil and gas exploration and development.

Figure 4-4. Percentage of Public Lands in each Open and Closed Designation—Alternative D



Geothermal Resources

Geothermal resources are leased under the Geothermal Steam Act of 1970. Through land use planning, the BLM uses the same guidelines for geothermal leasing as it does for oil and gas leasing in designating areas as open subject to standard lease terms, open subject to major or minor constraints, and closed to leasing. Lands available for geothermal leasing would follow the oil and gas leasing designations. The provisions for exceptions, modifications, and waivers would also apply to geothermal resources.

Methods and Assumptions

The analysis for impacts to geothermal resources assumes:

- Geothermal resource activity—exploration, drilling, and production if paying quantities are discovered—would be managed according to applicable law, federal regulations, and onshore orders and would be managed to mitigate impacts to other resources according to BMPs appropriate to the site/location.
- The RFD is a reasonable prediction of geothermal resource activity for the planning horizon.

Environmental Consequences

The impacts to geothermal resources would be similar to oil and gas because geothermal resources would be subject to the same leasing designations as oil and gas with differences as follows.

The high potential for the occurrence of geothermal resources is in the western part of the RFO, generally in the vicinity of the Sevier Valley, Sanpete Valley, and Marysvale. The high-potential area coincides

approximately with the Colorado Plateau–Basin and Range Transition Zone. Development of geothermal resources is not considered likely, but if it were to occur, it would most likely be in the vicinity of known hot springs and a former Known Geothermal Resource Area (KGRA) in the vicinity of Joseph and Monroe.

Tar Sands

Tar sands, or bituminous sandstone, are minerals that are subject to the Mineral Leasing Act of 1920, as amended, and the Combined Hydrocarbon Act of 1980. The Energy Act of 2005 required the BLM to develop a leasing program for tar sands. The BLM is preparing an EIS to address the leasing of tar sands. The requirements for land use planning for tar sands are similar to oil and gas leasing. The BLM may designate public land as open subject to standard terms, open subject to minor or major constraints, or closed to leasing. Exceptions, modifications, and waivers would also be allowed as described in the Tar Sands Draft RMP/EIS. One STSA, the Tar Sands Triangle, overlaps BLM lands on the Wayne and Garfield County lines in the eastern part of the RFO.

Methods and Assumptions

The analysis for impacts assumes exploration and development would be governed by the applicable laws and regulations.

Environmental Consequences

The impacts to tar sands under each alternative would be similar to oil and gas, although recognizing that the types of wells, facilities, and infrastructure necessary to explore and develop tar sands would differ from conventional oil and gas. The oil and gas leasing restrictions would apply to tar sands leasing. Existing oil and gas leases pending conversion to combined hydrocarbon leases were addressed under the discussion for oil and gas.

Coal

Federal regulations for the management of coal resources are at 43 CFR 3400. Coal resources within the planning area occur in three coal fields: the southern part of the Wasatch Plateau, Emery, and Henry Mountains. Land use planning for coal leasing requires an evaluation to determine the coal resources that have development potential by surface or underground mining methods, then a subsequent evaluation under the coal unsuitability criteria, as defined at 43 CFR 3461.5, to determine the coal resources that are acceptable for further consideration of leasing.

Alternative N: No Action

For Alternative N, the coal evaluations and unsuitability reports were completed as part of the current land use plans. The unsuitability criteria were applied to the Wasatch Plateau and Emery coal fields as one study area and to the Henry Mountains coal field as another study area.

Alternatives A–D

For Alternatives A–D, the coal resources in these three fields were evaluated in two resource reports in 2003–2004 to delineate coal with development potential that would be mined by underground or surface mining methods, based on parameters and assumptions presented in the coal evaluation reports. Those two reports, included in Appendix 8, are:

- *Coal Resources of the BLM Richfield Planning Area*, July 2003
- *Coal Resource Evaluation of the Henry Mountains Coal Field*, July 2004.

The coal resources that were determined to have development potential were additionally analyzed by applying the unsuitability criteria. These documents, included in Appendix 8, are:

- *Coal Unsuitability Report, Henry Mountains Coal Field* (draft), March 2005
- *Coal Unsuitability Report, Wasatch Plateau and Emery Coal Fields* (draft), March 2005.

Refer to Appendix 8 for acres identified for surface and subsurface mining of coal.

Methods and Assumptions

The analysis for impacts to coal assumes:

- Coal exploration and development would be managed according to federal regulations and would be managed to mitigate impacts to other resources.
- The coal resource evaluations are a reasonable estimation of the coal resources within the RFO for the planning horizon, based on the assumptions and analysis in the reports.

Because the reports for Alternative N combined the Wasatch Plateau and Emery coal fields without differentiating the resources within each field, the acreage for the Wasatch Plateau coal field is included in the discussion for that alternative. However, for Alternatives A–D, this analysis only addresses BLM-administered lands; thus, the discussion does not include the Wasatch Plateau for these alternatives. Coal resources in the southern Wasatch Plateau and Emery coal fields on the Fishlake or Manti-LaSal National Forests would be further considered in the Forest Plans for those two forests. The impact analysis for Alternatives A–D is only for BLM-administered lands.

Environmental Consequences

Impacts to coal exploration and development would most likely result from actions proposed for the management of the following resources:

- Soil Resources and Water Resources
- Cultural Resources
- Fish and Wildlife
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Special Designations.

Other programs were determined to have little or no impact on exploration and development of coal resources. There are no WSA or WSR decisions that would impact coal resources.

Alternative N: No Action

Impacts from Soil Resources and Water Resources

Managing public lands to protect soil and water would have an impact on coal resource exploration and development and could modify proposed activity, when an application is received by the BLM. The mitigations would be site-specific at the time of an application. As consistent with resource protection and applicable federal laws and regulations, mitigations would include requirements such as stockpiling topsoil for reclamation and avoiding live water by 500 feet. Such a buffer would not preclude drilling and other exploration activities and necessary facilities, such as roads, although such sites and facilities may

be relocated to avoid live water, as necessary. In the case of a mine, most likely for a surface mine, imposing a 500-foot buffer could result in a redesign of the mine and loss of recoverable coal.

Impacts from Cultural Resources

Managing public lands to protect cultural resources would have an impact on coal exploration and development, as mitigations would be developed that would modify proposed activity when an application is received by the BLM and as needed to protect cultural resources. The mitigations would be site-specific at the time of an application as consistent with applicable federal laws and regulations. Avoidance of cultural resource sites would not preclude drilling and other exploration activities, although specific drill or exploration sites and facilities, such as roads, may need to be relocated. In the case of a mine, most likely for a surface mine, avoidance of cultural resources could result in a redesign of the mine and loss of recoverable coal.

Impacts from Fish and Wildlife

Under this alternative, restrictions for wildlife, such as seasonal restraints, would apply to coal exploration and development. In the Henry Mountains coal field, 17,268 acres of coal resources are within crucial habitat, and in the Wasatch Plateau and Emery coal fields, 28,781 acres of coal resources are within crucial habitat. The crucial habitat is unsuitable for surface mining and is subject to no surface-disturbing activities during the restricted season for underground mining. The seasonal restriction would impact coal exploration by reducing the time frame during which such work could be completed. For an underground coal mine, locating portals, other facilities, and infrastructure outside of the seasonally restricted area would affect the feasibility of the coal mining and the operation of the mine. The seasonal restrictions would preclude coal development if surface facilities needed to be located within a restricted area and an exception is not applicable.

Impacts from Visual Resources

Managing visual resources on public lands would have an impact on coal resources. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-50:

Table 4-50. VRM Classes of Coal Resources, Alternative N

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	3,401	7,419	14,172
	Underground	0	25,258	29,471	66,373
Emery	**Surface**	0	1,411	3,935	6,821
	Underground	0	3,108	1,377	9,817

VRM Class I lands are unsuitable for coal leasing, and, except for WSAs, public lands are not classified as VRM Class I in this alternative. (BLM policy requires that WSAs be managed to meet VRM Class I objectives. Thus, WSAs are not suitable for coal leasing.) The objective of VRM Class II is to retain the character of the landscape with a low level of change, VRM Class III is to partially retain the character of the landscape with change that may be seen without dominating the view of the casual observer, and VRM Class IV allows for major modifications of the landscape. Mitigations as appropriate for the VRM class would be imposed on coal operations at the time of an application, as consistent with federal laws and regulations. VRM Class II would be the most restrictive of the three classes of VRM applicable here. Conforming to the objectives of VRM Class II may require relocation of drill sites and other exploration

activities and could preclude development of a coal mine, particularly a surface mine, and loss of recoverable coal. VRM Classes III and IV are less restrictive than VRM Classes I and II. The VRM Classes III and IV would not preclude exploration and development of coal resources, although proposals would be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impact to coal exploration and development.

Impacts from Recreation

In this alternative, there are no SRMAs that would impact coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Three of the existing ACECs in this alternative would affect exploration of coal resources. Gilbert Badlands (3,680 acres) includes restrictions for steep slopes and wet and muddy conditions, and the North and South Caineville Mesas (2,200 and 4,100 acres, respectively) are subject to NSO. None of these ACECs have coal resources that are acceptable for further consideration of leasing by surface mining methods. Exploration would not be allowed within the ACECs with the NSO restriction.

Alternative A

Impacts from Soil Resource sand Water Resources

Impacts on coal exploration and development from soil and water would be similar to Alternative N, except activity would not be allowed:

- Within 330 feet of live water or springs
- Within zones of hydric soils
- On slopes greater than 30 percent.

The exceptions, modifications, and waivers as described for oil and gas leasing would apply to coal exploration and development and would be considered at the time of an application for license or lease. The impacts of the 330-foot buffer would be similar to the 500-foot buffer, as addressed in Alternative N. Disallowing exploration and development activities within areas of hydric soils and slopes greater than 30 % would preclude development of coal resources and loss of recoverable coal.

Impacts from Cultural Resources

Impacts would be the same as Alternative N.

Impacts from Fish and Wildlife

Managing public lands for wildlife habitat would have an impact on coal exploration and development by imposing seasonal restraints for crucial wildlife habitat. In the Henry Mountains coal field, 10,871 acres of coal resources acceptable for consideration of leasing with a surface mining method and 41,347 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 5,126 acres with an underground mining method are contained within land subject to minor constraints. The seasonal restriction would impact coal exploration by reducing the time frame during which such work would be completed. For a coal mine, the seasonal restriction would impose shut downs, if the restriction is not modified or waived. Such shut downs would affect the feasibility of the surface coal mining and would render the mine inoperable. For an underground coal mine, locating portals, other facilities, and infrastructure outside of the seasonally

restricted area would affect the feasibility of the coal mining and the operation of the mine. These impacts to coal leasing would preclude coal development, if modifications and waivers are not considered at the time of application for a lease.

Impacts from Visual Resource Management

Managing visual resources on public lands would have an impact on coal resources. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-51:

Table 4-51. VRM Classes of Coal Resources, Alternative A

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	0	290	14,378
	Underground	0	0	723	40,629
Emery	**Underground**	0	0	5,125	4,497

Public lands with acceptable resources for mining would not be designated as VRM Classes I or II under this alternative. Mitigations as appropriate for the VRM class would be imposed on coal operations at the time of an application, as consistent with federal laws and regulations. VRM Classes III and IV would not preclude exploration and development of coal resources, although proposals may need to be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Impacts would be the same as for Alternative N.

Impacts from Recreation

Under this alternative, only the Factory Butte SRMA would overlap coal resources. The management prescription of this SRMA provides opportunities for cross-country OHV use, which would not restrict coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

No new ACECs would be designated in this alternative, and the four existing ACECs in Alternative N would no longer be designated as such. Thus, there would be no impacts to coal exploration and development from ACEC designations or the associated special management prescriptions.

Proposed RMP

Impacts from Soil Resources and Water Resources

Impacts would be the same as described under Alternative A.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, 11,759

acres of coal resources acceptable for consideration of leasing with a surface mining method and 40,550 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 7,358 acres with an underground mining method are contained within land subject to minor constraints. This alternative has additional acreage leased with minor constraints, thus there would be greater potential for restrictions of coal development.

Impacts from Visual Resource Management

Impacts to coal exploration and development would be the same as Alternative A, except the acreage in each VRM class would change. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-52:

Table 4-52. VRM Classes of Coal Resources, Proposed RMP

		Acres of Coal Resources by VRM Class			
Coal Field	Mining Method	Class I	Class II	Class III	Class IV
Henry Mountains	Surface	0	1,219	110	13,339
	Underground	0	4,146	0	37,205
Emery	Underground	0	1,701	357	7,564

Public lands with acceptable resources for mining would not be designated as VRM Class I in this alternative. Mitigations as appropriate for the VRM Classes II through IV would be imposed on coal operations at the time of an application, as consistent with federal laws and regulations. VRM Class II would be the most restrictive of the three VRM classes; VRM Class IV, the least. The VRM designations would not preclude coal exploration and development, although proposals would be modified to be consistent with the VRM class and applicable laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Although 78,600 acres of non-WSA lands would be managed to maintain wilderness characteristics, the prescriptions identified in Chapter 2 would not preclude coal mining; therefore, impacts would be the same as for Alternative N.

Impacts from Recreation

Under the Proposed RMP, the Henry Mountains and Factory Butte SRMAs would overlap coal resources in the Henry Mountains coal field. The Henry Mountains SRMA would provide opportunities for primitive and semi-primitive motorized and non-motorized recreation. The SRMA would not preclude coal exploration and development, but such exploration and development could be in conflict with SRMA goals and objectives.

The Factory Butte SRMA would provide opportunities for cross-country OHV use. This SRMA would not necessarily restrict coal exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

North Caineville Mesa would be the only designated ACEC within a coal field and would be subject to NSO. A coal resource acceptable for consideration of leasing has not been identified within this ACEC, and exploration would not be allowed due to the NSO restriction.

Alternative C

Impacts from Soil Resources and Water Resources

The types of impacts would be the same as Alternative A, except the buffer around live water and springs would be 660 feet. The impacts of the 660-foot buffer would be double the buffer distance for live water, as addressed in Alternative A, which could increase the number of drill sites and other exploration sites that may be relocated. It would also increase the possibility of redesign of a proposed mine and increase the loss of recoverable coal resources.

Impacts from Cultural Resources

Impacts would be the same as described under Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, 9,447 acres of coal resources acceptable for consideration of leasing with a surface mining method and 33,249 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal crucial wildlife habitat. In the Emery coal field, 7,922 acres with an underground mining method are contained within land subject to minor constraints. This alternative would allow fewer acres available for surface mining and require minor constraints for more acres of the RFO. This alternative would have greater impacts on coal resources than Alternatives N, A, and the Proposed RMP, but less impacts than Alternative D.

Impacts from Visual Resource Management

The types of impacts to coal exploration and development would be the same as Alternative A, except the acreage in each VRM class would change and VRM Class II areas would be closed to coal leasing. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-53.

Table 4-53. VRM Classes of Coal Resources, Alternative C

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	0	3,013	4,094	7,562
	Underground	0	8,134	10,039	23,178
Emery	**Underground**	0	1,701	357	7,564

Under this alternative, 11,147 acres of coal resources, including surface and underground resources, in the Henry Mountains coal field and 1,701 acres in the Emery coal field that are acceptable for the consideration of leasing would be precluded from any coal development or leasing due to the VRM Class II lands being closed to leasing, resulting in the loss of recoverable coal resources. Mitigations as appropriate for the VRM Classes III and IV would be imposed on coal operations at the time of an application, as consistent with federal laws and regulations. VRM Class III and IV would not preclude exploration and development of coal resources.

Impacts from Non-WSA Land with Wilderness Characteristics

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Under this alternative, the Henry Mountains SRMA would overlap coal resources in the Henry Mountains coal field. This SRMA would provide opportunities for primitive and semi-primitive motorized and primitive non-motorized recreation. Class A scenery would be closed to leasing and areas within the view shed of Capitol Reef National Park would be NSO. In this SRMA, 2,012 acres of coal resources that are acceptable for the consideration of leasing by surface mining and 7,279 acres acceptable by underground mining would be subject to NSO. In addition, 418 acres of coal resources acceptable for the further consideration of leasing by surface mining and 823 acres of coal resources acceptable by underground mining would be closed to leasing. The NSO designation would reduce or eliminate the opportunity to explore and develop coal resources, depending on whether exceptions, modifications, or waivers would apply to the specific application to explore or lease coal resources. The public lands closed to leasing would not be leased for coal development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under this alternative, the potential Badlands and Henry Mountains ACECs would overlap the Henry Mountains coal field, and the potential Thousand Lakes Bench ACECs would overlap the Emery coal field. The Badlands ACEC would be closed to leasing, and the Henry Mountains ACEC would be closed to leasing in VRM Class II. The Thousand Lakes Bench ACEC would be managed to protect cultural resources, special status plants, and riparian, which could affect siting of exploration and development but would not likely preclude leasing in a large area. In the Henry Mountains coal field, 8,134 acres of coal resources acceptable for leasing by underground mining methods and 3,013 acres acceptable for surface mining methods would be closed to leasing due to the management of the two ACECs. Closing these public lands to coal leasing would preclude exploration and development of coal resources within those portions of the ACECs.

Alternative D

Impacts from Soil Resources and Water Resources

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Fish and Wildlife

The types of impacts from management of fish and wildlife would be the same as Alternative A, except the acreage that is restricted is different in this alternative. In the Henry Mountains coal field, there are 2,592 acres of coal resources acceptable for consideration of leasing with a surface mining method, and 10,135 acres with an underground mining method are contained within lands subject to minor constraints, such as the seasonal timing limitations. In the Emery coal field, 3,888 acres with an underground mining method are contained within land subject to minor constraints. This alternative would allow surface mining on the fewest acres of any alternative. This alternative also has the fewest acres available for underground mining with only minor constraints, thus resulting in the greatest impact on the development of coal resources.

Impacts from Visual Resource Management

Impacts to coal exploration and development would be the same as those described under Alternative A, except the acreage in each VRM class would change and coal resources within VRM Classes I and II would be closed to leasing. VRM classes of coal resources determined acceptable for further consideration of leasing are shown in Table 4-54.

Table 4-54. VRM Classes of Coal Resources, Alternative D

		Acres of Coal Resources by VRM Class			
Coal Field	**Mining Method**	**Class I**	**Class II**	**Class III**	**Class IV**
Henry Mountains	**Surface**	10,008	706	2,358	1,627
	Underground	30,121	1,164	4,142	5,928
Emery	**Underground**	4,034	1,701	39	3,849

The acreages for the above-listed VRM Class I areas are for public lands outside WSAs and are acceptable for further consideration of leasing. Under this alternative, public lands designated as VRM Classes I and II would be closed to leasing, which would result in 41,999 acres of coal resources in the Henry Mountains coal field and 5,735 acres in the Emery coal field being precluded from any coal development. This would be a substantial impact to the availability of coal resources that are minable by the listed mining methods, as these coal resources would be unavailable for leasing. Mitigations as appropriate for VRM Classes III and IV would be imposed on coal operations at the time of an application, as consistent with federal laws and regulations.

Impacts from Non-WSA Land with Wilderness Characteristics

Under this alternative, all of the non-WSA lands with wilderness characteristics would be closed to leasing. In the Henry Mountains, 9,936 acres of coal resources that are acceptable for consideration of leasing by surface mining and 30,183 acres by underground mining would be unavailable for development. In the Emery coal field, 4,034 acres of coal resources that are acceptable by underground mining would be unavailable for leasing. These lands would be precluded from coal exploration and development. This would be a substantial impact to the availability of coal resources that are minable by the listed mining methods, as these coal resources would be unavailable for leasing.

Impacts from Recreation

Under this alternative, the Henry Mountains and Capitol Reef Gateway SRMAs would overlap coal resources. These SRMAs would provide opportunities for primitive and semi-primitive motorized and primitive non-motorized recreation. In these SRMAs, 1,480 acres of coal resources that are acceptable for the consideration of leasing by surface mining and 848 acres acceptable for the consideration of leasing by underground mining would be subject to NSO. In addition, 10,832 acres of coal resources acceptable for the further consideration of leasing by surface mining and 30,367 acres of coal resources acceptable by underground mining would be closed to leasing. The NSO designation would reduce or eliminate the opportunity to explore and develop coal resources, depending on whether exceptions, modifications, or waivers would apply to the specific application to explore or lease coal resources. The public lands closed to leasing would not be leased for coal development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Non-Energy Solid Leasable Minerals

These solid leasable minerals are leased under the Mineral Leasing Act of 1920, as amended, and the federal regulations at 43 CFR Part 3500. Through land use planning, the BLM may designate public land as open or closed to leasing, and the use of open areas may be restricted by special conditions. The

designations of open, open with special conditions, and closed would follow the oil and gas leasing designations to the extent practicable. The areas open with special conditions include the oil and gas open with minor constraints (timing or controlled surface use) and open with major constraints (NSO). The provisions for exceptions, modifications, and waivers would also apply to non-energy solid leasable minerals.

Methods and Assumptions

The analysis for impacts to non-energy solid leasable minerals assumes exploration and development would be regulated under all applicable laws and regulations.

Environmental Consequences

The impacts to non-energy solid leasable minerals would be similar to those impacts on oil and gas leasing and development under all alternatives. However, under Alternative N, the oil and gas leasing restrictions do not apply to these leasable minerals. Operations for solid minerals do not involve the same operations as oil and gas. Exploration for these minerals would include drilling, testing by excavating trenches or pits, bulk sampling, and other surface disturbances, and production would involve surface mines or quarries, underground mines, or in situ extraction. Additional facilities would be constructed as necessary for processing the mined or extracted mineral and for building an infrastructure, as needed, to develop a mine and to market the extracted mineral.

Non-energy solid leasable minerals are unlikely to see development during the planning horizon. Sodium and potassium as evaporitic or saline minerals have high potential in the Sevier and Sanpete Valleys, generally in association with the outcrop and mapped subsurface of the Arapien Shale. Also, such minerals have high potential in the mapped subsurface of Paleozoic strata and facies in the Paradox Basin, proper, where salt has been penetrated in deep oil and gas wells. However, neither the Sevier–Sanpete Valley area nor the Paradox Basin are likely to see exploration and development due to the relative abundance and more marketable saline resources at the Great Salt Lake in Utah. The area with high potential for salt in the Sevier and Sanpete Valleys is not encumbered by other proposed management prescriptions (such as ACECs, SRMAs, SSS, or VRM) that would preclude or substantially restrict such exploration and development. The high-potential area for salt in the Paradox Basin is encumbered in part by WSAs, ACECs, SRMAs, and VRM that would restrict such exploration and development.

Alunite or clay alteration deposits that would contain potassium are present in association with the Marysvale volcanic field. The high-potential area for such deposits is generally located in the vicinity of Marysvale. The potassium in the past has been prospected as a source of fertilizer. Such development is considered unlikely during the planning horizon. These deposits in the Marysvale field are not encumbered by other proposed management prescriptions (such as ACECs, SRMAs, SSS, or VRM) that would preclude or restrict such exploration or substantially restrict such exploration and development.

4.4.6.2 Locatable Minerals

Locatable minerals are those valuable under the U.S. mining laws, generally referred to as the 1872 Mining Law. Locatable minerals are subject to entry and location. Entry means the public land is subject to application for title to the land, (e.g., patenting under the mining laws). The BLM does not have discretion as to entry and location of mining claims on open, unappropriated, public lands and does not have the discretion to determine mitigations for mining claims at the time of location. However, the BLM does have discretion to make public lands open to entry or to close lands, (e.g., withdraw certain public lands from the operations of the mining laws). The BLM also has authority through FLPMA, the federal regulations at 43 CFR 3809, and other federal laws and regulations (i.e. 43 CFR 3715, etc.), as applicable, to regulate mining-related operations and the surface disturbances that would be incident to those

operations. The BLM regulates mining-related operations on public lands to prevent unnecessary or undue degradation and to ensure the operation is reasonably incident to mining. In WSAs, the BLM regulates mining-related operations under the IMP and as required by 43 CFR 3802, to prevent the impairment of a WSA's suitability for designation as wilderness by Congress.

Methods and Assumptions

The analysis for impacts to locatable minerals assumes that exploration and development will be governed by the applicable laws and regulations.

Environmental Consequences

Impacts to locatable minerals would likely result from actions proposed under the following resource management programs:

- Cultural Resources
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on locatable minerals.

Alternative N: No Action

Impacts from Cultural Resources

Managing cultural resources requires BLM to make a reasonable and good faith effort to identify the potential effects of federal undertakings. All federal undertakings having the potential to adversely affect cultural resources must include mitigation measures designed to avoid the impact. This is covered by NHPA and its implementing regulations found at 36 CFR Part 800. Operations under the mining laws would be regulated to avoid unnecessary or undue degradation of the public land and cannot knowingly disturb, alter, injure, or destroy any historic or archaeological site, structure, building, or object listed or eligible for listing on the National Register of Historic Places. These requirements could result in the need for avoidance or modification of proposed operations. The Federal Government bears any costs of investigation and salvage of cultural resources. Exploration for locatable minerals under a Notice is not a federal action, as it is not approved by the BLM. However, the BLM would review the Notice and advise the operator of proposed activity that would impact cultural resources. Exploration or development under a Plan of Operations is a federal action and requires approval by the BLM. Before approval is granted, the proposed activity for locatable minerals would be reviewed as required under NEPA and all applicable laws, including NHPA. Mitigations, as consistent with the claimant's rights under the mining laws, would be imposed on proposed operations. Thus, managing cultural resources would require mining operators under the mining laws to not knowingly impact historic or archaeological sites and to immediately bring to the attention of the BLM any cultural resources that would be altered or destroyed by the mining operation. Modification or mitigation requirements would have adverse impacts by delaying the time required for approval of proposed operations.

Impacts from Visual Resources

Managing visual resources would be accomplished by managing public lands as subject to VRM Classes I through IV objectives. The current VRM classes for the RFO are Class I, 0 acres (0% of the RFO); Class II, 529,500 acres (25%); Class III, 569,000 acres (27%); and Class IV, 1,029,500 acres (48%). It should be noted that BLM policy requires WSAs to be managed to meet VRM Class I objectives. The lands within the WSAs were inventoried as VRM Class II and are represented as such in this section. However, 446,900 acres would actually be managed as VRM Class I, to preserve the existing character of the landscape. Consistent with the IMP and as required by 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. VRM Class II objectives are more restrictive in terms of allowing changes to the landscape than Classes III and IV, with Class IV being the least restrictive. Notices would be reviewed, and the claimant would be advised of the steps necessary in order to be in conformance with the VRM class, as consistent with the claimant's rights under the mining laws. Drilling or other exploration sites and facilities could be relocated in VRM Class II areas to the extent practicable and to preserve the claimant's rights. Plans of operations would be reviewed under NEPA and approved in accordance with the VRM class and the claimant's rights. As consistent with 43 CFR 3809.5, operations would be designed to minimize and reduce adverse visual impacts and avoid or eliminate such impacts, as practical. Thus, operations may need to be relocated in order to utilize screening within the natural topography and may be modified in color, shape, and size, as consistent with a claimant's rights. This action could result in delays in authorizing proposed operations and additional costs.

Impacts from Special Status Species

All federal actions are subject to the requirements of the ESA, as amended. A plan of operations is required for operations proposed on lands or waters known to contain federally-proposed or listed threatened or endangered species or their proposed or designated critical habitats, unless the BLM allows for other actions under a land use plan or threatened or endangered species recovery plan, as stated at 43 CFR 3809.11(c)(6). The operator would be required to take such actions as may be needed to prevent adverse impacts to threatened or endangered species and habitat that may be affected by mining-related operations. Prior to approving any mining action potentially affecting any listed threatened or endangered species, the BLM must consult with USFWS under Section 7 of the ESA. As necessary and appropriate with the claimant's rights, mitigation, such as timing and avoidance, may be required to avoid or reduce potential impacts to listed species, species proposed for listing, and designated critical habitat. This could result in delays in approval of proposals. Some mitigation, such as timing and avoidance could reduce the success of or preclude some operations. Under this alternative, surface disturbing activities would be prohibited near Greater sage-grouse leks from March 1 through July 15 and within sage-grouse brooding habitat from April 1 through June 15.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, no actions to maintain wilderness characteristics on lands outside of WSAs are proposed, resulting in no impacts to mining of locatable minerals.

Impacts from Recreation

Developed recreation sites would be proposed for withdrawal from mineral entry. These sites include Hog Springs Picnic Area, Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, and Dandelion Flat Picnic Area. The acreage varies but generally would be less than 20 acres at each site. Withdrawal, if executed, would preclude any operations and development of minerals under the mining laws. These recreation sites are in areas with moderate to high potential for the occurrence of locatable minerals but are considered unlikely to have mineral development.

Impacts from Travel Management

Off-highway vehicle management restricting cross-country travel would affect locatable minerals. A plan of operations would be required for any closed area, as stated at 43 CFR 3809.11(c)(5). In this alternative, there would be 214,000 acres closed to cross-country motorized travel. This may increase the processing time for the review and approval of the plan of operations under applicable federal laws and regulations. Increased processing time may also occur for the 277,600 acres where motorized use is limited to existing/designated/maintained routes. If a new access route were needed for the proposed operation, additional processing time may be necessary, resulting in project delays and additional costs.

Impacts from Lands and Realty

Under this alternative, developed recreation sites and existing ACECs (14,780 acres) would be recommended for withdrawal from mineral entry, in addition to the existing withdrawals (154,700 acres). No mining-related operations under the mining laws could occur within the withdrawn lands, resulting in a potential loss of minerals development and the associated economic benefits. These recreation sites and ACECs are generally within areas with a high potential for the occurrence of locatable minerals. Valid existing rights would be recognized in withdrawn land.

Impacts from Special Designations

Wilderness Study Areas

Managing WSAs under the federal regulations at 43 CFR 3802 and the IMP would impact locatable minerals. There are ten active, recorded mining claims within the Mount Pennell WSA and four within the Bull Mountain WSA. WSAs are not withdrawn from mineral entry. However, all mining-related operations are subject to the IMP such that actions may not impair the suitability of the WSA for inclusion in the Wilderness Preservation System; thus precluding exploration and development of locatable minerals unless the activity is non-impairing, a grandfathered use, or a valid existing right. The WSAs are within an area rated as high potential for locatable minerals, increasing the potential for adverse impacts to locatable minerals and the loss of associated economic benefits.

Wild and Scenic Rivers

Managing 12 eligible WSR corridors totaling 135 miles would affect locatable mineral exploration and development. No decision would be made under this alternative for suitability. A total of 98 miles (73% of the total miles) of the eligible river segments are also within WSAs and are thus subject to the IMP. Stream segments designated for potential addition to the National Wild and Scenic Rivers System, which includes eligible rivers, would require a plan of operations, as stated at 43 CFR 3809.11(c)(2). As the plan of operations is reviewed and approved under the applicable federal laws and regulations and as consistent with claimant's rights, mitigations may be required to protect the outstandingly remarkable values of the eligible rivers, as consistent with applicable federal laws and regulations and a claimant's rights. Requiring a plan of operations and mitigation would have adverse impacts by delaying the processing time and possibly reducing the feasibility of the proposal. Most of the eligible river segments are within areas that are rated as high potential for the occurrence of locatable minerals. However, there are no active, recorded mining claims within the eligible river segments, so potential impacts would be expected to be minor.

Areas of Critical Environmental Concern

Four ACECs are designated: Beaver Wash (4,800 acres), Gilbert Badlands (3,680 acres), North Caineville Mesa (2,200 acres), and South Caineville Mesa (4,100 acres). These ACECs are proposed for withdrawal from mineral entry, which would preclude any mining-related activity. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operation, as required at 43 CFR 3809.11(c)(3). As part of the review and approval of the plan of operations,

mitigations would be required. As these ACECs are subject to NSO or no leasing under oil and gas, a similar restriction under the mining laws would not be consistent with a claimant's rights. NSO is inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These requirements would likely result in delays due to processing time. These four ACECs are within an area rated as high potential for the occurrence of locatable minerals; however, development is considered unlikely.

Alternative A

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be the same as Alternative N, except the VRM class designations under Alternative A would be Class I, 446,900 acres (21% of the RFO); Class II, 0 acres (0%); Class III, 392,800 acres (18%); and Class IV, 1,288,300 acres, (61%). The VRM Class I areas are coincident with WSAs, and exploration and development under the mining laws would be managed as consistent with the regulations at 43 CFR 3802. These regulations would preclude any activity for locatable minerals unless the activity is non-impairing, a grandfathered use, or a valid existing right. As required at 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. Under this alternative, there would be no areas classified as VRM Class II, which is more restrictive in terms of allowing changes to the landscape than VRM Classes III and IV. This would result in fewer restrictions in terms of project modifications. This alternative would result in the least impacts to locatable mineral development.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative N, although Alternative A has no stipulation on surface disturbing activities within Greater sage-grouse brooding/nesting habitat. Therefore, this alternative is less restrictive than Alternative N. The lease stipulations and notices for oil and gas leasing would be used as guidelines, as consistent with federal laws and regulations, the claimant's rights, and in recognition that operations for oil and gas and mining differ in scale, scope, and types of exploration and development. As practical and consistent with federal laws and regulations, proposed operations may be relocated to avoid SSS habitat. This action would result in delays in authorizing proposed operations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Developed recreation sites would not be withdrawn from mineral entry. There would be no impact to locatable minerals, although any proposed mining operation would be regulated to prevent unnecessary or undue degradation.

Impacts from Travel Management

The types of impacts would be similar to Alternative N. However, under this alternative, there would be no areas designated as closed to motorized use. Therefore, there would be no requirement to file a plan of operations for locatable minerals due to travel designations. Within the 1,679,000 acres where OHV use would be limited to designated routes, potential impacts would depend on the need for additional access. If additional access routes were necessary, more processing time may be necessary to authorize that

access, thus delaying operations and increasing costs. This alternative is the least restrictive to locatable minerals.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N, except that no new areas would be proposed for withdrawal from mineral entry. Thus, impacts to mining of locatable minerals would be slightly less than under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

The 12 eligible WSR corridors would be released as a potential addition to the National Wild and Scenic Rivers System. These corridors would be managed for unnecessary or undue degradation under 43 CFR 3809, except within WSAs or where other planning decisions may affect the regulation of mining-related activity. This would result in fewer restrictions and less processing time from what was described under Alternative N.

Areas of Critical Environmental Concern

No ACECs would be designated, and the four existing ACECs in Alternative N would no longer be designated as such. Operations under the mining laws would be regulated for the prevention of unnecessary or undue degradation, and a plan of operations would be required only if required under other applicable regulations. This would result in less restrictions or delays than under Alternative N.

Proposed RMP

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described under Alternative N, except the VRM class designations for this alternative would be Class I, 446,900 acres (21% of the RFO); Class II, 249,800 acres (12%); Class III, 393,100 acres (18%); and Class IV, 1,038,200 acres (49%). The VRM Class I areas are coincident with WSAs. The VRM Class I lands would be managed as consistent with the regulations at 43 CFR 3802 for exploration and development under the mining laws. These regulations would preclude any activity for locatable minerals unless the activity is non-impairing, a grandfathered use, or a valid existing right. As required at 43 CFR 3802.3-2, operations proposed within WSAs would be mitigated to harmonize operations, to the extent practicable, with visual resources. This alternative would have more acres classified as VRM Classes I and II and fewer acres as VRM Classes III and IV than under Alternatives N and A. This could result in the need for additional modifications of proposals and greater impacts to locatable minerals.

Impacts from Special Status Species

Impacts would be similar to those described under Alternative A, however, the Proposed RMP has more restrictions on surface disturbing activities within Greater sage-grouse habitat. These restrictions include NSO and timing limitations to protect breeding, brood-rearing, and winter habitats (see Appendix 11 for exceptions, waivers, and modifications). However, because 97 percent of sage grouse winter habitat is within mule deer crucial habitat, which under the Proposed RMP has a timing limitation on surface

disturbing activities from December 15 through April 15, the sage grouse winter timing limitation would only result in surface disturbing restrictions on an additional 2,200 acres. Limitations on surface disturbing activities within Greater sage-grouse habitat are greater under the Proposed RMP than under any of the other alternatives. Such limitations could reduce the success of or preclude some mining operations.

Impacts from Non-WSA Lands with Wilderness Characteristics

Although 78,600 acres of non-WSA lands would be managed to maintain wilderness characteristics, the prescriptions identified in Chapter 2 would not preclude the mining of locatable minerals, therefore, impacts would be the same as for Alternative N.

Impacts from Recreation

The impacts would be similar to Alternative N, except that additional developed recreation sites would be proposed for withdrawal from mineral entry. These sites include Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area. The acreage varies but generally would be less than 20 acres at each site. Withdrawal, if executed, would preclude any operations under the mining laws and would preclude development of locatable minerals. These sites are in areas with moderate to high potential for the occurrence of locatable minerals but are considered unlikely to have mineral development.

Impacts from Travel Management

The types of impacts from travel management would be similar to Alternative N. A plan of operations would be required for any closed area as stated at 43 CFR 3809.11(c)(5). In this alternative, there would be 209,900 acres designated as closed to motorized use. The impact would include an increased processing time for the review and approval of the plan of operations under applicable federal laws and regulations. There would be 1,908,210 acres of the RFO limited to designated routes. The potential for impacts to mining operations within the limited areas would depend on the need for additional access. If additional access routes were necessary, more processing time may be required to authorize that access. This alternative would result in greater potential for impacts to mining than Alternatives N and A.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- North Caineville Mesa ACEC
- Old Woman Front ACEC
- Fremont River (Fremont Gorge) suitable wild river within one-quarter mile of the high water mark on each bank of the river segment
- Developed recreation sites, including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area.

The impacts would be similar to Alternative N, except that the total acreage of the proposed new withdrawals would increase to 21,500 (this is in addition to the existing 154,700 acres withdrawn). This would result in a greater potential for impacts to mining-related operations than under Alternatives N and A. These recreation sites and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

One eligible segment—Fremont River (Fremont Gorge)—would be recommended for suitability and would be recommended for withdrawal from mineral entry, which would preclude any mining-related operations under the mining laws. Stream segments recommended suitable for potential addition to the National Wild and Scenic Rivers System, would require a plan of operations as stated at 43 CFR 3809.11(c)(2). If a plan of operations is reviewed and approved under the applicable federal laws and regulations, mitigation would be required to protect the outstandingly remarkable values of the suitable rivers consistent with a claimant's rights. However, there are no active, recorded mining claims within these suitable segments, and only one river segment (5 miles long) would be recommended for suitability with a tentative classification as wild under the Proposed RMP. The potential for impacts would be minor.

Areas of Critical Environmental Concern

North Caineville Mesa (2,200 acres) would remain as a designated ACEC, and Old Woman Front (330 acres) would be designated as an ACEC. These ACECs are proposed for withdrawal from mineral entry, and a withdrawal would preclude any mining-related activity and development of locatable minerals. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operation as required by applicable regulations. As part of the review and approval of a plan of operations, mitigations would be required. As these ACECs are subject to NSO under oil and gas, a similar restriction under the mining laws would not be consistent with a claimant's rights. NSO is inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These two ACECs would be in areas designated as high potential (North Caineville Mesa) and low potential (Old Woman Front) for the occurrence of locatable minerals; however, exploration and development are considered unlikely.

Alternative C

Impacts from Cultural Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described under Alternative N, except the VRM class designations under Alternative C would be Class I,446,900 acres (21% of the RFO); Class II, 230,600 acres (11%); Class III, 509,100 acres (24%); and Class IV, 944,100 acres (44%). The VRM Class I areas are coincident with WSAs. The VRM Classes I and II acres would increase slightly over the Proposed RMP, resulting in a slightly greater potential for impacts to locatable minerals.

Impacts from Special Status Species

Impacts would be similar to those described under the Proposed RMP although Alternative C has fewer restrictions on surface-disturbing activities within Greater sage-grouse habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Impacts would be the same as described under the Proposed RMP.

Impacts from Travel Management

Impacts from travel management would be similar to those described under the Proposed RMP, except the acres closed to motorized use and requiring a plan of operations would increase to 683,000 acres. The remainder of the RFO would be limited to designated routes, requiring additional processing time if additional access is needed. This alternative would result in greater impacts to locatable minerals than Alternatives N, A, and the Proposed RMP but fewer than Alternative D.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- Rainbow Hills ACEC (in total)
- Old Woman Front ACEC (in total)
- Recommended suitable Wild and Scenic Rivers within one-quarter mile of the high water mark on each bank of the river segment.
- Developed recreation sites, including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area
- VRM Class II portions of the following ACECs from mineral entry: Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, and Little Rockies ACEC.

The impacts would be the same as Alternative N, except that the total acreage of proposed new withdrawals would increase to 176,400 (this is in addition to the existing 154,700 acres of withdrawals). These withdrawals, if executed, would preclude any mining-related operations and development of minerals under the mining laws. This would result in a greater potential for impacts to mining-related operations than under Alternatives N, A, and the Proposed RMP. These recreation sites, WSRs, and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized in withdrawn lands.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

All 12 eligible river segments (135 miles) would be recommended for suitability for inclusion in the National Wild and Scenic Rivers System and would be recommended for withdrawal from mineral entry, increasing the potential for impacts to locatable minerals over Alternatives N, A, and the Proposed RMP. Stream segments recommended for potential addition to the National Wild and Scenic Rivers System, which includes eligible rivers, would require a plan of operations. If a plan of operations is reviewed and approved under applicable federal laws and regulations, mitigation would be required to protect the outstandingly remarkable values of the eligible rivers consistent with a claimant's rights. These requirements would have adverse impacts by delaying the processing time and possibly reducing the feasibility of the proposal. Most of the eligible river segments are within areas that are rated as high potential for the occurrence of locatable minerals. There are no active, recorded mining claims within the eligible river segments.

Areas of Critical Environmental Concern

Sixteen ACECs would be designated. Table 4-59 includes a list of the ACECs and the acreage for each. The total acreage included in the potential ACECs would be 886,810 acres. These potential ACECs, in whole or part, would be withdrawn from mineral entry, and a withdrawal would preclude any mining-related activity and development of locatable minerals. If the above areas are designated as ACECs but not withdrawn, any proposed mining-related operation would require a plan of operations. As part of the review and approval of the plan of operations, mitigation would be required. As these ACECs are subject to NSO or closed to leasing under oil and gas, similar restrictions under the mining laws would not be consistent with a claimant's rights. NSO and closed to leasing are inconsistent with the claimant's right to occupy and use public land, reasonably incident to the mining laws. However, where consistent with claimant's rights, drilling and exploration sites and other facilities would be relocated and the critical resource(s) would be avoided. These requirements would likely result in delays due to processing time. Mining claims are actively recorded on lands within the potential Dirty Devil/North Wash, Henry Mountains, Badlands, Fremont Gorge/Cockscomb, Sevier Canyon, and Rainbow Hills ACECs. Most of these ACECs would be in areas designated as high potential for the occurrence of locatable minerals and include lands where mineral exploration and development have occurred in the past and would occur in the future depending on market conditions. This alternative would result in greater impacts than under Alternatives N, A, and the Proposed RMP, due to the increase in potential ACEC acreage.

Alternative D

Impacts from Cultural Resources

Impacts would be the same as described under Alternative N.

Impacts from Visual Resources

The types of impacts from management of visual resources would be similar to those described under Alternative N, except the VRM class designations for this alternative would be Class I, 1,129,600 acres (53% of the RFO); Class II, 66,700 acres (3%); Class III, 355,100 acres (17%); and Class IV, 576,600 acres (27%). VRM Class I areas outside of WSA boundaries include 682,600 acres. VRM Class I is the most restrictive class and allows for minimal or no change to the landscape. VRM Class II requires retention of the character of the landscape with a low level of change. This alternative would have the greatest impact on locatable minerals, as VRM Class I is increased by 60% compared to Alternative A, the Proposed RMP, and Alternative C, and VRM Class II is also increased compared to the other alternatives. This alternative would result in the greatest potential for necessary project modifications resulting in processing delays, additional costs, and possibly reducing the feasibility of proposals.

Impacts from Special Status Species

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under this alternative, all 29 areas (682,600 acres) of non-WSA lands with wilderness characteristics would be recommended for withdrawal from entry under the mining laws. No exploration and development of locatable minerals could occur within these withdrawn lands. Due to increased acres of withdrawals, the potential for adverse impacts to mineral development would be greatest under this alternative. Valid existing rights would be recognized in withdrawn lands.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

The types of impacts experienced from travel management would be similar to those described under Alternative N, except there would be 1,155,200 acres designated as closed to motor vehicle use. The remainder of the RFO would be limited to designated routes. This alternative is the most restrictive to locatable minerals and would result in the greatest potential for impacts, such as processing delays and increased costs of development, throughout the RFO.

Impacts from Lands and Realty

Under this alternative, the following areas would be recommended for withdrawal from mineral entry:

- Rainbow Hills ACEC
- Old Woman Front ACEC
- All suitable wild and scenic rivers within one-quarter mile of the high water mark on each bank of the river segment
- All areas identified as non-WSA lands with wilderness characteristics
- Developed recreation sites, including Lonesome Beaver Campground, McMillan Spring Campground, Starr Springs Campground, Dandelion Flat Picnic Area, Hog Springs Picnic Area, Otter Creek Reservoir Recreation Sites, Kingston Canyon Recreation Site, and Koosharem Picnic Area
- VRM Class II portions of the following ACECs from mineral entry (see ACEC prescriptions for details): Dirty Devil/North Wash ACEC, Fremont Gorge/Cockscomb ACEC, Badlands ACEC, Henry Mountains ACEC, Horseshoe Canyon ACEC, and Little Rockies ACEC.

The impacts would be the same as described under Alternative N, except the total acreage proposed for new withdrawals would increase to 749,200; this is in addition to the 154,700 acres of existing withdrawals. This would be the most acres of proposed withdrawals of any of the alternatives, resulting in the greatest potential for adverse impacts. These withdrawals, if executed, would preclude any mining-related operations and development of minerals under the mining laws. These recreation sites, WSRs, and ACECs are generally within areas with a moderate to high potential for the occurrence of locatable minerals. Valid existing rights would be recognized.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as described under Alternative C.

Areas of Critical Environmental Concern

The types of impacts would be the same as those described under Alternative C. However, ACEC management prescriptions under Alternative D include additional restrictions for non-WSA lands with wilderness characteristics, which would result in greater impacts to locatable minerals. This alternative is the most restrictive to locatable minerals.

4.4.6.3 Salable Minerals

Salable minerals are subject to disposal under the Act of July 31, 1947, which is commonly called the Materials Act. The BLM's policy is to make mineral materials available unless detrimental to the public

interest, to protect public land resources and the environment, and to minimize damage to public health and safety. Through land use planning, the BLM may designate public land as open or closed to disposals, and the open areas may be designated with special conditions. The designations of open, open with special conditions, and closed would follow the oil and gas leasing designations to the extent practicable. Open with special conditions would include the oil and gas open with minor constraints (timing or controlled surface use) and open with major constraints (NSO). The provisions for exceptions, modifications, and waivers would also apply to salable minerals.

Methods and Assumptions

The analysis for impacts to salable minerals assumes exploration and development would be regulated under the subject laws and regulations.

Environmental Consequences

The impacts to salable minerals would be similar to impacts to oil and gas exploration and development. However, under Alternative N, the oil and gas leasing restrictions do not apply to salable minerals. Operations for salable minerals do not involve the same operations as oil and gas; however, there are similarities in that exploration and development for salable and fluid minerals require use of public lands and result in disturbances related to that exploration and development. Exploration for salable minerals would include drilling with smaller drill rigs than generally used for oil and gas, testing by excavating trenches or pits, extracting bulk samples, and other activities that would involve surface disturbances. Production would involve surface mines or quarries and associated surface facilities, which would include roads and could include conveyors, crushers, screens, and other equipment. Generally, excavating and hauling equipment would remain onsite during production activities. Please see the oil and gas discussion on the differences between alternatives in leasing categories, and maps 2-34, 2-35, 2-36, 2-37 and 2-38.

Differences between impacts to salable mineral operations and to oil and gas operations would include:

- Timing restrictions could preclude development of a salable mineral resource. Construction and drilling of a well may be reasonably completed during the open season for oil and gas exploration and development. Once development is completed, maintenance of facilities for production can be accomplished by a reduced presence of humans and equipment during the restricted season. For salable minerals, production would involve excavating and removing mineral materials from a quarry or pit, the materials would usually be processed for use at the quarry, and that mineral product would be hauled from the site to a place of use. Production of mineral materials requires that humans and equipment be onsite during the restricted season; production cannot continue during a seasonally restricted period if humans and the necessary equipment are not in use. Operations for salable minerals may not be profitable if shut-downs are required for seasonal periods. Thus, a seasonal restriction could make a salable mineral operation unprofitable and could preclude development of the mineral material.
- CSU or distance buffers could preclude development of a salable mineral. A well site for oil and gas may be relocated, and the well may still be practically and feasibly drilled to a subsurface target, allowing for exploration and development of the oil and gas resources. However, moving a proposed salable mineral pit may preclude development of the mineral resource, if the targeted resource is not present or if mining or extraction is not practical or feasible at the relocated site.
- NSO may preclude development of a salable mineral. An oil and gas well may be practically and feasibly directionally drilled from a well pad that is not located vertically above the subsurface, and oil and gas may be produced by a directionally drilled well. However, NSO requirements for salable minerals would, in most cases, preclude mineral development, as the mineral resource would not be available for mining and extraction.

4.5 IMPACTS TO SPECIAL DESIGNATIONS

4.5.1 Wilderness Study Areas

Pursuant to FLPMA and BLM policy, WSAs are managed according to the IMP to protect their suitability for wilderness designation until such time as Congress acts on the BLM's recommendations. This analysis does not consider the impact of the IMP on other resources and resource uses or on the wilderness characteristics of the WSAs; that analysis was conducted in the Utah Statewide Wilderness FEIS (BLM 1990b).

WSAs would be managed pursuant to the non-impairment standard, and as such, the BLM cannot allow activities to occur within WSAs that would impair their suitability for preservation as wilderness. Therefore, significant impacts on WSAs (e.g., impairment) would not occur under any of the alternatives. Although impacts on natural resources within WSAs could occur from a variety of uses, they would be non-impairing and therefore would not result in long-term impacts to the wilderness characteristics of the WSAs.

There are 11 WSAs within the RFO totaling 446,900 acres. All except one are located east of Capitol Reef National Park. The Fremont Gorge WSA is located west of Capitol Reef National Park. All are located in Wayne County or Garfield County. The management of WSAs focuses on maintaining the wilderness characteristics of appearance of naturalness, outstanding opportunities for solitude, or primitive, unconfined recreation. Size and management guidelines have already been established for these areas.

Federal law and BLM policy require that WSAs be closed to oil and gas leasing. This management direction protects the wilderness characteristics of the WSAs, and the BLM has no discretion to direct otherwise through planning. Thus, the RMP makes only two management decisions specific to WSAs:

- VRM class designations (BLM policy requires that WSAs be designated as VRM Class I)
- Designation of each WSA as either closed or limited to off-highway vehicle use (as displayed in Table 4-55).

In addition, route designation decisions (which are implementation decisions) will also be analyzed in this PRMP/FEIS (as displayed in Table 4-55).

Table 4-55. OHV Area and Way Designations within WSAs

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
OHV Area Designations	**Management Direction**	Continue current OHV designations (closed and limited) and allow vehicle use on identified ways. (Map 2-12)	Designate all WSAs as limited to OHV use and allow vehicle use on all designated ways. (Map 2-13)	Designate WSAs as either limited or closed to OHV use and allow vehicle use on identified ways. (Map 2-14)	Designate all WSAs as closed to OHV use and allow no vehicle use on inventoried ways. (Maps 2-15 and 2-16)
	Acres closed	187,000	0	175,300	446,900

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
	Acres limited	259,900	446,900	271,600	0
OHV Route Designations	**Miles Accessible**	41.5 (Map 3-10)	51.6 (Map 2-17)	59.5 (Map 2-18)	0 (Maps 2-19 and 2-20)

Management actions that could impact these characteristics include managing for the presence or absence of ways and trails, use of motorized vehicles along these ways, construction of fences and other range or wildlife improvements, management of native vegetation communities, land tenure adjustments, or other actions that result in surface-disturbing activities.

Methods and Assumptions

The analysis is based on the following assumptions:

- Managing WSAs according to the IMP will protect wilderness characteristics of WSAs in a manner that will not "impair the suitability of such areas for preservation as wilderness" (FLPMA Section 603(c))
- Management actions that enhance biological or environmental characteristics would improve the wilderness quality and suitability of the WSAs.

Environmental Consequences

Impacts to WSAs could result from actions proposed under the following resource programs:

- Fire and Fuels Management
- Recreation
- Travel Management
- Lands and Realty.

Other programs were determined to have little or no impact on WSAs.

Alternative N: No Action

Impacts from Fire and Fuels Management

During and immediately after fire events, access to WSAs and enjoyment of opportunities for primitive recreation associated with them may be restricted or impaired. Full suppression of wildland fires in these areas may be implemented to control fire size and severity, protecting these opportunities. Wildfire suppression activities could result in short-term impacts, including disturbance to soils, surfaces, and groundwater; watershed functions; and vegetation conditions. Impacts would be minimized by post-fire rehabilitation efforts. There would also be impacts to solitude due to the presence of firefighters and equipment during fire events, but this would be short term. Appropriate management response within a WSA could limit the use of mechanical suppression activities or other techniques for reducing these impacts. Temporary disturbances may occur to resources and values; however, these effects would be short term while wilderness values are assessed on a long-term scale.

Long-term impacts associated with the use of an appropriate management response to wildfire suppression, wildland fire use, and the planned actions of prescribed fire and non-fire fuel treatments on WSAs are the decreased risk of large severe wildfire events and the overall improved ecological health. With the removal of hazardous fuels, a trend towards increasing the preservation of naturalness and

opportunities for primitive recreation would be in place. Because fire is a natural and necessary event in maintaining ecological health, a WSA's natural character would not only be protected but also likely enhanced.

Impacts from Recreation

Visitors may have outstanding opportunities for solitude or primitive and unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the use of the area is by non-motorized, non-mechanical means; and where no or minimal developed recreation facilities are encountered. High concentrations of recreation users (large group sizes or frequent group encounters) would decrease outstanding opportunities for solitude in WSAs. Continued increases in non-motorized recreation users would reduce opportunities for solitude in those areas. Additionally, large numbers of recreationists in WSAs, especially in the narrow canyons associated with some of the WSAs, would increase the impact to campsites, decreasing the naturalness of WSAs in specific locations. Increasing use of campsites results in increased areas of compacted soils, reducing vegetation and creating unnatural openings in the vegetation. Human waste and trash also increases, especially when campsites are located in confined areas such as canyons.

Impacts from Travel Management

Use of motorized vehicles within WSAs could impact wilderness characteristics. Under Alternative N, some identified ways within the Mount Ellen—Blue Hills WSA and all of the Fremont Gorge, Horseshoe Canyon, Fiddler Butte, and French Springs WSAs would continue to be available for motor vehicle use on the designated way, which would temporarily impact solitude and opportunities for primitive recreation in areas adjacent to the ways. The rugged terrain of these areas has presented a barrier to vehicle intrusions in the past and would likely continue to do so in the future, although advancing vehicle technology could allow vehicles to enter and impact areas they have not been able to access in the past.

Impacts from Lands and Realty

Acquiring inholdings within WSAs would improve their manageability and preclude non-conforming uses on what are currently non-federal (state and private) lands. Lands within WSAs are not available for ROWs or disposal, precluding impacts to wilderness characteristics from these actions.

Alternative A

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Under this alternative, the Dirty Devil SRMA would overlap the Dirty Devil, Horseshoe Canyon South, and French Spring/Happy Canyon WSAs. Managing the lands that surround the WSAs for semi-primitive recreation would complement WSA management. However, management under the IMP is usually more restrictive than SRMA prescriptions, so no additional benefit to wilderness characteristics would result from SRMA management.

Impacts from Travel Management

OHV use within WSAs could impact wilderness characteristics. OHV area and route designations by alternative are shown in Table 4-55. Under Alternative A, all WSAs would be designated as limited to OHV use, with 51.6 miles of ways designated as available for use, which is the most of any alternative. The potential impacts to naturalness and solitude from vehicle intrusions would be the greatest among the alternatives, because more ways would be designated than under any other alternative.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The Dirty Devil, Henry Mountains, and Capitol Reef Gateway SRMAs overlap the Dirty Devil, Horseshoe Canyon South, French Spring/Happy Canyon, Fremont Gorge, Mount Ellen—Blue Hills, Bull Mountain, Mount Pennell, and Mount Hillers WSAs. Managing the lands that surround the WSAs for semi-primitive motorized and non motorized recreation would complement WSA management. However, management under the IMP is usually more restrictive than SRMA prescriptions, so no additional benefit to wilderness characteristics would result from SRMA management.

Impacts from Travel Management

Use of OHVs within WSAs could impact wilderness characteristics, however this use is mitigated by the IMP wherein BLM would restrict or close use on routes that do not meet with non-impairment standards. OHV area and route designations for this alternative are shown in Table 4-55. Area designations under the Proposed RMP would be similar to Alternative N, but an additional 18 miles of ways would be designated as open to motor vehicle use, resulting in more potential impacts to wilderness characteristics than Alternatives N, C, and D but less than Alternative A.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Alternative C

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Use of OHVs within WSAs could impact wilderness characteristics. OHV area and route designations by alternative are shown in Table 4-55. Under Alternative C, all WSAs would be closed to motorized use, which would eliminate any short-term impacts, thereby preserving opportunities for solitude and primitive recreation.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Alternative D

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

The types of impacts would be the same as those described under the Proposed RMP and Alternative C but would include more acres of WSAs and lands adjacent to the WSAs being included within SRMAs. The Dirty Devil, Henry Mountains, Capitol Reef Gateway, Labyrinth Canyon, and Little Rockies SRMAs would overlap with all 11 WSAs, complementing the management within those areas.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

4.5.2 Wild and Scenic Rivers

This section discusses impacts to wild and scenic rivers (WSRs) that would occur from actions associated with the management of other resources. Analysis of impacts to WSRs is limited to the river segment corridor, which includes the viewshed within one-quarter mile of the high water mark on each bank of the river segment. In many cases, the corridor would be limited to the canyon in which the river segment is located.

The Wild and Scenic River Act includes three possible tentative classifications: "wild," "scenic," or "recreational." These classifications are based on the type and degree of human development associated with the river and the lands adjacent to the river corridor at the time of inventory. Tentative classification also dictates the types of activities and development allowed within the river corridor. "Wild" rivers are the most restrictive of the three classifications and are associated with rivers free of impoundments, generally are inaccessible except by trail, contain shorelines and watersheds that are essentially primitive, and have waters that are unpolluted. "Scenic" rivers are slightly less restrictive than "wild" rivers, accessibility to "scenic" rivers is generally easier and can include existing routes; however, "scenic" rivers are generally free of impoundments and contain shorelines and watersheds that are largely primitive and undeveloped. "Recreational" rivers have the least restrictions placed on them and include rivers that are readily accessible by roads, trails, or railroads; may have some development along their shorelines; and may have substantial evidence of human activity.

Outstandingly remarkable values and the criteria associated with each value are as follows:

- **Scenic.** Diversity of view, special features, seasonal variations, cultural modifications.
- **Fish.** Habitat quality, diversity of species, values of species, abundance of fish, natural reproduction, size and vigor of fish, quality of experience, cultural and historical importance, recreational importance, and access.
- **Recreational.** Length of season, diversity of use, flow, character of run, scenery and naturalness, access, level of use, associated opportunities, attraction, sites, and facilities.
- **Wildlife.** Habitat quality, diversity of species, abundance of species, natural reproduction, size and vigor of species, quality of experience, cultural and historic importance, recreational importance, and access.
- **Geologic.** Feature abundance, diversity of features, and educational or scenic.
- **Historic.** Significance, site integrity, education and interpretation, listing, and eligibility.
- **Cultural.** Significance, current uses, number of cultures, site integrity, educational and interpretation, listing, and eligibility.
- **Ecologic.** Species diversity, ecological function, rare communities, and educational and scientific.

Methods and Assumptions

The analysis of impacts to WSRs includes an evaluation of where management actions may be inconsistent with the tentative classification given to all eligible or suitable segments as well as potential impacts to the outstandingly remarkable values of any eligible or suitable segment. Impacts to the tentative classification of the segments for each alternative will be discussed first, followed by impacts associated with the segment's outstandingly remarkable values.

River segments determined to be eligible for further consideration in land use planning, along with their outstandingly remarkable values and tentative classification, are identified in Table 4-56. Details of the eligibility and classification process are included in Appendix 2.

Table 4-56. Wild and Scenic River Eligibility and Tentative Classification

River or River Segment		Outstandingly Remarkable Value(s)	Tentative Classification	Miles within WSA	BLM Miles	Total Miles
Dirty Devil Complex	Dirty Devil River	Scenic, recreation, geologic, fish and wildlife, and cultural	Wild	35	54	57
	Beaver Wash Canyon	Scenic and ecological	Wild	6.8	6.8	6.9
	Larry Canyon	Scenic, recreation, wildlife and ecological	Wild	4	4	4
	No Mans Canyon	Scenic, recreation, and cultural	Wild	7.1	7.1	7.1
	Robbers Roost Canyon	Scenic, recreation, historic, and cultural	Wild	28	31	33
	Sams Mesa Box Canyon	Scenic and wildlife	Wild	9.5	9.5	9.5
	Twin Corral Box Canyon	Scenic and wildlife	Wild	8	9	10
Fish Creek		Cultural	Scenic	0	0.25	0.25
Fremont River	Fremont Gorge	Scenic	Wild	0	5	6
	Capitol Reef National Park to Caineville Ditch Diversion	Scenic and geologic	Recreational	0	4	6
Maidenwater Creek		Scenic, recreation, geologic, fish and wildlife, and ecological	Scenic	0	3	4
Quitchupah Creek		Cultural	Recreational	0	1.4	1.4
Total				**98.4**	**135.05**	**145.15**

Suitability, the process of deciding which rivers to recommend for addition to the National Wild and Scenic River System, is part of the resource management planning process. The suitability process is described in Appendix 3. Suitability varies by alternative, as summarized in Table 4-57.

Table 4-57. Suitability Recommendations by Alternative

Alternative N	Alternative A	Proposed RMP	Alternative C	Alternative D
A suitability decision would not be made. All 12 eligible river segments (135 miles) would continue to be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification.	No eligible river segments would be designated as suitable.	A 5 mile segment of the Fremont River in Fremont Gorge would be designated and managed as a suitable wild and scenic river. This segment would be managed to protect its outstandingly remarkable values, free flowing nature and tentative classification of wild	All 12 eligible river segments (135 miles) would be designated and managed as suitable WSRs. They would be managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification.	

Environmental Consequences

Impacts to the outstandingly remarkable values of the eligible WSRs could result from actions proposed under the following resource management programs:

- Vegetation and Fire and Fuels Management
- Cultural Resources
- Visual Resources
- Special Status Species and Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on WSRs.

Alternative N: No Action

Under this alternative, 12 segments, totaling 135 miles, have been identified as eligible for consideration for suitability and, as dictated by policy, would be managed to protect their free-flowing nature, outstandingly remarkable values, and tentative classification until such time as a suitability determination is made. Eight segments (126 miles) are tentatively classified as "wild," two segments (5 miles) are "recreational," and two segments (3 miles) are tentatively classified as "scenic."

Impacts from Vegetation and Fire and Fuels Management

Allowing for habitat restoration could result in evidence of human activity from surface disturbance along the 126 miles of segments tentatively classified as "wild"; however, these impacts would be short term in duration and would not likely result in a change to the tentative classifications. Performing land treatments to reduce soil loss and maintain vegetation structure would impact WSRs by assisting in maintaining plant diversity and preserving the ecological condition of the segments. Management actions

to maintain soil levels and vegetation cover, manage noxious weeds, and enhance wildlife habitat could have short-term impacts on wildlife, scenic, ecological, and recreational outstandingly remarkable values by removing vegetation and increasing the potential for erosion and sedimentation, visual intrusions, and loss of habitat; however, over the long term, such actions would likely increase age and species diversity of plant communities, which would improve or maintain these values.

Indirect protections from management of riparian areas would be provided to eligible river segments due to not allowing new surface disturbance within 500 feet of riparian-wetland areas. This would maintain the integrity of these areas and also provide indirect protections to many of the segments' outstandingly remarkable values, such as scenic and wildlife.

Impacts from Cultural Resources

Management actions associated with cultural resources would be compatible with all 135 miles identified as eligible for suitability because allowable activities and the degree of development within the river corridors would not change and future activities would be minimized or prohibited. In some instances, if inventories and collection were to occur within river corridors, short-term impacts could result from associated surface disturbance, particularly segments with "wild" classifications; however, over the long term, these impacts would not likely affect tentative classification of the segment. Law and policy guiding cultural resources management would provide indirect protection to those segments that contain cultural or historic outstandingly remarkable values by placing restrictions on surface-disturbing activities. Additionally, indirect effects from these restrictions could also occur to segments containing scenic, recreational, fish, wildlife, and ecological outstandingly remarkable values by providing additional protections within the management of these values. Allowing for inventories and collection within river corridors could potentially cause short-term impacts associated with surface-disturbing activities; however, over the long term, these impacts from associated mitigation measures would be negligible and, in some instances, may provide additional values to segments, particularly if a significant cultural resource was found.

Impacts from Visual Resources

Most of the eligible river segments would continue to be managed as VRM Class II. This requires that the existing character of the landscape be retained and allows only low-level changes to the landscape. This would minimize, but not eliminate, impacts from surface-disturbing activities to eligible WSRs where scenery was identified as the outstandingly remarkable value.

Impacts from Special Status Species and Fish and Wildlife

Management actions associated with SSS and fish and wildlife would be compatible with the tentative classifications of all 12 segments because allowable activities and the degree of development within the river corridor would not change and future activities would be minimized or prohibited. In some instances, short-term impacts could occur within "wild" segments from surface disturbance associated with habitat improvements from the increased potential for erosion and sedimentation impacting water quality and the natural character of the area. In some instances, these actions could also result in short-term impacts to the rivers' wildlife, fish, ecological, scenic, and recreational outstandingly remarkable values from any associated improvement or development actions; however, over the long term, these actions would likely assist in upholding the segment's outstandingly remarkable values by maintaining or improving habitat values.

Additionally, legal and policy requirements for protecting SSS habitats would protect eligible river segments where the SSS are the outstandingly remarkable value.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for WSR outstandingly remarkable values.

Impacts from Livestock Grazing

Proposed decisions to manage livestock grazing could have minor and localized effects on some outstandingly remarkable values. Most river segments are inaccessible to cattle and, although livestock grazing would be allowed within all eligible river corridors, impacts to the outstandingly remarkable scenic and recreational values would be minimal because management of livestock grazing is subject to the *Fundamentals of Rangeland Health*. However, there is a potential that certain rangeland improvements (e.g., fencing, water crossings) could be incompatible in some of the segments tentatively classified as "wild" from visual intrusions to the natural character of the area.

Impacts from Recreation

Under this alternative, there are no SRMAs; therefore, SRMA management would have no impact on eligible rivers.

Impacts from Travel Management

Off-highway vehicle use could impact outstandingly remarkable values and tentative classification of the eligible river segments. Under this alternative, some eligible WSR segments, including the Fremont River east of Capitol Reef National Park, Quitchupah Creek, Fish Creek, Maidenwater Creek, and the Dirty Devil River north and south of the Dirty Devil WSA, would continue to be open to cross-country OHV travel, leaving these areas vulnerable to vehicle intrusions that could adversely impact recreational, scenic, cultural, and wildlife outstandingly remarkable values. The rugged terrain in some of these areas has presented a barrier to vehicle intrusions in the past and would likely continue to do so in the future, although advancing vehicle technology could allow vehicles to enter—and affect—areas they have not been able to access in the past. Eligible river segments within WSAs would be closed or limit OHV use to existing identified routes, which would preclude or reduce threats to outstandingly remarkable values.

Impacts from Lands and Realty

No proposed actions from lands and realty would impact the tentative classification or outstandingly remarkable values of the eligible segments identified under this alternative because allowable lands and realty actions and the degree of development within the corridor would be minimized or prohibited due to BLM's policy of managing eligible river segments to protect their free-flowing nature, outstandingly remarkable values, and tentative classification. Thus, these river segments would be managed as ROW avoidance areas, which would provide additional protection to the outstandingly remarkable values of the segments by eliminating any surface disturbance or visual intrusions associated with such development actions.

Because the BLM has no control over potential modifications to a river's shoreline or any other type of development on non-public lands, impacts could occur in these areas. Land tenure adjustments that would result in the acquisition of non-BLM lands within these river corridors would provide opportunities to better manage outstandingly remarkable values and to mitigate any efforts that could impact the segments' tentative classification or free-flowing nature.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

There would be no impacts from oil and gas exploration and development to the outstandingly remarkable values of eligible river segments within WSAs (98 of the 135 total miles) because all WSAs are closed to

oil and gas leasing under all alternatives. The leasing categories of the 37 miles of eligible river segments outside WSAs (for all alternatives) are shown in Table 4-58.

Table 4-58. Oil and Gas Leasing in Eligible River Segments Outside WSAs

Eligible River Segment	Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
Dirty Devil River North	Open subject to moderate constraints (timing limitation, CSU)	Open subject to standard terms and conditions	Open to leasing subject to major constraints (NSO)	Closed to leasing
Dirty Devil River South	Open subject to moderate constraints (timing limitation, CSU)	Open subject to standard terms and conditions	Open to leasing subject to major constraints (NSO)	Closed to leasing
Dirty Devil Tributaries Outside WSA	Open subject to standard terms and conditions	Open subject to standard terms and conditions	Open to leasing subject to major constraints (NSO)	Closed to leasing
Fremont Gorge	Open to leasing subject to major constraints (NSO)	Open subject to moderate constraints (timing limitation, CSU)	Open to leasing subject to major constraints (NSO)	Closed to leasing
Fremont River Below Capitol Reef National Park	Open subject to moderate constraints (timing limitation, CSU)	Open subject to moderate constraints (timing limitation, CSU)	Open subject to moderate constraints (timing limitation, CSU)	Closed to leasing
Fish Creek	Open to leasing subject to major constraints (NSO)	Open subject to moderate constraints (timing limitation, CSU)	Open subject to moderate constraints (timing limitation, CSU)	Open to leasing subject to major constraints (NSO)
Maidenwater Creek	Open subject to standard terms and conditions and closed to leasing	Open subject to standard terms and conditions	Open subject to moderate constraints (timing limitation, CSU)	Closed to leasing
Quitchupah Creek	Open subject to standard terms and conditions	Open subject to standard terms and conditions and open subject to moderate constraints (timing limitation, CSU)	Open subject to standard terms and conditions and open subject to moderate constraints (timing limitation, CSU)	Closed to leasing

Although portions of these river segments are open to oil and gas leasing with standard or minor stipulations under Alternative N, the oil and gas leasing stipulations for Alternative N (Appendix 11) also require NSO within 500 feet of each side of a perennial stream, which would help protect outstandingly

remarkable values. This would reduce the potential for surface-disturbing activities and their associated visual impacts. The remainder of the eligible river segments would be closed to leasing or open to leasing subject to major constraints (NSO), which would further protect outstandingly remarkable values. The potential for impacts to eligible river segments would be minor.

Leasable Minerals—Coal

No coal resources were identified within the eligible WSR corridors, except for Quitchupah Creek, which is located within the Emery coal field, where development is not expected before 2030. If coal resources were developed within the corridor, there would be potential for disturbance and impacts to the cultural values within that eligible segment.

Non-Energy Solid Leasable Minerals

Under this alternative, leasing within one-quarter mile of the high water mark on each bank of the river segment of eligible WSRs would be prohibited, so outstandingly remarkable values would be protected.

Locatable Minerals

While there could be potential impacts from mineral development to the outstandingly remarkable values of eligible rivers, the likelihood of mineral development within the eligible river corridors is small, given their remote location and lack of known mineralization. Impacts from mineral exploration and development would be mitigated by the requirement of federal regulations that a plan of operations be submitted for any operations causing surface disturbance greater than casual use in areas recommended for potential addition to the National Wild and Scenic River System.

Salable Minerals

Under this alternative, disposal of salable minerals within one-quarter mile of the high water mark on each bank of the river segment of eligible WSRs would be prohibited, so outstandingly remarkable values would be protected.

Impacts from Special Designations

Wilderness Study Areas

Nearly three-quarters of the eligible river miles (98 of the 135 total miles) are within WSAs, encompassing most of the Dirty Devil River and its side drainages. WSA management pursuant to the IMP would continue to have a beneficial impact on all outstandingly remarkable values within these segments by limiting development within these river corridors.

Wild and Scenic Rivers

No suitability determination would be made under Alternative N, and the outstandingly remarkable values of all eligible river segments would continue to be protected by policy until suitability determinations are made.

Areas of Critical Environmental Concern

Continued management of the Beaver Wash ACEC for its relict vegetation (closed to OHV use, closed to oil and gas leasing, unavailable for livestock grazing, acquisition of inholdings, and recommending for mineral withdrawal) would protect the ecological outstandingly remarkable value of the Beaver Wash eligible river segment. Continued management of the other three existing ACECs would have no impact on the other eligible river segments because no segments are located within those ACECs.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

Under Alternative A, maximum treatment acreage limits would be set (averaging 73,600 acres annually for all treatments). No target (maximum or minimum) treatment acreage limits would be set under Alternative N. It is therefore likely that in some years, fewer acres would be treated under that alternative; however, in other years (when there are numerous wildland fires) more acres could be treated because the 2005 Land Use Plan Amendment for Fire and Fuels Management allows the full range of fire and fuels management actions to achieve ecosystem sustainability.

Under this alternative, no river segments would be recommended as suitable, which means that outstandingly remarkable values would not necessarily be protected. However, if these treatments were to occur in eligible WSR corridors, the types of impacts experienced would be similar to those described under Alternative N.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the 135 total miles) would be designated as VRM Class I, which would protect the scenic outstandingly remarkable values. River segments outside WSAs where scenery was identified as an outstandingly remarkable value (Dirty Devil and tributaries outside WSA, Fremont Gorge, Fremont River below Capitol Reef National Park, and Maidenwater Creek) would be designated as VRM Classes III or IV because no river segments would be recommended as suitable and no special management to protect outstandingly remarkable values is proposed under this alternative. Thus, management activities that could adversely impact the scenic values could occur in these river corridors.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described under Alternative N, with the exception of the 37 miles of river segments outside WSAs. However, legal and policy requirements for protecting SSS habitats would protect eligible river segments where the habitat overlaps a river segment.

Allowing for habitat restoration could result in evidence of human activity from surface disturbance along the 126 miles of segments tentatively classified as “wild”; however, these impacts would be short term in duration and would not likely result in a change to the tentative classifications. Management actions to enhance wildlife habitat could have short-term impacts on wildlife, scenic, ecological, and recreational outstandingly remarkable values by removing vegetation and increasing the potential for erosion and sedimentation, visual intrusions, and loss of habitat; however, over the long term, such actions would likely increase age and species diversity of plant communities, which would improve or maintain these values.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for WSR outstandingly remarkable values.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N. Providing no protective management for outstandingly remarkable values would allow more potential for certain rangeland improvements and associated surface disturbance, which could affect outstandingly remarkable values.

Impacts from Recreation

Proposed decisions to identify SRMAs could impact outstandingly remarkable values. Under Alternative A, management direction for the proposed Dirty Devil SRMA would complement the recreational outstandingly remarkable value identified in the eligible Dirty Devil River segment and several of its tributary segments because of the emphasis on providing primitive and semi-primitive recreation opportunities.

Proposed decisions to establish the Factory Butte SRMA with emphasis on motorized recreation could potentially impact outstandingly remarkable values of the eligible Fremont River segment from Capitol Reef National Park to the Caineville Diversion. Management for cross-country OHV use could result in surface disturbances and impacts, such as crushing vegetation, compacting soil, and contrasts in visual components within the river corridor, thus impacting the outstandingly remarkable values of this eligible river segment.

No other proposed SRMAs would overlap with eligible WSR segments under this alternative.

Impacts from Travel Management

OHV use could impact outstandingly remarkable values. Within most of the eligible river corridors, OHVs would be limited to designated routes, reducing impacts relative to Alternative N. Fremont Gorge would be open to cross-country OHV use, although the ruggedness of the gorge would prevent most vehicles from entering the area. The Fremont River from Capitol Reef National Park to the Caineville Ditch Diversion would remain open to cross-country OHV use. Terrain would limit motorized access in some locations. However, cross-country OHV use could result in surface disturbance, so impacts to outstandingly remarkable values could occur. Eligible river segments within WSAs would not be affected by OHVs.

Impacts from Lands and Realty

Under Alternative A, none of the eligible river segments would be recommended as suitable or managed to protect their free-flowing nature, outstandingly remarkable values, and tentative classification. The eligible river segments would not be included in withdrawals or ROW avoidance areas, which could result in proposals for surface-disturbing activities within some of the eligible river corridors such as development of ROWs or mining-related activities. These areas could be disposed of under a land tenure adjustment (removing land from management under federal laws and regulations), and inholdings could be acquired (which would bring lands under federal jurisdiction, subject to management under federal laws and regulations). There would continue to be protection from lands and realty actions for 98 of the 135 eligible river miles located within WSAs. The potential for impacts to the remaining 37 miles would be dependent on future proposals. This alternative would provide the least protection for the eligible river segments and, as discussed above, could result in impacts to the outstandingly remarkable values from development of ROWs or other land use actions, as well as development of lands if disposed from public ownership.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

This alternative would allow the greatest impacts from oil and gas leasing among all of the alternatives because all eligible segments outside WSAs (37 miles) would be open to leasing under standard terms or controlled surface use or timing stipulations. However, all eligible river segments except Quitchupah Creek are within an area identified as having low potential for oil and gas development. (Quitchupah Creek is located within an area identified as having moderate potential for gas development.) Because development of oil and gas within these areas is unlikely in the next 15 years, the possibility of such development impacting outstandingly remarkable values of any eligible river is minimal.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Non-Energy Solid Leasable Minerals

The 98 miles of eligible river segments located within WSAs would be closed to leasing, indirectly providing protection of the outstandingly remarkable values for those areas. There would be potential for leasing and development within the remaining 37 miles of eligible rivers, which could result in surface-disturbing activities within those corridors. This alternative would result in the least protection for the eligible river segments.

Locatable Minerals

There could be potential impacts from mineral exploration and development to the outstandingly remarkable values of eligible rivers as portions of the segments have a high potential for locatable minerals and no eligible rivers would be recommended as suitable in this alternative. There has been increasing interest in uranium adjacent to the Dirty Devil River corridor in the vicinity of Poison Spring and North Hatch Canyons, which could result in increased mineral-related traffic on the existing road that crosses the river. The 98 miles of eligible river segments located within the WSAs would be subject to the standards of 43 CFR 3802 and the IMP, which do not allow for impairment to the suitability for inclusion in the Wilderness Preservation System and thus would protect outstandingly remarkable values in these areas. This alternative would result in the least protection for the eligible river segments from locatable mineral exploration and development.

Salable Minerals

Proposed operations for salable minerals are subject to the oil and gas leasing restrictions. Live water would be protected by a buffer of 330 feet, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. Outstandingly remarkable values would be protected by mitigation to stabilize soil, to prevent unnecessary erosion, and to revegetate disturbed surfaces.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

No eligible river segments would be recommended as suitable under Alternative A, and the outstandingly remarkable values would receive no special management. Other proposed decisions in this alternative could allow adverse impacts to eligible river segments outside the WSAs, as discussed in other sections of this WSR analysis.

Areas of Critical Environmental Concern

No ACECs are proposed under this alternative, so there would be no protection of outstandingly remarkable values from ACEC designation and management.

Proposed RMP

Impacts from Vegetation and Fire and Fuels Management

Impacts would be similar to those described under Alternative A, except within the one river segment (5 miles) recommended for suitability. This river segment (Fremont Gorge) would be managed to protect the outstandingly remarkable values. Proposed treatments in this area would only be allowed if it was determined that they would not result in impacts to the suitability or tentative classification of the river segments.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The impacts on the outstandingly remarkable values of the eligible rivers not recommended suitable would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would directly protect the scenic, as well as indirectly protect the other outstandingly remarkable values. River segments outside WSAs would be designated as VRM Class II, which would retain the character of the existing landscape. This would minimize, but not eliminate, possible impacts to the scenic, as well as the other, outstandingly remarkable values in these river segments.

The five mile segment of the Fremont River in Fremont Gorge managed as a suitable wild and scenic river would be designated as VRM Class II. This VRM classification would retain the character of the existing landscape and complement the management objectives for this river segment.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be similar to those described under Alternative A, except that one river segment (5 miles) would be recommended as suitable under the Proposed RMP, which would ensure protection of the outstandingly remarkable values in that segment.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, no suitable river segments are included in non-WSA lands being managed for the protection of wilderness characteristics. Under the Proposed RMP, 4 miles of eligible wild and scenic river segments would be included within non-WSA areas managed to maintain wilderness characteristics. The Little Rockies non-WSA area would include a portion of the Maidenwater Creek eligible river segment and the Red Desert non-WSA area would include a portion of the Fremont River – Capitol Reef NP to Caineville Diversion river segment. The prescriptions to maintain wilderness characteristics would provide indirect protection to the outstandingly remarkable values and tentative classifications along these river miles.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Proposed decisions to establish SRMAs could impact outstandingly remarkable values. Management direction under the Proposed RMP for the Capitol Reef Gateway SRMA would complement the tentative

wild classification of the Fremont Gorge suitable WSR because of the emphasis on providing primitive and semi-primitive recreation opportunities.

Management direction for the Dirty Devil and Henry Mountains SRMAs would complement the recreational outstandingly remarkable values identified in the eligible Dirty Devil River segment, several of the Dirty Devil River tributary segments, and Maidenwater Creek because of the emphasis on providing primitive and semi-primitive recreation opportunities. No other proposed SRMAs would overlap with eligible WSR segments in the Proposed RMP.

Impacts from Travel Management

OHV use can impact outstandingly remarkable values. Under the Proposed RMP, the one river segment designated as a suitable wild and scenic river (Fremont Gorge – 5 miles), tentative classification of wild, would be closed to OHVs. This OHV designation would preclude impacts from motorized use.

The eligible segments not recommended for suitability in the Proposed RMP, within WSAs (the Dirty Devil tributaries) would also be closed to vehicle use. Other eligible segments would be within areas where OHVs would be limited to designated routes, so impacts would be confined to designated routes. Thus, outstandingly remarkable values would not likely be adversely impacted by OHV use under the Proposed RMP.

Impacts from Lands and Realty

Impacts would be similar to Alternative A, except that only 32 miles of eligible river segments (which are not recommended as suitable or not within WSAs) would be unprotected and at risk from potential surface-disturbing activities. Under the Proposed RMP, decisions for lands and realty would complement the management and protection for the one river segment (5 miles) recommended for suitability. These river segments would be recommended for withdrawal from mineral entry, managed as ROW avoidance areas, and no wind and solar energy development would be allowed. This would provide additional protection to the outstandingly remarkable values of the segments by eliminating any surface disturbance or visual intrusions associated with such development actions. All or the majority of the Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Dirty Devil River, Robbers Roost Canyon, Sams Mesa Box Canyon, and Twin Corral Box Canyon eligible segments (98 of 121 miles) are located within WSAs and would continue to be protected by IMP management.

Because the BLM has no control over potential modifications to a river's shoreline or any other type of development on non-public lands, impacts could occur in these areas. Management actions to acquire non-BLM lands within the river corridors would provide opportunities to better manage outstandingly remarkable values and to prevent any actions that could impact the segments' tentative classification or free-flowing nature.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Proposed RMP would reduce the level of impact compared to Alternative A by recommending 1 river segment (5 miles; tentative classification "wild") as suitable and managing the river corridor as closed to oil and gas leasing. All remaining eligible river segments, except Quitchupah Creek, are within an area identified as having a low activity level (low development potential) for oil and gas. Quitchupah Creek is located in an area identified as having moderate activity (moderate development potential) for oil and gas. River segments not recommended as suitable within WSAs would continue to be protected by the IMP.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Non-Energy Solid Leasable Minerals

Under the Proposed RMP, leasing within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs would be prohibited, so outstandingly remarkable values would be protected in the Fremont Gorge (5 miles; tentative classification "wild"). In addition, no surface disturbance would be allowed within the 100-year floodplain or 330 feet of riparian areas, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. It is important to note that of the remaining segments, 98 miles are within WSAs (which are closed to leasing), leaving 32 miles on which ground-disturbing activities could potentially impact outstandingly remarkable values. This alternative would provide less protection to outstandingly remarkable values than Alternatives N, C, or D but would provide more protection than Alternative A.

Locatable Minerals

While there could be potential impacts from mineral development to the outstandingly remarkable values of eligible rivers, the likelihood of mineral development within the eligible river corridors is small given their remote location and lack of known mineral deposits. Under this alternative, one suitable WSR corridor (Fremont Gorge, 5 miles; tentative classification "wild") would be recommended for withdrawal from mineral entry, precluding new mining claims in these areas. Impacts from mineral exploration and development would be mitigated by the requirement of federal regulations that a plan of operations be submitted for any operations causing surface disturbance greater than casual use in areas designated for potential addition to the National Wild and Scenic River System.

Salable Minerals

Under the Proposed RMP, disposal of salable minerals within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs would be prohibited, so the outstandingly remarkable values of the Fremont Gorge (5 miles; tentative classification "wild") would be protected. In addition, no surface disturbance would be allowed within the 100-year floodplain or 330 feet of riparian areas, subject to an appropriate exception when there are no practical alternatives and impacts can be fully mitigated. It is important to note that of the remaining segments, 98 miles are within WSAs, which are closed to disposal of salable minerals. This alternative would provide less protection to outstandingly remarkable values than Alternatives N, C, or D but more protection than Alternative A.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under this alternative, the Fremont Gorge eligible river segment would be recommended as suitable with a tentative classification of "wild" and would be managed to protect its outstandingly remarkable values. Additionally, this river segment would be recommended for withdrawal from mineral entry and identified as an ROW avoidance area, protecting the outstandingly remarkable values from these types of surface-disturbing activities.

The remaining eligible segments are recommended non-suitable because the values identified would be protected by alternative protection methods. Outstandingly remarkable values within these other eligible segments would be managed according to management direction contained elsewhere in this RMP. All or

the majority of the Beaver Wash Canyon, Larry Canyon, No Man's Canyon, Dirty Devil River, Robbers Roost Canyon, Sams Mesa Box Canyon and Twin Corral Box Canyon eligible segments (98 of 130 miles) are located within WSAs and would continue to be protected by IMP management. The 32 miles of eligible rivers not recommended for suitability located outside the WSAs would receive protection through existing laws, regulations and specific resource decisions within the Proposed RMP for Riparian, VRM, non-WSA lands with wilderness characteristics, SRMAs and Travel Management. Those protections are discussed in more detail within those resource sections of this analysis and the Wild and Scenic River Suitability Evaluation Report (Appendix 3).

Areas of Critical Environmental Concern

ACEC designations in this alternative do not overlap any eligible WSR segments, so there would be no impacts to outstandingly remarkable values from ACEC management.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

There would be no impacts to WSRs under this alternative, as all 12 eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River System. Proposed treatments in these areas would only be allowed if it was determined that they would not result in impacts to the suitability, tentative classification, or outstandingly remarkable values of the river segment.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would protect the scenic, as well as the other outstandingly remarkable values. River segments outside WSAs would be managed as VRM Class II, which would retain the character of the existing landscape. This would minimize, but not eliminate, possible impacts to the scenic outstandingly remarkable values and would indirectly provide protection of other outstandingly remarkable values for these river segments.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside WSAs are proposed under this alternative, resulting in no additional protection for WSR outstandingly remarkable values.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

All 12 eligible WSR segments (135 miles) would be designated as suitable under this alternative, and all would be closed to motorized vehicles except for the Poison Spring Road, which is a maintained road that

crosses the Dirty Devil River segment and provides the only access to this river segment. By closing the other suitable rivers to OHV use, there would be no impact to outstandingly remarkable values or tentative classification under this alternative.

Impacts from Lands and Realty

Impacts would be similar to those described under the Proposed RMP, except that all 12 recommended suitable river segments (135 miles) would be recommended for withdrawal from mineral entry, managed as ROW avoidance areas, and not considered for wind and solar energy development. This alternative (along with Alternative D) would result in the greatest protection to river segments from lands and realty decisions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under this alternative, all 12 eligible rivers would be recommended as suitable, and all would be closed to oil and gas leasing. However, Fish Creek is located in an area identified as having low potential for gas development, so development of oil and gas is unlikely in the next 15 years. Consequently, the possibility of such development impacting outstandingly remarkable values of this river is minimal.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Non-Energy Solid Leasable Minerals

Under this alternative, leasing within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs would be prohibited, so outstandingly remarkable values would be protected in all 12 of the eligible rivers (135 miles).

Locatable Minerals

Under this alternative, the 12 suitable WSR corridors would be recommended for withdrawal from mineral entry, precluding new mining claims in these areas. Impacts from mineral exploration and development would be mitigated by the requirement of federal regulations that a plan of operations be submitted for any operations causing surface disturbance greater than casual use in areas designated for potential addition to the National Wild and Scenic River System. The likelihood of mineral development within the suitable river corridors is small given their remote location and lack of known mineralization. Therefore, the potential for impacts from locatable minerals would be minimal.

Salable Minerals

Under this alternative, disposal of salable minerals within one-quarter mile of the high water mark on each bank of the river segment of suitable WSRs would be prohibited, so outstandingly remarkable values would be protected in all 12 rivers.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

All eligible river segments would be recommended as suitable under this alternative and would be managed to protect their outstandingly remarkable values. Management of these river segments (including closing to OHV use, closing to oil and gas leasing, recommending for withdrawal from mineral

entry, closing to forest and woodland products harvesting, and managing as ROW avoidance areas) would protect their outstandingly remarkable values. This alternative (along with Alternative D) would best protect the eligible river segments.

Areas of Critical Environmental Concern

Under this alternative, all suitable WSR segments would be within potential ACECs. Managing the ACECs to protect relevant and important values would likely protect outstandingly remarkable values within the eligible river corridors as well, because they are often the same or similar values. This alternative (along with Alternative D) would best protect the eligible river segments.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

The impacts on outstandingly remarkable values of the eligible rivers would depend on the VRM classification of the lands within the river corridor. The eligible river segments within WSAs (98 of the total 135 miles) would be designated as VRM Class I, which would protect the scenic, as well as the other outstandingly remarkable values. River segments outside WSAs but within wilderness characteristic lands (33.35 miles of the Dirty Devil and tributaries outside WSA, Fremont Gorge, Fremont River below Capitol Reef National Park, and Maidenwater Creek) would also be designated as VRM Class I. There would be 0.74 miles of the Fremont River (Capitol Reef National Park to Caineville) and 1.6 miles of Maidenwater Creek designated as VRM Class II, which would also protect outstandingly remarkable values. The potential for impacts to the outstandingly remarkable values would be greatest in the 0.1 mile of the Fremont River (Fremont Gorge) designated as VRM Class III and the 0.25 miles of Fish Creek and 1.4 miles of Quitchupah Creek designated as VRM Class IV, which would allow modifications to the landscape and impact outstandingly remarkable values. However, with only 1.75 miles within these VRM designations, the potential for impacts to the outstandingly remarkable values and tentative classification would be minor.

Impacts from Special Status Species and Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, 10,500 acres (33.35 miles) of suitable WSR segments would be included within the non-WSA areas managed to protect wilderness characteristics. Because the wilderness characteristics prescriptions are more restrictive than the WSR prescriptions, (e.g., VRM Class I versus VRM Class II), the eligible segments overlapping non-WSA lands with wilderness characteristics would be afforded a measure of additional protection over that provided in Alternative C.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Impacts would be similar to those described under Alternative C, except that management for protection of non-WSA lands with wilderness characteristics would result in 33.85 additional miles of suitable wild and scenic river segments being closed to OHV use. This would provide additional protection for outstandingly remarkable values in these segments.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping WSR segments.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be similar to those described under Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping WSR segments.

Leasable Minerals—Coal

Impacts would be similar to those described under Alternative N, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping WSR segments.

Non-Energy Solid Leasable Minerals

Impacts would be similar to those described under Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping WSR segments.

Locatable Minerals

Impacts would be the same as those described under Alternative C.

Salable Minerals

Impacts would be similar to those described under Alternative C, except additional acres would be managed for the protection of non-WSA lands with wilderness characteristics, which would provide additional protection for outstandingly remarkable values in overlapping WSR segments.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.5.3 Areas of Critical Environmental Concern

An ACEC is an administrative designation assigned by BLM for "areas within the public lands where special management attention is required." FLPMA defines an ACEC as an area…

> "…within the public lands where special management attention is required (when such areas are developed or used, or where no development 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 provide safety from natural hazards." (FLPMA Section 103(a))

This analysis identifies the effects of management decisions on the BLM's ability to protect against and prevent irreparable damage to the relevant and important values associated with each potential ACEC across the alternatives. Protection of relevant and important values can occur as a result of management associated with designating ACECs, management associated with other special designations (e.g., WSAs and WSRs), general management of public lands (VRM class designations, restrictions on wildlife habitat, SSS management, SRMAs), or through geographic or topographic characteristics. The most restrictive management that protects an area with relevant and important values will be the focus of the analysis. Analysis of less restrictive management that would not provide additional protection to a relevant and important value will not be addressed. For example, if part of an ACEC with scenic relevant and important values threatened by oil and gas development overlaps a WSA, the WSA management would eliminate the threat of irreparable damage. Therefore, the analysis would not address the impacts of ACEC management for those portions of the ACEC within the WSA. The BLM has separate policies and guidelines as well as criteria for establishing ACECs and WSAs. The differing criteria make it possible that the same acreages will quality as both an ACEC and a WSA but for different reasons.

In concert with BLM guidelines, the impact analysis considers management actions that "defend or guard against damage or loss" to the relevant and important values. This includes damaged values that can be restored over time as well as those that are irreparable. The management actions associated with the alternatives could either degrade or protect the relevant and important values and either cause or prevent irreparable damage to such values.

Table 4-59 lists the existing ACECs, as well as potential ACECs, by alternative.

Table 4-59. Existing and Potential Areas of Critical Environmental Concern

ACEC	Relevant and Important Values	Alternative N (Existing ACECs)	Alternative A	Proposed RMP	Alternatives C and D	% in WSAs
Existing ACECs						
North Caineville Mesa ACEC	Relict vegetation	2,200 acres	0 acres	2,200 acres	(Within Badlands ACEC)	0
South Caineville Mesa ACEC	Relict vegetation	4,100 acres	0 acres	0 acres	(Within Badlands ACEC)	100%
Gilbert Badlands RNA	Badlands geology	3,680 acres	0 acres	0 acres	(Within Badlands ACEC)	100%

ACEC	Relevant and Important Values	Alternative N (Existing ACECs)	Alternative A	Proposed RMP	Alternatives C and D	% in WSAs
Beaver Wash ACEC	Desert riparian ecosystem	4,800 acres	0 acres	0 acres	(Within Dirty Devil/North Wash ACEC)	99%
Potential ACECs						
Badlands RNA	Scenic, SSS, Natural Processes, Riparian, Relict Vegetation	0 acres	0 acres	0 acres	88,900 acres	46%
Bull Creek	Archaeological	0 acres	0 acres	0 acres	4,800 aces	0
Dirty Devil/North Wash	Scenic, Cultural, Paleontological, Wildlife, SSS	0 acres	0 acres	0 acres	205,300 acres	64%
Fremont Gorge/ Cockscomb	Cultural, Scenic, Riparian, Plant, Wildlife	0 acres	0 acres	0 acres	34,300 acres	8%
Henry Mountains	Scenic, Bison habitat, Mule deer habitat, SSS, Ecological	0 acres	0 acres	0 acres	288,200 acres	45%
Horseshoe Canyon	Scenic, Cultural, Riparian, SSS	0 acres	0 acres	0 acres	40,900 acres	92%
Kingston Canyon	Mule deer habitat	0 acres	0 acres	0 acres	22,100 acres	0
Little Rockies	Scenic, Desert Bighorn Sheep, SSS	0 acres	0 acres	0 acres	49,200 acres	76%
Lower Muddy Creek	Scenic, Riparian, SSS	0 acres	0 acres	0 acres	16,200 acres	0
Old Woman Front RNA	Relict Vegetation	0 acres	0 acres	330 acres	330 acres	0
Parker Mountain	Sagebrush Steppe, Sage-grouse, Utah prairie dog, Pygmy rabbit	0 acres	0 acres	0 acres	107,900 acres	0
Quitchupah	Archaeological, Native American, Riparian	0 acres	0 acres	0 acres	180 acres	0
Rainbow Hills	Mule deer, Natural system, SSS	0 acres	0 acres	0 acres	4,000 acres	0

ACEC	Relevant and Important Values	Alternative N (Existing ACECs)	Alternative A	Proposed RMP	Alternatives C and D	% in WSAs
Sevier Canyon	Mule deer, Riparian, SSS	0 acres	0 acres	0 acres	8,900 acres	0
Special Status Species	SSS	0 acres	0 acres	0 acres	15,100 acres	0
Thousand Lakes Bench	Cultural, SSS, Riparian	0 acres	0 acres	0 acres	500 acres	0
Total		**14,780 acres**	**0 acres**	**2,530 acres**	**886,810 acres**	

Methods and Assumptions

This analysis is based on the following assumption:

- Although management decisions for most resources and resource uses have RFO-wide application, ACEC management prescriptions apply only to those lands within each specific ACEC, as outlined.

Environmental Consequences

Relevant and important values identified for the ACECs and impacts to those values vary based upon the individual ACEC because the relevant and important values vary by ACEC. Thus, the discussion of impacts will be different for each ACEC. Table 4-59 identifies the relevant and important values for each ACEC.

This section is structured by ACEC, then by alternative. The ACECs are organized in the order that they appear in Chapter 2.

4.5.3.1 Existing ACECs

North Caineville Mesa ACEC

The North Caineville Mesa ACEC encompasses 2,200 acres. None of this ACEC is located within a WSA. The relevant and important value is the relict vegetation found on top of the mesa. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations

Other programs were determined to have little or no impact on the relict vegetation of this ACEC. There are no WSA or WSR decisions that would impact North Caineville Mesa ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class II objectives. This would retain the existing character of the landscape by restricting surface-disturbing activities and would provide protection to the relict vegetation on the mesa.

Impacts from Livestock Grazing

The North Caineville Mesa ACEC is unavailable for grazing. This management prescription provides protection for the relict plant community relevant and important value within this ACEC.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use.

Impacts from Lands and Realty

Under this alternative, the North Caineville Mesa ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is open to oil and gas leasing with NSO. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance.

Impacts from Special Designations

Areas of Critical Environmental Concern

The North Caineville Mesa ACEC is managed to protect its relevant and important relict vegetation community located on top of a mesa. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class IV. Areas designated as VRM Class IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the relict vegetation on the mesa.

Impacts from Livestock Grazing

Under this alternative, the area would be available for livestock grazing, so the relict vegetation would be grazed by domestic livestock. However, management of livestock grazing in accordance with the RHS would minimize impacts to the relict plant community on North Caineville Mesa.

Impacts from Travel Management

The North Caineville Mesa area would be designated as open to OHV use under this alternative. This has the potential to lead to direct mortality of vegetation, via the crushing of plants, and indirect mortality

from increases in erosion and sedimentation. The increasing use of OHVs on BLM land can also transport noxious and invasive weed seeds from infested areas to un-infested areas. Surface disturbance associated with OHV use (e.g., crushing of vegetation and soil disturbance) has the potential to increase the susceptibility of native plant communities to weed establishment and can modify localized soil conditions to the point where they are unsuitable for establishment by native species, which could result in adverse impacts to the relict vegetation. Vehicles driving over the vegetation would crush plants and the relevant and important value could be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions.

Impacts from Minerals and Energy

Under this alternative, the area would be open to oil and gas leasing with standard lease terms. Impacts to vegetation from oil and gas development would include loss or injury of plants due to excavation or trampling, burial under piles of waste material, toxic responses from use of chemicals in mineral extraction or waste pits, and increased exposure to dust and other contaminants associated with construction and use of access roads. In addition, disturbance of reclamation-limited soils could increase the opportunity for exotic plant species and noxious weed infestations. In the worst-case scenario, all vegetation would be removed from a parcel of land, and the site would be permanently altered to prevent future vegetation growth. Oil and gas development would have significant impacts to the relict vegetation of the area.

Impacts from Special Designations

Areas of Critical Environmental Concern

The North Caineville Mesa ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area. Potential impacts to relict vegetation could occur under this alternative.

Proposed RMP

Impacts from Visual Resources

Designation and protective management would continue for the North Caineville Mesa ACEC under the Proposed RMP and provide protection for the relict vegetation relevant and important value. Scenery is not a relevant or important value of this ACEC. However, the ACEC would be managed to meet VRM Class II objectives. This would retain the existing character of the landscape by restricting surface-disturbing activities and would provide indirect protection to the relevant and important value of relict vegetation on the mesa.

Impacts from Livestock Grazing

The North Caineville Mesa ACEC would be unavailable for grazing within the Proposed RMP. This management prescription provides protection for the relict vegetation relevant and important value within this ACEC.

Impacts from Travel Management

The ACEC would be closed to OHV use under the Proposed RMP, which would provide protection to the relevant and important relict vegetation value from this type of use.

Impacts from Lands and Realty

Under the Proposed RMP, the North Caineville Mesa ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-federal inholdings from willing sellers would be pursued. These management actions would help to protect the ACEC's relevant and important value of relict vegetation.

Impacts from Minerals and Energy

The ACEC would be open to oil and gas leasing with NSO. This would protect the relevant and important value of relict vegetation from surface disturbance.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the North Caineville Mesa ACEC would continue to be designated as an ACEC and managed to protect the relevant and important relict vegetation community located on top of the mesa.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. The North Caineville Mesa ACEC would be included in the larger potential Badlands ACEC, which includes protection for additional relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N.

Impacts from Minerals and Energy

The potential Badlands ACEC, including the existing North Caineville Mesa ACEC, would be closed to oil and gas leasing under this alternative. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be a candidate for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance, which would protect the relict vegetation from adverse impacts.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative N.

South Caineville Mesa ACEC

The South Caineville Mesa ACEC encompasses 4,100 acres. This ACEC is located entirely within the Mount Ellen—Blue Hills WSA. The relevant and important value is the relict vegetation found on top of

the mesa. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relict vegetation of this ACEC. There are no WSR decisions that would impact South Caineville Mesa ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class I objectives due to its location within the Mount Ellen—Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the relict vegetation on the mesa.

Impacts from Livestock Grazing

The South Caineville Mesa ACEC is unavailable for grazing. This management prescription provides protection for the relict vegetation on top of the mesa (this ACEC's relevant and important value) by eliminating the possibility of damage to the vegetation from grazing or trampling by livestock.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use by eliminating the possibility of damage to the vegetation from vehicles crushing plants, compacting soils, or spreading invasive species.

Impacts from Lands and Realty

Under this alternative, the South Caineville Mesa ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Mount Ellen—Blue Hills WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be considered for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance.

Impacts from Special Designations

Wilderness Study Areas

The ACEC is within the Mount Ellen—Blue Hills WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely impact relevant and important values. WSAs

are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Areas of Critical Environmental Concern

South Caineville Mesa ACEC is managed to protect the relevant and important relict vegetation that is found on top of the mesa. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class I due to its location within the Mount Ellen—Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the relict vegetation.

Impacts from Livestock Grazing

Under this alternative, the area would be available for livestock grazing, so the relict vegetation could be grazed by domestic livestock. However, management of livestock grazing in accordance with the IMP and *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would minimize impacts to the relict vegetation on South Caineville Mesa. Due to a lack of access to the top of South Caineville Mesa and lack of water availability, it is unlikely that this area would be grazed. Only hiking routes currently lead to the top of South Caineville Mesa; a route would need to be re-established to allow livestock to be trailed up onto the Mesa.

Impacts from Travel Management

Motorized travel in the South Caineville Mesa area would be designated as limited to designated routes under this alternative, but no routes have been identified for designation on the South Caineville Mesa and only ways identified within the WSA inventories would be available for designation. Should any routes be designated, there could be localized impacts to the relict vegetation from motorized vehicles. However, due to the non-impairment standard of the IMP (for management of WSAs), the relevant and important value would not be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and there would be no ACEC management direction for the acquisition of non-Federal inholdings. However, because of the location of this potential ACEC within the Mount Ellen/Blue Hills WSA, lands actions such as mineral withdrawal, acquisition of non-Federal inholdings and ROW exclusion would continue to be managed as identified under the IMP. Within the WSA, acquisition of non-Federal inholdings would be pursued. Continued management of the WSA under the IMP would provide protection from surface disturbing actions.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N, except that the area would not be recommended for mineral withdrawal. The WSA would continue to provide protection but would not prevent surface disturbing activities associated with locatable mineral development. The IMP allows for locatable mining claims and assessment work within WSAs subject to the non-impairment clause. No motorized ways have been identified on South Caineville Mesa. Therefore, any minerals related activities and access would be by non-motorized means and the potential for surface disturbance is minimal.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

The ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area. However, because the South Caineville Mesa area is within the Mount Ellen—Blue Hills WSA, the area would be managed pursuant to the IMP, which would provide adequate protection for the relevant and important value of relict vegetation.

Proposed RMP

Impacts from Visual Resources

Under the Proposed RMP, the South Caineville Mesa would not be designation as an ACEC. However, the area would be designated as VRM Class I due to its location within the Mount Ellen—Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide indirect protection to the relevant and important value of relict vegetation.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative A. As discussed under the analysis for Alternative A, due to lack of access to the top of South Caineville Mesa and lack of water availability, it is unlikely that this area would be grazed. Only hiking routes currently occur to the top of South Caineville Mesa. A route would need to be re-established to allow livestock to be trailed up onto the Mesa. South Caineville Mesa is located within the Mount Ellen/Blue Hills WSA. It is unlikely that construction of a route to accommodate grazing management needs would be consistent with the non-impairment standard of the IMP. Therefore, there would be no impacts to the relevant and important value of relict vegetation.

Impacts from Travel Management

Under the Proposed RMP, the South Caineville Mesa ACEC would be closed to OHV use, which would provide protection to the relevant and important value of relict vegetation on the mesa top. Closing the area to OHV use would eliminate the possibility of damage to the vegetation from vehicles crushing plants, compacting soils, or spreading invasive species.

Impacts from Lands and Realty

Under the Proposed RMP, the area would not be recommended for mineral withdrawal, and there would be no ACEC management direction for the acquisition of non-Federal inholdings. However, because of the location of this potential ACEC within the Mount Ellen/Blue Hills WSA, lands actions such as mineral withdrawal, acquisition of non-Federal inholdings and ROW exclusion would continue to be managed as identified under the IMP. Within the WSA, acquisition of non-Federal inholdings would be pursued. Continued management of the WSA under the IMP would provide protection from surface disturbing actions and it would provide indirect protection to the relevant and important value of relict vegetation.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N, except that the area would not be recommended for mineral withdrawal. The WSA would continue to provide protection but would not prevent surface disturbing activities associated with locatable mineral development. The IMP allows for

locatable mining claims and assessment work within WSAs subject to the non-impairment clause. However, there would be no motorized use authorized on South Caineville Mesa. Therefore, any minerals related activities and access would be by non-motorized means and the potential for surface disturbance to the relevant and important value of relict vegetation is minimal.

Impacts from Special Designations

Wilderness Study Areas

As in the other alternatives, the South Caineville Mesa ACEC is within the Mount Ellen—Blue Hills WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions which provides protection for the relevant and important relict vegetation value of this ACEC. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Areas of Critical Environmental Concern

The South Caineville Mesa ACEC would not be designated under the Proposed RMP, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area. However, because the South Caineville Mesa area is within the Mount Ellen—Blue Hills WSA, the area would be managed pursuant to the IMP, which would provide adequate protection for the relict vegetation relevant and important value identified within the area.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. The existing South Caineville Mesa ACEC would be included in the larger potential Badlands ACEC, which includes additional management protection for additional relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative N.

Beaver Wash ACEC

The Beaver Wash ACEC encompasses 4,800 acres, and 99 percent of this ACEC is located within the Dirty Devil WSA. The relevant and important value is its desert riparian ecosystem. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the desert riparian ecosystem of this ACEC.

Alternative N: No Action

Impacts from Vegetation

Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. Within the 99 percent of the ACEC located within the WSA, surface-disturbing activities would only be allowed if consistent with the IMP. This would protect the desert riparian ecosystem from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, all but 68 acres (which are outside the WSA) are managed to meet VRM Class I objectives due to its location within the Dirty Devil WSA. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the desert riparian ecosystem. The 68 acres outside the WSA would be managed to meet VRM Class IV objectives. Areas designated as VRM Class IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the vegetation in the area.

Impacts from Livestock Grazing

The Beaver Wash ACEC is unavailable for grazing from the south boundary of Section 25 northward, and fencing has been installed to restrict livestock in that portion of the ACEC. This management prescription provides protection for the desert riparian ecosystem relevant and important value within this ACEC. The remainder of the ACEC (approximately 800 acres) is available for grazing. Management of livestock grazing in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would protect this area as well.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection to the relevant and important value from this type of use.

Impacts from Lands and Realty

Under this alternative, the Beaver Wash ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Dirty Devil WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be a candidate for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance. Thus, no surface-disturbing activities would be allowed, which would result in protection of the area's desert riparian ecosystem.

Impacts from Special Designations

Wilderness Study Areas

The majority of the Beaver Wash ACEC is within the Dirty Devil WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely impact relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Wild and Scenic Rivers

The Beaver Wash Canyon eligible WSR is within the existing Beaver Wash ACEC. Although no suitability determination would be made, BLM policy requires the protection of the outstandingly remarkable values and free-flowing nature of all eligible WSRs. This interim management would provide protection of the ACEC's relevant and important values.

Areas of Critical Environmental Concern

Beaver Wash ACEC is managed to protect its relevant and important cold riparian ecosystem located in an otherwise desert environment. The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Vegetation

Under this alternative, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Although the riparian zone protection is less under this alternative, the impacts would be similar to Alternative N for the WSA portion of the potential ACEC, as surface disturbing actions would only be allowed consistent with the IMP. For the 68 acres outside of the WSA, surface disturbing actions related to vegetation treatments could occur. The potential for impacts to the relevant and important values would be limited to the 1% of the potential ACEC outside of the WSA.

Impacts from Visual Resources

Under this alternative, the area within the Dirty Devil WSA would be designated as VRM Class I. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the desert riparian ecosystem. The 68 acres outside the WSA would be managed to meet VRM Class III or IV objectives. Areas designated as VRM Classes III or IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. These areas could be subject to such actions as complete vegetation removal, which would drastically alter (at least in the short term) the vegetation in the area. However, scenery is not a relevant or important value of this ACEC.

Impacts from Livestock Grazing

Under this alternative, the entire Beaver Wash Canyon area would be available for grazing. However, management of livestock grazing in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would minimize impacts to vegetation in the area.

Impacts from Travel Management

Motorized travel in the Beaver Wash Canyon area would be limited to designated routes under this alternative, but no routes have been identified for designation and only ways identified within the WSA inventories would be available for designation. Should any routes be designated, there could be localized impacts to vegetation from motorized vehicles. However, due to the non-impairment standard of the IMP (for management of WSAs) which applies to all but 68 acres of the potential ACEC, the potential for impacts is minimal and the relevant and important values should not be adversely impacted.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and acquisition of non-federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions. The 99 percent of the ACEC located in the WSA would continue to receive protection from surface-disturbing activities. Due to the non-impairment standard of the IMP (for management of WSAs) which applies to all but 68 acres of the potential ACEC, the potential for impacts is minimal and the relevant and important values should not be adversely impacted. Therefore, mineral withdrawal would not be necessary for the protection of the relevant and important value.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N except that the area would not be recommended for mineral withdrawal. However, surface disturbing activities associated with locatable mineral development would be subject to the non-impairment standard of the IMP (for management of WSAs) which applies to all but 68 acres of the potential ACEC. The potential for impacts is minimal and the relevant and important values should not be adversely impacted.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

The Beaver Wash Canyon eligible river segment would not be recommended as suitable under this alternative, with no special management to protect its outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the area's relevant and important value.

Areas of Critical Environmental Concern

The Beaver Wash ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, because the majority of the area is within the Dirty Devil WSA, the area would be managed pursuant to the IMP, which would provide adequate protection for the area's desert riparian ecosystem.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Although the riparian zone protection is less in the Proposed RMP than in Alternatives N, C and D, the impacts would be similar to Alternative N for the WSA portion of the potential ACEC, as surface disturbing actions would only be allowed consistent with the IMP. For the 68 acres outside of the WSA, surface disturbing actions related to vegetation treatments could occur, but would need to be consistent with the riparian area decision. The potential for impacts to the relevant and important desert riparian ecosystem value would be limited to the 1% of the potential ACEC outside of the WSA.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative A, except the 68 acres outside the WSA would be designated as VRM Class IV, which would allow greater landscape modification and therefore greater potential for surface disturbance. The potential for impacts to the relevant and important desert riparian ecosystem value from surface disturbing actions would be limited to the 1% of the potential ACEC outside of the WSA and would also be minimized by the decisions for protection of riparian areas. Scenery is not a relevant or important value of this ACEC.

Impacts from Livestock Grazing

Under the Proposed RMP, the entire Beaver Wash area would be available for grazing. However, management of livestock grazing in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* and management for the protection of riparian areas would minimize impacts to the desert riparian ecosystem relevant and important value of this ACEC.

Impacts from Travel Management

Under the Proposed RMP, the portion of the Beaver Wash ACEC located within the Dirty Devil WSA would be closed to motorized use, eliminating potential impact to the desert riparian ecosystem relevant and important value within the WSA portion of the potential ACEC. The 68 acres of the potential ACEC outside the WSA would be limited to designated routes. There are only three short spur routed identified within this area and they do not occur within the riparian zone. Therefore the relevant and important desert riparian ecosystem value should not be adversely impacted.

Impacts from Lands and Realty

Under the Proposed RMP, the area would not be recommended for mineral withdrawal, and acquisition of non-federal inholdings would not be pursued. Thus, the relevant and important value of the area would not receive additional protection from lands and realty actions. The 99 percent of the ACEC located in the WSA would continue to receive protection from surface-disturbing activities. Due to the non-impairment

standard of the IMP (for management of WSAs) which applies to all but 68 acres of the potential ACEC, the potential for impacts is minimal and the relevant and important desert riparian ecosystem value should not be adversely impacted. Therefore, mineral withdrawal would not be necessary for the protection of the relevant and important value.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N except that the area would not be recommended for mineral withdrawal. Any surface disturbing activities associated with locatable mineral development would be subject to the non-impairment standard of the IMP (for management of WSAs) which applies to all but 68 acres of the potential ACEC. Surface disturbing activities associated with locatable mineral development outside the WSA would need to be consistent with protection measures for riparian resources. Therefore, the potential for impacts is minimal and the relevant and important desert riparian ecosystem value should not be adversely impacted.

Impacts from Special Designations

Wilderness Study Areas

As common to all alternatives, 99% of the potential Beaver Wash ACEC is within the Dirty Devil WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely impact the relevant and important desert riparian ecosystem value. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Wild and Scenic Rivers

The Beaver Wash Canyon eligible river segment would not be recommended as suitable under this alternative, with no special management to protect its outstandingly remarkable values and free-flowing nature. By not designating this river segment as suitable there would be no additional protective prescriptions to the ACEC's relevant and important value.

Areas of Critical Environmental Concern

The Beaver Wash ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important desert riparian ecosystem value of the area. However, because the majority of the area is within the Dirty Devil WSA (99%), the area would be managed pursuant to the IMP, which would provide adequate protection for the area's desert riparian ecosystem. The 68 acres (1%) outside the WSA receives indirect protection from other resource decisions and the relevant and important desert riparian ecosystem value should not be adversely impacted.

Alternatives C and D

Impacts from Vegetation

Impacts would be similar to those described under Alternative N. The existing Beaver Wash ACEC would be included in the larger potential Dirty Devil ACEC, which includes additional management prescriptions for the protection of its relevant and important values. The buffer zone around riparian areas in which no surface-disturbing activities would be allowed would be 660 feet. This would protect the widest area around the desert riparian ecosystem from surface-disturbing activities, but it could also restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative A.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be similar to those described under Alternative N, except that Beaver Wash Canyon would be recommended as suitable for inclusion in the National Wild and Scenic River System and tentatively classified as a wild river. The river would be managed to protect its outstandingly remarkable values and free-flowing nature, including closing to oil and gas leasing, closing to OHV use, and recommendation for withdrawal from mineral entry. These management prescriptions would provide protection of the ACEC's relevant and important value.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative N.

Gilbert Badlands RNA ACEC

The Gilbert Badlands RNA ACEC encompasses 3,680 acres. This ACEC is located entirely within the Mount Ellen—Blue Hills WSA. The relevant and important value is the badlands geology. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Livestock Grazing
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the badlands geology of this ACEC.

Alternative N: No Action

Impacts from Visual Resources

Scenery is not a relevant or important value of this ACEC. However, under this alternative, the ACEC is managed to meet VRM Class I objectives due to its location within the Mount Ellen—Blue Hills WSA.

This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the geomorphology of the area.

Impacts from Livestock Grazing

The ACEC is available for grazing. However, there is little-to-no threat to the Gilbert Badlands ACEC from livestock grazing because of topographic isolation and the lack of vegetation and water within the Mancos Shale badlands to support livestock.

Impacts from Travel Management

The ACEC is closed to OHV use under this alternative, which would provide protection from this type of use to the relevant and important value of the area.

Impacts from Lands and Realty

Under this alternative, the ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. In addition, land acquisitions to acquire non-federal inholdings from willing sellers would be pursued. Both of these management actions would help to protect the ACEC's relevant and important value.

Impacts from Minerals and Energy

The ACEC is closed to oil and gas leasing due to its location within the Mount Ellen—Blue Hills WSA. This would protect the relevant and important value from surface disturbance. The ACEC would be recommended for mineral withdrawal and would be protected from locatable mineral surface disturbance. Additionally, the ACEC would be a candidate for withdrawal from consideration for coal development in subsequent coal planning efforts and therefore would be protected from coal mining surface disturbance. Thus, no surface-disturbing activities would be allowed, which would result in protection of the area's relevant and important value.

Impacts from Special Designations

Wilderness Study Areas

Gilbert Badlands ACEC is within the Mount Ellen—Blue Hills WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely impact relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Areas of Critical Environmental Concern

The Gilbert Badlands ACEC is also a research natural area, a pre-FLPMA administrative designation that was elected to be carried forward. The ACEC is managed to protect its relevant and important geomorphology (Mancos Shale badlands). The area would continue to be managed for the protection of its relevant and important value.

Alternative A

Impacts from Visual Resources

Under this alternative, the area would be designated as VRM Class I due to its location within the Mount Ellen—Blue Hills WSA. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the shale badlands.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Motorized travel in the Gilbert Badlands area would be designated as limited to designated routes under this alternative. However, due to the topographic isolation of the area, rough nature of the badlands, and location within the Mount Ellen—Blue Hills WSA, it is unlikely that routes would be designated across the badlands. Only ways identified within the WSA inventories would be available for designation. If motorized vehicles were to drive across the badlands, damage to the geologic features could occur.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal, and there would be no ACEC management decision for the acquisition of non-Federal inholdings. However, because of the location of this potential ACEC within the Mount Ellen/Blue Hills WSA, lands actions such as mineral withdrawal, acquisition of non-Federal inholdings and ROW exclusion would continue to be managed as identified under the IMP. Within the WSA, acquisition of non-Federal inholdings would be pursued. Continued management of the WSA under the IMP would provide protection from surface disturbing actions.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N, except that the area would not be recommended for mineral withdrawal, so surface-disturbing activities associated with locatable mineral development (and impacts to the relevant and important value of the area) could occur. The WSA would continue to provide protection but would not prevent surface disturbing activities associated with locatable mineral development. The IMP allows for locatable mining claims and assessment work within WSAs subject to the non-impairment clause. Minimal surface disturbance that could be reclaimed immediately or within 48 hours could occur, but the potential to impact the overall badlands geology would be minimal.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

The Gilbert Badlands ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, because this area is entirely within the Mount Ellen—Blue Hills WSA, the area would be managed pursuant to the IMP, which would provide adequate protection for the area's relevant and important values.

Proposed RMP

Impacts from Visual Resources

Under the Proposed RMP, the Gilbert Badlands would not be designated as an ACEC. The potential ACEC is located within the Mount Ellen—Blue Hills WSA which would be designated as VRM Class I Although scenery is not a relevant and important value of this potential ACEC, management as VRM Class would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide indirect protection to the shale badlands geology relevant and important value for this area.

Impacts from Livestock Grazing

The potential ACEC would continue to be available for grazing. However, there is little-to-no threat to the Gilbert Badlands ACEC badlands geology relevant and important value from livestock grazing. The area is topographically isolated and lack sufficient vegetation and water within the Mancos Shale badlands to support livestock.

Impacts from Travel Management

The potential Gilbert Badlands ACEC is closed to OHV use under the Proposed RMP, eliminating potential impacts to the badlands geology relevant and important value from motorized use.

Impacts from Lands and Realty

Under the Proposed RMP, the area would not be recommended for mineral withdrawal, and there would be no ACEC management decision for the acquisition of non-Federal inholdings. However, because of the location of this potential ACEC within the Mount Ellen-Blue Hills WSA, lands actions such as mineral withdrawal, acquisition of non-Federal inholdings and ROW exclusion would continue to be managed as identified under the IMP. Within the WSA, acquisition of non-Federal inholdings would be pursued. Continued management of the WSA under the IMP would provide adequate protection for the badlands geology relevant and important value of this potential ACEC.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N, except that the area would not be recommended for mineral withdrawal, so surface-disturbing activities associated with locatable mineral development (and impacts to the relevant and important value of the area) could occur. The WSA would continue to provide protection but would not prevent surface disturbing activities associated with locatable mineral development. The IMP allows for locatable mining claims and assessment work within WSAs subject to the non-impairment clause. Only minimal surface disturbance that could be reclaimed immediately or within 48 hours could occur. Therefore, the potential to impact the overall badlands geology relevant and important value would be minimal.

Impacts from Special Designations

Wilderness Study Areas

Gilbert Badlands ACEC is within the Mount Ellen—Blue Hills WSA. Continued management of WSAs under the IMP would limit surface-disturbing actions that could adversely impact the badlands geology relevant and important value. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Areas of Critical Environmental Concern

The Gilbert Badlands ACEC would not be designated under the Proposed RMP, and no special management prescriptions would be implemented to specifically protect the relevant and important value of the area. However, because this area is entirely within the Mount Ellen—Blue Hills WSA, the area would be managed pursuant to the IMP, which would provide adequate protection for the area's badlands geology relevant and important value.

Alternatives C and D

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. The existing Gilbert Badlands ACEC would be included in the larger potential Badlands ACEC, which includes additional management prescriptions for the protection of its relevant and important values.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N.

Impacts from Minerals and Energy

Impacts would be similar to those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be similar to those described under Alternative N.

4.5.3.2 Potential ACECs

Badlands Potential RNA ACEC

The Badlands Potential RNA ACEC encompasses 88,900 acres of public lands in the Caineville area of eastern Wayne County and includes the existing North and South Caineville Mesa ACECs and Factory Butte. Forty-six percent of the area is within the Mount Ellen—Blue Hills WSA. The relevant and important values of the area are scenic, special status plant species, natural processes (wind erosion), riparian, and relict vegetation values.

The SSS (notably Wright fishhook cactus and Winkler pincushion cactus) and scenic relevant and important values could be threatened with irreparable damage by ground disturbance associated with cross-country OHV use under some alternatives. The natural process (wind erosion) value, per se, would not be affected by OHV use. However, preliminary research suggests that the soil erosion increases in badlands areas heavily used by OHVs, which could have indirect effects on the natural process. Long-term studies are necessary to verify and quantify the preliminary findings.

The riparian value would not be threatened with irreparable harm due to protective management, such as surface disturbance protection in riparian areas, in each alternative.

The relict vegetation relevant and important values (North and South Caineville Mesas) could be threatened with irreparable damage if these areas were made available for livestock grazing, although topography, access, and lack of water make it difficult to graze livestock on the mesa tops. Historically,

limited grazing may have occurred in these areas during wet winter seasons. Making the mesas available for grazing would present some risk to the relict vegetation under those alternatives.

Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Visual Resources

Visual resource management classes within the potential ACEC vary by alternative, as shown in Table 4-60. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values.

Class A scenery is identified as a relevant and important value of this ACEC. Class A scenery occurs within the Mount Ellen—Blue Hills WSA, an area north of Highway 24 encompassing North Caineville Mesa, Factory Butte, and the Fremont River Corridor. Although none of the lands within this potential ACEC are classified as VRM Class I, the portion within the Mount Ellen—Blue Hills WSA (40,400 acres) would be managed to meet VRM Class I objectives. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the area. VRM Class II would protect scenic values within 77% of the area. In the remaining 23% of the area (which is managed as either VRM Class III or Class IV), activities that could adversely impact relevant and important values would be allowed.

Table 4-60. VRM Class Designations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0*	40,400	40,400	40,400	75,800
	% ACEC	0%	46%	46%	46%	85%
Class II	Acres	68,300	0	23,200	28,400	7,700
	% ACEC	77%*	0%	26%	32%	9%
Class III	Acres	4,000	400	3,700	4,000	500
	% ACEC	4%	0%	4%	4%	1%

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class IV	Acres	16,600	48,100	21,600	16,100	5,000
	% ACEC	19%	55%	24%	18%	5%

* By BLM policy, the portion of the potential ACEC within the Mount Ellen—Blue Hills WSA would be managed to meet VRM Class I objectives. The lands within the WSA were inventoried as VRM Class II and are represented as such in this table.

Impacts from Special Status Species

Under all alternatives, management actions—such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements—would benefit SSS. In the Proposed RMP, Alternatives A, C, and D, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional protection for relevant and important values.

Impacts from Livestock Grazing

The North and South Caineville Mesas would continue to be unavailable for grazing, which would continue to provide protection to the relict vegetation on the mesa tops. Relict vegetation was not identified as a relevant and important value within the remainder of the potential ACEC. Grazing in the remainder of the area would be managed in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, which would minimize impacts to the relevant and important values. There would be little-to-no threat to the Gilbert Badlands from livestock grazing because of topographic isolation and lack of vegetation and water within the Mancos Shale badlands to support livestock. This would continue to provide protection to the relevant values of the area.

Impacts from Recreation

Under Alternative N, no SRMAs are proposed, so there would be no impacts to relevant and important values. However, visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities. Thus, intensively used recreation sites (such as Factory Butte) could experience impacts to vegetation and other resources. Potential for these impacts would be most likely to occur within the 46% of the area that would be open to OHV use with no specific management emphasis. These activities could result in loss of vegetation cover and soil compaction, as well as a decrease in riparian ecological condition as cross-country activities increase in vegetated areas or spread into the riparian zones. Thus, impacts to relevant and important values of this potential ACEC from recreation could continue under this alternative—or even increase as visitor use increases.

Impacts from Travel Management

OHV area designations vary by alternative, as shown in Table 4-61.

Table 4-61. OHV Area Designations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	40,800	40,400	8,000	0	0
	% Area	46%	45%	9%	0%	0%
Limited	Acres	1,800	48,500	36,400	6,000	4,100
	% Area	2%	55%	41%	7%	5%
Closed	Acres	46,300	0	44,500	82,900	84,800
	% Area	52%	0%	50%	93%	95%

The greatest impacts to relevant and important values from cross-country OHV use could occur under Alternative N. Forty-six percent of the area would be designated as open to OHVs, and relevant and important values would continue to be adversely impacted by vehicles running over vegetation and compacting soil. Two percent of the area would be limited, and 52% would be closed to OHV use, protecting relevant and important values from ground disturbance caused by cross-country OHV use within those areas.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. Under Alternative N, the proposal to withdraw North Caineville Mesa (2,200 acres) would benefit the relict vegetation value on the mesa by protecting it from ground disturbance caused by exploration and development of mineral resources. Alternative N would also propose to withdraw South Caineville Mesa (4,100 acres) and Gilbert Badlands (3,680 acres).

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-62. There would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The WSA represents 46% of the potential ACEC. An additional 3% of the potential ACEC is open to leasing subject to major constraints (NSO), which would result in minimal impacts to the relevant and important values, and 23% would be open to leasing with minor constraints. In the remainder of the area, impacts to relevant and important values from oil and gas leasing could occur due to surface-disturbing activities.

Protection is also provided by laws, rules, and regulations for other resources. Adherence to VRM Class II standards would provide protection for the Class A scenic values. SSS values would receive protection by the ESA. In addition, the potential ACEC is in a portion of the RFO identified as having low potential for oil and gas development. Few wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-62. Leasing Stipulations within Badlands Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard	Acres	25,100	47,300	37,000	0	0

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Lease Terms	**% Area**	28%	53%	42%	0%	0%
Controlled Surface Use or Timing Stipulations	**Acres**	20,000	1,200	6,800	0	0
	% Area	23%	1%	8%	0%	0%
No Surface Occupancy	**Acres**	3,400	0	4,700	0	0
	% Area	3%	0%	5%	0%	0%
Closed	**Acres**	40,400	40,400	40,400	88,900	88,900
	% Area	46%	46%	45%	100%	100%

Leasable Minerals—Coal

There are limited coal resources within the ACEC. Under this alternative, the 2,200-acre North Caineville Mesa ACEC and the 4,100-acre South Caineville Mesa ACEC would be identified as withdrawn from consideration for leasing for surface coal mining. The remainder of the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values in the area where surface mining occurred. The 46% of the ACEC within the WSA would be managed pursuant to the IMP, which would provide protection from these activities.

Locatable Minerals

There is potential for uranium, vanadium, and copper mineralization within the area. Under Alternative N, 36% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. Locatable mineral exploration and development would be allowed under the General Mining Law in these areas. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. This would minimize impacts from mining activities to relevant and important values. Difficulty of access due to location makes development unlikely within the next 15 years. Additionally, within a designated ACEC, federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values within the North Caineville Mesa ACEC.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 40,400 acres of the Mount Ellen—Blue Hills WSA. Within this area (46% of the potential ACEC), continued management of the WSA under the IMP would limit surface-disturbing actions that could adversely impact relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities.

Wild and Scenic Rivers

The Fremont River between Capitol Reef National Park and the Caineville Ditch diversion was determined to be an eligible WSR. Under this alternative, managing to protect its outstandingly remarkable values would also benefit the scenic and riparian relevant and important values within the river corridor.

Areas of Critical Environmental Concern

The North and South Caineville Mesas and Gilbert Badlands ACECs (9,980 combined acres) would be continued under Alternative N, which represents 11% of the Badlands Potential ACEC. Management of these ACECs would allow no uses that would cause irreparable damage to relevant and important values. In addition, because much of the potential ACEC (46%) is within the Mount Ellen—Blue Hills WSA, that portion of the potential ACEC would be managed pursuant to the IMP, which would protect the relevant and important values in that area. Potential impacts could occur under this alternative within the remainder of the potential ACEC.

Alternative A

Impacts from Visual Resources

Under this alternative, the portion of the potential ACEC located within the Mount Ellen—Blue Hills WSA (40,400 acres) would be designated as VRM Class I. This would preserve the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the relevant and important values. The remaining 54% of the area would be designated VRM Classes III and IV. Scenic values could be adversely impacted because the objectives for these VRM classes allow actions that can result in moderate-to-major landscape modification and therefore greater surface disturbance. Among all of the alternatives, Alternative A would allow the greatest impacts to scenic resources.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Under this alternative, North and South Caineville Mesas would be available for livestock grazing, which could adversely impact the relict vegetation value. However, because access and water are extremely limited on the mesas, the potential for such use is low. Relict vegetation was not identified as a relevant and important value within the remainder of the potential ACEC. There would be little-to-no threat to Gilbert Badlands from livestock grazing because of topographic isolation and lack of vegetation and water within the Mancos Shale badlands to support livestock. In addition, grazing would be managed in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, which would minimize impacts to the relevant and important values of the area.

Impacts from Recreation

Under this alternative, the Factory Butte SRMA would include much of the proposed Badlands ACEC that is outside of the WSA. Cross-country OHV use would adversely impact several relevant and important values by vehicles running over vegetation, compacting soil, and possibly causing increased erosion.

Impacts from Travel Management

Forty-five percent of the area would be designated open to OHVs under Alternative A, so relevant and important values could be adversely impacted by cross-country vehicle use. Fifty-five percent of the area would be limited to OHV use, protecting relevant and important values from ground disturbance caused by cross-country OHV use within that portion of the potential ACEC.

Impacts from Lands and Realty

Under this alternative, the area would not be recommended for mineral withdrawal. Thus, the relevant and important value of the area would not receive additional protection from land and realty actions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing are shown in Table 4-62. There would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The WSA represents 46% of the potential ACEC. In the remainder of the area, impacts to relevant and important values from oil and gas leasing and development could occur due to surface-disturbing activities. However, the potential ACEC is in a portion of the RFO identified as having low development potential for oil and gas development. Therefore, few wells are expected to be drilled in this area in the next 15 to 20 years. Thus, it is unlikely that surface-disturbing activities from oil and gas development would occur that would impact the relevant and important values of this area.

Leasable Minerals—Coal

There are limited coal resources within the ACEC. Under this alternative, the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values in the area where surface mining occurred. The 46% of the ACEC within the WSA would be managed pursuant to the IMP, which would provide protection from these activities.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under this alternative, the Fremont River between Capitol Reef National Park and the Caineville Ditch diversion would not be recommended as suitable, with no special management to protect its outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the area's relevant and important values.

Areas of Critical Environmental Concern

The potential Badlands ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. However, because much of the potential ACEC (46%) is within the Mount Ellen—Blue Hills WSA, that portion of the potential ACEC would be managed pursuant to the IMP, which would protect the relevant and important values in that area. This alternative would present the greatest threat to relevant and important values of the potential ACEC.

Proposed RMP

Impacts from Visual Resources

VRM Classes I and II would protect scenic values within 72% of the area, the majority of the Class A scenery. This would preserve or retain the existing character of the landscape by restricting surface-disturbing activities, and it would provide protection to the scenic relevant and important value.

Restricting surface-disturbing activities for visual resources would also provide indirect protection for the remaining relevant and important values of special status plants, natural processes, riparian and relict vegetation.

The remaining 28% would be designated as either VRM Class III or Class IV, but only a small portion of this area was identified as having scenic values. Although these VRM classes allow actions that can result in moderate-to-major landscape modification, the potential to impact the overall scenic relevant and important value of the potential Badlands ACEC would be minimal.

Impacts from Special Status Species

Under all alternatives, management actions—such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements—would benefit SSS. In the Proposed RMP, as well as Alternatives A, C, and D, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, portions of the Mount Ellen—Blue Hills non-WSA lands with wilderness characteristics area (3,900 acres).which would be managed to protect, preserve and maintain their wilderness characteristics, overlap the potential Badlands ACEC. Management prescriptions to protect, preserve and maintain wilderness characteristics would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership. Approximately 810 acres (less than 1% of the potential ACEC) overlap with the managed wilderness characteristic lands, providing indirect protection for all the relevant and important values that occur within that area.

Impacts from Livestock Grazing

Under the Proposed RMP, the North Caineville Mesa ACEC (which is located wholly within the potential Badlands ACEC) would be designated and would continue to be unavailable for grazing, which would continue to provide protection to the relict vegetation relevant and important value located on North Caineville Mesa. The South Caineville Mesa would be available for livestock grazing, which could adversely impact the relict vegetation relevant and important value. However, because access and water are extremely limited on the mesa, the potential for such use is low. Relict vegetation was not identified as a relevant and important value within the remainder of the potential ACEC.

There would be little to no threat to the relevant and important natural processes value of the Gilbert Badlands or the potential Badlands ACEC as a whole from livestock grazing because of lack of vegetation and water within the Mancos shale badlands to support livestock. In addition, grazing would be managed in accordance with the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration*, which would minimize impacts to the relevant and important value of natural processes within the potential Badlands ACEC.

Impacts from Recreation

Under the Proposed RMP, 24,400 acres north of Highway 24 would be included in the Factory Butte SRMA. This SRMA would provide special management attention for the cross-country OHV use area, while providing information to visitors regarding the other resources within the area and restricting use in sensitive areas such as the, North Caineville Mesa ACEC, Factory Butte, SSS habitat areas, and the riparian zones located within the ACEC. The OHV open area is an area with little-to-no vegetation.

Studies would continue regarding the long-term effects of OHV use on the Mancos Shale soils (natural processes relevant and important value) at this location.

The portion of the potential Badlands ACEC south of Highway 24 is included in the Henry Mountains SRMA. This SRMA would be managed for a combination of semi-primitive non-motorized and motorized recreation. Managing recreation use would help protect all the relevant and important values that occur within that area (scenic, SSS habitat areas, natural processes and relict vegetation from ground-disturbing activities associated with recreation.

Impacts from Travel Management

Nine percent of the potential Badlands ACEC would be designated open to OHVs under the Proposed RMP. The relevant and important values that are present within the OHV open area are scenic and natural processes (wind erosion) values. A small portion of the area remaining open to cross-country OHV use was identified as having Class A scenery. However, this area has been receiving extensive cross-country use since before completion of the 1982 Henry Mountains MFP and the potential to impact the overall scenic relevant and important value of the potential Badlands ACEC from continuing OHV use in this small area would be minimal. The VRM Class for this area would be adjusted for consistency with the OHV activities that have and would continue to occur there. Studies would continue regarding the long-term effects of OHV use on the Mancos Shale soils at this location, and thus on the natural processes. No SSS, riparian, or relict vegetation values have been identified within the OHV open area.

Forty-one percent of the area would limit OHV use to designated routes, protecting all relevant and important values from ground disturbance caused by cross-country OHV use; 50% of the area would be closed to OHV use, which would result in no impacts from motorized vehicles. Proposed OHV designations under this alternative would reduce or eliminate impacts to all the identified relevant and important values from OHV use within the 91% of the potential ACEC.

Impacts from Lands and Realty

Under the Proposed RMP, the recommendation to withdraw North Caineville Mesa (2,200 acres) would benefit the relict vegetation value on the mesa by protecting it from ground disturbance caused by exploration and development of mineral resources. The remainder of the potential Badlands ACEC would not be recommended for mineral withdrawal. Thus, the relevant and important values of the area would not receive additional protection from land and realty actions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be similar to those described under Alternative N. There would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The WSA represents 45% of the potential ACEC. An additional 5% of the potential ACEC is open to leasing subject to major constraints (NSO), which would result in minimal impacts to the relevant and important values, and 8% would be open to leasing with moderate constraints. In the remainder of the area (42%), impacts to relevant and important values from oil and gas leasing could occur due to surface-disturbing activities.

Protection is also provided by laws, rules, and regulations for other resources. Adherence to VRM Class II standards would provide protection for the Class A scenic values. SSS values would receive protection by the ESA, riparian protection zones would provide adequate protection for the riparian values and the relict vegetation values are located within areas of the potential ACEC that would require NSO or closed. In addition, the potential ACEC is in a portion of the RFO identified as having low potential for oil and gas development. Few wells are expected to be drilled in this area in the next 15 to 20 years. Therefore, the potential for impacts to relevant and important values from oil and gas are minimal.

Leasable Minerals—Coal

There are limited coal resources within the potential Badlands ACEC. Under this alternative, the 2,200-acre North Caineville Mesa ACEC would be identified as withdrawn from consideration for leasing for surface coal mining. The remainder of the potential ACEC would be available for consideration for leasing for surface coal mining, which would cause irreparable harm to the relevant and important values if they were present in the area where surface mining occurred. The 46% of the ACEC within the WSA would be managed pursuant to the IMP, which would provide protection from these activities.

Locatable Minerals

Impacts would be the same as those described under Alternative N. There is potential for uranium, vanadium, and copper mineralization within the area. The 36% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. Locatable mineral exploration and development would be allowed under the General Mining Law in these areas. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. This would minimize impacts from mining activities to all relevant and important values. Difficulty of access due to location makes development unlikely within the next 15 years. Additionally, within a designated ACEC, federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values within the North Caineville Mesa ACEC which is located within the potential Badlands ACEC.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N. The potential ACEC encompasses 40,400 acres of the Mount Ellen—Blue Hills WSA. Within this area (45% of the potential ACEC), continued management of the WSA under the IMP would limit surface-disturbing actions that could adversely impact relevant and important values. WSAs are closed to oil and gas leasing, precluding any impact from oil and gas development, and they are managed as VRM Class I, which further restricts surface-disturbing activities and would provide protection to all the relevant and important values located within the WSA.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative A. Under the Proposed RMP, the Fremont River between Capitol Reef National Park and the Caineville Ditch diversion would not be recommended as suitable, with no special management to protect its outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the potential Badlands ACEC's relevant and important values.

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Badlands ACEC would not be designated, and no special management prescriptions would be implemented to specifically protect the relevant and important values of that area. The existing North Caineville Mesa ACEC (2,200 acres) would continue to be designated to protect the relict vegetation relevant and important value. The portion of the potential Badlands ACEC located within the Mount Ellen—Blue Hills WSA would continue to receive adequate protection for all relevant and important values located within that area under the IMP. Resource decisions related to riparian protection zones, SSS, and restricting OHV use to designated routes and a small, managed open area provide protection to the relevant and important values. The potential for impacts associated with cross-country OHV use would be reduced significantly under this alternative when compared with Alternatives N and A.

Alternative C

Impacts from Visual Resources

Impacts would be similar to those described under the Proposed RMP. As shown in Table 4-60, the VRM class designations between the two alternatives are very similar, the main difference being that Alternative C designates all Class A scenery outside of the WSA as VRM Class II and designates fewer VRM Class IV areas, which would provide more protection to relevant and important values by allowing less surface-disturbing activities.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Under this alternative, the portion of the potential ACEC south of Highway 24 is included in the Henry Mountains SRMA. This SRMA would be managed for a combination of semi-primitive and motorized recreation. Managing recreation use would help protect relevant and important values from ground-disturbing activities associated with recreation.

Impacts from Travel Management

Alternative C would close 93% of the area to OHVs (including the mesa tops) and would limit OHVs to designated routes in the remaining 7% of the area. This would protect relevant and important values from ground disturbances caused by this activity.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative N, except that substantially more acres would be recommended for withdrawal under Alternative C. Under Alternative C, 27,800 acres would be recommended for withdrawal from mineral entry, which would protect scenic values as well as other values, by precluding those areas from surface-disturbing activities associated with locatable mineral development.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under this alternative, the entire ACEC would be closed to oil and gas leasing, precluding any impacts from this type of activity.

Leasable Minerals—Coal

Under this alternative, the potential Badlands ACEC would be closed to leasing for coal resources, precluding any impacts from this type of activity.

Locatable Minerals

There is potential for uranium, vanadium, and copper mineralization within the area. Under Alternative C, 13% of the potential ACEC could be impacted by mineral exploration and development. However, difficulty of access makes development unlikely within the next 15 years. Additionally, within a

designated ACEC, federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

The Fremont River between Capitol Reef National Park and the Caineville Ditch diversion (4 miles) was determined to be an eligible WSR and recommended as suitable under this alternative. Managing to protect the river's outstandingly remarkable values would also benefit the scenic and riparian relevant and important values within the river corridor portion of the potential Badlands ACEC.

Areas of Critical Environmental Concern

Under Alternative C, the Badlands ACEC and RNA would be designated on 88,900 acres of public land to protect and provide special management for the relevant and important values. In addition to the management direction associated with Alternative C related to other resource programs (described above), designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Visual Resources

This alternative provides the most protection to scenic resources of all the alternatives. Ninety-four percent of the potential ACEC would be designated as either VRM Class I or II, which would preserve or retain the existing character of the landscape by restricting surface-disturbing activities. The remaining 6% of the area, which does not contain Class A scenery, would be designated as either VRM Class III or IV. Scenic values in these areas could be adversely impacted because the objectives for these VRM classes allow actions that can result in moderate-to-major landscape modification and therefore greater surface disturbance.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Mount Ellen—Blue Hills (6,200 acres), Muddy Creek/Crack Canyon (17,700 acres), Red Desert (830 acres), and Wild Horse Mesa (10,600 acres) non-WSA lands with wilderness characteristics lie within the 88,900-acre potential Badlands ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Badlands ACEC would provide protection for relevant and important values on 35,330 acres. Specifics are disclosed in the visual resource management, travel management, lands and realty, and minerals discussions in this section.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Under Alternative D, portions of the Badlands Potential RNA ACEC would be included in the Capitol Reef Gateway, Henry Mountains, and San Rafael Swell SRMAs. The proposed management direction of

these SRMAs, with its emphasis on primitive and semi-primitive recreation, would help protect relevant and important values from ground-disturbing activities associated with some types of motorized recreation.

Impacts from Travel Management

Alternative D would best protect relevant and important values from cross-country OHV use among the alternatives. Ninety-five percent of the area would be closed to OHVs and 5% of the ACEC would limit OHVs to designated routes, protecting relevant and important values from ground disturbances caused by this activity.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative C, except that a much larger area (42,700 acres) would be recommended for withdrawal under Alternative D to protect scenic values. This alternative would best protect the relevant and important values from the ground-disturbing activities associated with mining exploration and development.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative C.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative C.

Locatable Minerals

There is potential for uranium, vanadium, and copper mineralization within the area. Under Alternative D, 6% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. However, difficulty of access due to location of the WSA makes development unlikely within the next 15 years. Additionally, within a designated ACEC, federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operations be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Bull Creek Potential ACEC

The Bull Creek Potential ACEC encompasses 4,800 acres of public lands located in Wayne County several miles south of Hanksville. The relevant and important value is cultural resources (archaeological). None of the proposed decisions would threaten archaeological values with irreparable harm, and the archaeological values could be protected without designating the area as an ACEC. However, designating

the as an ACEC would enhance those values. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Cultural Resources
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the archaeological values of this potential ACEC.

Alternative N: No Action

Impacts from Cultural Resources

Under Alternative N, management of the Bull Creek Archaeological District would be consistent with properties listed on the National Register of Historic Places, which would protect the values for which the district was nominated. Under all alternatives, no surface-disturbing activities would be authorized in the Bull Creek Archaeological District other than archaeological research.

Impacts from Travel Management

Under Alternative N, continuing to limit vehicles to designated routes would protect the cultural resources from surface disturbance caused by cross-country motor vehicle travel.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative N, the Bull Creek Archaeological District would continue to be open to leasing subject to major constraints (NSO), precluding surface disturbances.

Locatable Minerals

Under Alternative N, locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources, including cultural values. This would minimize impacts of mining activities on cultural resources. Mining activities have not occurred within the area and are not expected in the future.

Impacts from Special Designations

Areas of Critical Environmental Concern

The potential Bull Creek ACEC would not be designated under this alternative, and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for cultural and travel management would adequately protect the relevant and important cultural values.

Alternative A

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under this alternative, motorized use within the potential ACEC and surrounding area would be limited to designated routes. This would protect the cultural resources from potential surface disturbance associated with cross-country motor vehicle travel.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Cultural Resources

Under the Proposed RMP, motorized use within the potential Bull Creek Archaeological ACEC and surrounding area would be limited to designated routes. This would protect the relevant and important cultural values from potential surface disturbance associated with cross-country motor vehicle travel.

Impacts from Travel Management

Under the Proposed RMP, motorized use within the potential ACEC and surrounding area would be limited to designated routes. This would protect the relevant and important cultural values from potential surface disturbance associated with cross-country motor vehicle travel.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, the potential Bull Creek Archaeological District would continue to be open to leasing subject to major constraints (NSO), precluding surface disturbances which would provide adequate protection to the relevant and important cultural value.

Locatable Minerals

Under the Proposed RMP, locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources, including cultural values. This would minimize impacts of mining activities on cultural resources. Mining activities have not occurred within the area and are not expected in the future.

Impacts from Special Designations

Areas of Critical Environmental Concern

The potential Bull Creek Archaeological ACEC would not be designated under the Proposed RMP, and no special management prescriptions would be implemented to specifically protect the relevant and important cultural value of the area. Existing laws, rules, and regulations, as well as management decisions for cultural, travel and minerals and energy management would adequately protect the relevant and important cultural value.

Alternative C

Impacts from Cultural Resources

Under Alternative C, special management for the ACEC would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and, if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for the archaeological district.

Impacts from Travel Management

Impacts would be the same as those described under Alternative A.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be similar as those described under Alternative N. Additionally, designating the area as an ACEC under this alternative would require the filing of a plan of operation and analyzing impacts with a site-specific environmental assessment (EA) before mineral development would be allowed.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, designating the Bull Creek ACEC would provide increased management emphasis for protecting cultural resources. Special management for the ACEC would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and, if necessary, install fencing or other direct protection of important sites.

Alternative D

Impacts from Cultural Resources

Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the archaeological district as much as Alternative C.

Impacts from Travel Management

In Alternative D, the 320 acres of the potential Bull Creek Archaeological District ACEC overlapping non-WSA lands with wilderness characteristics would be closed to OHV use, providing additional protection to cultural resources.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative D, designating the Bull Creek ACEC would provide increased management emphasis for protecting cultural resources but to a lesser extent than Alternative C. Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics.

Dirty Devil/North Wash Potential ACEC

The Dirty Devil/North Wash Potential ACEC includes the Dirty Devil River and side canyons and totals 205,300 acres. It is located southeast of Hanksville in Wayne and Garfield counties. Sixty-four percent of the potential ACEC is within WSAs, where management under the IMP would protect all relevant and important values from surface-disturbing activities. The potential ACEC includes the existing Beaver Wash ACEC; the Dirty Devil, French Spring/Happy Canyon, and Fiddler Butte Wilderness Study Areas; and the Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Mans Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, and Twin Corral Box Canyon eligible WSRs. Relevant and important values include scenic, cultural, paleontological, wildlife (bighorn sheep), and SSS (plant species and the Mexican spotted owl).

OHV use could adversely impact the scenic, cultural, wildlife, and SSS values if OHVs travel where these values are present. Plants could be crushed, damaged, or destroyed; cultural resources could be damaged or destroyed; and new trails could be established in scenic areas. OHV use could also disturb Desert bighorn sheep and special status animal species. Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Vegetation
- Cultural Resources
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert

riparian ecosystem from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Under Alternative N, no special management prescriptions for cultural resources (other than that already afforded by existing laws) would be provided.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC vary by alternative, as shown in Table 4-63. The higher VRM Classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Scenic relevant and important values were found to be present within 60% of the potential ACEC, generally the canyons. Under Alternative N, 74% of the ACEC is designated as VRM Class II. Per BLM policy, the 64% of the ACEC within WSAs would continue to be managed as VRM Class I. VRM Class I and II management would provide adequate protection to the Class A scenery occurring within the ACEC.

Table 4-63. VRM Class Designations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	130,700	130,700	130,700	203,900
	% ACEC	0%	64%	64%	64%	99%
Class II	Acres	151,300	0	46,300	47,600	900
	% ACEC	74%	0%	22%	23%	<1%
Class III	Acres	22,000	64,800	5,700	5,400	100
	% ACEC	11%	31%	3%	3%	<1%
Class IV	Acres	32,000	9,800	22,600	21,600	400
	% ACEC	15%	5%	11%	10%	<1%

Impacts from Special Status Species

Under Alternative N, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Fish and Wildlife

Managing Desert bighorn sheep in accordance with the existing habitat management plan (HMP) would benefit this relevant and important value. The HMP was specifically prepared to direct and provide for management of this wildlife species. Prohibiting the changing in class of livestock from cattle to sheep would protect the Desert bighorn sheep from diseases that could be contracted from domestic sheep. Under this alternative, implementing less seasonal or spatial restrictions on human presence or surface-disturbing activity could result in greater impacts to Desert bighorn sheep during critical periods, such as lambing.

Impacts from Fire and Fuels Management

Although unlikely due to vegetation within Mexican spotted owl habitats, decisions under this alternative would allow for habitat manipulations to improve habitat condition for this species. Any fuels activities would be required to adhere to the Endangered Species Act and, for portions of the potential ACEC within WSAs, the IMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Dirty Devil/French Spring (58,100 acres), Fiddler Butte (12,000 acres), Flat Tops (10 acres), and Little Rockies (3,200 acres) non-WSA lands with wilderness characteristics lie within the 205,300-acre potential Dirty Devil/North Wash ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Livestock Grazing

Under Alternative N, the majority of the potential ACEC would be available for livestock grazing. The Big Ridge would continue to be unavailable for grazing. The North Wash drainage and Beaver Wash Canyon would continue to be unavailable for grazing, which would provide additional protection of the desert riparian ecosystem. Grazing would be managed in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, which would minimize impacts to the relevant and important values of the area.

Impacts from Recreation

Under Alternative N, no SRMAs are proposed, so there would be no impacts to relevant and important values. However, visitor use is expected to increase throughout the RFO. Under this alternative, the entire RFO (with the exception of Yuba Reservoir, which is managed by the Fillmore FO) is identified and managed as an ERMA. Management of recreation in ERMAs is restricted to custodial actions only, with no special prescriptions identified that would limit or control recreational activities. As recreation uses increase and new types of recreational activities develop, having no SRMA management plan in place to manage that use could result in impacts to relevant and important values. The remoteness of the area and 64% of the potential ACEC being located within WSAs would continue to provide protection from recreational uses, such as cross-country motorized travel, within those portions of the ACEC.

Impacts from Travel Management

OHV area designations vary by alternative, as shown in Table 4-64. Alternative N would continue to allow cross-country vehicle travel within 31% of the potential ACEC, which could adversely impact the scenic, cultural, wildlife, and special status plant species values if the OHVs traveled where these values were present. Plants could be crushed, damaged, or destroyed; cultural resources could be damaged or destroyed; and new trails could be established in scenic areas. OHV use could also disturb Desert bighorn sheep and special status animal species. Thirty percent of the area would limit OHV use to designated routes, protecting relevant and important values from ground disturbance caused by cross-country OHV use; 39% of the area would be closed to OHV use, which would result in no impacts from motorized vehicles.

Table 4-64. OHV Area Designations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	64,100	0	0	0	0

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
	% Area	31%	0%	0%	0%	0%
Limited	Acres	61,500	205,300	99,600	600	500
	% Area	30%	100%	49%	<1%	<1%
Closed	Acres	79,700	0	105,700	204,700	204,800
	% Area	39%	0%	51%	100%	100%

Impacts from Lands and Realty

Under this alternative, the portion of the potential ACEC outside WSAs would not be recommended for mineral withdrawal. Thus, the relevant and important value of the area would not receive additional protection from land and realty actions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-65. Under all alternatives, there would be no impacts to relevant and important values within the WSAs, which are closed to oil and gas leasing by law. WSAs represent 64% of the potential ACEC. Under Alternative N, 29% of the potential ACEC would be open to oil and gas leasing under standard terms, and 7% would be open under controlled surface use or timing stipulations. The seasonal restriction would prohibit exploration and development from April 15 through June 15 to reduce impacts to bighorn sheep during the lambing season. Among the alternatives, Alternative N would have the greatest potential of impacting relevant and important values. However, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years. Thus, it is unlikely that surface-disturbing activities from oil and gas development would occur that would impact the relevant and important values of this potential ACEC.

Table 4-65. Leasing Stipulations within Dirty Devil/North Wash Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	59,200	5,800	3,600	400	200
	% Area	29%	3%	2%	<1%	<1%
Controlled Surface Use or Timing Stipulations	Acres	15,300	68,800	21,800	7,200	100
	% Area	7%	33%	11%	4%	<1%
No Surface Occupancy	Acres	100	0	49,300	32,200	700
	% Area	<1%	0%	24%	16%	<1%
Closed	Acres	130,700	130,700	130,600	165,500	204,300
	% Area	64%	64%	64%	80%	100%

Locatable Minerals

Under Alternative N, 36% of the potential ACEC (the area outside the WSAs) could be impacted by mineral exploration and development. There is potential for uranium, vanadium, and copper mineralization within the area. There has been increasing interest in uranium adjacent to the Dirty Devil River corridor in the vicinity of Poison Spring and North Hatch Canyons, which could result in increased mineral-related activities within the potential ACEC. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. Mitigation such as minimizing visual impacts and avoiding sensitive seasons or areas for SSS would be addressed in site-specific analysis as proposals are reviewed. These mitigation measures would reduce, but would not eliminate, impacts to relevant and important values.

Salable Minerals

Under all alternatives, there would be no impacts to relevant and important values within the WSAs, which would be managed under the IMP. Under Alternative N, the effects of mineral material sales on relevant and important values would be determined on a case-by-case basis. Impacts to relevant and important values would be analyzed within site-specific NEPA and minimization measures identified as necessary.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,700 acres of wilderness study areas, including all of the Dirty Devil and French Spring/Happy Canyon WSAs and part of the Fiddler Butte WSA. Within the WSAs, which represent 64% of the potential ACEC, relevant and important values would be protected from ground-disturbing activities by management under the IMP to protect the wilderness characteristics of the area.

Wild and Scenic Rivers

WSR designations, by alternative, are shown in Table 4-66. Seven eligible WSRs are within the potential ACEC and recommended suitable under Alternatives C and D: Dirty Devil River, Beaver Wash Canyon, Larry Canyon, No Mans Canyon, Robbers Roost Canyon, Sams Mesa Box Canyon, and Twin Corral Box Canyon. Protecting the river-related outstandingly remarkable values of all segments under Alternative N would also protect relevant and important values within about 19% of the potential ACEC. However, most of these river segments are within WSAs, so management to protect the river values would add little or no additional protection for the ACEC values over what is afforded by WSA management direction.

Table 4-66. Eligible/Suitable Wild and Scenic Rivers within Dirty Devil/North Wash Potential ACEC

		Eligible	Suitable		
Eligible/ Suitable Rivers		**Alternative N (No Action)**	**Alternative A**	**Proposed RMP**	**Alternatives C and D**
Eligible/ Suitable Rivers	**# of Segments**	7	0	0	7
	River Miles	121	0	0	121
	Acres	38,400	0	0	38,400

		Eligible	Suitable		
Eligible/ Suitable Rivers		Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
	% Potential ACEC	19%	0%	0%	19%

Areas of Critical Environmental Concern

Under Alternative N, the existing Beaver Wash ACEC (4,800 acres) would continue to be designated to protect its unique desert riparian ecosystem. Management according to the IMP within the 64% of the potential ACEC within the WSAs and management of the eligible WSR corridors would provide protection of the relevant and important values within those areas.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. Although the buffer zone is smaller than in Alternatives N, C, and D, it would still protect the desert riparian ecosystem from surface-disturbing activities. This decision could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Visual Resources

Alternative A would provide less protection for the scenic values of the potential ACEC than the other alternatives. The 64% of the ACEC within WSAs would be designated as VRM Class I, which would prevent surface-disturbing activities that would result in changes to the landscape, thus providing protection to the scenic relevant and important values. The remainder of the ACEC, including some areas having Class A scenery, would be designated as VRM Classes III and IV, which would allow activities to take place that could impact the scenic values.

Impacts from Special Status Species

As with Alternative N, in Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Under this alternative, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important value.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

As per the fish and wildlife management decisions, the change in kind of livestock from cattle to domestic sheep would be prohibited in those allotments with bighorn sheep habitat identified in the BLM Desert Bighorn Sheep HMP. This would provide protection for the desert bighorn sheep relevant and important value. Under Alternative A, the majority of the potential ACEC would be available for livestock grazing. The North Wash drainage and the Big Ridge would continue to be unavailable for grazing. Grazing would be managed in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* which would minimize impacts to the relevant and important values of the area.

Impacts from Recreation

Under Alternative A, the Dirty Devil SRMA (290,000 acres) would encompass the northern two-thirds of the Dirty Devil/North Wash Potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development.

Impacts from Travel Management

Under all action alternatives, adverse impacts from cross-country motorized travel would be virtually eliminated. Under Alternative A, vehicles would be limited to designated routes within the entire potential ACEC. Limiting OHV use would reduce the impacts to relevant and important values because use would be confined to designated routes, although there could be some impacts if relevant and important values were located on or adjacent to open routes.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be similar to those described under Alternative N, except that fewer acres would be open with standard leasing terms. Under Alternative A, 3% of the potential ACEC would be open to oil and gas leasing under standard terms, and 33% would be open under controlled surface use or timing stipulations. Compared with Alternative N, Alternative A would reduce potential impacts to bighorn sheep by placing more land under seasonal restrictions.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under this alternative, the seven eligible WSRs within the potential ACEC would not be recommended as suitable, with no special management to protect their outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the areas' relevant and important values. However, most of these river segments are within WSAs, so management to protect the river values would add little or no additional protection for the ACEC values over what is afforded by WSA management direction.

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated. Management according to the IMP within the 64% of the potential ACEC within the WSAs would provide protection of the relevant and important values within those areas.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. Although the buffer zone is smaller than in Alternatives N, C, and D, it would still protect the riparian resources from surface-disturbing activities which indirectly benefits the wildlife and SSS relevant and important values of the potential ACEC. This decision could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N. Under the Proposed RMP, no special management prescriptions for cultural resources (other than that already afforded by existing laws) would be provided.

Impacts from Visual Resources

Under the Proposed RMP, 86% of the potential ACEC would be designated as VRM Classes I or II. These designations would adequately protect the scenic relevant and important values by limiting surface-disturbing activities within the majority of the ACEC, including the canyons identified for Class A scenery.

Impacts from Special Status Species

As with Alternatives N and A, management actions identified within the Proposed RMP, such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Under the Proposed RMP, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important value within the potential ACEC.

Impacts from Fish and Wildlife

Management according to the IMP within the 64% of the potential ACEC within the WSAs would provide protection of the wildlife (bighorn sheep) relevant and important values within those areas. In addition, managing desert bighorn sheep in accordance with the existing habitat management plan (HMP) would benefit and provide protection for the wildlife (bighorn sheep) relevant and important value of the Dirty Devil/North Wash ACEC. The potential Dirty Devil/North Wash ACEC was defined by Class A Scenery, Mexican spotted owl suitable habitat and the desert bighorn crucial yearlong habitat within the

nominated areas. The desert bighorn sheep HMP includes all of the desert bighorn crucial yearlong habitat identified for relevant and important values, plus additional acres of the potential ACEC. The HMP was specifically prepared to direct and provide for management of this wildlife species. Prohibiting the change in class of livestock from cattle to sheep would protect the Desert bighorn sheep from diseases that could be contracted from domestic sheep. Under this alternative, greater seasonal and spatial restrictions on human presence or surface-disturbing activities could result in benefits to Desert bighorn sheep because they would be afforded protection from disturbances during critical periods. Other SSS could also benefit if they were in the same areas as the Desert bighorn sheep.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N. Although unlikely due to vegetation within Mexican spotted owl habitats, decisions under the Proposed RMP would allow for habitat manipulations to improve habitat condition for this species. Any fuels activities would be required to adhere to the Endangered Species Act and, for portions of the potential ACEC within WSAs, the IMP which would provide adequate protection for the SSS relevant and important value of the potential Dirty Devil ACEC.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, portions of the Dirty Devil/French Spring (6,000 acres) non-WSA lands with wilderness characteristics would be managed for wilderness characteristics. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership. Approximately 550 acres of the Dirty Devil/French Springs non-WSA lands managed for wilderness characteristics would overlap with the potential Dirty Devil/North Wash ACEC (less than 1% of the potential ACEC) which would provide additional protection for relevant and important values within those areas.

Impacts from Livestock Grazing

Impacts would be similar to those described under Alternative A. In addition, no domestic sheep and goat grazing east of Capitol Reef National Park, subject to existing livestock grazing permits would be allowed, providing additional protection for the wildlife (bighorn sheep) relevant and important value of the potential Dirty Devil/North Wash ACEC.

Impacts from Recreation

Under the Proposed RMP, the Dirty Devil SRMA (290,000 acres) would encompass the northern two-thirds of the Dirty Devil/North Wash Potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values of the potential ACEC by focusing recreational use and limiting development.

Impacts from Travel Management

Under the Proposed RMP, vehicles would be limited to designated routes within 49% of the potential ACEC, and the remaining 51% would be closed to motor vehicles. Limiting OHV use would reduce the impacts to all relevant and important values because use would be confined to designated routes. Although there could be some surface disturbance and associated impacts to relevant and important values located on or adjacent to open routes, the potential would be minimized. In closed areas, impacts to relevant and important values from OHV use would be eliminated.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N. Under the Proposed RMP, the portion of the potential ACEC outside WSAs (46%) would not be recommended for mineral withdrawal. Thus,

the relevant and important values of the area would not receive additional protection from land and realty actions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be similar to those described under Alternatives N and A, except that fewer acres would be open to leasing subject to standard terms and conditions and more acres would be open to leasing subject to major constraints (NSO) or closed to leasing. Under the Proposed RMP, only 2% of the potential ACEC would be open to oil and gas leasing subject to standard terms and conditions, 11% open to leasing subject to moderate constraints (timing limitation, CSU), 24% open to leasing subject to major constraints (NSO), and 64% closed to leasing. Compared with Alternatives N and A, the Proposed RMP would reduce potential impacts to all relevant and important values.

Locatable Minerals

Under the Proposed RMP, 46% of the potential ACEC (the area outside the WSAs) could be impacted by mineral exploration and development. There is potential for uranium, vanadium, and copper mineralization within the area. There has been increasing interest in uranium adjacent to the Dirty Devil River corridor in the vicinity of Poison Spring and North Hatch Canyons, which could result in increased mineral-related activities within the potential ACEC. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. Mitigation such as minimizing visual impacts and avoiding sensitive seasons or areas for SSS would be addressed in site-specific analysis as proposals are reviewed. These mitigation measures would reduce, but would not eliminate, impacts to relevant and important values.

Salable Minerals

Under the Proposed RMP, impacts would be similar to those described under Alternative N, except that no material sales would be allowed in Class A scenery areas, resulting in no surface disturbance and no impact to the relevant and important scenic values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,700 acres of wilderness study areas, including all of the Dirty Devil and French Spring/Happy Canyon WSAs and part of the Fiddler Butte WSA. Within the WSAs, which represent 64% of the potential ACEC, all relevant and important values would be protected from ground-disturbing activities by management under the IMP to protect the wilderness characteristics of the area.

Wild and Scenic Rivers

Under the Proposed RMP, the seven eligible WSRs within the potential Dirty Devil/North Wash ACEC would not be recommended as suitable, with no special management to protect their outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the areas' relevant and important values. However, most of these river segments are within WSAs, so management to protect the river values would add little or no additional protection for the ACEC values over what is afforded by WSA management direction.

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Dirty Devil/North Wash ACEC would not be designated, and no special management prescriptions would be implemented to specifically protect the relevant and important values of that area. Management according to the IMP within the 64% of the potential ACEC within the WSAs and management prescriptions for the Dirty Devil/French Spring non-WSA lands within the potential ACEC would provide protection for all the relevant and important values within those areas. Existing laws, rules, and regulations, as well as other resource decisions within this alternative for VRM, SSS, fish and wildlife, travel, and minerals management would adequately protect or mitigate potential impacts to the scenic, cultural, paleontological, wildlife and SSS relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the desert riparian ecosystem from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Under Alternative C, special management for the ACEC would include the following prescriptions: increase public awareness of cultural resource values; increase law enforcement presence; and if necessary, install fencing or other direct protection of important sites. These prescriptions would provide added protection for cultural resources in the area.

Impacts from Visual Resources

Impacts would be similar to those described under the Proposed RMP, except that an additional 1% of the ACEC, 87% total, would be protected by VRM Class I and II designations.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Special management prescriptions associated with the ACEC (designated under Alternatives C and D) would allow no prescribed or wildland fire use in Mexican spotted owl core and nest protection areas. In addition, all wildland fires that threaten Mexican spotted owl core areas and nest protection areas would be suppressed. While these actions would minimize short-term loss of habitat from fire, these decisions would preclude habitat manipulations to improve habitat condition, which could impact the Mexican spotted owl in the long term. However, habitat manipulation projects would be limited within the area due to vegetation types and WSAs.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Under Alternative C, an expanded Dirty Devil SRMA would encompass all of the potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development. Because the SRMA under Alternatives C and D encompasses the entire potential ACEC, it would best protect relevant and important values from the impacts of recreation use.

Impacts from Travel Management

Under Alternatives C and D, the entire potential ACEC would be closed to OHVs. In closed areas, impacts to relevant and important values from OHV use would be eliminated.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. A withdrawal of 47,400 acres (23% of the potential ACEC) to protect Class A scenery outside the WSAs is proposed in Alternative C as part of the ACEC designation.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, 96% of the potential ACEC would either be closed to leasing or open to leasing subject to major constraints (NSO). The remaining 4% would be open to leasing subject to moderate constraints (timing limitation, CSU). Given these restrictions, there would be virtually no impacts to relevant and important values.

Locatable Minerals

Impacts would be similar to those described under Alternative N, except that the portion of the potential ACEC available for locatable minerals exploration and development would be less than Alternatives N, A, and the Proposed RMP. Under Alternative C, 13% of the potential ACEC (the area outside the WSAs and outside proposed withdrawals) could be impacted. In addition, within a designated ACEC, federal regulations (43 CFR 3809.11 (c) (3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate, but not eliminate, the impacts of mining exploration and development on relevant and important values in Alternatives C and D.

Salable Minerals

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

The seven eligible WSRs within the potential ACEC would be recommended as suitable under Alternative C. Protecting the river-related outstandingly remarkable values of all segments under Alternative C would also protect relevant and important values within about 19% of the potential ACEC. However, most of these river segments are within WSAs, so management to protect the river values

would add little or no additional protection for the ACEC values over what is afforded by WSA management direction.

Areas of Critical Environmental Concern

Under Alternative C, the Dirty Devil/North Wash ACEC would be designated on 205,300 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the cultural resources in the area as much as Alternative C.

Impacts from Visual Resources

Under Alternative D, 99% of the potential ACEC would be designated as VRM Class I, providing the best protection to the scenic values of the ACEC, even in areas not identified for Class A scenery.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Dirty Devil/French Spring (58,100 acres), Fiddler Butte (12,000 acres), Flat Tops (10 acres), and Little Rockies (3,200 acres) non-WSA lands with wilderness characteristics lie within the 205,300-acre potential Dirty Devil/North Wash ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Dirty Devil/North Wash ACEC would provide protection for relevant and important values on 73,310 acres. Specifics are disclosed in the visual resource management, travel management, fluid minerals, and mineral withdrawal discussions in this section.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative C.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative C, except that more of the potential ACEC would be recommended for withdrawal. A withdrawal of 100,500 acres (49% of the potential ACEC) is proposed under Alternative D to protect non-WSA lands with wilderness characteristics located within the ACEC.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative D, virtually all of the potential ACEC would be closed to leasing, precluding any impacts to relevant and important values.

Locatable Minerals

Impacts would be the same as those described under Alternative C.

Salable Minerals

Under Alternative D, no mineral material sales would be allowed within the ACEC, therefore eliminating any potential impacts to relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Fremont Gorge/Cockscomb Potential ACEC

The Fremont Gorge/Cockscomb Potential ACEC is located on public lands west of Capitol Reef National Park in the Torrey–Teasdale–Grover area of central Wayne County. The potential ACEC totals 34,300 acres and includes the Fremont Gorge WSA and Fremont Gorge and Fish Creek eligible WSRs. Relevant and important values are cultural, scenic, riparian, plant, and wildlife (mule deer).

Some vegetation manipulation activities, which would benefit the mule deer, could be restricted by vegetation (riparian) decisions, and VRM Class I and II management objectives. Designation of areas as open to OHVs would threaten all relevant and important values, possibly with irreparable damage.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation (Riparian)
- Visual Resources
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management

- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-67. The higher VRM classes (I and II) would best protect the scenic values and, by limiting surface-disturbing activities, also benefit the cultural and riparian values. Per BLM policy, the 8% of the ACEC within the Fremont Gorge WSA would continue to be managed as VRM Class I. Scenic relevant and important values were found to be present within 9% of the potential ACEC outside of the WSA. Under Alternative N, all portions of the ACEC outside of the WSA would be designated as VRM Class III or IV, which could result in impacts to the 9% of Class A scenery located outside of the WSA.

Table 4-67. VRM Class Designations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	2,800	2,800	2,800	18,700
	% ACEC	0%	8%	8%	8%	55%
Class II	Acres	2,800	0	2,900	4,700	1,300
	% ACEC	8%	0%	9%	14%	4%
Class III	Acres	11,400	15,700	9,000	26,800	14,200
	% ACEC	33%	46%	26%	78%	41%
Class IV	Acres	20,100	15,800	19,600	0	0
	% ACEC	59%	46%	57%	0%	0%

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Fremont Gorge (16,000 acres) non-WSA lands with wilderness characteristics lie within the 34,300-acre potential Fremont Gorge/Cockscomb ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Recreation

SRMAs within the potential ACEC vary by alternative. No SRMAs are proposed within the potential ACEC in Alternative N, hence there would be no impacts to relevant and important values from SRMA identification under this alternative.

Impacts from Travel Management

OHV area designations within the potential ACEC vary by alternative, as shown in Table 4-68. The ground disturbance caused by cross-country vehicle travel within open areas would adversely impact all relevant and important values. Additionally, vehicle travel cross-country would harass mule deer. Adverse impacts would be the greatest in Alternative N, which designates 85% of the potential ACEC as open to cross-country vehicle use. Adverse impacts would be reduced in the 8% of the ACEC limited to designated routes and would be eliminated in the 7% of the area closed to OHV use.

Table 4-68. OHV Area Designations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	29,200	14,700	0	0	0
	% Area	85%	43%	0%	0%	0%
Limited	Acres	2,800	19,600	32,800	11,100	13,900
	% Area	8%	57%	96%	32%	41%
Closed	Acres	2,300	0	1,500	23,200	20,400
	% Area	7%	0%	4%	68%	59%

Impacts from Lands and Realty

No lands within the potential ACEC are identified as available for sale and no withdrawals are proposed under Alternative N. Therefore, there would be no impacts to relevant and important values from lands and realty decisions.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-69. Alternative N would provide the least protection to relevant and important values by leaving 48% open to oil and gas leasing subject to the standard terms and conditions. Leasing would be open and subject to major constraints (NSO) within 10% of the potential ACEC and closed within 8% of the area, which would eliminate impacts to relevant and important values within those areas. It is important to note that the potential ACEC is within a portion of the lands managed by the RFO identified as having low potential for oil and gas development, so the likelihood of any impact from these activities on any relevant and important value would be small.

Table 4-69. Oil and Gas Leasing Stipulations within Fremont Gorge/Cockscomb Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	16,400	0	0	0	0
	% Area	48%	0%	0%	0%	0%
Controlled surface use or timing stipulations	Acres	11,600	31,500	29,900	26,700	13,800
	% Area	34%	92%	87%	78%	40%
No Surface Occupancy	Acres	3,500	0	0	3,100	1,600
	% Area	10%	0%	0%	9%	5%
Closed	Acres	2,800	2,800	4,400	4,500	18,900
	% Area	8%	8%	13%	13%	55%

Impacts from Special Designations

Wilderness Study Areas

Managing the Fremont Gorge WSA (8% of the potential ACEC) to protect its wilderness characteristics under the IMP would generally benefit all relevant and important values by limiting ground-disturbing activities.

Wild and Scenic Rivers

WSR designations vary by alternative, as shown in Table 4-70. Two eligible WSR segments are within the potential ACEC: Fremont Gorge (5 miles) and Fish Creek (one-quarter mile). Managing to protect the river-related outstandingly remarkable values of both segments under Alternative N would also protect the relevant and important values within about 5% of the potential ACEC.

Table 4-70. Eligible/Suitable Wild and Scenic Rivers within Fremont Gorge/Cockscomb Potential ACEC

		Eligible	Suitable		
		Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
Eligible/Suitable Rivers	# of Segments	2	0	1	2
	River Miles	5.25	0	5	5.25
	Acres	1680	0	1600	1680
	% Area	5%	0%	5%	5%

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated. Management according to the IMP within the 8% of the potential ACEC within the Fremont Gorge WSA, and management of the Fremont Gorge and Fish Creek eligible WSRs would provide protection of the relevant and important values within those areas.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. The 8% of the potential ACEC within the Fremont Gorge WSA would be designated as VRM Class I. The 9% of the potential ACEC found to have Class A scenery outside of the WSA would be designated as VRM Class III or IV.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, 43% of the potential ACEC would be open to cross-country vehicle use, continuing to allow for adverse impacts to relevant and important values within that portion of the area. The remaining 57% of the ACEC would be limited to designated routes, which would provide protection to the relevant and important values.

Impacts from Lands and Realty

Lands identified as available for sale under FLPMA Section 203 vary by alternative. Under Alternative A, 2,300 acres (7% of the potential ACEC) are identified as available for possible sale. Impacts to relevant and important values would be as follows:

- **Cultural and Riparian.** Impacts to these values would be assessed in a site-specific environmental analysis conducted prior to the sale of any parcel. Lands with high-value cultural or riparian values would likely not be offered for sale.
- **Scenery.** The lands identified for sale include no Class A scenery, so sales of land would have no impact on the scenic relevant and important value.
- **Mule Deer.** All lands within the potential ACEC are identified as crucial mule deer habitat. Any sale of land within the potential ACEC would result in a loss of habitat in federal ownership and would be considered in site-specific analysis prior to offering the land for sale. Actual impacts to mule deer populations and habitat would depend upon the acreage sold and how the land is used and developed after it leaves federal ownership.

No withdrawals from mineral entry are proposed under Alternative A. Therefore, there would be no impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Alternative A would protect the mule deer relevant and important value from being impacted by oil and gas leasing by placing seasonal restrictions on 92% of the potential ACEC. The remainder of the potential ACEC, would be closed to leasing, which would eliminate impacts to relevant and important values within those areas. It is important to note that the potential ACEC is within a portion of the lands managed by the RFO identified as having low potential for oil and gas development, so the likelihood of any impact from these activities on any relevant and important value would be small.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under this alternative, no suitable WSRs are proposed and there would be no special management to protect the outstandingly remarkable values and free-flowing nature. This would provide no additional protection to the area's relevant and important values.

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated. Management according to the IMP within the 8% of the potential ACEC within the Fremont Gorge WSA would provide protection of the relevant and important values within those areas.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value of the potential Fremont Gorge ACEC from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Under the Proposed RMP, 17% of the potential ACEC would be designated as VRM Classes I and II, 8% of the potential ACEC within the WSA would be designated as VRM Class I, and the remaining 9% of the ACEC with Class A scenery would be designated as VRM Class II. This would provide protection for all of the Class A scenic relevant and important value of the area.

Impacts from Non-WSA Lands with Wilderness Characteristics

Portions of the Fremont Gorge (16,000 acres) non-WSA lands with wilderness characteristics lie within the 34,300-acre potential Fremont Gorge/Cockscomb ACEC. No actions to maintain wilderness characteristics within the Fremont Gorge non-WSA lands are proposed under the Proposed RMP, resulting in no additional protection for relevant and important values.

Impacts from Recreation

In the Proposed RMP, the Capitol Reef Gateway SRMA would overlap 37% (12,800 acres) of the potential ACEC east of Highway 12 and west of Capitol Reef National Park. Identifying the SRMA for primitive and semi-primitive motorized and non-motorized recreation would, in and of itself, have no

impact on the relevant and important values. However, the management of recreation uses associated with the SRMA could help protect all the relevant and important values located in those portions of the potential ACEC.

Impacts from Travel Management

Under the Proposed RMP, no areas would be designated as open to cross-country vehicle use, thus eliminating the threats to relevant and important values from cross-country activities. The potential for adverse impacts would be reduced in the 95% of the ACEC limited to designated routes and eliminated in the 5% of the area closed to OHV use.

Impacts from Lands and Realty

Lands identified as available for sale under FLPMA Section 203 vary by alternative. Under the Proposed RMP, 2,300 acres (7% of the potential ACEC) are identified as available for possible sale. Impacts to relevant and important values would be as follows:

- **Cultural and Riparian.** Impacts to these values would be assessed in a site-specific environmental analysis conducted prior to the sale of any parcel. Lands with high-value cultural or riparian values would likely not be offered for sale.
- **Scenery.** The lands identified for sale include no Class A scenery, so sales of land would have no impact on the scenic relevant and important value.
- **Mule Deer.** All lands within the potential ACEC are identified as crucial mule deer habitat. Any sale of land within the potential ACEC would result in a loss of habitat in federal ownership and would be considered in site-specific analysis prior to offering the land for sale. Actual impacts to mule deer populations and habitat would depend upon the acreage sold and how the land is used and developed after it leaves federal ownership.

No withdrawals from mineral entry are proposed under the Proposed RMP for the potential ACEC. Therefore, there would be no impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Proposed RMP would protect the mule deer relevant and important value from being impacted by oil and gas leasing by placing seasonal restrictions on 87% of the potential ACEC. The remainder of the potential ACEC would be closed to leasing (13%), which would eliminate impacts to all of the relevant and important values within those areas. It is important to note that the potential ACEC is within a portion of the lands managed by the RFO identified as having low potential for oil and gas development, so the likelihood of any impact from these activities on any relevant and important value would be small.

Impacts from Special Designations

Wilderness Study Areas

Managing the Fremont Gorge WSA (8% of the potential ACEC) to protect its wilderness characteristics under the IMP would generally benefit all relevant and important values by limiting ground-disturbing activities.

Wild and Scenic Rivers

Under the Proposed RMP, the Fremont Gorge segment of the Fremont River which is located within the potential Fremont Gorge ACEC would be recommended suitable, tentatively classified as wild, and managed to protect the river related outstandingly remarkable values of that segment. This would also

protect the relevant and important values of cultural, scenic, riparian, and plants from surface disturbing activities within this portion of the potential ACEC.

Areas of Critical Environmental Concern

Under the Proposed RMP, no ACEC would be designated. Management according to the IMP within the 8% of the potential ACEC within the Fremont Gorge WSA and management of the Fremont Gorge suitable WSR would provide protection of the relevant and important values within those areas. Existing laws, rules, and regulations, as well as other resource decisions within this alternative—such as VRM designations, protection of crucial deer habitat from cross-country OHV use, and surface disturbance—would provide protection for relevant and important values, reducing or eliminating potential impacts to the potential Fremont Gorge/Cockscomb ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet of riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Alternatives C and D provide for the greatest protection of riparian values.

Impacts from Visual Resources

Impacts would be similar to those described under the Proposed RMP, except that Alternative C would designate 22% of the potential ACEC as VRM Class I or II.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Under Alternative C, no areas would be designated as open to cross-country vehicle use, thus eliminating the threats to relevant and important values from cross-country activities. The potential for adverse impacts would be reduced in the 32% of the ACEC limited to designated routes and would be eliminated in the 68% of the area closed to OHV use.

Impacts from Lands and Realty

Under Alternative C, no lands within the potential ACEC are identified as available for sale. Therefore, there would be no impacts to relevant and important values from proposed sales.

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. Alternative C proposes withdrawing 4,500 acres (14% of the potential ACEC).

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Alternative C would protect the mule deer relevant and important value from being impacted by oil and gas leasing by placing seasonal restrictions on 78% of the potential ACEC. The remainder of the potential ACEC would be open to leasing subject to major constraints (NSO) (9%) or closed to leasing (13%), which would eliminate impacts to relevant and important values within those areas. It is important to note that the potential ACEC is within a portion of the lands managed by the RFO identified as having low potential for oil and gas development, so the likelihood of any impact from these activities on any relevant and important value would be small.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Under Alternative C, the two eligible WSR segments within the potential ACEC would be recommended as suitable and managed to protect the river-related outstandingly remarkable values of those segments. This would also protect the relevant and important values within about 5% of the potential ACEC.

Areas of Critical Environmental Concern

Under Alternative C, Fremont Gorge/Cockscomb ACEC would be designated on 34,300 acres of public land in Wayne County. In addition to management direction for other resource programs associated with Alternative C (described above), designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Alternative D would provide the most protection of scenic values by designating 59% of the potential ACEC as VRM Class I or II.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Fremont Gorge/Cockscomb ACEC would provide protection for relevant and important values on 16,000 acres. Specifics are disclosed in the visual resource management, travel, lands and realty, and minerals discussions in this section. However, some of the prescriptions associated with protecting wilderness characteristics could limit opportunities for managing vegetation for the mule deer relevant and important value.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Under Alternative D, no areas would be designated as open to cross-country vehicle use, thus eliminating the threats to relevant and important values from cross-country activities. The potential for adverse

impacts would be reduced in the 41% of the ACEC limited to designated routes and would be eliminated in the 59% of the area closed to OHV use.

Impacts from Lands and Realty

Under Alternative C, no lands within the potential ACEC are identified as available for sale. Therefore, there would be no impacts to relevant and important values from proposed sales.

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. Alternative D proposes withdrawing 17,300 acres (50% of the potential ACEC).

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

This alternative would protect the mule deer relevant and important value from being impacted by oil and gas on 40% of the potential ACEC by opening it to leasing subject to moderate constraints (timing limitation, CSU). Alternative D would best protect scenic, cultural, and riparian relevant and important values from ground disturbance caused by oil and gas exploration and development within 60% of the potential ACEC by closing it to leasing or opening it to leasing subject to major constraints (NSO).

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Henry Mountains Potential ACEC

The Henry Mountains Potential ACEC is located in the Henry Mountains south of Hanksville and totals 288,200 acres. Forty-five percent of the potential ACEC is within the Mount Hillers, Mount Pennell, and Bull Mountain WSAs, and the southern portion of the Mount Ellen—Blue Hills WSA. Relevant and important values are scenic, wildlife (bison and mule deer), SSS (Townsend's big-eared bat, ferruginous hawk, burrowing owl, hole-in-the-rock prairie clover, Dana's milkvetch, Barneby milkvetch), and ecological values (riparian areas and relict vegetation).

The portion of the potential ACEC that is within WSAs would be managed under the IMP, which would protect the relevant and important values from surface-disturbing activities. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation and Fire and Fuels Management
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Forestry and Woodland Products

- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation and Fire and Fuels Management

Managing vegetation and fire and fuels could enhance bison and mule deer habitat and riparian values, and could adversely impact scenic, cultural, and SSS values. Under Alternative N, managing vegetation with a full range of tools—mechanical, biological, manual, fire, and chemical—would have beneficial impacts on mule deer and bison habitat but could have adverse impacts on scenic values if treatments occurred in areas having Class A scenery.

Vegetation and fire and fuels treatments could have indirect impacts on cultural resources from increased erosion and displacement and destruction of surface artifacts and, in some cases, destruction of surface and buried structures and features. Overall impacts from vegetation management would result in direct and indirect impacts to cultural resources, which could be partially mitigated during compliance with NEPA and Section 106 of NHPA. Projects would be redesigned to avoid historic properties or those eligible for or listed on the NRHP, thus mitigating some of the direct and indirect impacts.

Vegetation treatment methods include mechanical, prescribed fire, and chemical treatments. Surface-disturbing activities, such as the use of heavy equipment, cause crushing and mortality of individual plants and alter habitat. The use of herbicides or pesticides in occupied habitat could render the habitat unsuitable by some species. Chemical weed controls could also affect potential pollinators of special status plant species by eliminating their habitat.

Removing vegetation with heavy equipment could temporarily reduce potential breeding and nesting habitats. Human disturbance and noise associated with the use of heavy equipment could also temporarily displace special status bird species from foraging and nesting habitats. For example, the Southwestern willow flycatcher and the yellow-billed cuckoo have been known to nest in tamarisk and Russian olive. Vegetation treatments to remove these invasive plant species could result in habitat loss and disrupt nesting and foraging behavior. Overall impacts from vegetation management to SSS are discussed in more detail in Section 4.3.8 of this document. Analysis of impacts to SSS would occur during project-specific NEPA and adjustments would be made in the project if impacts to SSS were identified. Any vegetation or fuels projects would be required to adhere to the Endangered Species Act, and, for portions of the potential ACEC within WSAs, the IMP. In the long term, special status animal species would benefit from most vegetation treatments through an increase in vegetation productivity, which would provide additional forage, cover, and prey base.

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. Under Alternative N, the protection zone for riparian areas would be 500 feet. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-71. The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other values. Under Alternative N, all Class A scenery would be managed as VRM Classes I and II, providing protection to the scenic relevant and important values. Conversely, the lower VRM classes (III and IV) would permit greater flexibility in vegetation management, a benefit to the mule deer and bison value. The remaining 56% of the potential ACEC would be designated as VRM Class III or IV, which would least restrict vegetation management activities.

Table 4-71. VRM Class Designations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	130,000	130,000	130,000	222,500
	% ACEC	0%	45%	45%	45%	78%
Class II	Acres	127,600	0	43,900	54,200	23,200
	% ACEC	44%	0%	15%	19%	8%
Class III	Acres	43,300	34,700	0	24,600	15,100
	% ACEC	15%	12%	0%	8%	5%
Class IV	Acres	117,300	123,500	114,300	79,400	27,400
	% ACEC	41%	43%	40%	28%	9%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Fish and Wildlife

Management actions for the benefit of bison and mule deer would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities within the potential ACEC vary by alternative. Alternative N would provide no special management for the Henry Mountains bison or mule deer. Current seasonal closures to OHV use on Swap Mesa and Cave Flat and restrictions of oil and gas activities in crucial bison and mule deer habitat during sensitive seasons would benefit the relevant and important values of bison and mule deer. These seasonal restrictions would protect fewer acres and for a shorter time frame than the Proposed RMP and Alternatives C and D.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of Mount Hillers (1,800 acres) and portions of the Bull Mountain (2,800 acres), Mount Ellen—Blue Hills (17,800 acres), Mount Pennell (45,700 acres), and Ragged Mountain (24,400 acres) non-WSA lands with wilderness characteristics lie within the 288,200-acre potential Henry Mountains ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Forestry and Woodland Products

Allowing for the harvest of forest and woodland products in the Henry Mountains outside the WSAs could have an adverse impact on Class A scenery due to potential changes in the landscape character. These potential impacts would be greater with commercial harvest of timber and woodland products than with smaller-scale, non-commercial harvesting of woodland products for personal use. There could be short-term impacts to riparian and other relevant and important values from surface disturbances associated with harvesting activities. Effects would be determined in site-specific environmental analysis, and mitigating measures would likely be developed. Proposed decisions for areas open to forest and woodland products harvest vary by alternative. Under Alternative N, no commercial timber harvesting would be allowed within the Henry Mountains. Non-commercial use of woodlands products outside WSAs by permit would continue. Demand for these products has been low and mostly occurs within seeding areas in which continued harvest of woodland products is beneficial to maintenance of these areas for wildlife. Potential impacts to the relevant and important values would be low.

Impacts from Livestock Grazing

Under all alternatives, implementing the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* and maintaining or improving rangeland productivity would be beneficial to mule deer, bison, and riparian relevant and important values.

Impacts from Recreation

The establishment of SRMAs would vary by alternative. No SRMA is proposed in Alternative N, so there would be no impact to relevant and important values.

Impacts from Travel Management

OHV area designations, by alternative, are shown in Table 4-72. Cross-country OHV use could adversely impact the scenic, riparian, and special status plant species values if OHVs traveled where these values were present. Plants could be crushed, damaged, or destroyed; cultural resources could be damaged or destroyed; and new trails could be established in scenic areas. OHV use could also disturb bison and mule deer. Under Alternative N, 54% of the potential ACEC would continue to be open to cross-country motorized travel, adversely impacting scenic, wildlife (bison and mule deer), SSS, and ecological values if the OHVs traveled in the areas in which these values are present. Plants could be crushed and damaged or destroyed, and new trails could be established in areas containing Class A scenery. In closed areas (12%), relevant and important values would benefit because OHV use and associated surface disturbances and human-caused disruptions would be essentially eliminated. Seasonal OHV closures on Cave Flat and Swap Mesa would continue to benefit bison by reducing human disturbances during the critical winter period.

Table 4-72. OHV Area Designations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	155,800	0	0	0	0
	% Area	54%	0%	0%	0%	0%
Limited	Acres	98,000	288,200	288,200	81,000	57,800
	% Area	34%	100%	100%	28%	20%
Closed	Acres	34,400	0	0	207,200	230,400
	% Area	12%	0%	0%	72%	80%

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. No withdrawals from mineral entry are proposed under Alternative N. Therefore, there would be no impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-73. Under all alternatives, there would be no impacts to relevant and important values within the WSAs, which are closed to oil and gas leasing by law. WSAs represent 45% of the potential ACEC. Under Alternative N, 37% of the potential ACEC would be open to oil and gas leasing subject to the standard terms and conditions, and 18% would be open to leasing subject to moderate constraints (timing limitation, CSU), where exploration and development activities would be restricted in portions of the mule deer and bison range during the winter and spring. Among the alternatives, Alternative N would have the greatest potential to impact all relevant and important values. In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-73. Leasing Stipulations within Henry Mountains Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	105,700	200	0	0	0
	% Area	37%	<1%	0%	0%	0%
Controlled Surface Use or Timing Stipulations (Seasonal)	Acres	51,700	158,000	142,100	106,200	43,500
	% Area	18%	55%	49%	37%	15%
No Surface Occupancy	Acres	800	0	16,100	17,200	5,200
	% Area	<1%	0%	6%	6%	2%
Closed	Acres	130,000	130,000	130,000	164,800	239,500
	% Area	45%	45%	45%	57%	83%

Leasable Minerals—Coal

Development of coal resources, particularly surface mining, could adversely impact all relevant and important values. In the Henry Mountains coal field, some of the 8,134 acres of coal resources acceptable for leasing by underground mining methods and 3,013 acres acceptable for surface mining methods are located within the ACEC. Under this alternative, the potential ACEC would be available for consideration for leasing for surface coal mining, which could cause irreparable harm to the relevant and important values in the area where surface mining occurred. Mitigation of such impacts would be addressed during site-specific NEPA prior to development. The 45% of the ACEC within the WSAs would be managed pursuant to the IMP, which would provide protection from these activities.

Locatable Minerals

Exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance and harassment, including scenic values. The development of gold and copper (if found in economic quantities in the Henry Mountains) is possible, though probably on a small scale. Development is most likely in the Bromide Basin/Crescent Creek area. There is also potential for uranium development in the southern half of the Henry Mountains. Impacts to relevant and important values through direct ground disturbance and harassment of wildlife would be greatest under Alternatives N and A.

Salable Minerals

Under Alternative N, the effects of mineral material sales on relevant and important values would be determined on a case-by-case basis. Mitigation measures, if necessary to protect relevant and important values, would be developed during site-specific NEPA analysis.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,000 acres of WSAs, including all of the Mount Hillers, Mount Pennell, and Bull Mountain WSAs and the southern portion of the Mount Ellen—Blue Hills WSA. Within the WSAs, which represent 45% of the potential ACEC, relevant and important values would be protected from ground-disturbing activities by management under the IMP, which requires BLM to protect these areas' suitability for wilderness.

Wild and Scenic Rivers

The only eligible WSR within the potential ACEC is a portion of Maidenwater Creek. Due to the small portion of the potential ACEC encompassed by Maidenwater Creek, neither recommending nor not recommending it as a suitable WSR would have any perceptible impact on any relevant and important values.

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated. Management according to the IMP within the 45% of the potential ACEC within the WSAs would provide protection of the relevant and important values within that portion of the potential ACEC.

Alternative A

Impacts from Vegetation and Fire and Fuels Management

Impacts would be similar to those described under Alternative N for vegetation and fire and fuels treatments. Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. Alternative A would designate 45% of the potential ACEC as VRM Class I, providing protection to the scenic values. The remainder of the area would be designated as VRM Classes III and IV, allowing greater flexibility in vegetation management, a benefit to the mule deer and bison relevant and important value.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. In Alternative A, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fish and Wildlife

Management actions for the benefit of bison and mule deer would benefit those relevant and important values. Alternative A would implement the fewest specific management prescriptions and seasonal or spatial restrictions on human presence or surface-disturbing activities, which could result in greater impacts to mule deer and bison during critical periods. There would be no special management for Henry Mountains bison or mule deer. Seasonal or spatial restrictions on surface-disturbing activity could be added as mitigation but would not be required. However, limiting OHV use to designated routes in crucial bison habitat and allowing the use of prescriptive grazing to favor forage production for big game crucial winter range would benefit habitats and the relevant and important values of bison and mule deer.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Forestry and Woodland Products

Allowing for the harvest of forest and woodland products in the Henry Mountains outside the WSAs could have an adverse impact on scenery (Class A) due to potential changes in the landscape character. These potential impacts would be greater with the commercial harvest of timber and woodland products than with smaller-scale, non-commercial harvesting of woodland products for personal use. There could be short-term impacts to riparian and other relevant and important values from surface disturbances associated with harvesting activities. Effects would be determined in site-specific environmental analysis and mitigating measures developed if impacts were anticipated. Under Alternative A, commercial and non-commercial harvesting of forest and woodland products would be allowed (outside WSAs) where feasible, sustainable, and compatible with restoring, maintaining, or improving forest health. This could indirectly benefit wildlife species by improving habitat conditions. If demands for products increase, potential impacts to scenic values would be greatest under this alternative.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, OHVs would be limited to designated routes within the entire potential ACEC. No areas would be open to cross-country OHV use, which would reduce impacts on relevant and important values compared with Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative A, 55% of the potential ACEC would be open to oil and gas leasing subject to moderate constraints (timing limitation, CSU) where exploration and development activities would be restricted in the mule deer and bison range during the winter and spring. The 45% of the potential ACEC within the WSAs would be closed to oil and gas leasing. Compared with Alternative N, Alternative A would reduce impacts to bison and mule deer by placing more land under seasonal restrictions. In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated. Management according to the IMP within the 45% of the potential ACEC within the WSAs would provide protection of the relevant and important values within that portion of the potential ACEC.

Proposed RMP

Impacts from Vegetation and Fire and Fuels Management

Impacts associated with vegetation and fire and fuels management would be similar to those described under Alternative N. Under the Proposed RMP, a full-range of tools would be permitted and more of the potential ACEC would be designated as VRM Class II, providing beneficial impacts to wildlife relevant and important value while protecting the scenic relevant and important value. Impacts associated with riparian protection zones would be the same as Alternative A. Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

The Proposed RMP would designate 45% of the potential ACEC as VRM Class I and 15% as VRM Class II, providing protection to the scenic relevant and important values. The remainder of the area would be designated as VRM Classes III and IV, allowing greater flexibility in vegetation management, a benefit to the mule deer and bison value.

Impacts from Special Status Species

Under the Proposed RMP, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fish and Wildlife

Management actions for the benefit of bison and mule deer would benefit the wildlife relevant and important values. The Proposed RMP would provide more specific management prescriptions and seasonal or spatial restrictions on human presence or surface-disturbing activities than Alternatives N and A, but less than Alternatives C and D. A habitat management plan for bison, mule deer, and other big game species within the Henry Mountains area would be developed and prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer and bison crucial habitat, and seasonal restrictions of surface-disturbing activities would be required in crucial bison and mule deer habitats. These management actions would provide adequate protection for the wildlife relevant and important value of the potential Henry Mountains ACEC.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, the Mount Ellen—Blue Hills (3,900 acres), Mount Pennell (4,700 acres), and Ragged Mountain (7,900 acres) non-WSA lands with wilderness characteristics would be managed for wilderness characteristics. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership. Combined, approximately 15,890 acres (6% of the potential Henry Mountains ACEC) would be overlapped by non-WSA areas managed to maintain their wilderness characteristics, providing indirect protection for relevant and important values within those areas.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative A, except that the potential for impacts to the scenic values from woodland products harvest would be reduced. All Class A scenery (44% of the potential Henry Mountain ACEC) would be managed as VRM Classes I (29% of the potential Henry Mountain ACEC) and VRM Class II (15% of the potential Henry Mountain ACEC), providing protection for that relevant and important value.

Impacts from Livestock Grazing

Under all alternatives, including the Proposed RMP, implementing the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* and maintaining or improving rangeland productivity would be beneficial to the wildlife (mule deer, bison) and riparian relevant and important values.

Impacts from Recreation

Under the Proposed RMP, the Henry Mountains SRMA (532,600 acres) would encompass all of the Henry Mountains Potential ACEC. Management emphasis on primitive and semi-primitive motorized and non-motorized recreation would complement the relevant and important values by focusing recreational use and limiting development and surface-disturbing activities.

Impacts from Travel Management

Impacts would be the same as those described under Alternative A. Under the Proposed RMP, OHVs would be limited to designated routes within the entire potential ACEC. No areas would be open to cross-country OHV use, which would reduce impacts on all relevant and important values within the potential ACEC, compared with Alternative N.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. No withdrawals from mineral entry are proposed under within the potential Henry Mountains ACEC in the Proposed RMP. Therefore, there would be no beneficial impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, 49% of the potential ACEC would be open to oil and gas leasing subject to moderate constraints (timing limitation, CSU), 6% open to leasing subject to major constraints (NSO), and the 45% within the WSAs would be closed to leasing. No areas would be available for oil and gas development under standard stipulations. These oil and gas leasing restriction in the Proposed RMP would reduce or eliminate potential impacts to all relevant and important values within the potential ACEC. In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Leasable Minerals—Coal

Development of coal resources, particularly surface mining, could adversely impact all relevant and important values. In the Henry Mountains coal field, some of the 8,134 acres of coal resources acceptable for leasing by underground mining methods and 3,013 acres acceptable for surface mining methods are located within the potential ACEC. Under the Proposed RMP, the potential ACEC would be available for consideration for leasing for surface coal mining, which could cause irreparable harm to the relevant and important values in the area where surface mining occurred. Mitigation of such impacts would be addressed during site-specific NEPA prior to development. The 45% of the ACEC within the WSAs would be managed pursuant to the IMP, which would provide protection to all the relevant and important values from these activities within those areas.

Locatable Minerals

Exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance and harassment, including scenic values. The development of gold and copper (if found in economic quantities in the Henry Mountains) is possible, though probably on a small scale. Development is most likely in the Bromide Basin/Crescent Creek area. There is also potential for uranium development in the southern half of the Henry Mountains. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. Mitigation such as minimizing visual impacts and avoiding sensitive seasons or areas for wildlife and SSS would be

addressed in site-specific analysis as proposals are reviewed. These mitigation measures would reduce, but would not eliminate, impacts to relevant and important values.

Salable Minerals

Under the Proposed RMP, no material sales would be allowed in Class A scenery areas, resulting in no surface disturbance and no impact to the relevant and important scenic value. The effects of mineral material sales on relevant and important values outside the Class A scenery would be similar to those described under Alternative N. Material sales would be analyzed on a case-by-case basis and mitigation measures, if necessary to protect relevant and important values, would be developed during site-specific NEPA analysis.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 130,000 acres of WSAs, including all of the Mount Hillers, Mount Pennell, and Bull Mountain WSAs and the southern portion of the Mount Ellen—Blue Hills WSA. Within the WSAs, which represent 45% of the potential ACEC, all relevant and important values would be protected from ground-disturbing activities by management under the IMP, which requires BLM to protect these areas' suitability for wilderness. This management would provide indirect protection for all relevant and important values of this portion of the potential Henry Mountains ACEC.

Wild and Scenic Rivers

The only eligible WSR within the potential ACEC is a portion of Maidenwater Creek. Due to the small portion of the potential ACEC encompassed by Maidenwater Creek, neither recommending nor not recommending it as a suitable WSR would have any perceptible impact on any relevant and important values.

Areas of Critical Environmental Concern

Under the Proposed RMP, no ACEC would be designated. Management according to the IMP within the 45% of the potential ACEC within the WSAs would provide protection of the relevant and important values within those areas. Other resource decisions under this alternative such as VRM Classes I and II, limiting OHV use to designated routes, and seasonal/spatial restrictions would provide adequate protection for the relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation and Fire and Fuels Management

Under Alternative C, utilizing only natural processes to treat vegetation could limit the success of treatments, adversely impacting bison and mule deer relevant and important values.

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be similar to those described under the Proposed RMP, except that Alternative C would designate 64% of the potential ACEC as VRM Class I or II and the remaining as VRM Class III or IV.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Alternative C would implement additional management prescriptions in support of the potential ACEC and greater seasonal and spatial restrictions on human presence or surface-disturbing activities, which could result in benefits to the relevant and important values of mule deer and bison. Under Alternative C, prescriptive grazing would be used to favor forage production for big game ranges. Manipulation of habitat and range improvements would be allowed to benefit wildlife. An HMP would be developed for bison and mule deer within the ACEC. OHV use in mule deer crucial winter range and crucial bison habitat would be limited to designated routes or closed. Seasonal restrictions would apply to surface-disturbing activities in crucial bison habitat and crucial and high-value mule deer habitat.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative N. No commercial timber harvest would be allowed. Commercial and non-commercial use of forest and woodland products would continue outside WSAs, where feasible, sustainable, and compatible with restoring, maintaining, or improving forest health.

Impacts from Livestock Grazing

Impacts would be similar to Alternative N.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Under Alternative C, OHVs would be limited to designated routes within 28% of the potential ACEC. Seventy-two percent of the area would be closed to OHV use, which would reduce impacts on relevant and important values compared to Alternatives N, and A and the Proposed RMP.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. A withdrawal of 53,400 acres (19% of the potential ACEC) to protect Class A scenery outside the WSAs is proposed in Alternative C as part of the ACEC designation, which would provide additional protection of the relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, 37% of the potential ACEC would be open to oil and gas leasing subject to moderate constraints (timing limitation, CSU). The remainder of the potential ACEC would either be open to leasing subject to major constraints (NSO) (6%) or closed to leasing (57%; 12% in addition to WSAs), reducing or eliminating impacts to relevant and important values. In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Leasable Minerals—Coal

Under Alternative C, the Henry Mountains coal field, 8,134 acres of coal resources acceptable for leasing by underground mining methods, and 3,013 acres acceptable for surface mining methods would be closed to leasing due to the management of the Henry Mountains and Badlands ACECs. Closing these public lands to coal leasing would preclude exploration and development of coal resources within those portions of the ACECs, thus eliminating the potential for impacts to relevant and important values.

Locatable Minerals

Impacts would be less than those described under Alternative N. Under Alternative C, 19% of the potential ACEC is proposed for withdrawal from mineral entry, which would provide additional protection for relevant and important values within a larger portion of the potential ACEC.

Salable Minerals

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under Alternative C, the Henry Mountains ACEC would be designated on 288,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation and Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Alternative D would best protect the scenic values by designating 86% of the potential ACEC as VRM Class I or II. However, designating only 14% of the potential ACEC as VRM Classes III and IV would restrict vegetation management activities, resulting in fewer benefits to the mule deer and bison relevant and important values.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C. Manipulation of habitat and range improvement outside of WSAs and non-WSA lands with wilderness characteristics would be allowed to benefit wildlife. This would restrict vegetation manipulations and result in reduced benefits to wildlife. OHV use in mule deer crucial winter range and crucial bison habitat would be limited to designated routes or closed, with the largest acres closed to OHV use in Alternative D. Alternative D would provide

the greatest protection from surface disturbances and the greatest restriction of vegetation enhancement to benefit the mule deer and bison values.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Mount Hillers (1,800 acres) and portions of the Bull Mountain (2,800 acres), Mount Ellen—Blue Hills (17,800 acres), Mount Pennell (45,700 acres), and Ragged Mountain (24,400 acres) non-WSA lands with wilderness characteristics lie within the 288,200-acre potential Henry Mountains ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Henry Mountains ACEC would provide protection for relevant and important values on 92,500 acres. Specifics are disclosed in the vegetation, visual resource management, travel, lands and realty (withdrawals), and minerals discussions in this section.

Impacts from Forestry and Woodland Products

Under Alternative D, prohibiting commercial and non-commercial use of forest and woodland products (including timber harvesting in the Henry Mountains) would result in no impacts to relevant and important values caused by this activity, but would preclude any wildlife habitat improvements that could result from harvest.

Impacts from Livestock Grazing

Impacts would be similar to Alternative N.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Under Alternative D, OHVs would be limited to designated routes within 20% of the potential ACEC. Eighty percent of the area would be closed to OHV use. Among the alternatives, Alternative D would best protect relevant and important values from ground disturbance and harassment caused by OHVs.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative C, except that additional acres are proposed for withdrawal (115,400 acres, 40% of the potential ACEC) in Alternative D to protect the non-WSA lands with wilderness characteristics.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative D, 83% of the potential ACEC would be closed to oil and gas leasing. Among the alternatives, Alternative D would best protect the relevant and important values from surface disturbance and harassment caused by oil and gas exploration and development.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative C.

Locatable Minerals

The potential for impacts would be the least under Alternative D. Under this alternative, 40% of the potential ACEC is proposed for withdrawal from mineral entry, which would provide additional protection for relevant and important values.

Salable Minerals

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Horseshoe Canyon Potential ACEC

The Horseshoe Canyon Potential ACEC includes Horseshoe Canyon, a tributary to the Green River, and totals 40,900 acres. It is located in northeastern Wayne County. It includes portions of the Horseshoe Canyon North and Horseshoe Canyon South WSAs. Relevant and important values are scenic, cultural (Cowboy Cave), SSS (Townsend's big-eared bat), and riparian. Ninety-two percent of the potential ACEC is within WSAs, where management under the IMP would protect all relevant and important values from surface-disturbing activities. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation (Riparian)
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts can be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet from riparian areas, providing protection of the riparian relevant and important values.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-74. The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Under Alternative N, 99% of the potential ACEC would be managed for VRM Classes I and II, providing adequate protection of the scenic relevant and important value.

Table 4-74. VRM Class Designations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	37,800	37,800	37,800	40,800
	% ACEC	0%	92%	92%	92%	100%
Class II	Acres	40,400	0	2,900	2,900	100
	% ACEC	99%	0%	7%	7%	<1%
Class III	Acres	500	3,100	200	200	0
	% ACEC	1%	8%	<1%	<1%	0%
Class IV	Acres	0	0	0	0	0
	% ACEC	0%	0%	0%	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Horseshoe Canyon South (2,900 acres) and Labyrinth Canyon (1 acre) non-WSA lands with wilderness characteristics lie within the 40,900-acre (RFO portion only) potential Horseshoe Canyon ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Recreation

No SRMA is proposed in Alternative N, so there would be no impact to relevant and important values.

Impacts from Travel Management

OHV use would not threaten relevant and important values under any of the alternatives for several reasons. First, no OHV open areas are proposed under any of the alternatives, precluding impacts from cross-country OHV use. Second, only 7 miles of open motorized routes were inventoried, a nominal amount in such a large area. These routes would remain open under Alternatives N, and A and the Proposed RMP. Third, much of the terrain within the potential ACEC is too rugged to be accessible to vehicles in any case. OHV area designations by alternative are shown in Table 4-75.

Table 4-75. OHV Area Designations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternatives C and D
Open	Acres	0	0	0	0
	% area	0%	0%	0%	0%
Limited	Acres	40,900	40,900	32,800	100
	% area	100%	100%	80%	<1%
Closed	Acres	0	0	8,100	40,800
	% area	0%	0%	20%	>99%

Impacts from Lands and Realty

Under Alternative N, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative N, 92% of the potential ACEC (the portion within the WSA) would be closed to oil and gas leasing, precluding any impacts from oil and gas exploration or development activities. Oil and gas stipulations in the area outside the WSA vary by alternative, as shown in Table 4-76 below. Alternative N would allow oil and gas exploration and development with standard lease terms and conditions within 8% of the potential ACEC, which could impact relevant and important values.

Table 4-76. Leasing Stipulations within the Horseshoe Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	3,100	0	0	0	0
	% Area	8%	0%	0%	0%	0%
Controlled Surface Use or Timing Stipulations	Acres	0	3,100	200	0	0
	% Area	0%	8%	1%	0%	0%
No Surface Occupancy	Acres	0	0	2,900	3,100	100
	% Area	0%	0%	7%	8%	Negligible
Closed	Acres	37,800	37,800	37,800	37,800	40,800
	% Area	92%	92%	92%	92%	100%

Locatable Minerals

Under all alternatives, only 8% of the potential ACEC could be impacted by mineral exploration and development (because the remainder is within the WSA). Due to the remoteness and low mineral

potential within the area, it would be unlikely that mining activity would impact the relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 37,800 acres of the Horseshoe Canyon WSA. Within the WSA, which represents 92% of the potential ACEC, relevant and important values would be protected from ground-disturbing activities by management under the IMP.

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated. Management according to the IMP within the 92% of the potential ACEC within the WSAs would provide protection of the relevant and important values.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, providing protection of the riparian relevant and important values.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N, except that slightly fewer acres would be designated as VRM Classes I and II (92%), providing less protection to scenic relevant and important values.

Impacts from Special Status Species

As in Alternative N, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. In Alternative A, additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Under Alternative A, the Dirty Devil SRMA would encompass the Horseshoe Canyon Potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development.

Impacts from Travel Management

Impacts would be the same as those described under Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative A, 92% of the potential ACEC (the portion within the WSA) would be closed to oil and gas leasing, precluding any impacts from oil and gas exploration or development activities. Oil and gas stipulations in the area outside the WSA vary by alternative, as shown in Table 4-76 below. Alternative A would allow oil and gas exploration subject to moderate constraints (timing limitation, CSU) within 8% of the potential ACEC, which would reduce the potential for impacts to relevant and important values.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, providing protection of the riparian relevant and important values.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-74. The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Under the Proposed RMP, 99% of the potential ACEC would be managed for VRM Classes I and II, providing adequate protection of the scenic relevant and important value.

Impacts from Special Status Species

As in Alternative N, management actions under the Proposed RMP such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 12,200 acres of the Horseshoe Canyon South non-WSA lands with wilderness characteristics would be managed to maintain their wilderness characteristics. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership. Approximately 1,780 acres of the Horseshoe Canyon South non-WSA lands would overlap with the potential Horseshoe Canyon ACEC, providing indirect protection for relevant and important values within those areas.

Impacts from Recreation

Under the Proposed RMP, the Dirty Devil SRMA would encompass the Horseshoe Canyon Potential ACEC. The Dirty Devil SRMA management emphasis on primitive and semi-primitive recreation would complement the relevant and important values by focusing recreational use and limiting development.

Impacts from Travel Management

OHV use would not threaten relevant and important values under any of the alternatives, including the Proposed RMP, for several reasons. First, no OHV open areas are proposed, precluding impacts from cross-country OHV use. Second, motorized use would be limited to designated routes with only 7 miles of routes inventoried and identified for designation, a nominal amount in such a large area. These routes would remain open under Alternatives N, A, and the Proposed RMP. Third, much of the terrain within the potential ACEC is too rugged to be accessible to vehicles in any case. Therefore, there would be no impact to relevant and important values of the potential Horseshoe Canyon ACEC from motorized use.

Impacts from Lands and Realty

Under the Proposed RMP, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. With 92% of the potential ACEC being located within the WSA, it would be most likely that land tenure adjustments, if any, would benefit the relevant and important values of the area.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, 92% of the proposed ACEC (the portion within the WSA) would be closed to oil and gas leasing, precluding any impacts from oil and gas exploration or development activities. The portion of the proposed ACEC outside of the WSA would be open to leasing with minor constraints (1%) or open with NSO (7%). The potential for impacts to relevant and important values from oil and gas exploration or development activities would be unlikely.

Locatable Minerals

Under all alternatives, including the Proposed RMP, only 8% of the potential ACEC could be impacted by mineral exploration and development (because the remainder is within the WSA). Due to the remoteness and low mineral potential within the area, it would be unlikely that mining activity would impact the relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential Horseshoe Canyon ACEC encompasses 37,800 acres of the Horseshoe Canyon WSA. Within the WSA, which represents 92% of the potential ACEC, relevant and important values would be protected from ground-disturbing activities by management under the IMP.

Areas of Critical Environmental Concern

Under the Proposed RMP, no Horseshoe Canyon ACEC would be designated. WSA management and other resource decisions under this alternative for visual resource, travel, and minerals management would provide adequate protection for all the relevant and important values identified within this potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas, providing protection of the riparian relevant and important values.

Impacts from Visual Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N, except that the designated routes would be reduced to 2 miles of open routes under Alternative C.

Impacts from Lands and Realty

Under Alternative C, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in federal ownership and protecting it from development.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative C.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under Alternative C, the Horseshoe Canyon ACEC would be designated on 40,900 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N, except that the entire potential ACEC would be designated as VRM Class I, eliminating any impact to scenic relevant and important values.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Horseshoe Canyon South (2,900 acres) and Labyrinth Canyon (1 acre) non-WSA lands with wilderness characteristics lie within the 40,900-acre (RFO portion only) potential Horseshoe Canyon ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Horseshoe Canyon potential ACEC would provide indirect protection for relevant and important values on 2,901 acres. Specifics are disclosed in the visual resources, travel management, minerals and energy, and lands and realty discussions in this section.

Impacts from Recreation

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Lands and Realty

Impacts would be similar to those described under Alternative C. Also under Alternative D, proposed withdrawal from mineral entry of the 2,900 acres outside the WSA (to protect the non-WSA lands with wilderness characteristics) would protect relevant and important values from surface disturbance caused by mineral exploration and development.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts from oil and gas leasing would be precluded under Alternative D, which closes all but a small portion of the potential ACEC to oil and gas leasing.

Locatable Minerals

Impacts would be similar to those described under Alternative N. In addition, under Alternative D, 2,900 acres outside the WSA would be proposed for withdrawal from mineral entry to protect non-WSA lands with wilderness characteristics, which would also protect relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Kingston Canyon Potential ACEC

The Kingston Canyon Potential ACEC encompasses 22,100 total acres of public lands located in the side canyons north and south of the Sevier River between the towns of Kingston and Antimony in Sevier County. Relevant and important values are mule deer, mule deer habitat, and riparian areas.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Fish and Wildlife
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Fish and Wildlife

Fish and wildlife management actions for the benefit of mule deer and their habitat would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities with the potential ACEC vary by alternative. Under Alternative N, a seasonal restriction on oil and gas exploration and development would be required in crucial and high-value mule deer habitat during sensitive seasons, such as fawning. These seasonal restrictions would provide greater protection for the mule deer and habitat relevant and important values than Alternative A, but less than under the Proposed RMP and Alternatives C and D.

Impacts from Fire and Fuels Management

Under Alternative N, unwanted wildfire in crucial mule deer habitats could result in impacts to crucial mule deer habitats. However, this alternative includes stabilization and rehabilitation efforts as needed for every wildland fire. Stabilization and rehabilitation efforts would benefit fish and wildlife species over the long term by decreasing erosion and restoring or improving habitat conditions following a fire event.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Phonolite Hill (7,900 acres) and portions of the Kingston Ridge (2,100 acres) and Rocky Ford (6,400 acres) non-WSA lands with wilderness characteristics lie within the 22,100-acre potential

Kingston Canyon ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no impacts to relevant and important values.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-77. Under Alternative N, continuing to manage the area as open to OHV use would cause the greatest adverse impacts to mule deer and riparian values by allowing harassment of mule deer, crushing and removal of riparian vegetation, and loss of habitat.

Table 4-77. OHV Area Designations within the Kingston Canyon Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	22,100	18,800	0	0	0
	% Area	100%	85%	0%	0%	0%
Limited	Acres	0	3,300	22,100	22,100	5,700
	% Area	0%	15%	100%	100%	26%
Closed	Acres	0	0	0	0	16,400
	% Area	0%	0%	0%	0%	74%

Impacts from Lands and Realty

No lands within the Kingston Canyon Potential ACEC have been identified as available for FLPMA Section 203 sales. Under Alternative N, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area.

Alternative A

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater.

Impacts from Fish and Wildlife

Under Alternative A, no seasonal or spatial restrictions of human presence or surface-disturbing activities would be required, which could result in greater impacts to mule deer and habitats during critical periods. This alternative would provide the least protection to mule deer and their habitat.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, managing the potential ACEC as open and limited would continue most of the impacts in the open areas and reduce impacts in limited use areas. Adverse impacts under Alternative A would be slightly less than Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area.

Proposed RMP

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under the Proposed RMP no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater. Although the protection area is smaller than Alternatives N, C and D, it would provide adequate protection to the riparian relevant and important values of the potential Kingston Canyon ACEC.

Impacts from Fish and Wildlife

Seasonal or spatial restriction of human presence or surface-disturbing activities under this alternative could provide greater benefits to the mule deer and mule deer habitat relevant and important values than Alternatives N and A, but less than Alternatives C and D. Prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer crucial habitat, and seasonal restrictions of surface-disturbing activities would be required in crucial mule deer habitats.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative N, except that the Proposed RMP would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. Stabilization efforts would have the potential to benefit the mule deer and mule deer habitat relevant and important values in the long term.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Phonolite Hill (7,900 acres) and portions of the Kingston Ridge (2,100 acres) and Rocky Ford (6,400 acres) non-WSA lands with wilderness characteristics lie within the 22,100-acre potential Kingston Canyon ACEC. These areas would not be managed to for wilderness characteristics in the Proposed RMP, resulting in no impacts to relevant and important values.

Impacts from Travel Management

Under the Proposed RMP, limiting vehicles to designated routes would reduce adverse impacts to mule deer habitat and harassment to the mule deer populations caused by cross-country vehicle use, as compared with Alternatives N and A. By limiting motorized use to designated routes, the impacts of crushing and removal of riparian vegetation, and loss of habitat associated with motorized activities would be eliminated or reduced to areas adjacent to the routes. Therefore, the Proposed RMP would provide protection to the mule deer and mule deer habitat relevant and important values of the potential Kingston Canyon ACEC.

Impacts from Lands and Realty

No lands within the Kingston Canyon Potential ACEC have been identified as available for FLPMA Section 203 sales. Proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Lands with riparian values would likely not be offered for disposal, thus not impacting the riparian relevant and important value. Any sale of land within the potential ACEC would result in a loss of mule deer habitat in federal ownership and would be considered in site-specific analysis prior to offering the land for sale. Actual impacts to the mule deer and mule deer habitat relevant and important values would depend upon the acreage sold and how the land is used and developed after it leaves federal ownership.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Kingston Canyon ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for riparian protection zones, seasonal/spatial restrictions on surface disturbances, and travel management would adequately protect the relevant and important riparian, mule deer and mule habitat values of the potential ACEC. The UDWR purchased and set aside a 319 acre wildlife management area in Kingston Canyon and would provide additional protection for the ACEC's relevant and important values (mule deer, mule deer habitat, and riparian areas).

Alternative C

Impacts from Vegetation

Impacts would be similar to those described under Alternative N, except that no surface-disturbing activities would be allowed within 660 feet of riparian areas.

Impacts from Fish and Wildlife

Under Alternative C, prescriptive grazing would be used to favor forage production for big game ranges. OHV use in mule deer crucial winter range would be limited to designated routes or closed. Seasonal restrictions would apply to surface-disturbing activities in crucial and high-value mule deer habitats. Alternatives C and D would provide the greatest protection for the relevant and important values of mule deer and mule deer habitat.

Impacts from Fire and Fuels Management

Under Alternative C, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Lands and Realty

No lands within the Kingston Canyon Potential ACEC have been identified as available for FLPMA Section 203 sales. Under Alternative C, proposed decisions for land tenure adjustments benefit all relevant and important values by keeping the land in federal ownership and protecting it from development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Kingston Canyon ACEC would be designated on 22,100 acres of public land to protect and provide special management for the mule deer (e.g., mule deer habitat) and riparian relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C, except that additional acres would be closed to OHV use in Alternative D. Alternatives C and D would provide the greatest protection for the relevant and important values of mule deer and mule deer habitat.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

All of the Phonolite Hill (7,900 acres) and portions of the Kingston Ridge (2,100 acres) and Rocky Ford (6,400 acres) non-WSA lands with wilderness characteristics lie within the 22,100-acre potential Kingston Canyon ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Kingston Canyon ACEC would provide indirect protection for relevant and important mule deer value on 16,400 acres, but it could limit options for managing mule deer habitat.

Impacts from Travel Management

Closing 74% of the potential ACEC to vehicle use would reduce adverse impacts to deer habitat and harassment to the deer populations caused by cross-country vehicle use, as compared with all other alternatives.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative D, Kingston Canyon ACEC would be designated on 22,100 acres of public land to protect and provide special management for the mule deer (e.g., mule deer habitat) and riparian relevant and important values. In addition to management direction associated with Alternative D described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Little Rockies Potential ACEC

The Little Rockies Potential ACEC totals 49,200 acres located in the southeast corner of Garfield County. It includes the entire Little Rockies National Natural Landmark—an NPS designation. Seventy-six percent of the potential ACEC is within the Little Rockies WSA. Relevant and important values are scenic, wildlife (Desert bighorn sheep), SSS (Townsend's big-eared bat and hole-in-the-rock prairie clover), and ecological (riparian) values.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Special Status Species
- Fish and Wildlife
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Visual Resources

Visual resource management classes within the potential ACEC, by alternative, are shown in Table 4-78. Under Alternative N, all lands within the potential ACEC would be designated as VRM Class I or II, protecting scenic values.

Table 4-78. VRM Class Designations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	37,400	37,400	37,400	46,300
	% ACEC	0%	76%	76%	76%	94%
Class II	Acres	49,200	0	11,800	11,800	2,900
	% ACEC	100%	0%	24%	24%	6%
Class III	Acres	0	0	0	0	0
	% ACEC	0%	0%	0%	0%	0%
Class IV	Acres	0	11,800	0	0	0
	% ACEC	0%	24%	0%	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Fish and Wildlife

Under all alternatives, proposed decisions prohibiting the conversion of classification of livestock from cattle to sheep would benefit the Desert bighorn sheep value by eliminating the threat of disease spread by domestic sheep. The proposed decision to allow Desert bighorn sheep reintroductions would have a beneficial impact by augmenting the herd to provide for genetic diversity, which would increase the health of the population. The proposed decision to limit surface-disturbing activities near springs would have a beneficial impact on riparian vegetation, Desert bighorn sheep, and other riparian species. Proposed decisions for limiting ground-disturbing activities in Desert bighorn sheep habitat vary by alternative. Under Alternative N, not limiting activities in Desert bighorn sheep habitat during lambing and other sensitive seasons could adversely affect the Desert bighorn sheep by allowing disturbance and harassment during critical periods.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Little Rockies (8,700 acres) non-WSA lands with wilderness characteristics lies within the 49,200-acre potential Little Rockies ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no impacts to relevant and important values.

Impacts from Travel Management

OHV area designations, by alternative, are shown in Table 4-79. Under Alternative N, continuing to allow cross-country travel in 19% of the potential ACEC would threaten relevant and important values in that area with ground disturbance or harassment.

Table 4-79. OHV Area Designations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	9,200	0	0	0	0 ac
	% Area	19%	0%	0%	0%	0%
Limited	Acres	2,500	49,200	11,800	10,800	2,300
	% Area	5%	100%	24%	22%	5%
Closed	Acres	37,500	0	37,400	38,400	46,900
	% Area	76%	0%	76%	78%	95%

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. No withdrawals from mineral entry are proposed under Alternative N. Therefore, there would be no impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing, by alternative, are shown in Table 4-80. Under all alternatives, there would be no impacts to relevant and important values within the WSA, which is closed to oil and gas leasing. The Little Rockies WSA represents 76% of the potential ACEC. Under Alternative N, 11% of the potential ACEC would be available for leasing with standard terms, which could result in impacts to relevant and important values. However, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-80. Leasing Stipulations within Little Rockies Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	5,400	11,800	4,000	0	0
	% Area	11%	24%	8%	0%	0%
Controlled Surface Use or Timing Stipulations (Seasonal)	Acres	0	0	2,200	0	0
	% Area	0%	0%	4%	0%	0%
No Surface Occupancy	Acres	0	0	5,400	11,800	2,300
	% Area	0%	0%	11%	24%	5%
Closed	Acres	43,800	37,400	37,600	37,400	46,900
	% Area	89%	76%	76%	76%	95%

Locatable Minerals

Under Alternative N, 24% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. There is potential for mineral exploration within the area. Mitigation such as minimizing visual impacts and avoiding sensitive seasons or areas for SSS would be addressed in site-specific analysis as proposals are reviewed. These mitigation measures would reduce but may not eliminate impacts to relevant and important values.

Salable Minerals

In Alternative N, the effects of salable mineral disposal on relevant and important values would be considered on a case-by-case basis outside the WSA. Disposal of salable minerals would not be allowed within the WSA. Mitigation measures would likely be developed if potential impacts were identified for relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

The potential ACEC encompasses 37,400 acres of the Little Rockies WSA. Within the WSA, relevant and important values would be protected from ground-disturbing activities by management under the IMP.

Wild and Scenic Rivers

The only eligible WSR within the potential ACEC is a portion of Maidenwater Creek. Due to the small portion of the potential ACEC encompassed by Maidenwater Creek, neither recommending nor not recommending it as a suitable WSR would have any perceptible impact on any relevant and important value.

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated. Management according to the IMP within the 76% of the potential ACEC within the Little Rockies WSA would provide protection of the relevant and important values within that portion of the potential ACEC.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Under Alternative A, lands outside the WSA would be designated as VRM Class IV, which could allow activities that would adversely impact the scenic values within 24% of the potential ACEC.

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would

be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, limiting OHV use to designated routes throughout the potential ACEC would reduce vehicle impacts to relevant and important values, as compared with Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Alternative A would allow leasing subject to standard terms and conditions for all lands within the potential ACEC outside the WSA. This alternative would result in the greatest potential for impacts. However, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Salable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-

disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Under the Proposed RMP, all lands within the potential ACEC would be designated as VRM Class I (76%) or II (24%), protecting scenic relevant and important values of the potential Little Rockies ACEC.

Impacts from Special Status Species

Management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fish and Wildlife

The proposed decisions prohibiting the conversion of classification of livestock from cattle to sheep would benefit the Desert bighorn sheep relevant and important value by eliminating the threat of disease spread by domestic sheep. The proposed decision to allow Desert bighorn sheep reintroductions would have a beneficial impact by augmenting the herd to provide for genetic diversity, which would increase the health of the population. The proposed decision to limit surface-disturbing activities near springs would have a beneficial impact on the riparian, Desert bighorn sheep, and wildlife relevant and important values. Proposed decisions for limiting ground-disturbing activities in Desert bighorn sheep habitat vary by alternative. Under the Proposed RMP, limiting activities in Desert bighorn sheep habitat during lambing and other sensitive seasons would benefit Desert bighorn sheep by minimizing disturbance and harassment during critical periods, providing additional benefits to this relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, 9,500 acres of the Little Rockies non-WSA lands with wilderness characteristics would be managed to maintain their wilderness characteristics. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership. Approximately 5,480 acres (11% of the Little Rockies non-WSA lands) would overlap with the potential Little Rockies ACEC, providing indirect protection for all the relevant and important values within those areas.

Impacts from Travel Management

Under the Proposed RMP, the WSA would be closed to OHVs (76% of the potential ACEC) and the remaining portion of the potential ACEC would restrict OHVs to designated routes. This would reduce or eliminate vehicle impacts to the relevant and important values of the potential Little Rockies ACEC.

Impacts from Lands and Realty

Withdrawing land from mineral entry would benefit all relevant and important values by protecting them from ground-disturbing activities associated with the exploration and development of locatable minerals. However, no withdrawals from mineral entry are proposed under the Proposed RMP, resulting in no impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, only 8% of the potential ACEC would be open to oil and gas leasing subject to standard terms and conditions, 4% would be leased subject to moderate constraints (timing limitation, CSU), 11% would be subject to major constraints (NSO) and the 76% within the WSA would be closed to leasing. The potential for impacts would be reduced or eliminated compared with Alternatives N and A. In addition, the potential ACEC is in a portion of the lands managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Locatable Minerals

Impacts would be the same as those described under Alternative N. Under the Proposed RMP, 24% of the potential ACEC (the area outside the WSA) could be impacted by mineral exploration and development. There is potential for mineral exploration within the area. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. Mitigation such as minimizing visual impacts and avoiding sensitive seasons or areas for SSS would be addressed in site-specific analysis as proposals are reviewed. These mitigation measures would reduce but may not eliminate impacts to relevant and important values.

Salable Minerals

Impacts would be the same as those described under Alternative N. The effects of salable mineral disposal on relevant and important values would be considered on a case-by-case basis outside the WSA. Disposal of salable minerals would not be allowed within the WSA. Management for visual resources, riparian protection zones, and SSS and wildlife habitats provide protection from surface disturbing activities such as mineral material sales. Mitigation measures would be developed or the action denied if potential impacts were identified for the scenic, riparian, SSS and wildlife relevant and important values of the potential Little Rockies ACEC.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N. The potential ACEC encompasses 37,400 acres of the Little Rockies WSA. Within the WSA, relevant and important values would be protected from ground-disturbing activities by management under the IMP.

Wild and Scenic Rivers

The only eligible WSR within the potential ACEC is a portion of Maidenwater Creek. Due to the small portion of the potential ACEC encompassed by Maidenwater Creek, neither recommending nor not recommending it as a suitable WSR would have any perceptible impact on any relevant and important value.

Areas of Critical Environmental Concern

Under the Proposed RMP, no ACEC would be designated. Management according to the IMP within the 76% of the potential ACEC within the Little Rockies WSA would provide protection of the relevant and important values within that portion of the potential ACEC. Existing laws, rules, and regulations, as well as management decisions for riparian protection zones, VRM, seasonal/spatial restrictions on surface disturbances, non-WSA lands with wilderness characteristics, and travel management would adequately protect all the relevant and important values of the potential Little Rockies ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under the Proposed RMP, except that Desert bighorn sheep habitat outside the WSA would also be closed to OHVs, providing additional protection for that relevant and important value.

Impacts from Lands and Realty

In Alternative C, the potential ACEC outside the WSA is proposed to be withdrawn from mineral entry, precluding locatable mineral development, which would protect the relevant and important values from ground disturbance caused by mineral exploration and development. If the area is not withdrawn but an ACEC is designated, a plan of operations would be required that would address the effects on relevant and important values and other resource concerns.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, 24% of the potential lands would be leased subject to major constraints (NSO), with the remaining 76% within the WSA closed to leasing. This would eliminate the potential for impacts to relevant and important values.

Locatable Minerals

Under Alternative C, the area outside the WSA would be proposed for withdrawal from mineral entry, protecting the relevant and important values from disturbances associated with mining exploration and development. Additionally, within a designated ACEC, federal regulations (43 CFR 3809.11 (c)(3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Salable Minerals

Under Alternative C, no disposal of salable minerals would be allowed in the ACEC, resulting in no surface disturbance and no impact to the relevant and important values.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Under Alternative C, Little Rockies ACEC would be designated on 49,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Impacts would be similar to those described under Alternative N. Scenic values would be best protected under Alternative D, which would designate 94% of the potential ACEC as VRM Class I to protect the existing character of the landscape.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Little Rockies (8,700 acres) non-WSA lands with wilderness characteristics lies within the 49,200-acre potential Little Rockies ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Little Rockies ACEC would provide indirect protection for relevant and important values on 8,700 acres. Specifics are disclosed in the visual resource management, travel, fluid minerals, and lands and realty (withdrawals) discussions in this section.

Impacts from Travel Management

Under Alternative D, closing the WSA and the non-WSA lands with wilderness characteristics to OHVs (95% of the potential ACEC) would best protect relevant and important values from vehicle impacts.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Alternative D would best protect relevant and important values from ground-disturbing activities associated with oil and gas exploration and development by closing 95% of the potential ACEC to oil and gas leasing and allowing leases subject to major constraints (NSO) in the remaining 5%.

Locatable Minerals

Impacts would be the same as those described under Alternative C.

Salable Minerals

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Wilderness Study Areas

Impacts would be the same as those described under Alternative N.

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative N.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Lower Muddy Creek Potential ACEC

The Lower Muddy Creek Potential ACEC, located along Muddy Creek north of Hanksville, totals 16,200 acres of the RFO, with additional acreage to the north in the lands managed by the Price Field Office. The discussion here is limited to the RFO portion. Relevant and important values of this potential ACEC are scenic, SSS (Wright fishhook cactus and Heil's beavertail cactus), and riparian.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Visual Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical

alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Visual Resources

VRM class designations, by alternative, are shown in Table 4-81. The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Under Alternative N, 97% of the potential ACEC would be managed as VRM Class II, which would protect the scenic relevant and important values.

Table 4-81. VRM Class Designations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Class I	Acres	0	0	0	0	15,800
	% ACEC	0%	0%	0%	0%	98%
Class II	Acres	15,600	0	15,600	16,200	400
	% ACEC	97%	0%	97%	100%	2%
Class III	Acres	400	0	400	0	0
	% ACEC	2%	0%	2%	0%	0%
Class IV	Acres	200	16,200	200	0	0
	% ACEC	1%	100%	1%	0%	0%

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wild Horse Mesa (15,800 acres) non-WSA lands with wilderness characteristics lies within the 16,200-acre (RFO portion only) potential Lower Muddy Creek ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Travel Management

OHV area designations, by alternative, are shown in Table 4-82. Alternative N would continue to allow cross-country vehicle travel within all of the potential ACEC, which would adversely impact the scenic, riparian, and special status plant species values if the OHVs travel where these values are present. Plants could be crushed, damaged, or destroyed; riparian areas disrupted; and new trails established in scenic areas.

Table 4-82. OHV Area Designations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	16,200	16,200	0	0	0
	% Area	100%	100%	0%	0%	0%
Limited	Acres	0	0	16,200	1,600	300
	% Area	0%	0%	100%	10%	2%
Closed	Acres	0	0	0	14,600	15,900
	% Area	0%	0%	0%	90%	98%

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing, by alternative, are shown in Table 4-83. Under Alternative N, all of the potential ACEC would be open to oil and gas leasing under standard terms and conditions. Among the alternatives, this proposed decision would pose the greatest risk to relevant and important values from surface disturbance caused by oil and gas exploration. However, the potential ACEC is in a portion of land managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Table 4-83. Lease Stipulations within Lower Muddy Creek Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Standard Lease Terms	Acres	16,200	16,200	7,500	0	0
	% Area	100%	100%	46%	0%	0%
Controlled Surface Use or Timing Stipulations	Acres	0	0	200	0	0
	% Area	0%	0%	1%	0%	0%
No Surface Occupancy	Acres	0	0	8,500	0	0
	% Area	0%	0%	52%	0%	0%
Closed	Acres	0	0	0	16,200	16,200
	% Area	0%	0%	0%	100%	100%

Locatable Minerals

Under Alternative N, exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. SSS would be protected by law and BLM policy. This would minimize impacts of mining activities on relevant and important values of the potential ACEC.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from continued cross-country OHV use under this alternative.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Conversely, areas designated as VRM Class III or IV would be subject to actions that allow for greater landscape modification and therefore greater surface disturbance. Alternative A would provide no protection for scenic values by designating all of the potential ACEC as VRM Class IV.

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. This alternative would result in the greatest potential for impacts to relevant and important values due to resource decisions for visual resource and travel management.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Impacts would be the same as those described under Alternative N. VRM class designations, by alternative, are shown in Table 4-81. The higher VRM classes (I and II) would better protect the scenic values and, by limiting surface-disturbing activities, also benefit other relevant and important values. Under the Proposed RMP, 97% of the potential ACEC would be managed as VRM Class II, limiting surface disturbing activities which would protect the scenic relevant and important values. This management would also indirectly benefit the SSS and riparian relevant and important values of the potential Lower Muddy Creek ACEC.

Impacts from Special Status Species

Under the Proposed RMP, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, management prescriptions to maintain wilderness characteristics on 8,700 acres of the Wild Horse Mesa non-WSA lands with wilderness characteristics area that overlap the Lower Muddy Creek ACEC would provide an indirect protection for relevant and important values within that portion of the potential ACEC. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership.

Impacts from Travel Management

Under the Proposed RMP, no areas within the potential ACEC would be open to cross-country travel. Motorized use would be limited to designated routes. Limiting OHV use would reduce the impacts to relevant and important values because use would be confined to designated routes, although there could be some impacts if relevant and important values were located on or adjacent to open routes. The potential for impacts to relevant and important values from cross-country OHV use would be eliminated within this alternative.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, 52% of the potential ACEC would be open to oil and gas leasing subject to major constraints (NSO) which would protect the relevant and important values from surface disturbances caused by oil and gas exploration and development within most of the area. In addition, the potential ACEC is in a portion of land managed by the RFO identified as having low development potential for oil and gas leasing. Few, if any, wells are expected to be drilled in this area in the next 15 to 20 years.

Locatable Minerals

Impacts would be the same as those described under Alternative N. Under the Proposed RMP, exploration and development of locatable minerals could impact relevant and important values sensitive to surface disturbance. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. SSS would be protected by law and BLM policy. This would minimize impacts of mining activities on relevant and important values of the potential ACEC.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as resource decisions within the Proposed RMP that limit surface disturbance (i.e., managing the Wild Horse Mesa non-WSA lands for wilderness characteristics), would provide adequate protection to all the relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Visual Resources

Under Alternative C, the potential ACEC would be designated as VRM Class II, which would eliminate the potential for impacts to the relevant and important values.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative C, no areas would be open to cross-country use, vehicles would be limited to designated routes within 10% of the potential ACEC, and the remaining 90% would be closed to motor vehicles. Although there could be some impacts if relevant and important values were located on or adjacent to designated routes, this alternative would reduce or eliminate potential impacts by eliminating cross-country use.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative C, all of the potential ACEC would be closed to leasing, precluding any impacts to relevant and important values from oil and gas leasing.

Locatable Minerals

Under Alternative C, within a designated ACEC, federal regulations (43 CFR 3809.11 (c)(3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on relevant and important values.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Lower Muddy Creek ACEC would be designated on 16,200 acres of public land to protect and provide special management for the relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Visual Resources

Alternative D would best protect the scenic values by designating most of the potential ACEC as VRM Class I, with the remaining area designated as VRM Class II.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wild Horse Mesa (15,800 acres) non-WSA lands with wilderness characteristics lies within the 16,200-acre (RFO portion only) potential Lower Muddy Creek ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Lower Muddy Creek ACEC would provide indirect protection for relevant and important values on 15,800 acres (98% of the potential ACEC). Specifics are described in the visual resources, travel management, minerals and energy, and lands and realty discussions in this section.

Impacts from Travel Management

Under Alternative D, 98% of the potential ACEC would be closed to motor vehicles. Consequently, Alternative D would best protect the relevant and important values from motorized vehicle use.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative C.

Locatable Minerals

Impacts would be similar to those described under Alternative C. Additionally, under Alternative D, 15,800 acres (98% of the potential ACEC) would be proposed for withdrawal from mineral entry, precluding impacts to relevant and important values from mining exploration and development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Old Woman Front Potential ACEC

The Old Woman Front RNA Potential ACEC is located in eastern Sevier County, adjacent to the Old Woman Plateau RNA on the Fishlake National Forest. It encompasses 330 acres. Designating this area as an ACEC would complement the adjacent Forest Service RNA and provide a logical topographical boundary for the area. The relevant and important value of the area is its relict vegetation.

Impacts to the relevant and important value of this ACEC could occur from the following resource management programs:

- Fish and Wildlife
- Fire and Fuels Management
- Forest and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Fish and Wildlife

Under Alternative N, vegetation treatments to meet terrestrial, aquatic, and riparian habitat objectives could pose risks to relict vegetation.

Impacts from Fire and Fuels Management

Alternative N would allow fire and fuels management and suppression activities that could crush or remove relict vegetation.

Impacts from Forest and Woodland Products

Alternative N would allow the harvest of forest and woodland products. However, due to the remote location and lack of access, the potential of harvest and the associated impacts to relict vegetation would both be low.

Impacts from Livestock Grazing

Under Alternative N, the Old Woman Front potential ACEC would be available for livestock grazing, so the relict vegetation could be grazed by domestic livestock. Management of livestock grazing in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration* would minimize impacts to the relict plant community, but these alternatives would pose some risks to the relevant and important value of relict vegetation.

Impacts from Recreation

Management in Alternative N could allow SRPs to be issued within the potential ACEC. There has been little-to-no demand for SRPs within this area. Prior to issuance of an SRP, site-specific analysis would be required and could provide mitigation for relict vegetation.

Impacts from Travel Management

Under Alternative N, the Old Woman Front is open to OHV use (including cross-country travel), which presents the greatest risk to relict vegetation from motorized vehicles.

Impacts from Lands and Realty

The potential ACEC is not recommended for withdrawal under Alternative N, which would allow mineral activities to be proposed within the area, possibly resulting in vegetation loss.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative N, all of the potential ACEC would be open to oil and gas leasing subject to standard lease terms and conditions or with open to oil and gas leasing subject to moderate constraints (TL, CSU) restrictions. Among the alternatives, this proposed decision would pose the greatest risk to relevant and important relict vegetation values from surface disturbance caused by oil and gas exploration.

Locatable Minerals

Under Alternative N, exploration and development of locatable minerals could impact relevant and important relict vegetation values that are sensitive to surface disturbance. Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important relict vegetation of the area. There would be a potential for impacts to relevant and important relict vegetation from resource decisions under this alternative.

Alternative A

Impacts from Fish and Wildlife

Impacts would be the same as those described under Alternative N.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Forest and Woodland Products

Impacts would be the same as those described under Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as those described under Alternative N.

Impacts from Recreation

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, OHV use would be limited to designated routes within the potential ACEC, reducing the risks greatly over Alternative N. No routes are currently identified within this area. If routes were designated, this motorized activity could pose some risk to relevant and important relict vegetation by potential disturbance adjacent to these routes.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Fish and Wildlife

Under the Proposed RMP, no wildlife habitat manipulation would be allowed, thus eliminating the risks to relevant and important relict vegetation from these types of treatments.

Impacts from Fire and Fuels Management

Under the Proposed RMP, requirements to use fire to accomplish the objectives of the area, use "light on the land" techniques (which minimize disturbance), and avoid the use of heavy equipment would best protect the relevant and important value of relict vegetation.

Impacts from Forest and Woodland Products

Under the Proposed RMP, the harvest of forest and woodland products would not be allowed, providing the best protection of the relevant and important value.

Impacts from Livestock Grazing

Under the Proposed RMP, the potential ACEC would be unavailable to grazing, eliminating the risks from livestock grazing to the relevant and important relict vegetation value.

Impacts from Recreation

Management actions under the Proposed RMP would preclude issuance of SRPs and would allow no impacts from this type of activity.

Impacts from Travel Management

Under the Proposed RMP, the potential ACEC would be closed to OHV use, eliminating any impacts to the relict vegetation from motorized use.

Impacts from Lands and Realty

Under the Proposed RMP, the potential ACEC is proposed to be withdrawn from mineral entry, precluding locatable mineral development, which would protect the relevant and important relict vegetation values from ground disturbance caused by mineral exploration and development. If the area is not withdrawn but an ACEC is designated, a plan of operations would be required that would address the effects on relevant and important values and other resource concerns.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, all of the potential ACEC would be open to leasing subject to major constraints (NSO), precluding any impacts to relevant and important values from oil and gas leasing.

Locatable Minerals

Under the Proposed RMP, within a designated ACEC, federal regulations (43 CFR 3809.11 (c)(3)) require that a plan of operation be submitted for any operation causing surface disturbance greater than casual use. This regulation would mitigate the impacts of mining exploration and development on the relict vegetation relevant and important values.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, Old Woman Front RNA ACEC would be designated on 330 acres of public land in eastern Sevier County, adjacent to the Old Woman Plateau RNA on the Fishlake National Forest. Management actions for the Old Woman Front RNA ACEC associated with the Proposed RMP (i.e., protection of relict vegetation, closing the ACEC to OHV use) described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative C

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Forest and Woodland Products

Impacts would be the same as those described under the Proposed RMP.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Lands and Realty

Impacts would be the same as those described under the Proposed RMP.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under the Proposed RMP.

Locatable Minerals

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under the Proposed RMP.

Alternative D

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Forest and Woodland Products

Impacts would be the same as those described under the Proposed RMP.

Impacts from Livestock Grazing

Impacts would be the same as those described under the Proposed RMP.

Impacts from Recreation

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Lands and Realty

Impacts would be the same as those described under the Proposed RMP.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under the Proposed RMP.

Locatable Minerals

Impacts would be the same as those described under the Proposed RMP.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under the Proposed RMP.

Parker Mountain Potential ACEC

The Parker Mountain Potential ACEC is located in western Wayne County on the Awapa Plateau. The area totals 107,900 acres. Relevant and important values are sagebrush-steppe habitat and SSS (Greater sage-grouse, Utah prairie dog, and pygmy rabbit).

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Special Status Species
- Fish and Wildlife
- Travel Management
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Proposed decisions to manage surface-disturbing activities within wildlife habitat could affect the sage-grouse, prairie dog, and pygmy rabbit values. Under Alternative N, the proposed decision to prohibit surface-disturbing activities from March 1 through July 15 near Greater sage-grouse leks and from April 1 through June 15 within sage-grouse brooding/nesting habitat would have beneficial impacts to sage-grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place.

Impacts from Fish and Wildlife

Under this alternative, restricting oil and gas activities in crucial pronghorn antelope habitat from December 1 through April 30 would have beneficial impacts to the Parker Mountain antelope herd and other wildlife inhabiting the area.

Impacts from Travel Management

OHV area designations within the potential ACEC, by alternative, are shown in Table 4-84. Under Alternative N, continuing to allow cross-country OHV use within 97% of the potential ACEC would adversely impact wildlife habitat due to ground disturbance and would also adversely impact wildlife itself due to harassment and displacement.

Table 4-84. OHV Area Designations within Parker Mountain Potential ACEC

		Alternative N (No Action)	Alternative A	Proposed RMP	Alternative C	Alternative D
Open	Acres	104,500	9,300	90	0	0
	% Area	97%	9%	<1%	0%	0%
Limited	Acres	3,400	98,600	107,810	107,900	107,900
	% Area	3%	91%	>99%	100%	100%
Closed	Acres	0	0	0	0	0
	% Area	0%	0%	0%	0%	0%

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Lands open to oil and gas leasing vary by alternative, as shown in Table 4-85. Under Alternative N, 23% of the potential ACEC would be open to leasing under standard terms and conditions. Among the alternatives, this proposed decision would pose the greatest risk to relevant and important relict vegetation values from surface disturbance caused by oil and gas exploration.

Table 4-85. Oil and Gas Leasing Stipulations within Parker Mountain Potential ACEC

		Alternative N (No Action)	Proposed RMP	Alternatives A, C and D
Standard Lease Terms	Acres	24,400	0	0
	% Area	23%	0%	0%
Controlled Surface Use or Timing Stipulations	Acres	77,400	104,200	107,900
	% Area	72%	97%	100%
No Surface Occupancy	Acres	6,100	3,700	0
	% Area	5%	3%	0%
Closed	Acres	0	0	0
	% Area	0%	0%	0%

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from travel and leasable mineral decisions under this alternative.

Alternative A

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of SSS habitat, and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values. Under this alternative, the proposed decision to prohibit surface-disturbing activities within one-quarter mile of sage-grouse leks from March 15 through June 1 would have beneficial impacts to sage-grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place. However, this alternative has no surface disturbance restrictions for sage-grouse brooding/nesting habitat, thus posing a greater risk to relevant and important values than the other alternatives.

Impacts from Fish and Wildlife

Under Alternative A, having no surface disturbance restrictions for crucial pronghorn antelope habitat poses a greater risk to relevant and important values than the other alternatives.

Impacts from Travel Management

Under Alternative A, limiting vehicles to designated routes within 91% of the potential ACEC would greatly reduce these impacts. Continuing to allow cross-country OHV use within 9% of the potential ACEC could result in impacts to wildlife habitat due to ground disturbance, and wildlife itself due to harassment and displacement within that portion of the ACEC. The portion of the ACEC remaining open to OHVs is composed of large boulders, and the SSS of this potential ACEC have not been identified within this area. Portions of the open OHV area have been receiving continuous use from community-based recreational activities for many years.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under Alternative A, oil and gas leasing throughout the potential ACEC would be subject to moderate constraints (timing limitation, CSU). This would protect the wildlife relevant and important values by restricting use during sensitive seasons.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for travel and leasable minerals management, would adequately protect the relevant and important values of the potential ACEC.

Proposed RMP

Impacts from Special Status Species

Under the Proposed RMP, management actions such as prohibiting the destruction, adverse modification or fragmentation of listed species habitat, maintaining the integrity of SSS habitat, and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

The decision to limit surface-disturbing activities in sage-grouse habitat would benefit sage-grouse, prairie dogs, and pygmy rabbits during those times of the year when the restrictions are in place. Restrictions include managing the area as open to oil and gas leasing subject to major constraints (NSO) within ½ mile of Greater sage-grouse leks and prohibiting surface disturbing or otherwise disruptive activities within 2 miles of a lek from March 15 through July 15, and within sage-grouse winter habitat from December 15 through March 14 (see Appendix 11 for exceptions, waivers, and modifications).

Impacts from Fish and Wildlife

Restricting surface-disturbing activities in crucial pronghorn antelope habitat from May 15 through June 15 would provide additional benefits to sage-grouse, prairie dogs, and pygmy rabbits over Alternatives N and A.

Impacts from Travel Management

Limiting vehicles to designated routes within 99% of the potential ACEC under the Proposed RMP would greatly reduce the potential for impacts to relevant and important values associated with cross-country OHV use. A 90-acre managed open area would be located within the potential ACEC. The portion of the ACEC remaining open to OHVs is composed of large boulders, and the SSS of this potential ACEC have not been identified within this area. Extensive OHV use has been occurring within this area, and continuing that use would maintain the current condition, not resulting in any change to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Under the Proposed RMP, oil and gas leasing on 97% of the potential ACEC would be subject to moderate constraints (timing limitation, CSU), and leasing on the remaining 3% would be subject to major constraints (NSO). This would protect the SSS relevant and important values by restricting use during sensitive seasons.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Parker Mountain ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for SSS, fish and wildlife, travel, and leasable minerals management would adequately protect all the relevant and important values of the potential ACEC.

Alternative C

Impacts from Special Status Species

Impacts would be similar to those described under the Proposed RMP, however Alternative C has fewer restrictions on surface disturbing activities within Greater sage-grouse habitat.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

The greatest beneficial impacts from travel management would be under Alternatives C and D, where no areas are open to cross-country motorized vehicle travel, thus eliminating the potential for impacts to relevant and important values.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative A.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Parker Mountain ACEC would be designated on 107,900 acres of public land in Wayne County. In addition to management direction associated with Alternative C, described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Fish and Wildlife

Impacts would be the same as those described under the Proposed RMP.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative A.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Quitchupah Potential ACEC

The Quitchupah Potential ACEC is located in eastern Sevier County along Quitchupah Creek and totals 180 acres. The potential ACEC boundary includes the riparian corridors and associated cultural resource sites and areas that have spiritual value to Native Americans. Relevant and important values are cultural resources and riparian values. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Cultural Resources
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Cultural Resources

Under Alternative N, management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect this relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wildcat Knolls (30 acres) non-WSA lands with wilderness characteristics lies within the 180-acre potential Quitchupah ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Travel Management

Proposed OHV area designations vary by alternative. Under Alternative N, Trough Hollow is closed to OHV use (54 acres, or 30% of the ACEC), which would protect the relevant and important values. For Quitchupah Creek, Link Canyon, and Water Hollow (121 acres, 67% of the ACEC), unrestricted OHV use would continue to pose a threat to cultural resources, Native American concerns, and riparian values.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative N, managing Quitchupah Creek as an eligible WSR to protect its free-flowing nature and cultural outstandingly remarkable values would protect and enhance the cultural and riparian relevant and important values.

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from travel management decisions under this alternative.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, limiting vehicles to designated routes within the potential ACEC would protect the cultural resources, Native American concerns, and riparian values from disturbance.

Impacts from Special Designations

Wild and Scenic Rivers

There would be no additional protective management for Quitchupah Creek because it is not designated as a suitable WSR under Alternative A.

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for this alternative, would adequately protect the relevant and important values of the potential ACEC.

Proposed RMP

Impacts from Vegetation

Under the Proposed RMP, no surface-disturbing activities would be allowed within 330 feet on each side of the stream or the 100-year floodplain, whichever is greater, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Management to reduce surface-disturbing activities would also indirectly benefit the cultural relevant and important value of the potential Quitchupah ACEC.

Impacts from Cultural Resources

Impacts under the Proposed RMP would be the same as those described under Alternative N. Management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect the cultural relevant and important value.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wildcat Knolls (30 acres) non-WSA lands with wilderness characteristics lies within the 180-acre potential Quitchupah ACEC. This non-WSA area would not be managed for wilderness characteristics within the Proposed RMP, resulting in no additional protection for relevant and important values.

Impacts from Travel Management

Impacts would be the same as those described under Alternative A. Under the Proposed RMP, limiting vehicles to designated routes within the potential ACEC would protect the cultural resources, Native American concerns, and riparian relevant and important values from disturbance.

Impacts from Special Designations

Wild and Scenic Rivers

There would be no additional protective management for Quitchupah Creek because it is not designated as a suitable WSR under the Proposed RMP.

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Quitchupah ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions within the Proposed RMP for riparian protection (no surface-disturbing activities within 330 feet on each side of the stream or the 100-year floodplain) and travel management (limiting vehicles to designated routes), would adequately protect the riparian and cultural relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Under Alternative C, special management for the ACEC would include an increase in public awareness of cultural resource values; an increase in law enforcement presence; and if necessary, installing fencing or other direct protection of important sites. These prescriptions would provide added protection for the cultural resources in the area.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative C, closing portions of the area to OHV use (90 acres), with the remaining acres limited to designated routes, would protect the cultural resources, Native American concerns, and riparian values from disturbance.

Impacts from Special Designations

Wild and Scenic Rivers

Under Alternative C, designating Quitchupah Creek as a suitable WSR to protect its free-flowing nature and cultural outstandingly remarkable values would protect and enhance the cultural and riparian relevant and important values of the potential ACEC.

Areas of Critical Environmental Concern

Under Alternative C, designating the Quitchupah Archaeological ACEC to protect relevant and important archaeological, riparian, and Native American concerns would provide increased management emphasis for protecting these relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Impacts would be similar to those described under Alternative C, except that special management under Alternative D would allow no fencing in non-WSA lands with wilderness characteristics, which may not protect the cultural resources as much as Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Wildcat Knolls (30 acres) non-WSA lands with wilderness characteristics lies within the 180-acre potential Quitchupah ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Quitchupah ACEC would provide indirect protection for relevant and important values on 30 acres (17% of the potential ACEC). Specifics are described in the travel management discussion in this section.

Impacts from Travel Management

Impacts would be similar to those described under Alternative D, except that within Alternative D, 110 acres would be closed to OHV use. This alternative would provide the greatest level of protection for the relevant and important values of the potential ACEC.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts would be the same as those described under Alternative C.

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Rainbow Hills Potential ACEC

The Rainbow Hills Potential ACEC is located just east of Richfield and encompasses the colorful Arapien Shale outcropping. It totals 4,000 acres of public lands. Relevant and important values are mule deer, mule deer habitat, special status plants (Utah phacelia, Arapien stickleaf, Wards penstemon, rainbow rabbitbrush, Sigurd townsendia, and Glenwood milkvetch), and the naturally functioning ecosystem. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Special Status Species
- Fish and Wildlife
- Fire and Fuels Management
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Fish and Wildlife

Fish and wildlife management actions for the benefit of mule deer and their habitat would benefit those relevant and important values. These management prescriptions and seasonal and spatial restrictions on activities within the potential ACEC vary by alternative. Under Alternative N, a seasonal restriction on oil and gas exploration and development would be required in crucial and high-value mule deer habitat during sensitive seasons, such as fawning. These seasonal restrictions would provide greater protection for the mule deer and habitat relevant and important values than Alternative A, but less than under the Proposed RMP and Alternatives C and D.

Impacts from Fire and Fuels Management

Under Alternative N, unwanted wildfire in crucial mule deer habitats could result in impacts to crucial mule deer habitats. However, this alternative includes stabilization and rehabilitation efforts as needed for every wildland fire. Stabilization and rehabilitation efforts would benefit fish and wildlife species over the long term by decreasing erosion and restoring or improving habitat conditions following a fire event.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-86. Under Alternative N, continuing to manage Rainbow Hills as an open OHV area could have adverse impacts on the relevant and important values because cross-country travel could disrupt wildlife use patterns and habitat. SSS would also continue to be impacted by vehicle travel, resulting in vegetation disturbance.

Table 4-86. OHV Area Designations within Rainbow Hills Potential ACEC

		Alternative N (No Action	Alternative A	Proposed RMP	Alternatives C and D
Open	Acres	4,000	3,800	700	0
	% Area	100%	95%	17%	0%
Limited	Acres	0	200	3,300	0
	% Area	0%	5%	83%	0%
Closed	Acres	0	0	0	4,000
	% Area	0%	0%	0%	100%

Impacts from Lands and Realty

Under Alternative N, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Rainbow Hills area is within the Covenant Oil Field, presently encompassed by authorized oil and gas leases, and the producing oil field in this RFD area overlaps this potential ACEC. Under Alternative N, exploration and development activities could affect relevant and important values due to surface and human-caused disturbances if they occur within the potential ACEC. The existing leases are a valid existing right and would have priority over the ACEC designation. The effects of any proposals on relevant and important values would be analyzed in site-specific analysis.

Locatable Minerals

Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. SSS would be protected by law and BLM policy. This would minimize impacts of mining activities on relevant and important values of the potential ACEC. In addition, there is a low-to-moderate potential for occurrence of locatable mineral resources within the area. Currently, there is little interest in development. Impacts to relevant and important values from future exploration and development are expected to be low.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from resource management decisions under this alternative.

Alternative A

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fish and Wildlife

Under Alternative A, no seasonal or spatial restrictions of human presence or surface-disturbing activities would be required, which could result in greater impacts to mule deer and habitats during critical periods. This alternative would provide the least protection for the relevant and important values of mule deer and mule deer habitat.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Impacts would be similar to those described under Alternative N. Under Alternative A, 95% of the potential ACEC would continue to be open to cross-country OHV travel.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from resource management decisions under this alternative.

Proposed RMP

Impacts from Special Status Species

Under the Proposed RMP, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values and indirectly benefit the mule deer, mule deer habitat and naturally functioning ecosystem relevant and important values of the potential Rainbow Hills ACEC.

Impacts from Fish and Wildlife

Under the Proposed RMP, seasonal or spatial restriction of human presence or surface-disturbing activities could provide greater benefits to mule deer and habitats than Alternatives N and A, but less than Alternatives C and D. Prescriptive grazing would be used to favor forage production for big game high-priority and crucial winter range. OHV use would be limited to designated routes in mule deer crucial habitat, and seasonal restrictions of surface-disturbing activities would be required in crucial mule deer habitats. These management prescriptions would provide adequate protection of the mule deer and mule deer habitat relevant and important values.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative N, except that the Proposed RMP would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and to help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. Stabilization efforts would have the potential to benefit mule deer and the mule deer habitat relevant and important values in the long term.

Impacts from Travel Management

Under the Proposed RMP, open OHV use would occur on 700 acres within the potential Rainbow Hills ACEC. Boundaries of the open area have been adjusted to eliminate the potential for impacts to the SSS relevant and important value of the potential ACEC. Limiting OHVs to designated routes within the remainder of the area would reduce the impacts created by cross-country use. Vehicle travel on

designated routes could temporarily disrupt mule deer if these routes are near feeding and other occupied areas. Few routes have been identified for designation within this area, reducing the potential for impacts to all the relevant and important values.

Impacts from Lands and Realty

Under the Proposed RMP, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Lands with SSS populations would likely not be offered for disposal, thus not impacting the SSS relevant and important value. Any sale of land within the potential ACEC would result in a loss of mule deer habitat in federal ownership and would be considered in site-specific analysis prior to offering the land for sale. Actual impacts to the mule deer and mule deer habitat relevant and important values would depend upon the acreage sold and how the land is used and developed after it leaves federal ownership.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Rainbow Hills area is within the Covenant Oil Field, presently encompassed by authorized oil and gas leases, and the producing oil field in this RFD area overlaps this potential ACEC. Under the Proposed RMP, exploration and development activities could affect relevant and important values due to surface and human-caused disturbances if they occur within the potential ACEC. The existing leases are a valid existing right and would have priority over the ACEC designation. The effects of any proposals on relevant and important values would be analyzed in site-specific analysis.

Locatable Minerals

Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. SSS would be protected by law and BLM policy. This would minimize impacts of mining activities on all the relevant and important values of the potential ACEC. In addition, there is a low-to-moderate potential for occurrence of locatable mineral resources within the area. Currently, there is little interest in development. Impacts to relevant and important values from future exploration and development are expected to be low.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Rainbow Hills ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. A small portion of the potential ACEC would remain open for OHV use, while providing protection to SSS relevant and important value. Existing laws, rules, and regulations, as well as management decisions within the Proposed RMP for fish and wildlife (crucial habitats), fire and fuels, travel, lands and realty and locatable minerals, would provide protection for the relevant and important values of the potential ACEC.

Alternative C

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Under Alternative C, prescriptive grazing would be used to favor forage production for big game ranges. OHV use in mule deer crucial winter range would be limited to designated routes or closed. Seasonal restrictions would apply to surface-disturbing activities in crucial and high-value mule deer habitats.

Impacts from Fire and Fuels Management

Under Alternative C, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Travel Management

Under Alternative C, closing the Rainbow Hills to OHV use would eliminate the potential impacts from motorized travel described above.

Impacts from Lands and Realty

Under Alternative C, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in federal ownership and protecting it from development. In addition, proposed withdrawal from mineral entry would protect relevant and important values from surface disturbance caused by mineral exploration and development.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Rainbow Hills area is within the Covenant Oil Field, presently encompassed by authorized oil and gas leases, and the producing oil field in this RFD area overlaps this potential ACEC. Under Alternative C, management prescriptions would allow leasing with NSO to protect special status and endemic plants and the naturally functioning system relevant and important values. However, the existing leases are a valid existing right and would have priority over the ACEC designation, and those leases are not subject to NSO. Surface-disturbing activities from these existing leases could continue to pose risks to the relevant and important values. The effects of any proposals on relevant and important values would be analyzed in site-specific analysis.

Locatable Minerals

Under Alternative C, withdrawing the area from locatable mineral entry would protect relevant and important values from disturbances caused by mining activities.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Rainbow Hills ACEC would be designated on 4,000 acres of public land to protect and provide special management for the mule deer, mule deer habitat, special status plants, and the naturally functioning ecosystem relevant and important values. Under Alternative C, the proposed decision to designate a Rainbow Hills ACEC would (1) allow no uses that would cause irreparable damage to relevant and important values and (2) prescribe management to protect and enhance all relevant and important values.

Alternative D

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fish and Wildlife

Impacts would be similar to those described under Alternative C.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be the same as those described under Alternative C.

Locatable Minerals

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Sevier Canyon Potential ACEC

The Sevier Canyon Potential ACEC encompasses the gorge bordering the Sevier River located between the towns of Marysvale and Sevier and totals 8,900 acres of public land. Relevant and important values are mule deer, mule deer habitat, SSS, and riparian areas.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Special Status Species
- Fire and Fuels Management
- Travel Management
- Lands and Realty
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance

the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Fire and Fuels Management

Under Alternative N, unwanted wildfire in crucial mule deer habitats could result in impacts to crucial mule deer habitats. However, this alternative includes stabilization and rehabilitation efforts as needed for every wildland fire. Stabilization and rehabilitation efforts would benefit fish and wildlife species over the long term by decreasing erosion and restoring or improving habitat conditions following a fire event.

Impacts from Travel Management

Proposed OHV area designations, by alternative, are shown in Table 4-87. Under Alternative N, continuing to manage the area as open to cross-country OHV use could adversely impact mule deer, SSS, and riparian values by allowing disruption, crushing, and removal of vegetation and loss of habitat.

Table 4-87. OHV Area Designations within Sevier Canyon Potential ACEC

		Alternatives N and A	The Proposed RMP and Alternatives C and D
Open	Acres	8,900	0
	% Area	100%	0%
Limited	Acres	0	8,900
	% Area	0%	100%

Impacts from Lands and Realty

Under Alternative N, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from resource management decisions under this alternative.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream, unless it could be shown that there are no practical alternatives, all long-term impacts could be

fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Impacts would be the same as those described under Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Vegetation

Impacts would be similar to those described under Alternative A, except within the Proposed RMP the buffer zone would be equal to the 100-year floodplain or 330 feet on either side from the centerline, whichever is greater. This would provide protection for the riparian relevant and important value of the potential Sevier Canyon ACEC

Impacts from Special Status Species

Management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Fire and Fuels Management

Impacts would be similar to those described under Alternative N, except that the Proposed RMP would include stabilization efforts to sustain ecosystems, improve public health, improve safety, and help communities protect infrastructure. Priority would be given to areas that pose a threat to life and property and areas with a potential for invasive weeds. Stabilization efforts would have the potential to benefit mule deer and mule deer habitat relevant and important values in the long term.

Impacts from Travel Management

Under the Proposed RMP, limiting vehicles to designated routes would reduce adverse impacts to riparian areas and mule deer habitat and reduce the potential for harassment of mule deer and SSS, providing protection to all the relevant and important values of the potential ACEC. Impacts would be less than Alternatives N and A, and the same as Alternatives C and D.

Impacts from Lands and Realty

Under the Proposed RMP, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis. Lands with riparian values and SSS populations would likely not be offered for disposal, thus not impacting the riparian and SSS relevant and important value. Any sale of land within the potential ACEC would result in a loss of mule deer habitat in federal ownership and would be considered in site-specific analysis prior to offering the land for sale. Actual impacts to the mule deer and mule deer habitat relevant and important values would depend upon the acreage sold and how the land is used and developed after it leaves federal ownership.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Sevier Canyon ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as management decisions for riparian protection zones, SSS, fire and fuels, and travel management under the Proposed RMP would provide protection for all the relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fire and Fuels Management

Under Alternative C, the proposed decision to suppress unwanted wildfire in crucial mule deer habitats would benefit the mule deer by protecting the browse species that could otherwise be damaged by wildland fire and subsequently out-competed by undesirable species.

Impacts from Travel Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Lands and Realty

Under Alternative C, proposed decisions for land tenure adjustments would benefit all relevant and important values by keeping the land in federal ownership and protecting it from development.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Sevier Canyon ACEC would be designated on 8,900 acres of public land to protect and provide special management for the mule deer and riparian relevant and important values. In addition to management direction associated with Alternative C described above, designating the ACEC would allow no uses that would cause irreparable damage to relevant and important values.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Fire and Fuels Management

Impacts would be the same as those described under Alternative C.

Impacts from Travel Management

Impacts would be the same as those described under the Proposed RMP.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Special Status Species Potential ACEC

The Special Status Species Potential ACEC encompasses documented locations of SSS identified in the evaluations of the various ACEC proposals. In total, this represents 15,100 acres of public lands. Relevant and important values are the following SSS: Winkler pincushion cactus, Wright fishhook cactus, last chance townsendia, Rabbit Valley gilia, Cronquist wild buckwheat, Creutzfeldt flower, Wards penstemon, Basalt milkvetch, Bicknell milkvetch, hole-in-the-rock prairie clover, Dana's milkvetch, Barneby milkvetch, Psoralea globemallow, Heil's beavertail, Jane's globemallow, flat-top wild buckwheat, Townsend's big eared bat, Allen's big eared bat, big free-tailed bat, fringed miotis, ferruginous hawk, bald eagle, burrowing owl, long-billed curlew, southwestern willow flycatcher, Greater sage-grouse, bluehead sucker, flannelmouth sucker, round-tail sucker, leatherside chub, and desert night lizard.

Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Special Status Species
- Travel Management
- Lands and Realty
- Minerals and Energy

- Special Designations.

Other programs were determined to have little or no impact on the SSS of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Travel Management

Proposed decisions for OHV open areas under Alternative N would pose the threat of irreparable damage to some of the special status plant species. If cross-country OHV use occurred within areas occupied by special status plants, they could be crushed, damaged, or destroyed.

Impacts from Lands and Realty

Under Alternative N, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important values that would be determined in site-specific environmental analysis.

Impacts from Minerals and Energy

Potential impacts of energy and mineral development to special status plant species include direct mortality from construction equipment and vehicles in occupied habitats. Also, habitat could be lost or modified by constructing well pads, pipelines, and associated facilities in occupied and suitable habitats and by disturbing habitat of the species' pollinators. Potential impacts of energy and mineral development to special status animal species include disturbance and harassment, which could interrupt/affect animals during critical activities (such as breeding or foraging), which could impact survival. SSS are scattered in various locations throughout the RFO, which could involve areas open to oil and gas, areas suitable for coal exploration and development, locatable minerals development, and mineral material disposal.

Leasable Minerals—Oil and Gas

SSS that are located in open areas or areas open to leasing subject to moderate constraints (timing limitation, CSU) are at greatest risk from oil and gas activities. Under Alternative N, 58% of the RFO would be open to leasing subject to standard terms and conditions and 19% would be open to leasing subject to moderate constraints (timing limitation, CSU). Lease notices informing potential lessees of restrictions and requirements that could be necessary for the protection of SSS would be attached to oil and gas leases offered in the State. The lease notices and accompanying consultation memoranda are found in Appendix 11. Application of the measures resulted in a "may affect, not likely to adversely affect" determination for the oil and gas leasing program.

Leasable Minerals—Coal

Any direct impacts of coal development on listed plant and animal species would be precluded by Coal Unsuitability Criterion 9, which states that, "federally designated habitat for listed threatened or endangered plant and animal species or species proposed for listing…shall be considered unsuitable."

Locatable Minerals

SSS could be adversely affected by surface-disturbing activities resulting from locatable minerals development. Closing or withdrawing areas from mineral operations would prevent impacts to SSS if they occur within those areas. Alternative N would recommend the fewest acres for withdrawal (169,480 acres). Locatable mineral exploration and development would be allowed under the General Mining Law. FLPMA requires BLM to regulate mining activities to prevent undue and unnecessary environmental degradation to resources. SSS would be protected by law and BLM policy. This would minimize impacts of mining activities on relevant and important values of the potential ACEC.

Salable Minerals

Existing areas of salable mineral disposals have already been substantially impacted. Therefore, it is likely that SSS do not occur in these areas. Authorization of new sites would be subject to NEPA review and consultation with USFWS, which would protect SSS.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from resource management decisions under this alternative.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Travel Management

Impacts would be the same as those described under Alternative N.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative N.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts would be similar to those described under Alternative N, except with fewer acres open to oil and gas leasing with standard stipulations. Under Alternative A, 40% of the RFO would be open to leasing subject to standard terms and conditions, and 39% would be open to leasing subject to moderate constraints (timing limitation, CSU).

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be similar to those described under Alternative N, except that fewer acres (154,700) would be recommended for withdrawal from mineral entry.

Salable Minerals

Impacts would be the same as those described under Alternative N.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative N.

Proposed RMP

Impacts from Vegetation

Impacts would be similar to those described under Alternative A, except within the Proposed RMP the buffer zone would be equal to the 100-year floodplain or 330 feet on either side from the centerline, whichever is greater. This protection of riparian resources would indirectly benefit any special status species located or dependant on those areas, and thus provide benefit to the SSS relevant and important value of the potential ACEC.

Impacts from Special Status Species

As in Alternative A, under the Proposed RMP, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Travel Management

Proposed decisions for OHV open areas under Alternatives N and A would pose the threat of irreparable damage to some of the special status plant species. The threat would be much reduced under the Proposed RMP where less than 1% of the lands managed by the RFO are designated as open. The boundaries of these small, managed open areas were developed to avoid SSS and thus protect this relevant and important value.

Impacts from Lands and Realty

Under the Proposed RMP, proposed decisions for land tenure adjustments could maintain, increase, or decrease the land in federal ownership, having a beneficial or adverse impact on relevant and important

values that would be determined in site-specific environmental analysis. Lands with SSS populations would likely not be offered for disposal, thus not impacting the SSS relevant and important value.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The Proposed RMP would reduce the potential threat to SSS by having only 29% of the RFO open to leasing subject to standard terms and conditions. There would be 43% of the RFO open to leasing subject to moderate constraints (timing limitation, CSU), and the remaining 28% would be open to leasing subject to major constraints (NSO) or closed to leasing. Oil and gas leasing would be subject to species-specific buffers and seasonal, temporal and spatial restrictions identified within Appendix 11 and 14 to conserve habitat for SSS. These mitigation measures would provide protection to the SSS relevant and important values of the potential ACEC.

Leasable Minerals—Coal

Any direct impacts of coal development on listed plant and animal species would be precluded by Coal Unsuitability Criterion 9, which states that, "federally designated habitat for listed threatened or endangered plant and animal species or species proposed for listing…shall be considered unsuitable."

Locatable Minerals

Impacts would be similar to those described under Alternative N, except that additional acres (176,200) would be recommended for withdrawal from mineral entry over Alternatives N and A, providing additional protection to SSS species and the relevant and important values, if SSS are located within those areas.

Salable Minerals

Existing areas of salable mineral disposals have already been substantially impacted. Therefore, it is likely that SSS do not occur in these areas. Authorization of new sites would be subject to NEPA review and consultation with USFWS, which would protect SSS relevant and important values.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the potential Special Status Species ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Resource decisions under the Proposed RMP have greatly reduced the potential for impacts to SSS. Existing laws, rules, and regulations, as well as the management decisions for SSS (maintaining the integrity of SSS habitats), travel, and minerals management (oil and gas leasing stipulations) would provide protection for the relevant and important SSS values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

The potential for impacts to SSS from travel management was virtually eliminated under this alternative, which designated no open areas.

Impacts from Lands and Realty

Under Alternative C, proposed decisions for land tenure adjustments would benefit SSS by keeping the land in federal ownership and pursuing acquisition of non-federal lands from willing sellers where determined necessary for SSS. Also under this alternative, ROWs and other land use authorizations would be avoided if they would impact SSS or their habitats.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

In Alternative C, 2% less of the RFO would be open to leasing subject to standard terms and conditions, and 9% more of the area would be open to leasing subject to major constraints (NSO) or closed to leasing. This alternative would reduce risks to SSS compared to Alternatives N and A and the Proposed RMP.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Impacts would be similar to those described under Alternative N, except that additional acres (331,100) would be recommended for withdrawal from mineral entry, providing additional protection to SSS.

Salable Minerals

Alternative C would provide additional protection for SSS by managing disposal subject to controlled surface use or timing limitations.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, the Special Status Species ACEC would be designated (15,100 acres of public land) to protect and provide special management for SSS values within the potential ACEC by protecting them from ground-disturbing activities.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative A.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Lands and Realty

Impacts would be the same as those described under Alternative C.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Potential for impacts would be least under this alternative, which would allow leasing with standard stipulations on only 14% of the RFO. The remainder of the area would be open to leasing subject to moderate constraints (TL, CSU), subject to major constraints (NSO), or closed to leasing, which would minimize or eliminate the potential for impacts to SSS.

Leasable Minerals—Coal

Impacts would be the same as those described under Alternative N.

Locatable Minerals

Alternative D would provide the greatest protection to SSS by recommending 903,900 acres for withdrawal from mineral entry.

Salable Minerals

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

Thousand Lakes Bench Potential ACEC

The Thousand Lakes Bench ACEC is located in southeastern Sevier County, south of Interstate 70 and east of Thousand Lake Mountain. It is 500 acres, located in several small areas. Relevant and important values are cultural resources, SSS (bald eagle, last chance townsendia, and Wright fishhook cactus), and riparian areas. Impacts to the relevant and important values of this ACEC could occur from the following resource management programs:

- Vegetation
- Cultural Resources
- Special Status Species
- Non-WSA Lands with Wilderness Characteristics
- Travel Management
- Special Designations.

Other programs were determined to have little or no impact on the relevant and important values of this potential ACEC.

Alternative N: No Action

Impacts from Vegetation

Under all alternatives, no surface-disturbing activities would be allowed within identified distances (which vary by alternative) from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important values from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and

vegetation treatment. Under Alternative N, no surface-disturbing activities would be allowed within 500 feet of riparian areas.

Impacts from Cultural Resources

Under Alternative N, management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect this relevant and important value.

Impacts from Special Status Species

Under all alternatives, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Jones Bench (40 acres) and Limestone Cliffs (390 acres) non-WSA lands with wilderness characteristics lie within the 500-acre potential Thousand Lakes Bench ACEC. No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under Alternative N, resulting in no additional protection for relevant and important values.

Impacts from Travel Management

OHV area designations, by alternative, are shown in Table 4-88. Under Alternative N, continuing to manage the area as open to cross-country OHV use would leave relevant and important values vulnerable to direct impacts from cross-country vehicle use.

Table 4-88. OHV Area Designations within Thousand Lakes Bench Potential ACEC

		Alternative N (No Action)	Alternatives A and the Proposed RMP	Alternatives C and D
Open	Acres	500	0	0
	% Area	100%	0%	0%
Limited	Acres	0	500	0
	% Area	0%	100%	0%
Closed	Acres	0	0	500
	% Area	0%	0%	100%

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative N, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. There would be a potential for impacts to relevant and important values from travel management decisions under this alternative.

Alternative A

Impacts from Vegetation

Under Alternative A, no surface-disturbing activities would be allowed within 330 feet on each side of the stream, unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N.

Impacts from Special Status Species

Under Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat; and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Under Alternative A, limiting vehicles to designated routes would reduce direct impacts to cultural, special status plant species, and riparian areas and would reduce the disturbance to bald eagles.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative A, no ACEC would be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as other resource decisions for riparian protection zones and travel management under this alternative, would provide protection for the relevant and important values of the potential ACEC.

Proposed RMP

Impacts from Vegetation

Impacts would be similar to those described under Alternative A, except within the Proposed RMP the buffer zone would be equal to the 100-year floodplain or 330 feet on either side from the centerline, whichever is greater. This would provide protection for the riparian relevant and important value of the potential Thousand Lakes Bench ACEC

Impacts from Cultural Resources

Impacts would be the same as those described under Alternative N. Under the Proposed RMP, management of cultural resources within the potential ACEC would be in accordance with existing cultural resource laws, which would protect this relevant and important value.

Impacts from Special Status Species

Under the Proposed RMP, as in Alternative A, management actions such as prohibiting the destruction, adverse modification, or fragmentation of listed species habitat; maintaining the integrity of SSS habitat;

and habitat improvements would benefit SSS. Additional strategies (such as utilizing seasonal and spatial buffers for surface-disturbing activities and complying with raptor protection guidelines for powerline construction) would be employed to protect raptors and their habitat. These actions would minimize or eliminate impacts to the SSS relevant and important values.

Impacts from Non-WSA Lands with Wilderness Characteristics

Under the Proposed RMP, management prescriptions to maintain wilderness characteristics on 2,600 acres of the Jones Bench non-WSA lands with wilderness characteristics area would provide indirect protection for relevant and important values within the 50 acres located within the potential Thousand Lakes Bench ACEC. Management prescriptions would protect scenic values, reduce or eliminate surface disturbance, and retain public lands in federal ownership.

Impacts from Travel Management

Impacts would be the same as those described under Alternative A. Under the Proposed RMP, limiting vehicles to designated routes would reduce direct impacts to cultural, special status plant species, and riparian areas and would reduce the disturbance to bald eagles, thus providing protection for all relevant and important values of the potential ACEC.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under the Proposed RMP, the Thousand Lakes Bench ACEC would not be designated and no special management prescriptions would be implemented to specifically protect the relevant and important values of the area. Existing laws, rules, and regulations, as well as other resource decisions for riparian protection zones (not allowing surface disturbing activities within the 100-year floodplain or 330 feet on either side from the centerline), SSS (maintaining the integrity of the SSS habitats), non-WSA lands with wilderness characteristics and travel management (limiting vehicles to designated routes) under the Proposed RMP, would provide protection for all the relevant and important values of the potential ACEC.

Alternative C

Impacts from Vegetation

Under Alternative C, no surface-disturbing activities would be allowed within 660 feet from riparian areas unless it could be shown that there are no practical alternatives, all long-term impacts could be fully mitigated, and the activity would benefit and enhance the riparian area. This would protect the riparian relevant and important value from surface-disturbing activities, but it could restrict potentially beneficial actions such as riparian area restoration and vegetation treatment.

Impacts from Cultural Resources

Under Alternative C, special management for the ACEC would include increasing public awareness of cultural resource values, increasing law enforcement presence, and, if necessary, installing fencing or other direct protection of important sites. These prescriptions would provide added protection for the cultural resources in the area.

Impacts from Special Status Species

In addition to the management strategies described under Alternative A, Alternative C prescribes increasing law enforcement presence in order to deter unauthorized collection of Wright fishhook cactus. This would provide added protection for this SSS within the potential ACEC.

Impacts from Non-WSA Lands with Wilderness Characteristics

Impacts would be the same as those described under Alternative N.

Impacts from Travel Management

Alternative C would close the potential ACEC to OHV use, thus eliminating the risks associated with motorized use and protecting the relevant and important values.

Impacts from Special Designations

Areas of Critical Environmental Concern

Under Alternative C, Thousand Lakes Bench ACEC would be designated (500 acres of public land) to protect and provide special management for the SSS, cultural resources, and riparian area values within the potential ACEC by protecting them from ground-disturbing activities.

Alternative D

Impacts from Vegetation

Impacts would be the same as those described under Alternative C.

Impacts from Cultural Resources

Special management under Alternative D would increase public awareness of cultural resource values and increase law enforcement presence, but no fencing would be allowed in non-WSA lands with wilderness characteristics, which may not protect the cultural resources as much as Alternative C.

Impacts from Special Status Species

Impacts would be the same as those described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

A portion of the Jones Bench (50 acres) and Limestone Cliffs (390 acres) non-WSA lands with wilderness characteristics lie within the 500-acre potential Thousand Lakes Bench ACEC. Under Alternative D, protecting the non-WSA lands with wilderness characteristics within the Thousand Lakes Bench ACEC would provide indirect protection for relevant and important values on 440 acres (88% of the potential ACEC). Specifics are described in the travel management discussion in this section.

Impacts from Travel Management

Impacts would be the same as those described under Alternative C.

Impacts from Special Designations

Areas of Critical Environmental Concern

Impacts would be the same as those described under Alternative C.

4.6 IMPACTS TO THE SOCIAL AND ECONOMIC ENVIRONMENT

This section is subdivided into three general areas:

- Impacts to social and economic conditions
- Impacts to environmental justice
- Impacts to public safety.

4.6.1 Social and Economic Conditions

This section discusses impacts to the social and economic conditions of the five-county socioeconomic study area from management actions contained within the various RMP alternatives and the Proposed RMP. Such impacts may result from specific individual management actions but also often reflect the collective effect of a number of actions under a particular alternative. Thus, this section presents impacts *from* the specific management actions of various resource programs and alternatives, in terms of impacts *to* the local economy, population, community services, public finance, and social customs and culture. Environmental justice is also addressed.

Potential *economic impacts* include changes in employment, income, business costs, and tax revenue to local, State, and Federal Government entities. Changes in employment and income can then cause indirect socioeconomic impacts, such as changes in population, which can lead to community impacts on housing, infrastructure, and other government services. These economic impacts may then produce *social impacts*, such as changes in community structure as new people move in to take new jobs. Changes in management of resources under the Proposed RMP and all alternatives can also have direct social impacts for residents and visitors, affecting livelihoods, lifestyles, attitudes, opinions, quality of life, and social structures.

The socioeconomic impact analysis and conclusions are based on BLM knowledge of resource uses in the socioeconomic study area; review of existing literature; and information provided by BLM specialists, local and State cooperating entities, and industry contacts. Impacts are quantified when possible and described in qualitative terms in the absence of reliable quantitative data. The analysis of socioeconomic impacts is intended to capture the most notable, overall socioeconomic impacts under each alternative, and cannot address all potential impacts.

Methods and Assumptions

This analysis was based on the following socioeconomic assumption:

- Baseline population growth in the planning area would follow projections made by the Governor of Utah's Office of Planning and Budget, Demographic and Economic Analysis Section, as shown in Table 4-89. (Deviations from these baseline projections due to management alternatives were noted, if any.)

Table 4-89. Population Projections in the Five-County Area

County	1990 Population	2000 Population	2010 Projected Population	2020 Projected Population	2030 Projected Population	Percent Change 2000–2030
Garfield*	3,980	4,763	4,955	5,973	6,747	42%

County	1990 Population	2000 Population	2010 Projected Population	2020 Projected Population	2030 Projected Population	Percent Change 2000–2030
Piute	1,277	1,436	1,503	1,790	1,797	25%
Sanpete	16,259	22,846	27,904	32,902	35,181	54%
Sevier	15,431	18,938	21,038	24,855	26,892	42%
Wayne	2,177	2,515	2,764	3,469	3,943	57%
Socioeconomic Study Area Totals	**39,124**	**50,498**	**58,164**	**68,989**	**74,560**	**48%**
Utah Totals	**1,722,850**	**2,246,553**	**2,833,337**	**3,486,218**	**4,086,319**	**82%**

Source: U.S. Census Bureau 2005, Utah Governor's Office of Planning and Budget 2005.
*Most of Garfield County's population lives outside the portion of the county within the RFO boundary.

Additional assumptions related to particular resource programs are important to the analysis of socioeconomic impacts. These are noted in the analyses below as needed.

Estimation of employment and income impacts required an economic model and a series of inputs specific to the RFO socioeconomic study area. Current uses of public lands and how these uses could change under each alternative provided quantitative input necessary for the economic impact analysis (e.g., number of gas wells, AUMs). Quantitative measures were only possible for some resource uses, specifically, livestock grazing, fuels management, recreation, and minerals (coal and fluid minerals). The estimates of annual employment and income generated in this study represent *only* the economic activity *directly attributable to activities on BLM-administered lands within the planning area*, based on the data and assumptions described in the methodology sections for each specific resource use. Economic activity that does not result from use of the RFO, such as jobs and income derived from livestock forage outside of BLM-administered lands, is not reported in this analysis.

It should be noted that for each resource use, future economic activity is dependent on a variety of factors beyond the control of BLM. For instance, the extent, pace, and timing of energy development activities depend on national and international energy demand and prices, production factors within each industry, and business strategies of operators. Because the pace of energy development in the planning area is unknown, a constant rate of production is assumed in this analysis for both coal production and oil and gas drilling and production. Likewise, utilization of livestock AUMs is assumed to be constant throughout the study period, based on the AUM allocations for each alternative. Actual economic impacts may vary if the rate of production in any of these industries changes over the study period.

Environmental Consequences

Impacts to socioeconomics would likely result from actions proposed under the following resource programs:

- Vegetation
- Visual Resources
- Fire and Fuels Management
- Non-WSA Lands with Wilderness Characteristics

- Forestry and Woodland Products
- Livestock Grazing
- Recreation
- Travel Management
- Lands and Realty
- Minerals and Energy
- Special Designations.

Other programs were determined to have little or no impact on socioeconomic conditions. There are no WSA decisions that would impact socioeconomic conditions.

Alternative N: No Action

Impacts from Vegetation

Vegetation treatments (including weed control and pest control) could provide some benefits to economic uses of BLM rangelands (e.g., livestock grazing and harvesting of forest and woodland products) and could result in inflows of dollars and provide contracts, income, and employment in the five-county study area. Insufficient information exists to quantify these benefits, but differences between the alternatives are discussed qualitatively.

Impacts from Visual Resources

VRM decisions represent a collection of restrictions placed on various resource programs, depending on the class of scenery identified through visual resource inventories. The VRM class itself does not represent a restriction; restrictions result from management decisions for other resources that potentially affect scenic qualities. The socioeconomic impacts of management decisions result from those separate resource decisions for the specific acreages within each VRM class designation. As with other resources, these decisions vary by alternative.

Impacts on socioeconomics from VRM decisions would most likely result from actions proposed under vegetation, fire and fuels management, non-WSA lands with wilderness characteristics, livestock grazing, recreation, travel management, lands and realty, minerals and energy, and special designations.

It must be re-emphasized that restrictions within these *other* resources provide the tools that BLM can use in managing scenic resources.

Alternative N contains no acreage in VRM Class I and is thus potentially the least restrictive of the alternatives. This is somewhat misleading in that Alternative N does not include WSA acreage as VRM Class I, as do the Proposed RMP and Alternatives A, C, and D. By policy, all WSAs must be managed under IMP. The prescriptions of IMP, which bar almost all forms of development or surface-disturbing activities, have the same net impact as managing as VRM Class I. The impacts to socioeconomics would be similar to the impacts discussed for other resources in this alternative that directly affect scenic quality. The lower degree of protection of scenic resources under this alternative has the potential to adversely impact those businesses and individuals whose livelihood depends, all or in part, on local recreation spending by those visitors who place a high value on the scenic qualities of the planning area.

Impacts from Fire and Fuels Management

Wildland fires pose significant threats to human life and property. Personal, social, and economic losses from wildland fires, particularly in the Wildland Urban Interface, can be substantial. Strains on the resources of communities to fight fires can also be considerable. The wildland fire risk management and fire-fighting policies and programs of the alternatives would reduce risks and eventual losses. Fire

suppression activities within the RFO are managed by the Richfield Interagency Fire Center (RIFC), which is located in central Utah. Its jurisdictional boundaries cover seven counties, including Piute, Sanpete, Sevier, and Wayne counties. RIFC employed local personnel that participated on 468 on-and-off district assignments in 2005 (RIFC 2005). In the same year, BLM administered two exclusive use contracts for a Type-3 helicopter and one air-attack/reconnaissance fixed-wing aircraft, both stationed at Richfield airport. BLM also acquired two Single Engine Airtankers on Call When Needed contracts that were stationed at Fillmore and Nephi (ibid). From 1996 through 2005, 336,392 acres burned on BLM's Richfield and Fillmore Field offices combined, with an annual average of 82 fires burning an annual average of 33,639 acres (ibid). In the Richfield area, the cost of fire suppression ranges from $169 for fires one-quarter of an acre to 10 acres down to $34 per acre for fires larger than 1,000 acres (BLM RFO 2008). Assuming the entire cost for fire suppression stays within the socioeconomic study area, the average fire is about 410 acres, and cost of fire suppression for a fire between 300 acres and 1,000 acres remains at $47 per acre over the life of the plan, a rough estimate of the annual revenue contributed to the local economy from fire suppression activities can be estimated. This results in about $1,580,000 annually to the local economy over the life of the plan. The estimate overstates the total economic contribution to the local economy because it uses the average annual acreage for fires in both the Richfield and Fillmore Field Offices. Post-fire stabilization and rehabilitation costs could result in inflows of dollars to the socioeconomic study area and provide opportunities for contracts, income, and employment in the study area. However, the resulting economic activity from suppression activities cannot be quantified or differentiated between the alternatives due to unpredictability in the locations and intensities of wildfire and rehabilitation requirements.

For fuels treatments, however, it is possible to quantify expenditures and their impact on the local economy. In the Richfield Fire District (of which the BLM is a partner), approximately 10,000 acres per year have been mechanically treated in recent years. In the Richfield area, the cost of this treatment is about $100 per acre, with about 70% of that amount going to a local contractor (conversation between Bill Stevens, Moab Field Office and Stan Anderson, United States Forest Service (USFS), Richfield Interagency Fire Center, June 29, 2007). This has resulted in at least $70,000 per year being put into the local economy from mechanical fuels treatments. Contracts for such services are awarded competitively, so there is no assurance that such contracts will continue to be locally awarded. This analysis, however, makes that assumption.

The extent of socioeconomic impacts of fire suppression cannot be projected given the unpredictability in the locations and intensities of wildfire. However, under Alternative N and based on assumptions discussed above, on average, approximately 33,639 acres are suppressed annually, contributing an estimated $1,580,000 to the local economy. Alternative N is not specific as to acres treated per year, as decisions are made on a case-by-case basis. In recent years, as noted above, approximately 10,000 acres have been treated annually, contributing an estimated $700,000 to the local economy.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Insufficient information on current harvests and harvest potential (e.g., areas suitable for timber harvest) is available to quantify the economic value, jobs, and income produced from forest and woodland products on public lands.

Commercial timber harvesting on public land in the RFO has historically been very limited. At present, commercial harvests are prohibited east of Capitol Reef National Park, including the Henry Mountains, which have commercially harvestable species. Public lands are also used for commercial seed and live

plant collection. These operations are believed to support jobs and income in the socioeconomic study area. Non-commercial harvests of Christmas trees, posts and poles, and fuelwood also have economic, social, and cultural significance to local residents. Under this alternative, forest and woodland product harvests, and any resulting jobs and significance to local custom and culture, would continue to follow recent patterns.

Impacts from Livestock Grazing

Grazing decisions were analyzed as follows. First, historical grazing use (licensed AUMs per year) within the RFO was obtained from BLM records. This data is provided in Chapter 3. Next, the average values of AUMs in Utah for cattle and sheep were estimated, which is also discussed in Chapter 3.

Grazing use of public lands would continue to provide income and jobs in the socioeconomic study area. According to a statewide social survey conducted by Utah State University (USU) in 2007, provided in Appendix 17, a minority group of the residents in each of the five counties within the socioeconomic study area relies on permitted use of BLM lands for a portion of their household income. The highest percentage of respondents that indicated some portion of their household income comes from permit-based grazing activities on BLM lands was for Garfield County (20% of respondents), and the lowest percentage was for Sanpete County (4.5% of respondents).

Levels of grazing would likely continue at recent levels. Use of public lands in the Richfield planning area averaged 50,827 cattle AUMs and 9,756 sheep AUMs over the 10-year period from 1994 to 2003. This base period includes a number of good, average, and low grazing years, ranging from 76,591 total AUMs in 2001 to 39,921 total AUMs in 2003. Based on this average use and average Utah production values per AUM, the annual value of livestock production from AUMs on public lands is $2,319,000. This represents 1.5% of the $154,189,000 annual value of cash receipts from livestock and livestock products for the entire five-county socioeconomic study area.

Ranching on public lands also represents an important aspect of the local culture. A decrease in the number of acres available for grazing has the potential to adversely 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 for the ranchers to continue with traditional practices could potentially impact the overall character and way of life for residents of the planning area. Reductions in ranching-based income could make it difficult for families to earn a living on ranching alone. Family members may have to get second jobs or work off of the ranch to bring in additional income. If ranchers are unable to continue operations, impacts to local communities could include loss of business activity or the businesses themselves and a decline in population if individuals have to relocate to earn a living.

Impacts from Recreation

Recreational activity has important socioeconomic value, both in terms of satisfaction provided to local residents and visitors and the economic activity generated for the local economy. Recreation-related expenditures in the socioeconomic study area by visitors from other regions infuse new money into the local economy. These expenditures and re-spending of this money between sectors within the local economy generate income and support jobs.

Data on recreational use for various activities on public lands managed by the RFO is available from RMIS (Recreation Management Information System), a database maintained by the BLM. RMIS data for fiscal years (FYs) 2001–2004 is summarized in Chapter 3. Unfortunately, neither RMIS nor any other source provides data on the proportion of visitor days accounted for by individuals living outside the socioeconomic study area. According to a state-commissioned study by D.K. Shifflet & Associates (2006), non-resident travel within Utah has consistently been about double that of resident tourism,

measured in terms of visitor days. In 2005, for example, the study found that non-resident visitor days accounted for 66.2% of statewide visitor days. Not all visitors, of course, are recreation visitors (e.g., business, visiting family), nor are all recreation visitors using BLM lands. Given the lack of other data sources, this figure seems reasonable for the 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[1].

Data on expenditures per local (defined as Utah resident) and non-local visitor day was obtained from the above source. That study estimated non-resident visitor spending statewide at $103 per day, with resident spending statewide 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.

Due to insufficient data, economic differences between the alternatives could not be quantified. Differences are discussed qualitatively.

The economic contributions of recreation to the local economy were quantified for Alternative N based on current levels of recreation. Recreational visitor days on BLM land were based on a 4-year average of RMIS data for fiscal years 2001 to 2004. Total visitor days were 374,594. Non-local visitor days were assumed to be 66.2% of that figure. Total expenditures in the socioeconomic study area by non-local recreationists using public lands were estimated to be $25,542,000 in 2005 dollars. Spending by Utah residents (not all of whom would reside in the planning area) added another $7,723,000, based on the assumptions outlined above.

Factors outside the planning area are expected to increase demand for recreational activities within the RFO. While there have been reductions in visitation numbers over recent years, these contradict regional and national recreation trends and are expected to reverse and grow over time (BLM 2003b). For instance, increasing populations along the Wasatch Front and the western slope of Colorado are expected to result in increasing demand for recreational activities throughout Utah, and likely for the RFO. No projections for increased visitation to RFO lands over the planning period are available, but expenditures, income, and jobs related to recreation on public lands are likely to increase over the planning period. According to the 2007 USU social survey, with summary results provided in Appendix 17, the percentage of survey respondents who operate or work at a business linked to recreation or tourism activities influenced by public lands and resources was highest in Wayne County (51.3%), Garfield County (40.3%), and Piute County (33.3%) and substantially lower in Sevier County (8.1%) and Sanpete County (5.3%).

Recreation management decisions could impact the lifestyle or quality of life of individuals utilizing or living near public lands. In particular, decisions that alter the classification of certain areas within the RFO relative to different types of recreation experiences (e.g., primitive, motorized, developed sites) would affect the availability and quality of different recreational experiences. This could impact individuals with expectations or desires that differ from those provided by the management decisions. Under Alternative N, existing conflicts caused by differing visitor expectations and desires for certain types of recreational experiences could continue and intensify with time. This alternative does not address these types of conflicts.

[1] *A comprehensive visitation use study conducted for the Moab, Utah, BLM Field Office found that 18% of recreation visitors were locals, defined as living within 50 miles of the interview site (USFS 2007).*

Impacts from Travel Management

Demand for OHV recreation use is likely to increase over time in the RFO, although these increases are not quantifiable with existing data. The employment and income impacts of current levels of OHV recreation use are captured in the recreation analysis.

Under this alternative, most of the RFO (1,636,400 acres, 77%) would be open to OHV recreation use without limitation. This would provide for high quantity and quality of experience for users seeking an unconfined OHV recreation use experience, but it would impact the quality of experience for other recreationists interested in non-motorized recreational environments. There could also be adverse impacts to that segment of OHV users for whom a key part of their recreation experience is interaction with and enjoyment of scenic values. Unrestricted OHV use has the potential to detract from such values, and thus the desired experience of this subset of users.

Impacts from Lands and Realty

Land tenure adjustments potentially impact local government finances. Disposal of public lands to private ownership could reduce Payments In Lieu of Taxes (PILT) by the Federal Government to local government, but would also result in payments of property taxes to local government by the new private property owner(s). Land exchange to other governments could also impact PILT payments. Acquisition of private land by the BLM would reduce property taxes paid to local government but would increase PILT payments. The net impact on local government finances cannot be determined without detailed information on the specific property or properties in question and the tax rates and other financial figures for the particular local government(s).

Disposal of public lands to local governments or private parties could further the economic development of communities within the RFO or serve other important social purposes such as provision of special recreational areas. Neither the increased economic activity nor other social benefits or costs can be predicted within the framework of the RMP process because these impacts depend on the location and timing of the specific land tenure adjustments. Analysis of these impacts would properly be conducted at the implementation level.

ROWs, leases, and permits produce revenue for the BLM and play important roles in the economy within, and in some cases beyond, the RFO. Management direction established in the RMP might support or deny ROWs, leases, and permits, but actual impacts would depend on the specific location and proposal. The socioeconomic impacts cannot be estimated at the RMP level.

Under Alternative N, only a few parcels (280 acres) identified in current land use plans that have not sold to date would be available for FLPMA Section 203 sales. Thus, impacts from sales under this program would be low, resulting in foregone opportunities to bolster local economic development. However, other land tenure adjustments (exchanges, R&PP patents, etc.) could still be approved. These other land tenure adjustments are considered on a case-by-case basis and are hard to predict.

Under Alternative N, certain areas are managed as avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Eligible WSR corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing subject to major constraints (NSO).

To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development that require such use of the public lands. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities desiring ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

The economic impact of oil and gas operations was analyzed in two phases:

- Phase I: Exploration and Development
- Phase II: Production.

Phase I considered how many exploratory and development wells would be drilled in the RFO under each alternative and how many would be completed as producing wells. The average number of wells expected to be drilled under each alternative for four sub-areas of the RFO was taken from the RFD scenario (Appendix 12) prepared by BLM for this Proposed RMP. A number of additional assumptions were necessary for this analysis, which are summarized in Table 4-90.

Table 4-90. Assumptions for Oil and Gas Economic Impact Analysis

Item		RFD Area			Source
		1 and 2	3	4	
Number of Wells Drilled per Year on BLM		3	0	11	RFD Table 1 figures as adjusted for land ownership, divided by 15-year period
Type of Well	Oil	50%	0	100%	RFD, and Utah BLM state office minerals staff professional judgment
	Conventional Gas	50%	0	0	
	Coalbed Methane	0	100%	0	
Average Success Rates, All Well Types		12.50%	12.50%	50%	Utah BLM state office mineral staff professional judgment—12.5% is the national average for exploration; a higher rate is expected in Area 4 due to known field development
Average Cost of Drilling and Completion to Producing Well	Oil	$2.25 million			Utah BLM state office mineral staff, based on costs in recent "Paying Well Determination" submittals for wells similar to those expected in the RFO
	Conventional Gas	$2.25 million			
	Coalbed Methane	$1 million			
Average Cost of Drilling and Completion to Dry Hole	Oil	$1.35 million			Utah BLM state office mineral staff professional judgment
	Conventional Gas	$1.35 million			
	Coalbed Methane	$0.6 million			

Item		RFD Area			Source
		1 and 2	3	4	
Average Annual Operating Costs	Oil	$60,000			Utah BLM state office mineral staff, based on costs in recent "Paying Well Determination" submittals for wells similar to those expected in the RFO
Average Annual Operating Costs	Conventional Gas	$60,000			
	Coalbed Methane	$30,000			

With regard to exploration and development, the assumptions in Table 4-90 result in figures of $22 million for annual oil and gas well drilling and completion costs. (RFD Area 3 includes 49 projected wells located in a play on the eastern side of Sanpete and Sevier counties. Because RFD Area 3 has the least amount of BLM or other public land, any fluid mineral development precluded on public lands would likely be made up on other lands. This is why no wells are projected on BLM lands in RFD Area 3.) Not all of these expenditures benefit the socioeconomic study area because the oil and gas industry within the socioeconomic study area is quite small due to the low level of development in this area. It was therefore assumed for this analysis that all of the drilling operators would originate from areas outside of the study area. Investment in oil and gas drilling would have less of an economic impact on the area because most of the direct expenditures (labor costs in particular) would not be recirculated back into the local economy. However, some businesses that would support drilling activities indirectly are located in the study area; for instance, hotels and restaurants used by the drilling crews. A study of impacts of gas drilling in Carbon and Emery counties concluded that only 40% of the direct expenditures for new wells would be local. This result was used for oil and gas exploration and development activities in the RFO.

Historically, the RFO has seen limited oil and gas exploration and very little development. Interest has recently increased with the advent of a producing well field. The RFD predicts that approximately 207 wells (including coalbed methane wells) would be drilled on BLM lands in the planning area over the 15-year planning period. This is an average rate of about 14 wells per year.

Using recent data from the State of Utah for the Uintah Basin and Uintah County and making two additional assumptions: 1) oil and gas development and production in the RFO socioeconomic study area are similar to the Uintah Basin and Uintah County and 2) average wages for oil and gas employment and average wages for all other employment in the RFO socioeconomic study area are also similar to the Uintah Basin and Uintah County, it is possible to project the numbers of jobs likely to be created by drilling and completing a well in the RFO. A study done by the Utah Energy Office (UEO 2004) estimated the number of jobs in all sectors that drilling and completing a single well in the Uintah Basin would create at 14.8 jobs. The study cautions that the projection is for a single well; additional wells would likely use most of these same employees. Table 4-91 confirms this likelihood. As of 2006, for example (the most recent year for which complete data is available), the number of employees per well in Uintah County was 0.67. For the 5 years prior to this, the ratio varied from a low of 0.463 to the 0.67 reported for 2006. Similarly, one can compute the number of additional employees in the industry in Uintah County in relationship to the number of new wells drilled. Although the numbers vary somewhat from year to year, Table 4-91 shows that the highest multiple was in 2006 at 1.267 additional employees per new producing well brought online; the average for all positive years was 1.03. This data is not inconsistent with the UEO study, which estimated that most of the new job creation would be in the services, retail, and wholesale trades, with only 1.7 of the 14.8 projected new jobs in the oil and gas industry. The recent lower numbers are likely due to economies of scale resulting from large-scale

development. If all wells, including dry holes, were included, the ratio would be less. These results should not be surprising, in that the industry can quickly relocate crews to new drilling platforms as wells are drilled and completed. Once completed, it takes relatively few employees to oversee the operation of numerous wells and associated infrastructure.

As stated above, the UEO study projected the additional non-oil and gas jobs that a single well would create at 13.1 jobs (14.8 total minus 1.7 specific to oil and gas). The information from UEO assumes that employment for 14.8 individuals is required for one well, and it would require 14.8 employees for each well thereafter. The numbers used from the report do not take into account that one employee may be able to complete the tasks required for numerous wells, for example, a clerk in a retail store could accommodate the needs of several oil and gas employees. In other words, one cannot assume a strictly multiplicative increase for additional wells. This is borne out by recent studies done for the State of Utah by the University of Utah[2]. This study estimated total employment in the Uintah Basin at 19,852 employees. Of this total, the study estimates that 9,835 jobs were directly or indirectly related to the oil and gas industry, with direct employment of 3,959. This suggests a multiplier effect of 2.48 (9835/3959). Although a significant economic impact in itself, this is considerably less than the multiplier suggested by the earlier UEO study. Once again, this can be explained by the fact that the UEO study estimated the impact of a single well, which misses the economies of scale that result from large-scale development of the type currently experienced in the Uintah Basin. Given this recent State-provided data, subsequent analysis in this section will assume 1.26 direct and 2.48 indirect jobs created per additional well drilled over the life of the plan (2006 data). Wage data are derived from the same study: average wages for employees in the oil and gas industry in the Uintah Basin were $65,482 in 2006 and average wages for all other jobs were $30,607. Combining this data, the analysis that follows will assume that each new well could create 3.74 jobs, generating $158,412 in wage income annually. These numbers are based on producing wells, rather than wells drilled. Given that not all exploration efforts are successful, the actual economic impact per well drilled, based on the RFD, will probably be lower.

Table 4-91. Producing Wells and Employment in the Oil and Gas Industry—Uintah County, 2001–2006

Year	Producing Wells[1]	Employment[2]	Oil and Gas Employment per Well	Change in Well Numbers	Change in Employment	Ratio of Change in Employment to Change in Wells
2001	2,650	1,376	0.519			
2002	2,867	1,327	0.463	217	-49	-0.226
2003	3,119	1,564	0.501	252	237	0.940
2004	3,471	1,830	0.527	352	266	0.756
2005	3,875	2,254	0.582	404	424	1.050
2006	4,452	2,985	0.670	577	731	1.267

[1]Source: State of Utah, Division of Oil, Gas and Mining

[2]Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (as reported in *The Structure and Economic Impact of Utah's Oil and Gas Exploration and Production Industry Phase I—The Uinta Basin*, Bureau of Economic and Business Research, University of Utah, November, 2007)

2 *Source:* The Structure and Economic Impact of Utah's Oil and Gas Exploration and Production Industry Phase I—The Uinta Basin*, Bureau of Economic and Business Research, University of Utah, November, 2007)*

Under Alternative N, 459,700 acres would be closed to oil and gas leasing and 22,600 acres would be open to leasing subject to major constraints (NSO). Remaining lands would be open to leasing subject to standard terms and conditions (1,236,500 acres) or subject to moderate constraints (timing limitation, CSU) (409,200 acres). The closures and stipulations on leasing under this alternative are not expected to significantly affect oil and gas development. Nearly 80% of the wells projected in the RFD are located in a play along the west side of the planning area where public lands are either open to leasing subject to standard terms and conditions or open to leasing subject to moderate constraints (timing limitation, CSU).

Leasable Minerals—Coal

Coal mining has historically been an important activity within the RFO, and it is expected that this importance would continue in the future. Currently, only one mine is operating within the planning area. This is the Southern Utah Fuel Company (SUFCO) mine in eastern Sevier County, which is Utah's single most productive coal mine. This operation includes both Forest Service and BLM land. While its current activity focuses on Forest Service land, BLM land is also part of the "logical mining unit" and, therefore, the production of this mine is included in its entirety for this socioeconomic impact analysis. As described in Chapter 2, the coal region of which the SUFCO mine is a part includes 73,952 acres of federal mineral estate.

Economic contributions associated with coal mining within the RFO were analyzed by first considering coal resources and annual production for Sevier County, which is the location of the SUFCO mine. This information was obtained from the Utah Geological Survey (2004). A 5-year production average, as summarized in Table 4-92, was used as a basis for future potential coal production during the study period. Coal resources in the vicinity of the SUFCO mine are adequate to support this level of production (Tabet 2003, pages 1 and 41).

Table 4-92. Total Annual Coal Production for Sevier County, Utah

Year	Production (Thousand Short Tons)
2000	5,906
2001	7,001
2002	7,600
2003	7,126
2004[a]	7,400
5-yr Average	**7,007**

[a] Forecast
Source: UGS 2004.

The value of coal production within the RFO was then estimated by applying an annual price forecast per short ton to the 5-year average annual production rate listed in Table 4-92. The average forecasted price was obtained from the U.S. Energy Information Administration (2004) and represents the average forecasted 9-month price for the U.S. over the period 2004–2018.

Coal mining under current conditions has a notable impact on the local economy, supporting nearly 700 full- and part-time jobs and nearly $22 million in labor income within the socioeconomic study area. Based on management actions under Alternative N, current trends in coal production are expected to continue and, therefore, the future economic role of coal mining in the socioeconomic study area would be much the same as today. Adequate accessible coal resources exist to allow continuation of current

production trends (Tabet 2003). No policies are in place that would substantially affect those trends. Rather, significant decreases or increases in coal production depend on energy prices and the relative economics of coal production in the RFO versus other regions. New coal development also depends strongly on site-specific environmental review.

In addition to the SUFCO mining area on the Wasatch Plateau, the Richfield RFD scenario identifies an additional area in the Henry Mountains with potential for subsurface coal leasing, totaling 107,414 acres of federal mineral estate. Although no current production exists, development of this resource has the potential to generate beneficial socioeconomic impacts under Alternative N. Under this alternative, the entire acreage would be available for lease, with the exception of WSA acreage.

Locatable and Salable Minerals

Insufficient information was available to quantify the generation of employment and income from mining of locatable minerals (e.g., gypsum and metals such as gold) or salable minerals such as sand and gravel, stone, humate, and clay. Differences between the alternatives with regard to these mining activities are discussed qualitatively. According to the assumptions of this study, significant development of oil shale, tar sands, or geothermal resources is considered unlikely within the planning horizon.

Under Alternative N, present locatable mineral and mineral material exploration and development would be able to continue, with levels of activity depending on market conditions. Opportunities for individuals and companies to prospect for and develop mineral deposits would be maintained, thus preserving a culture of historic and social significance in the region.

Impacts from Special Designations

For the RFO, areas of special designation include ACECs and WSRs. As is the case with VRM and non-WSA lands with wilderness characteristics, ACECs and WSRs are not resource management tools in themselves but rely on prescriptions for other resource programs to achieve management goals. Alternative N continues to designate four existing ACECs totaling 14,780 acres and manages in a protective manner 12 eligible WSR segments totaling 135 miles.

Wild and Scenic Rivers

Alternative N requires BLM to manage all eligible streams to protect their outstandingly remarkable values, free-flowing nature, and tentative classification to the degree that BLM has authority (e.g., BLM lands within the corridor) and within the parameters of decisions made in the previous planning documents, until such time as suitability determinations are made. Under Alternative N, no suitability determinations would be made for any of the eligible WSR segments. However, the 12 eligible river segments would continue to be managed in a manner that would not impair their WSR suitability. Social and economic impacts resulting from this management action would be similar to current conditions.

Areas of Critical Environmental Concern

The management prescriptions for the four existing ACECs are described in detail in Chapter 2. The prescriptions include restrictions on oil and gas leasing (either closed to leasing or subject to major constraints), restrictions on grazing in three of the ACECs, managed as closed to OHV use, closed to surface coal leasing, and recommended for mineral withdrawal. For those people in the planning area who could use these restricted resources for their economic or social benefit, this alternative is potentially harmful. No additional impact to these interests would occur, however, because these areas are currently managed to protect the relevant and important values that led to their creation. For those who derive social well-being from protection of these relevant and important values, this alternative provides such benefits. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently managed as ACECs.

Alternative A

Impacts from Vegetation

Additional vegetation treatments and weed control efforts, relative to Alternative N, would likely result in additional inflows of dollars to the RFO, increasing the opportunities for contracts, income, and employment. These additional treatments could also improve forage, economically benefiting ranchers who graze cattle on public lands. This alternative would provide the greatest economic stimulus in the form of contracts, income, and employment related to vegetation treatments, weed control, and pest control. This stimulus would be very small relative to the total socioeconomic study area economy.

Impacts from Visual Resources

Alternative A designates 446,900 acres as VRM Class I. This acreage is within WSAs and is managed in Alternative N to protect scenic quality under IMP. The impacts to socioeconomics would be similar to the impacts from Alternative N decisions for those resources that directly impact scenic quality.

Impacts from Fire and Fuels Management

Assuming the 73,600 acres for treatment annually in this alternative are funded and implemented, the number of fires could diminish relative to Alternatives N, C, or D, thus lowering the economic activity resulting from fire suppression. The economic activity resulting from hazardous fuel reduction treatments could be greater than in Alternatives N, C, or D, because Alternative A could provide the greatest economic stimulus in the form of contracts, income, and employment related to hazardous fuel reduction treatments. If, for example, the full acreage was mechanically treated and past contract patterns continued, over $5,000,000 could be contributed to the local economy. Such a scenario, however, is unlikely in that funding on such a scale is improbable. The acreage maximum may be achieved through a variety of means, including naturally caused wildfires or selective thinning (often done by out-of-area contractors). It is also unclear whether local contractors would have the capacity to operate on such a scale, even for the type of work now being done. A more realistic scenario would be continued treatment at the 10,000-acre annual level, resulting in economic impacts similar to Alternative N. Any increase up to the prescribed maximum could generate more economic benefits to the local economy.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Opening additional areas to commercial harvesting in this alternative potentially could result in additional income and jobs relative to Alternative N; however, the value of timber available for harvest in this alternative is unknown. No impacts are anticipated to commercial seed and live plant harvesting and non-commercial harvesting of woodland products relative to Alternative N. This alternative could provide the greatest economic stimulus in the form of contracts, income, and employment related to forestry and woodland products. The level of economic stimulus would be very small relative to the total socioeconomic study area economy.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N, except that an additional 1,079 AUMs of forage on 36,950 acres would be available for livestock grazing. These additional AUMs would show little overall change from the above-listed figures, representing an increase of only 1% over Alternative N. Construction of necessary range improvements to facilitate the use of the additional forage could inject a small amount of permittee-provided investment into the economy. The limited scope of those improvements and the extended timeframes required for initial investments to be recouped from the small

amount of added production would delay real, derived economic benefit to the ranchers for possibly decades. The small reduction in available AUMs for wildlife would possibly reduce the allotted hunting permits or opportunity in each respective locale for the species concerned (e.g., mule deer, elk, bison, or a combination thereof). This reduction in permit numbers or hunting opportunity would reduce proportionally the income in local service industries, guide businesses, and Utah Division of Wildlife Resources (UDWR) coffers. The impact would be greatest on bison-related activities with 249 AUMs becoming unavailable in Dry Lakes and Sawmill Basin allotments for bison, reducing their yearlong herd number by 20 animals. This alternative would also forfeit the investment the UDWR or their agents have made in purchasing these AUMs from livestock permit holders for the purpose of increasing available forage for wildlife.

Impacts from Recreation

The emphasis of Alternative A on motorized access, commodity production, and resource extraction impacts recreation. Management actions under this alternative could reduce the quality of the recreational experience for certain recreationists, particularly those seeking primitive and semi-primitive experiences. However, these impacts would be relatively localized, as the commercial potential for operations with substantial impacts on recreation (e.g., mining or timber harvesting) is relatively limited in the planning area and resource development would likely be focused in small areas.

Recreation management impacts to lifestyle and quality of life under Alternative A could be locally significant (for particular sites) or significant in aggregate, depending on the degree to which the decisions match individual and societal preferences for the wide array of recreational uses provided by public lands. Under Alternative A, a number of SRMAs would be established. Plans for these areas include both recreational facility development and primitive area preservation (the latter most notably for the Dirty Devil/Robbers Roost area), and emphasizes motorized and non-motorized uses to greater or lesser degrees. Recreationists seeking a wide variety of experiences would be able to find areas in which their preferences are emphasized. This could improve the quality of experiences and resulting quality of life of many recreationists and reduce conflicts relative to Alternative N.

Establishment and management of the Dirty Devil/Robbers Roost SRMA to provide for recreational experiences complementary with the remote and scenic nature and other resource values of this area would help protect the quality of those experiences and could draw additional visitors to the area from outside the socioeconomic study area. (The Dirty Devil Canyon area provides the type of primitive and semi-primitive recreation experiences and opportunities for challenge and solitude that are in substantial demand across the West.) This could result in increased economic activity in communities near the Dirty Devil area. To the extent that visitors rely on local permittees as guides or outfitters, these activities would directly benefit businesses and individuals engaged in such activities.

Impacts from Travel Management

Management actions under this alternative would provide some areas open to OHV recreation use without limitation (449,000 acres), but they would place limitations on OHV recreation use in a very large portion of the RFO (1,679,000 acres). This would reduce the quantity and quality of experience for OHV recreation users seeking unconfined experiences. However, the lessened impacts on the scenery that could result from these restrictions could enhance the recreational experience of those OHV users whose primary interest is in enjoying the scenic qualities of the area. All areas closed to OHV recreation use in Alternative N (214,000 acres) would be limited under Alternative A, providing new areas for OHV recreation use. Designation of a large number of open play areas could draw additional riders from outside the RFO, resulting in economic stimulus to the socioeconomic study area. However, increased concentration of OHV recreation users in certain locations could cause increased conflicts among OHV recreation users or decreased quality of experience. The quality of experience for other recreationists

seeking non-motorized recreational environments would be enhanced in those areas being placed in a limited category under this alternative.

Under Alternative A, 252 fewer miles of routes are open for motorized travel than under Alternative N; use on 249 additional miles is restricted; and 3 additional miles are closed. The effects on the local economy from these differences should be minor to negligible, given that 4,312 miles of routes would remain open to motorized travel.

Impacts from Lands and Realty

Under Alternative A, approximately 13,400 acres of BLM-administered public lands would be considered for FLPMA Section 203 sales, much more than would be considered under Alternative N. Benefits to community development and taxes, assuming more land disposals, would likely be greater than under Alternative N. An offset to this economic gain to local counties would be a loss of PILT payments for any lands so disposed. A potential adverse social impact to disposals under this alternative would be the probable loss of public access to these parcels, although many of them are small, isolated parcels surrounded by non-federal land where access is already restricted. Opportunities for other land tenure adjustments would be the same as for Alternative N.

Under Alternative A, certain areas are managed as avoidance or exclusion areas for ROWs, including utility corridors:

- WSAs
- Areas closed to oil and gas leasing.

The acreage avoided or excluded is less than for all other alternatives. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development that require such access. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities desiring ROW access. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified, but they would likely be less than under any other alternative.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts from management actions under this alternative are similar to Alternative N. Under Alternative A, 446,900 acres would be closed to oil and gas leasing. Remaining lands would be open to leasing subject to standard terms and conditions (860,600 acres) or subject to moderate constraints (timing limitation, CSU) (820,500 acres). The closures and stipulations on leasing under this alternative are not expected to significantly alter oil and gas development, for the same reasons noted for Alternative N.

Leasable Minerals—Coal

Under Alternative A, the coal unsuitability reports prepared for this Proposed RMP would be used to determine lands acceptable for further consideration for leasing (Appendix 8). The acreage of lands available for leasing is considerably less in this alternative (and the Proposed RMP and Alternatives C and D) than in Alternative N. However, the unsuitability analysis indicates 41,842 acres in the Henry Mountains coal field are suitable for underground mining (82% of the total underground minable coal resource acreage) and 14,719 acres are suitable for surface mining (40% of the corresponding acreage). In the Emery and Wasatch fields, 31,838 acres are suitable for underground mining (100%) and no acres are suitable for surface mining (0% of the 683 total acres of surface-minable coal resource). In short, the unsuitability analyses indicate ample acreages are available for continued and perhaps expanded coal mining operations. This alternative includes policies and decisions that are designed to support extractive

industries such as coal mining. However, as in Alternative N, whether additional coal development takes place depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

Impacts would be similar to those described under Alternative N, except that this alternative would have fewer restrictions on disposal of mineral materials. The lessened restrictions could provide additional opportunities for those wishing to obtain salable minerals.

Impacts from Special Designations

Wild and Scenic Rivers

Alternative A would not recommend rivers within the RFO for WSR designation. This would create some opportunities for businesses and individuals currently impacted by managing the eligible river segments to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. Individuals whose social well-being is enhanced by the values currently protected could be adversely impacted by this alternative, relative to Alternative N.

Areas of Critical Environmental Concern

Alternative A would designate no ACECs. This would create some opportunities for businesses and individuals currently impacted by restrictions on the existing ACECs under Alternative N. Individuals whose social well-being is enhanced by the relevant and important values currently protected could be adversely impacted by this alternative, relative to Alternative N. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently designated as ACECs.

Proposed RMP

Impacts from Vegetation

Impacts from management actions under the Proposed RMP are the same as for Alternative A. In addition, management actions under the Proposed RMP would apply an economic threshold to the application of pest control programs. This would probably result in fewer pest control programs and reduce attendant contracts, income, and employment opportunities compared to Alternative A.

Impacts from Visual Resources

The Proposed RMP designates the same acreage as VRM Class I as Alternative A, but adds 249,800 acres as VRM Class II. The VRM Class II will pose additional costs on certain activities, particularly minerals. A corresponding socio-economic benefit, however, will be a net increase in scenic vistas. Our recreation data indicates “driving for pleasure” as the number one recreation activity in the RFO. The socioeconomic impacts of resource decisions to protect scenic qualities of VRM Class II areas are described further in those specific resource discussions. Resource decisions most affected by the Proposed RMP include non-WSA lands with wilderness characteristics, recreation, minerals, and travel management.

Impacts from Fire and Fuels Management

Impacts would be the same as described under Alternative A.

Impacts from Non-WSA Lands with Wilderness Characteristics

The Proposed RMP manages 78,600 acres of non-WSA lands with wilderness characteristics to maintain the qualities of naturalness, outstanding opportunities for primitive and unconfined recreation or solitude, and supplemental values where present. As with visual resources, this resource itself is not a management tool but relies on restrictions of other resource programs to achieve its management goals. The tools used

include restrictions on forestry and woodland products, travel management, minerals and energy, lands and realty, and recreation. These restrictions are identical to the restrictions discussed for each of the resources described throughout chapter 4 under the Proposed RMP, and the socioeconomic impacts are similar for each of these resources so restricted. The socioeconomic impacts of these restrictions resulting from managing 78,600 acres to protect wilderness characteristics are summarized in this section under the specific resource decision, and in the following paragraph.

To help protect, preserve and maintain wilderness characteristics in the 78,600 acres being so managed, the Proposed RMP does the following. Motorized use would be limited to 25.6 miles of designated routes, typically in areas now open to cross-country OHV travel. This decision will benefit those desiring a more non-motorized recreation experience, but negatively impact those OHV recreationists who desire a less restricted environment. All acres of those being protected would be subject to major constraints (NSO). To the extent that such mineral resources are present in the affected areas, there is a potential negative impact to those individuals and firms relying on minerals extraction for their livelihood. All 78,600 acres would be rights-of-way avoidance areas, which could have minor impacts on those needing such provisions. All 78,600 acres would remain in federal ownership, although this would likely have only minor to minimal impacts on future land exchanges or disposals. Woodland harvest would be prohibited, which could cause some harm to those currently relying on the area for such harvest. All 78,600 acres would be in VRM Class II. This has the potential to increase costs for certain types of activities such as minerals; given that all 78,600 acres would be NSO category, however, the additional restrictions posed by VRM class would not likely have an additional negative impact. As with visual resources, 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 sense of well-being depends on values associated with wilderness characteristics and primitive recreation would perceive a benefit under the Proposed RMP. This alternative could benefit those businesses that rely on those recreation visitors who value wilderness qualities.

It is not possible to predict whether the potential socioeconomic gains described above would outweigh the socioeconomic losses that could result from this alternative. Managing lands for wilderness characteristics may have some 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. Other research suggests that areas with protected lands are more likely to attract higher income individuals, as well as businesses, who value the types of recreation activities provided by protected areas. Still other research argues that certain types of high-dollar recreation, such as hunting, are enhanced by wilderness protection. While most of these studies have focused on the benefits accruing from *designated* wilderness, it is possible that the same arguments may be applicable to non-WSA lands with wilderness characteristics[3].

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative A, with two exceptions. The 78,600 acres of non-WSA lands with wilderness characteristics being managed to protect, preserve and maintain wilderness characteristics in the Proposed RMP would be closed to woodland harvest, live plant and seed collection (except as allowed under the Healthy Lands Initiative), potentially affecting those individuals relying in whole or part on these areas for this activity. Live plant and seed collection would only be allowed in areas outside WSAs, the 78,600 acres of non-WSA lands with wilderness characteristics being carried forward and suitable WSR corridors.

[3] A good source with an extensive literature review is: "The net economic value of wilderness", Bowker, J.M.; Harvard, J.E.,III; Bergstrom, John C.; Cordell, H. Ken; English, Donald B.K.; Loomis, John B., in *The Multiple Values of Wilderness*, pp. 161–181, USFS, Southern Research Station, 2005.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Management actions under the Proposed RMP attempt to balance needs to provide for production of food, fiber, and minerals with needs to protect, restore, and enhance natural values and to provide quality recreational experiences. There could be less impact on recreation due to resource development and extraction than under Alternative A and, therefore, less impact on the lifestyle and quality of life of recreational users of the lands managed by the RFO.

Management of the SRMAs and non-WSA lands with wilderness characteristics would emphasize primitive and semi-primitive experiences to a greater extent than under Alternative A (most notably for the Capitol Reef Gateway and Henry Mountains). This could draw additional visitors to the area from outside the planning area who seek such experiences, potentially resulting in increased economic activity in communities near these SRMAs.

Establishing an SRMA for motorized recreation in the Factory Butte area could provide positive social benefits to those individuals and groups who value a less restricted recreation experience. The management actions in the SRMA, especially facilities and marked trails, have the potential to attract additional visitation to the area, possibly benefiting local businesses. Conversely, those businesses and individuals who cater to non-motorized recreation may be negatively impacted by this decision.

Impacts from Travel Management

The Proposed RMP has 9,890 acres open to OHV use and fewer designated open play areas than Alternative A. This could result in a diminished recreational experience for some OHV users and may impact the area's ability to draw new OHV users, and their associated expenditures, to the socioeconomic study area. OHV use on the majority of the RFO (1,908,210 acres) would be limited to designated routes. The total acreage closed to OHV use in the Proposed RMP (209,900 acres) is also similar to that for Alternative N (214,000 acres). While OHV users seeking unconfined experiences would be impacted, overall OHV recreation use would likely be similar to Alternative N. Thus the economic impact of OHV recreation use under this alternative would likely be similar to the impact under Alternative N.

Under the Proposed RMP, designated routes total 4,277 miles, 538 miles of which have timing or vehicle size restrictions. The reduced miles available for motorized travel could adversely impact some local users, to the degree that their perceived needs for access are affected. For those desiring a more backcountry recreation experience, the reduced miles of available motorized routes could be perceived as beneficial. The overall differences between Alternatives N and A might not be substantial enough to produce other than minor socioeconomic impacts.

Impacts from Lands and Realty

The types of impacts from lands and realty under the Proposed RMP are similar to those for Alternative A. In addition, the Proposed RMP considers withdrawing a relatively small amount of land from mineral entry; however, this would have minor impacts on mineral development relative to Alternative N, given current rates of such development and directional drilling technologies. Significant acreages would also not be available for ROWs for wind and solar energy exploration and development, but this would likely have minimal impacts as the potential for such uses is small.

Under the Proposed RMP, certain areas would be avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Suitable WSR corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing subject to major constraints (NSO).

The *categories* of these ROW avoidance/exclusion areas are similar to Alternative N, except for the inclusion in the Proposed RMP of 78,600 acres of non-WSA lands with wilderness characteristics as ROW avoidance areas. This addition results in differing acreages due to differences between the alternatives within these land categories, primarily due to the inclusion of 78,600 acres of non-WSA lands with wilderness characteristics being managed to protect, preserve and maintain the wilderness characteristics. The Proposed RMP places greater restrictions on ROWs than does Alternative N because an additional 79,100 acres fall into the closed or subject to major constraints (NSO) oil and gas leasing categories. This is somewhat offset by the management of 12,250 fewer acres as ACECs under the Proposed RMP. In addition, although the Proposed RMP recommends one eligible river segment (5 miles) as suitable (while no suitability determination is made in Alternative N), all eligible river segments are managed to protect their outstandingly remarkable values, free-flowing nature, and tentative classification under Alternative N. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development that require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities desiring ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

As discussed earlier, the Proposed RMP retains lands in public ownership for 78,600 acres being managed to protect, preserve and maintain wilderness characteristics. Although expected to be minor, this decision could potentially affect community expansion opportunities and any resultant economic benefits. Retaining these lands in public ownership will result in continued PILT payments to local governments.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts from management actions under the Proposed RMP are similar to Alternative A. Although the total number of acres closed to oil and gas leasing (447,300 acres) or open to leasing subject to major constraints (NSO) (154,500 acres) is greater than under Alternatives N or A, this would not likely have substantial effects on oil and gas activity for the reasons noted for Alternative N. These reasons include the relatively lower minerals potential in the areas closed or NSO. Additionally, 446,900 acres of the 447,300 acres closed to leasing are located in WSA's, which are outside the scope of the plan.

Leasable Minerals—Coal

Impacts from management actions under the Proposed RMP on coal production and its impact on the local economy likely would be similar to Alternative A. The Wasatch and Emery coal fields would remain largely available. The Proposed RMP includes policies and decisions that are designed to balance extractive industries, such as coal mining, with needs to protect, restore, and enhance natural values. As in Alternative A, whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

The Proposed RMP recommends withdrawing an additional 21,500 acres from mineral entry relative to Alternative A. This could have minor-to-negligible effects on the local economy. The Proposed RMP

closes an additional 400 acres to disposal of salable minerals. These areas are largely devoid of potential or at uneconomic distances from users (e.g., sand and gravel deposits located at a distance from significant construction activity), rendering socioeconomic impacts similar to Alternative A.

Impacts from Special Designations

Wild and Scenic Rivers

The Proposed RMP recommends one river segment (5 miles) as suitable for inclusion into the wild and scenic rivers system, tentative classification of wild. Restrictions under the Proposed RMP include closing the area to OHV use, oil and gas leasing with NSO, and recommending for withdrawal from mineral entry. These restrictions could potentially adversely impact individuals or businesses in the planning area that rely on these resources. The acreage affected, however, is small, and these effects would likely be minor. The OHV restrictions in particular would have negligible-to-minor impacts, as the segments in question receive little if any motorized use due to topography or current OHV management. The designation of WSRs under the Proposed RMP could potentially lead to an increase in tourism revenue to local communities, thus having long-term beneficial impact on the local economies. The designation of rivers 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).

Areas of Critical Environmental Concern

The Proposed RMP would designate two ACECs totaling 2,530 acres (which is less than under Alternative N but more than under Alternative A). This would create additional opportunities for businesses and individuals currently impacted by restrictions within ACECs under Alternative N, but less opportunities than under Alternative A. Individuals whose social well-being is enhanced by the relevant and important values currently protected could be adversely impacted by the Proposed RMP, relative to Alternative N. For all groups, however, socioeconomic impacts likely would be minor, given the small amount of acreage currently designated as ACECs.

Alternative C

Impacts from Vegetation

This alternative would rely on using treatment methods that mimic natural processes, including prescribed fire for vegetation treatments and weed control. A maximum of 26,000 acres per year would be so treated, less than the 73,600 acres per year allowed under Alternative A and the Proposed RMP. Fewer opportunities for contracts, income, and employment would be available than under Alternative A or the Proposed RMP. No pest control measures would be implemented; thus, opportunities for contracts, income, and employment available under Alternative A and the Proposed RMP for pest control would not be available under this alternative. Impacts on forage, and thereby on grazing economics, cannot be predicted.

Impacts from Visual Resources

VRM designations for Alternative C are very similar to the Proposed RMP; therefore, socioeconomic impacts would be similar.

Impacts from Fire and Fuels Management

Fire suppression efforts and hazardous fuel reduction treatments could generate economic activity from contracts and result in income and employment gained by those providing the suppression and treatments, plus indirect and induced effects. This activity would be less than under Alternative A or the Proposed RMP because the annual treatments are limited to 26,000 acres per year. The fire suppression efforts could be greater than under Alternative A or the Proposed RMP because the annual fuel treatments

acreage could be less per year. As noted in the discussion for Alternative A, however, a more likely scenario is continued treatment of about 10,000 acres annually, with an economic impact similar to Alternatives N and A and the Proposed RMP.

Impacts from Non-WSA Lands with Wilderness Characteristics

No actions to maintain wilderness characteristics on lands outside of WSAs are proposed under this alternative, resulting in no additional impacts on socioeconomics.

Impacts from Forestry and Woodland Products

Relative to Alternative N, there could be some loss of income and jobs due to this alternative's prohibitions on commercial timber harvesting and commercial collection of seeds and live plants. Such losses are likely to be very small relative to the total socioeconomic study area economy. However, these prohibitions might have important local impacts and could reduce opportunities to maintain aspects of local culture based on harvesting natural resources. Prohibiting commercial seed harvesting would shift this activity to other areas outside of the RFO. Non-commercial harvesting of woodland products would not change relative to Alternative N.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Management actions under this alternative place the emphasis on protection of natural systems. This alternative could produce less of an impact on recreation arising from resource development and extraction than Alternatives N and A or the Proposed RMP.

Management of SRMAs would have a stronger emphasis on primitive, semi-primitive, and non-motorized uses than under Alternatives N and A or the Proposed RMP. Fewer recreational facilities would be developed. Expenditures by individuals who desire developed facilities might decline relative to those alternatives. These expenditure reductions could cause a loss of income and jobs in the socioeconomic study area. Whether these expenditures would be offset by spending from recreationists desiring more primitive recreation experiences cannot be quantified without knowing how numbers would shift (if at all) under this alternative.

Impacts from Travel Management

Under Alternative C, areas closed to OHV use (683,000 acres) and areas in which OHV use is limited to designated routes (1,445,000 acres) would be greater than Alternatives N and A and the Proposed RMP and less than Alternative D. Under this alternative, no acres would be designated as open. The mileage of closed routes in this alternative would be greater than Alternatives N and A and the Proposed RMP and less than Alternative D. Thus the quality of experience for some OHV recreation users, particularly those desiring an unrestricted OHV environment, could be reduced. Restrictions on OHV recreation use could reduce the draw of OHV recreation users from beyond the RFO, resulting in some reduction of expenditures relative to the other alternatives. However, the lowered impacts on scenery that could result from these restrictions could enhance the recreational experience of those OHV users whose primary interest is enjoying the scenic qualities of the area. Limitations and closures to OHV recreation use would enhance the recreational experiences of individuals seeking non-motorized recreational environments.

Alternative C provides 2,601 miles of designated routes and 591 miles of designated routes with seasonal closures or size width restrictions, and it closes 1,188 miles of routes to motorized travel. This represents an additional closure of 984 miles relative to the Proposed RMP. Although not quantifiable, this alternative has greater potential to adversely impact the local economy, but only to the extent that local

residents use these routes in their economic pursuits. Similarly, to the extent that these routes are used for recreational use or access, the additional closures could adversely affect the experiences and potential expenditures of these users. Conversely, those who desire a more primitive recreation experience would likely find their recreational experiences enhanced under this alternative.

Impacts from Lands and Realty

The type of impacts from lands and realty under this alternative are similar to those described under the Proposed RMP, except that no public lands would be considered for FLPMA Section 203 disposals. Thus, any fiscal or economic development benefits achieved in the other alternatives from disposal of public lands would be foregone.

Under Alternative C, certain areas would be avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Suitable WSR corridors
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing subject to major constraints (NSO).

Although the *categories* of lands are similar to Alternative N and the Proposed RMP, the acreages differ due to differences between the alternatives within these land categories. Alternative C places greater restrictions on ROWs than Alternative N and the Proposed RMP because an additional 173,700 acres fall into the closed or open subject to major constraints (NSO) mineral leasing categories. Additionally, Alternative C manages an additional (as compared to the Proposed RMP) 884,280 acres as ACECs. Alternative C also manages an additional 10 segments of WSRs, totaling an additional 76 miles. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development that require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities desiring ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Impacts from management actions under this alternative are similar to the Proposed RMP. Although the total number of acres closed to fluid mineral leasing (586,300 acres) or open to leasing subject to major constraints (NSO) (148,700 acres) is greater than Alternatives N and A and the Proposed RMP, this would not likely have substantial effects on oil and gas activity for the reasons noted for Alternative N.

Leasable Minerals—Coal

This alternative includes objectives and management actions that are designed to protect, restore, and enhance natural values. Surface and subsurface coal leases would be prohibited in those areas designated as VRM Class I or II; thus this alternative could be more restrictive on coal leasing than the Proposed RMP, which restricts such leasing only in areas designated as VRM Class I. However, as in the Proposed RMP, whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

The area proposed for withdrawal from mineral entry is larger, by 154,900 acres, than the Proposed RMP. This has some potential to preclude development of some economically viable deposits, and it could

reduce opportunities for individuals interested in maintaining a mining economy and culture. However, the potential for locatable mineral development in the RFO is at this time assumed to be low. Thus, economic and cultural impacts could also be low.

The area closed to disposal of salable minerals is also larger than in the Proposed RMP, totaling 586,300 acres. These areas are largely devoid of potential, or at uneconomic distances from users (e.g., sand and gravel deposits located at a distance from significant construction activity), rendering socioeconomic impacts similar to the Proposed RMP.

Impacts from Special Designations

Wild and Scenic Rivers

Alternative C recommends 12 river segments (135 miles) as suitable for inclusion into the WSR system. Restrictions under this alternative include closing to OHV use, closing to oil and gas leasing or open to oil and gas leasing subject to major constraints (NSO), and recommending for withdrawal from mineral entry. These restrictions could potentially adversely impact individuals or businesses that rely on these resources. The acreage affected, however, is small and these impacts would likely be minor. Furthermore, nearly three-quarters of the suitable river miles under this alternative are within WSAs, encompassing most of the Dirty Devil River and its side drainages. Thus, the restrictions proposed are already in place under IMP for these particular segments, leading to socioeconomic impacts identical to the current situation. The OHV restrictions in particular would have negligible-to-minor impacts as the segments in question receive little if any motorized use due to topography or current OHV management. The designation of WSRs under Alternative C could potentially lead to an increase in tourism revenue to local communities, thus having long-term beneficial impact on the local economies. The designation of rivers 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).

Areas of Critical Environmental Concern

Alternative C would designate 16 ACECs, totaling 886,810 acres. Table 4-93 summarizes the major management prescriptions for the 16 ACECs under Alternative C that have the potential to impact socioeconomics.

Table 4-93. Management Prescriptions in ACECs Potentially Affecting Socioeconomics—Alternative C

ACEC Name	Acres	Acres within WSAs	OHV Closed Acres	Closed Routes (Miles)	Oil & Gas Closed Acres	VRM Class I Acres
Badlands	88,900	40,400	82,900	12	88,900	40,400
Bull Creek	4,800	0	0	1	0	0
Dirty Devil/North Wash	205,300	130,700	204,700	78	165,500	130,700
Fremont Gorge/Cockscomb	34,300	2,800	23,200	9	4,500	2,800
Henry Mountains	288,200	130,000	207,200	164	164,800	130,000
Horseshoe Canyon	40,900	37,800	40,800	5	37,800	37,800
Kingston Canyon	22,100	0	0	10	0	0
Little Rockies	49,200	37,400	38,400	3	37,400	37,400

ACEC Name	Acres	Acres within WSAs	OHV Closed Acres	Closed Routes (Miles)	Oil & Gas Closed Acres	VRM Class I Acres
Lower Muddy Creek	16,200	0	14,600	17	16,200	0
Old Woman Front	330	0	330	0	0	0
Parker Mountain	107,900	0	0	46	0	0
Quitchupah	180	0	90	0	90	0
Rainbow Hills	4,000	0	4,000	26	0	0
Sevier Canyon	8,900	0	0	3	0	0
Special Status Species	15,100	0	0	0	0	0
Thousand Lakes Bench	500	0	500	0	0	0
Total	**886,810**	**379,100**	**616,720**	**374**	**515,190**	**379,100**

As Table 4-93 indicates, approximately 379,100 acres (42.7%) of the 16 ACECs are partially within WSAs that are managed under IMP. For this acreage, impacts to socioeconomics would be identical to current conditions. For example, the acreage designated as VRM Class I under Alternative C is identical to the WSA acreage, with no additional VRM Class I acreage attributable to ACEC designations. OHV management and oil and gas leasing restrictions, however, encompass additional non-WSA acreage. For the 16 ACECs, 200,100 additional acres (compared to the Proposed RMP) are in the closed OHV category. For oil and gas leasing, an additional 137,400 acres are in the closed to leasing category. These additional restrictions would likely have adverse impacts for OHV enthusiasts and could adversely impact individuals and businesses that rely on mineral resources for all or part of their livelihoods. Individuals whose social well-being is enhanced by the specific relevant and important values protected within these ACECs would be beneficially affected by this alternative, relative to Alternatives N and A and the Proposed RMP.

Alternative D

Impacts from Vegetation

Impacts would be the same as described under Alternative C.

Impacts from Visual Resources

Alternative D places the greatest restrictions on development to protect visual resources. As discussed earlier, the restrictions to protect visual resources are decisions within other resource programs 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 within VRM Class I and II areas 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 RFO that attract visitation would receive the greatest degree of protection under Alternative D. This could benefit those businesses that rely on that type of recreation visitation, including lodging, restaurants, and outfitting.

Impacts from Fire and Fuels Management

Impacts would be the same as described under Alternative C.

Impacts from Non-WSA Lands with Wilderness Characteristics

Alternative D manages 682,600 acres of non-WSA lands with wilderness characteristics in such a manner as to provide protection for the qualities of naturalness, outstanding opportunities for primitive and unconfined recreation or solitude, and supplemental values where present. As with visual resources, this resource itself is not a management tool but relies on restrictions of other resource programs 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 those discussed throughout 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 visual resources, 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 sense of well-being depends on values associated with wilderness characteristics and primitive recreation would perceive the greatest benefit under Alternative D. This alternative could benefit those businesses that rely on those recreation visitors who value wilderness qualities.

It is not possible to predict whether the potential socioeconomic gains described above would outweigh the socioeconomic losses that could result from this alternative. Managing lands for wilderness characteristics may have some 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. Other research suggests that areas with protected lands are more likely to attract higher income individuals, as well a businesses, who value the types of recreation activities provided by protected areas. Still other research argues that certain types of high-dollar recreation, such as hunting, are enhanced by wilderness protection. While most of these studies have focused on the benefits accruing from *designated* wilderness, it is possible that the same arguments may be applicable to non-WSA lands with wilderness characteristics[4].

Impacts from Forestry and Woodland Products

Impacts would be similar to those described under Alternative C, with the addition that neither commercial nor non-commercial wood collecting would be allowed in non-WSA lands with wilderness characteristics or in WSR corridors. No live plant or seed collecting would be allowed in these areas. However, these prohibitions could have local social and economic impacts and could reduce opportunities to maintain aspects of local culture based on harvesting natural resources.

Impacts from Livestock Grazing

Impacts would be the same as described under Alternative N.

Impacts from Recreation

Impacts would be similar to those described under Alternative C, except that this alternative would include management prescriptions to protect wilderness characteristics on 682,600 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 desire developed facilities might decline relative to the other alternatives. These

[4] A good source with an extensive literature review is: "The net economic value of wilderness", Bowker, J.M.; Harvard, J.E.,III; Bergstrom, John C.; Cordell, H. Ken; English, Donald B.K.; Loomis, John B., in *The Multiple Values of Wilderness*, pp. 161–181, USFS, Southern Research Station, 2005.

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, use and resulting expenditures, and related economic activity, as well as experiential satisfaction, would likely be greatest under this alternative.

Impacts from Travel Management

Closure of areas to OHV recreation use (1,155,200 acres) and limiting OHV use to designated routes in other areas (972,800 acres) would be greatest under this alternative. Thus, the quality of experience for some OHV recreation users would be reduced as OHV riding takes place in more limited areas, increasing crowding in some. Restrictions on OHV recreation use could reduce the draw of OHV recreation users from beyond the planning area, resulting in some reduction of expenditures relative to the other alternatives. Limitations and closures to OHV recreation use would enhance the recreational experiences of individuals seeking non-motorized recreational environments.

The miles of routes designated, designated with restrictions, and closed would be similar to Alternative C. The miles of closed routes would be higher by 54 miles, an increase of approximately 5% over Alternative C. The socioeconomic impacts of route designations under Alternative D would thus be similar to Alternative C.

Impacts from Lands and Realty

Socioeconomic impacts from land tenure adjustments would be the same as for Alternative C. Under Alternative D, certain areas would be managed as avoidance or exclusion areas for ROWs, including utility corridors and communication sites:

- WSAs
- ACECs
- Eligible WSR corridors
- Non-WSA lands with wilderness characteristics
- Areas closed to oil and gas leasing
- Areas open to oil and gas leasing subject to major constraints (NSO).

Although the *categories* of lands are similar to Alternatives N and C and the Proposed RMP, the acreages differ due to differences between the alternatives within these land categories. Alternative D includes more areas as ROW exclusion/avoidance areas than does Alternative C because an additional 468,800 acres fall into the closed or NSO mineral lease categories. To the extent that areas are excluded for ROWs, there could be an adverse impact on certain types of economic development that require such development. To the extent that such areas are avoidance areas, additional costs could be imposed on those entities desiring ROWs. Without knowing the quantity of ROWs foregone by this alternative, the economic impacts cannot be quantified.

Impacts from Minerals and Energy

Leasable Minerals—Oil and Gas

Alternative D closes 1,160,500 acres to oil and gas leasing and opens 43,300 acres to leasing subject to major constraints (NSO). As described in detail in the non-WSA lands with wilderness characteristics section, this alternative projects one less well drilled per year in RFD Areas 1 and 2 and projects 13 wells per year fewer in RFD Area 3 (two wells over 15 years). This would result in a reduced spending on Phase 1 exploration and development of $2.87 million (1.13 wells multiplied by $2.25 million to drill and complete one successful well, less if unsuccessful), computed on an average annual basis. As discussed under Alternative N, not all of these expenditures would likely be local.

An additional potential impact to state revenues is the potential loss to SITLA from not being able to lease or develop lands bordered all or in part by non-WSA lands with wilderness characteristics. The value of these lands for oil and gas leasing or development may be reduced if all or portions of public lands bordering these state lands are closed to new oil and gas leasing. This in turn could reduce the monies collected by the state (through SITLA), including royalties and severance taxes. These impacts can be estimated by using current data and incorporating several assumptions. If one assumes that any SITLA land whose perimeter is more than 50% bounded by BLM acreage closed to new oil and gas leasing as a result of implementing Alternative D and would be unavailable for development, and if one uses the projections of the RFD, one can project that slightly more than one well (1.16) would not be drilled over the life of the plan. Using data provided by the State of Utah, royalty payments to wells on SITLA lands averaged $57,065 as of early 2008. Severance taxes averaged $9,335 for all wells, regardless of land ownership. Multiplying these figures by the wells assumed to not be drilled, the fiscal loss to the state would total $66,516 in royalties and $10,881 in severance taxes in any year in which all 1.16 wells would have been in operation. This amount could increase over the life of the plan, as it is likely that some fraction of these wells would be in operation in several (or even all) years of the plan.

Similarly, one can compute potential spending on oil and gas activities (including coalbed methane) lost to the planning area, if these SITLA lands prove undevelopable under Alternative D. Using the assumptions outlined in the Impacts from Minerals and Energy for Alternative N: No Action section, the loss in spending in the local area would be approximately $721,100 in any year in which all 1.16 wells would have been in operation. This amount could increase over the life of the plan, as it is likely that some fraction of these wells would be in operation in several (or even all) years of the plan.

The potential loss to SITLA from not being able to lease or develop lands bordered all or in part by non-WSA lands with wilderness characteristics could also potentially increase school trust land management costs. Restrictive designations could increase the cost of access to school trust lands, impair marketability, and increase expenditures of trust resources in pursuing land exchanges with BLM. It is not possible to estimate the potential increase in school trust land management costs with available data.

Leasable Minerals—Coal

This alternative includes policies and decisions that are designed to protect, restore, and enhance natural values and to protect non-WSA lands with wilderness characteristics. Protecting the non-WSA lands with wilderness characteristics would remove 44,300 acres of identified coal resource land from further consideration for leasing, primarily in the Henry Mountains. But this study assumes this coal field would not be developed within the planning period. Whether additional coal development takes place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review.

Locatable and Salable Minerals

Alternative D proposes withdrawing 903,900 acres from development of locatable minerals and closing 1,160,500 acres to salable minerals. This has some potential to preclude development of some economic deposits, and it could reduce opportunities for individuals interested in maintaining a mining economy and culture. However, the potential for both locatable mineral development and disposal of salable minerals in the RFO is, at this time, assumed to be low. Thus, economic and social impacts could also be low.

An additional potential loss to SITLA would be revenues foregone from its inability to lease its lands for other types of minerals. In FY2007, SITLA generated statewide $12 million from leases of coal and other minerals. This amounted to 8% of all SITLA revenues. (In contrast, oil and gas revenues accounted for 40% of SITLA revenues.) To the extent that such minerals are present on SITLA lands that prove to be

undevelopable, there would be a financial loss to SITLA. It is not possible to estimate this potential loss with available data, but the impact is expected to be minor.

Impacts from Special Designations

Wild and Scenic Rivers

Impacts are the same as those described under Alternative C.

Areas of Critical Environmental Concern

Alternative D designates acreage identical to Alternative C, but it offers a higher degree of protection of the relevant and important values. Table 4-94 summarizes those restrictions that could impact socioeconomics.

Table 4-94. Management Prescriptions in ACECs Potentially Affecting Socioeconomics—Alternative D

ACEC Name	Acres	Acreage within WSA	OHV Closed Acres	Closed Routes (Miles)	Oil & Gas Closed Acres	VRM Class I Acres
Badlands	88,900	40400	84,800	10	88,900	75,800
Bull Creek	4,800	0	300	1	0	300
Dirty Devil/North Wash	205,300	130,700	204,800	89	204,300	203,900
Fremont Gorge/Cockscomb	34,300	2,800	20,400	20	18,900	18,700
Henry Mountains	288,200	130,000	230,400	162	239,500	222,500
Horseshoe Canyon	40,900	37,800	40,800	5	40,800	40,800
Kingston Canyon	22,100	0	16,400	20	0	16,500
Little Rockies	49,200	37,400	46,900	4	46,900	46,300
Lower Muddy Creek	16,200	0	15,900	17	16,200	15,800
Old Woman Front	330	0	330	0	0	0
Parker Mountain	107,900	0	0	46	0	0
Quitchupah	180	0	110	0	0	30
Rainbow Hills	4,000	0	4,000	26	0	0
Sevier Canyon	8,900	0	0	3	0	0
Special Status Species	15,100	0	0	0	0	0
Thousand Lakes Bench	500	0	500	1	0	40
Total	**886,810**	**379,100**	**665,640**	**404**	**655,500**	**640,670**

As Table 4-94 indicates, and identical to Alternative C, approximately 379,100 acres (42.7%) of the 16 ACECs are in WSAs currently managed under IMP. For this acreage, impacts to socioeconomics would be identical to current conditions. For example, the acreage designated as VRM Class I under Alternative C is identical to WSA acreage, with no additional acreage attributable to ACEC designations. Additional restrictions on some resources, however, are present in this alternative, above and beyond WSA acreage and the acreage described in Alternative C. These additional acreages in VRM Class I, restrictive oil and

gas lease categories, and closed OHV areas are due almost exclusively to the overlap between the ACECs and non-WSA lands with wilderness characteristics. The increased restrictions on these resources in Alternative D are the result of prescriptions for managing non-WSA lands for wilderness characteristics, rather than prescriptions for protecting the relevant and important values of the ACECs.

These additional restrictions would likely adversely impact OHV enthusiasts and could adversely impact individuals and businesses that rely on mineral resources for all or part of their livelihoods. Individuals whose social well-being is enhanced by the specific relevant and important values protected within these ACECs would be beneficially affected by this alternative relative to the Proposed RMP and Alternatives N, A, and C.

Other Impacts on Socioeconomics

The following section projects impacts on facets of socioeconomics not fully described in the resource decisions discussed above. Specifically, this section discusses the impacts of BLM resource decisions on population, community services, environmental justice, and public health and safety.

4.6.2 Impacts to Population

Any population change that could be associated with implementation of alternatives under consideration in this RMP would likely be linked to employment changes. Activities on public lands in the RFO would continue to support a notable number of jobs in the socioeconomic study area under all alternatives. It is not anticipated that continuing current management actions under Alternative N would significantly affect population trends. Changes in employment in all action alternatives, whether quantified in this RMP or not, are not expected to be substantial relative to Alternative N or to each other. Therefore, population impacts of any of the alternatives would be negligible. Under Alternative A, localized impacts are possible within portions of the socioeconomic study area that are more closely tied to the employment opportunities generated by coal mining and oil and gas development. Under Alternatives C and D, employment could change somewhat in specific locations due to policies that favor resource preservation and passive use over resource development, but any resulting localized impacts to population trends would be minor.

4.6.3 Impacts to Community Services

Activities affected by RMP decisions could cause impacts to local government services in various ways. For instance, changes in demand for local government services could vary with changes in population tied to management actions. Significant changes in population could cause undue strain on infrastructure (e.g., roads, utilities, schools). As discussed above, notable population changes are not expected under any alternative. Therefore, identifiable changes in demand for government services are not expected due to changes in population.

Decisions under the alternatives could also cause impacts to services through changes in tax receipts. All alternatives are expected to continue to generate notable local tax revenues throughout the planning period, with some minor variations. For instance, management actions under Alternative A and the Proposed RMP would provide the greatest potential for community development and increased local tax revenues from land disposals, while management actions under Alternative C would preclude these potential benefits.

Management actions could also affect local government services directly. For instance, increased recreational use of RFO lands, likely under all alternatives due to regional and national trends, would increase the demand for local government services associated with safety, emergency services, and police

protection. While local search-and-rescue operations utilize volunteers, there would be a growing need for training, equipment, and resources. In addition, these operations must be supported by the Sheriff's Office in each county.

Increased government services might also be needed to support other activities such as somewhat greater oil and gas development under Alternative A. This could include emergency, social, and safety services as well as road maintenance and traffic control. However, oil and gas development in this and all alternatives is likely to be fairly limited compared to major oil and gas producing areas in other parts of the West.

4.6.4 Impacts on Public Finance

Management alternatives could affect various revenues collected by the Federal government, state government, and various local governments. The socioeconomic section of the PRMP/FEIS Chapter 3 details a variety of revenue sources that are tied to or related to natural resource management on BLM lands.

Current trends in coal production are expected. The Federal Government would continue to collect mineral rents, royalties, and possibly bonuses from coal mining operations. Fifty percent of these revenues would be retained by the Federal Government, and 50% forwarded to the State of Utah. The State would provide some of these revenues to local governments through a variety of funds, only one of which is directly proportional to the mineral revenues produced by each county. The State has no severance tax on coal. Local governments would continue to receive natural resource property tax revenues from coal mining. Whether changes in coal development take place largely depends upon energy prices, the relative economics of coal production in the RFO versus other regions, and site-specific environmental review. Revenues collected from coal mining operations would be impacted by changes in coal production levels. These revenues cannot be quantified in the PRMP/FEIS, given currently available information.

Oil and gas production expected under all alternatives would produce some new federal and state mineral revenues, and the State would in turn provide some oil and gas revenues to the counties of origin. The State would also obtain new revenues from its oil and gas severance tax, oil and gas conservation fee, and income taxes. Local governments would obtain new revenues from associated natural resource property taxes. Because the amount of oil production is unknown, these impacts cannot be quantified, but they are not expected to vary significantly among between the alternatives because the RFD scenario does not vary significantly among between the alternatives.

Under all alternatives, the BLM would collect revenues through ROW rents, recreation fees, grazing fees, mineral material fees, and other permit fees. Some of these fees would be forwarded to the federal treasury; others would be returned to state and local governments, local grazing boards, or retained and used by the Richfield Field Office.

All alternatives are expected to continue to generate local sales and lodging tax revenues through expenditures of visitors in local establishments. These revenues would increase through the planning period as visitation increases due to regional and national trends and management actions that increase the attractiveness of the decision area to non-local visitors.

Land tenure adjustments under the BLM lands and realty program could potentially impact local government finances. Disposal of BLM lands to private ownership may reduce PILT by the Federal Government to local government, but it would also result in payments of property taxes to local government by the new private property owner(s). Land exchanges to other governments may also impact PILT payments. Acquisition of private land by BLM would reduce property taxes paid to local

government but would increase PILT payments. Differences between the alternatives, as well as the net impact on local government finances, cannot be determined without detailed information on the specific property(ies) in question as well as the tax rates and other financial figures for the particular local government(s).

4.6.5 Environmental Justice

Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to identify and address disproportionately high and adverse human health and environmental impacts of federal programs, policies, and activities on minority or low-income populations. As noted in the Baseline Socioeconomic Profile (BLM 2003b) and Chapter 3, no socioeconomic study area counties:

- Have minority or low-income populations exceeding 50 percent
- Have minority or low-income populations that are 10 percentage points greater than figures for the State of Utah.

Therefore, for the purposes of this analysis and all management alternatives examined in this Final EIS, there are no environmental justice populations in the socioeconomic study area, and actions required to identify and mitigate impacts to such populations are not required.

4.6.6 Public Health and Safety

An inventory of abandoned mines throughout the RFO has not been completed. Some abandoned mines within the RFO may be considered public safety hazards or suspected to have environmental concerns due to potentially occurring hazardous materials. Through coordination with Utah Department of Oil, Gas, and Mining and subject to funding, abandoned mines will continue to be identified and closed in order of the physical safety hazard priority and availability of funding. None of the management actions would increase public exposure to the risks associated with these abandoned mines. As a result, impacts would be negligible.

Remediation of contaminated and hazardous sites is necessary for compliance with applicable federal and state rules and regulations. No hazardous or solid waste sites are known to occur on public lands within the planning area. Incidental dumping of hazardous materials occurs, but it is rare and concentrated mostly in close proximity to towns and highways primarily within the RFO. None of the management actions proposed by the alternatives would require the handling, storage, or release of hazardous, toxic, or unapproved solid wastes that would cause health and safety concerns. Small amounts of fuels, chemicals, or other vegetation treatment products would be used throughout the RFO, but amounts would be relatively small and mostly applied away from populated areas. As a result, health and safety impacts would be negligible and are not analyzed further.

4.7 CUMULATIVE IMPACTS

Cumulative impacts are the effects on the environment resulting from the impact of implementing the Proposed RMP in combination with other actions outside the scope of this plan, either within the planning area or outside it. As stated in 40 CFR 1508.7 (1997), a "cumulative impact is the impact on the environment that results from the incremental impact of an 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."

Resource decisions from this Proposed RMP could combine with other past, present, and reasonably foreseeable future actions to produce cumulative impacts to resources in the planning area or adjacent lands that would be within the influence of the Proposed RMP. In other words, the scope of implementation of the alternatives of this Proposed RMP would include any activities and conditions, either within the RFO boundaries or outside, which would directly or indirectly influence the same resources as analyzed in the Proposed RMP. Planning projects in the region that could contribute to cumulative impacts include any area that would be affected by the decisions of the plan because of their geographic, administrative, or political ties to the Proposed RMP lands, such as adjacent BLM Field Office lands, Forest Service lands, and State-owned lands. Private lands, surrounding communities, and city and county jurisdictions could also produce cumulative impacts where land is developed or projects are constructed adjacent to BLM public lands.

The analysis of cumulative impacts serves to place the projected incremental impacts from the Proposed RMP in the context of past, present, and future impacts. Combining the projected impacts of the Proposed RMP with past, present, and future impacts necessarily involves projections and limited analyses, to the extent possible. Analyses are limited and qualitative in nature due to the inability to isolate the specific contribution of all past and present impacts from non-federal lands; challenges of predicting potential impacts for reasonably foreseeable future actions; the broad programmatic and strategic nature of the Proposed RMP; unknown nature and pace of resource uses and technological changes that could occur; and changing circumstances related to agency priorities, policies, and the economy. It is neither practical nor required to exhaustively analyze all possible cumulative impacts. Instead, CEQ indicates the cumulative impact analysis should focus on meaningful impacts due to the nature of the RMP decisions

4.7.1 Methodology

The cumulative impacts discussion that follows considers the alternatives in the context of the broader human environment and specifically actions that occur outside the scope and geographic area covered by the Proposed RMP. Because of the programmatic, broad-scale nature of this Proposed RMP, this assessment is broad and generalized to address potential effects that could occur from a hypothetical management scenario when combined with other activities or projects. This assessment is primarily qualitative for many resources because of the lack of detailed information that would result from project-level decisions and other activities or projects.

Cumulative impact analysis is limited to important issues of national, regional, or local significance. Therefore, not all issues identified for direct or indirect impact assessment in this Final EIS are analyzed for cumulative effects. Because of the wide geographic scope of a cumulative impact assessment and the variety of activities assessed, cumulative impacts are commonly examined at a more qualitative and less detailed level than are the direct and indirect impacts presented previously in this chapter. This analysis includes discussion of factors that make up the current environment. Factors that could be expected to influence that environment in the future are also considered. Reasonably foreseeable future action

scenarios are projections made only for the prediction of future impacts; they are not actual planning decisions or resource commitments.

Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent a best professional estimate. Unforeseen changes in such factors as economics, demand, and federal, state, and local laws and policies could result in different outcomes than those projected for this analysis.

The following factors were considered in this cumulative impact assessment:

- Federal, non-federal, and private actions
- The potential for effects to cross political and administrative boundaries
- The characteristics of each affected resource
- The comparative scale of cumulative impacts across alternatives.

4.7.2 Past and Present Actions

4.7.2.1 Population and Settlement

Overall, the RFO is sparsely populated due to its elevation, aridity, and ruggedness. Total population in the five-county, 5,400,000-acre planning area barely exceeds 50,000 residents, and most of this is concentrated in Sevier and Sanpete counties. Piute, Wayne, and Garfield counties are still sparsely populated. All five counties experienced early pioneer settlement dating back to the 1840s. Farms and communities were established along the arable valleys bordering the Sevier and Fremont Rivers and their tributaries. Many of these areas are still used for agriculture-related uses; some have been intensively developed. During the mining heyday, some of the less hospitable areas in the mountains and desert were used for mining ventures, resulting in some residential occupation that still exists. Many of the towns were abandoned when lodes played out or economic conditions changed.

Private land totals 15% of the area. The most evident changes to the natural environment are concentrated in and around the settled areas in which native vegetation and wildlife have been displaced by homes, farms, and other developments.

4.7.2.2 Land Ownership and Management

Most of the RFO remains in public ownership and is managed by the Federal Government or State of Utah. Three federal agencies manage 77% of the land: BLM, 39%; Forest Service, 27%; and National Park Service, 11%. Proposed actions on these lands potentially affecting the environment are analyzed under NEPA, which ensures, among other things, that cumulative impacts are addressed. The State of Utah manages an additional 7% of the land base. Many State land parcels are isolated within large tracts of public land. Impacts from activities on State lands can affect the surrounding federal lands; likewise, impacts from activities on federal land can affect State lands. The National Park Service units, Canyonlands and Capitol Reef National Parks, and Glen Canyon National Recreation Area (NRA) attract large numbers of visitors, which can impact surrounding public lands. Conversely, BLM management decisions for resource uses such as OHVs, oil and gas leasing, and coal leasing can impact national park resources.

4.7.2.3 Water Development

Agriculture in this arid land depends on irrigating crops with water diverted from streams, rivers, and springs. Concentrated along the Sevier and Fremont Rivers and their tributaries is an extensive system of irrigation diversions, canals, pipelines, and ditches. There are 21,000 surface water, groundwater, and point-to-point agricultural water diversions within the RFO. Major water storage facilities include the Gunnison, Rocky Ford, Johnson Valley, Otter Creek, Yuba, Koosharem, and Piute Reservoirs. The water diversions and reservoirs alter the timing of flows, temperature, turbidity, and ecological composition of the rivers and streams, which in turn affects water quality and quantity. Most of the streams within the RFO have been affected by water development. Those few remaining segments that remain relatively unaffected were identified and considered in the WSR analysis.

4.7.2.4 Livestock Grazing

Closely associated with pioneer settlement was livestock grazing on the surrounding public domain, in both the mountains and deserts. The environmental consequences of this early, unregulated grazing led to the establishment of the forest reserves (national forests) and the Forest Service and later, passage of the Taylor Grazing Act and establishment of the Grazing Service, which later became the BLM. Grazing continues today on the public lands and the national forests. Livestock numbers have generally been considerably reduced from what they were in the past, but evidence of past abuses remains on the land.

4.7.2.5 Mineral Development

Locatable mineral exploration and development dominated portions of the RFO in the past, most notably in the Tushar and Henry Mountains and near the towns of Marysvale and Ticaboo. Evidence of past mining activity, such as adits, shafts, roads, old buildings, and machinery remain on the land. Current mineral activity includes the SUFCO coal mine (located north of I-70 in Salina Canyon), gypsum mining (at Sigurd), salt mining (at Redmond), renewed interest in uranium mining (near Ticaboo and Hanksville), sales of various mineral materials (mostly sand and gravel) throughout the RFO, and oil and gas exploration and production in the Sevier and Sanpete Valleys, as discussed under the Reasonably Foreseeable Actions (Section 4.7.3).

4.7.2.6 Industrial Development

The RFO is not heavily industrialized. There are two gypsum plants operating in Sigurd and a gypsum mill in Richfield that use gypsum mined in the San Rafael Swell. There is also a salt mine and plant located in Redmond that produces and markets salt products, and a clay plant in Aurora that also gets clay from the San Rafael Swell.

4.7.2.7 Transportation System

Populated areas within the RFO are served by federal and state highways including Interstate 70, U.S. Highways 89 and 50, and State Highways 12, 24, 28, 62, 72, and 95. The Forest Service and National Park Service maintain networks of road systems within their respective ownerships; the counties maintain roads around communities and on the public lands. Currently there is no rail service within the RFO, but there is a proposal to construct a rail line in Sanpete and Sevier counties in the near future.

4.7.2.8 Off-Highway Vehicles

OHVs, particularly all-terrain vehicles (ATVs), are popular within the planning area for agricultural and recreational use. The Paiute Trail System, a joint effort of federal, state, and local agencies and

communities, is an extensive trail system on the west side of the planning area that links federal- and state-managed public lands with communities. It is a model of OHV management and interagency cooperation and has become an attraction for visitors from outside the area. There are areas of intensive ATV use throughout the area, particularly around some of the communities, where soils, vegetation, and scenic values are being affected.

Overall recreation use within the RFO has grown slightly. Vehicle-based recreation (OHV) use has become popular for a variety of recreational outings, including camping, hunting, and exploring, and OHV-specific activities such as hill climbing and trials riding (rock climbing). As vehicle-based recreation has grown and OHVs adapted for use on rough terrain, areas previously inaccessible for full-sized vehicles have become accessible for ATVs. OHV use has increased on public lands. The trend continues to grow as ATVs become more affordable and popular.

4.7.3 Reasonably Foreseeable Future Actions

4.7.3.1 Population Growth

Over the next 50 years, the population within the planning area is expected to grow by 64% (Table 4-95 and Table 4-96), somewhat less than the population growth in Utah (Table 4-96), which is expected to increase by 140% during the same period.

Table 4-95. Predicted Population Growth in Counties within the Planning Area

	Year	Garfield*	Piute	Sanpete	Sevier	Wayne
Population Projections	2000	4,800	1,400	22,800	18,900	2,500
	2010	5,000	1,500	27,900	21,000	2,800
	2020	6,000	1,800	32,900	24,900	3,500
	2030	6,700	1,800	35,200	26,900	3,900
	2040	7,400	1,900	36,900	28,300	4,300
	2050	8,000	2,000	38,500	29,700	4,600
% Increase	**2000–2050**	**67%**	**43%**	**69%**	**57%**	**84%**

Source: Governor's Office of Planning and Budget 2005
*Includes all of Garfield County.

Table 4-96. Growth in the Planning Area and Utah

	Year	Planning Area*	Utah
Population Projections	2000	50,400	2,246,600
	2010	58,200	2,833,300
	2020	69,100	3,486,200
	2030	74,500	4,086,300
	2040	78,800	4,701,400
	2050	82,800	5,368,600
% Increase	**2000–2050**	**64%**	**140%**

Source: Governor's Office of Planning and Budget 2005
*Includes all of Garfield County.

4.7.3.2 Community Growth

Associated with population growth would be the conversion of farmland to residential housing and second homes. Potential impacts from community expansion include wildland-urban interface fire issues, infrastructure demands, water quantity and quality, habitat fragmentation, economic benefits, and social issues. Because most new homes are built on farmland, the loss of farmland is also an issue. Recent trends in the five-county area are shown in Table 4-97. Overall, the number of farms and farmland acreage is decreasing and would likely continue to decrease as farmlands are converted to homes.

Table 4-97. Number and Acreage of Farms in the Planning Area

		Garfield*	Piute	Sanpete	Sevier	Wayne
Number of Farms	1997	312	108	847	530	206
	2002	225	108	759	568	173
Land in Farms	1997	122,536 acres	41,991 acres	361,116 acres	149,774 acres	59,246 acres
	2002	79,879 acres	(Information missing)	357,184 acres	164,817 acres	42,374 acres

Source: USDA 2004b.
*Includes all of Garfield County.

4.7.3.3 Oil and Gas Leasing and Development

Significant portions of public and private lands in the Sevier–Sanpete Valley are currently leased for oil and gas and interest in leasing remains high. Future impacts from oil and gas development would be determined by the outcome of current exploration in the valley. Several producing wells have been drilled and proposals for others are being considered. A RFD scenario for oil and gas within the planning area was developed and is included in Appendix 12. Over the next 15 years, geophysical exploration for oil and gas would directly impact no more than 5,100 acres; and 454 oil and gas wells would be drilled, directly impacting no more than 3,080 acres. Indirect impacts could include impacts to scenic quality, increased traffic on roads and highways, conflicts with wildlife and wildlife habitat, removal of vegetation, and social issues in communities. These numbers reflect expected impacts on private, state, national forest, and public lands.

4.7.3.4 Industrial Development

NEVCO Energy Company is proposing to build a 270-megawatt circulating fluidized bed coal-fired steam electric generating plant near Sigurd. If constructed, the plant would emit nitrogen oxides and sulfur oxides. It would increase demand on water quantity and impact water quality. The project also would increase employment during the plant construction phase and provide a few long-term jobs in the region.

4.7.3.5 Water Development

The Wayne County Water Conservancy District has expressed interest in utilizing remaining unappropriated water in the Fremont River. Dams at sites upstream and downstream from Capitol Reef National Park have been proposed at various times in the past, as have pipelines and land exchanges to bring under cultivation new land along the Fremont River and surrounding areas. No specific proposals or approved plans have been disclosed, and implementation of the project continues to remain uncertain. The coal-fired plant discussed above would require an extraordinary amount of water, which would affect

present uses. Further withdrawals of water could adversely impact outstandingly remarkable values in segments of the Fremont and Dirty Devil Rivers identified as eligible WSRs.

4.7.4 Cumulative Impacts of the Proposed RMP and Draft Alternatives- Cumulative Impacts by Resource Category

Cumulative impacts are discussed only for resources or uses that may experience impacts. The potential for cumulative impacts to the resources and resource uses is discussed below. Cumulative impacts to hazardous materials and public safety are not anticipated; therefore, these topics are not discussed.

Air Quality

Drilling, coal mining, and OHV activities cause emissions of particulate matter, carbon monoxide, nitrogen oxide, sulfur dioxide, and volatile organic compound (VOC) emissions. In the future, these emissions could impact ambient air quality, visibility, and atmospheric deposition. The cumulative impact analysis of air quality within and near the planning area includes major sources such as coal-fired power plants and cogeneration facilities. No other RFD would increase regulated pollutants in the area.

Data provided by RFO staff were used to determine the base year conditions after the development of proposed energy resources was complete. In addition, emissions data were gathered for the area. The most recent Utah Division of Air Quality (UDAQ) Statewide Emissions Inventory Report shows the primary air pollutants in all counties are VOCs and carbon monoxide (CO), followed by PM_{10}, nitrogen oxides (NO_x), $PM_{2.5,}$ and sulfur oxides (SO_x). The only exception is Sevier County where NO_x is higher than PM_{10}. Table 4-98 shows the criteria pollutant levels in tons per year from the Statewide Emissions Inventory. The 2005 emissions from the sources in all counties are 186,241 tons per year (UDAQ 2005). The emissions from future BLM activities for the Proposed RMP and all alternatives range from 2,240 tons to almost 2,271 tons per year (Table 4-11). Emissions from proposed actions from BLM activities in the decision area will contribute approximately $1/10^{th}$ of a percent of the emissions of the State of Utah and approximately 1 percent of the sum of emissions from all counties listed in Table 4-98.

Table 4-98. 2005 Criteria Pollutant Inventory (tons per year)

Area	PM_{10}	$PM_{2.5}$	SO_x	NO_x	VOC	CO	TOTAL
Garfield	**1,544**	**457**	**55**	**634**	**45,336**	**14,930**	62,956
Piute	**240**	**57**	**19**	**138**	**11,703**	**2,935**	15,092
Sanpete	1,231	272	206	1,119	18,874	12,439	34,141
Sevier	1,504	436	262	3,423	19,369	17,047	42,041
Wayne	473	87	79	224	24,591	6,557	32,011
Utah Total	**79,890**	**26,485**	**47,910**	**186,254**	**884,847**	**952,840**	**2,178,226**
Utah Average	**2755**	**913**	**1,652**	**6,423**	**30,512**	**32,857**	**150,222**

Sources: (UDAQ 2005)

Considering that the permitted sources do not calculate emissions from some of the oil and gas sources and that the permitted emissions come from single-point sources, the future anticipated emissions from BLM activities will be low in comparison to existing sources.

Ozone concentrations in both Canyonlands and Zion National Parks have been over 85% of the air quality standard designed to protect public health. The more strict 8-hour ozone NAAQS recently adopted by EPA makes ozone concentrations of critical concern.

Soil and Water Resources

The cumulative analysis boundary for soil resources is the planning area and the fifth order watersheds that intersect the planning area boundary. The BLM management actions combined with other federal, state, local, private and other land incremental impacts to soils and water resources would most likely come from OHV use, mineral exploration and development, livestock grazing, vegetative treatments (including prescribed burning), and wildfires. Historically, these actions have all had cumulatively adverse impacts on soil resources by causing surface disturbance contributing to reduced soil productivity, soil compaction and erosion, and subsequent sedimentation. They have also resulted in the widespread introduction of invasive weeds, which can affect water resources through increased evapotranspiration rates and can affect soil resources through alterations to soil chemistry and productivity. However, BLM-permitted activities would comply with authorizing permit stipulations that would minimize soil erosion and degradation of water quality and are not expected to contribute to the overall cumulative effect to water quantity and quality from past, present, and reasonably foreseeable actions. In addition, fire use and vegetation treatments proposed by BLM under the Proposed RMP would incrementally improve watershed health, which could increase the ability of the watershed to retain moisture. This could increase the volume of water within the watershed.

Reasonably foreseeable future actions in the RFO and on federal, state, local, private, and other lands within and adjacent to the planning area that could have an adverse affect on soils and water resources include an expansion of recreational use (including increased OHV use) and ongoing mineral exploration, development, and production.

Under the Proposed RMP and all DRMP/DEIS alternatives, soils and water resources would benefit from management in accordance with the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*. Adherence with these standards would reduce many of the adverse impacts from future BLM actions. In general, DRMP/DEIS Alternatives N, and A, would be the least protective of soil and water resources, result in the least beneficial impacts to soils and water resources, and have the least mitigating effect on past impacts to soils and water resources in the RFO. Incremental impacts from DRMP/DEIS Alternatives and A would be the greatest. DRMP/DEIS Alternatives C and D would be the most protective and would provide the least amount of incremental impacts by excluding the most areas from OHV use and other forms of surface disturbance. The Proposed RMP would provide an intermediate level of protection and mitigation of cumulative impacts.

Vegetation

The cumulative impact analysis boundary for vegetation includes the entire planning area. Potential cumulative impacts on vegetation would occur from a combination of BLM and non-BLM activities and land uses occurring within the analysis boundary. Such incremental impacts would result primarily from vegetation treatments, oil, gas, and other minerals development, forage use by livestock and wildlife species, prescribed burning, wildfires, vegetative and increased OHV use. The combined amount of surface-disturbing incremental actions associated with consumptive uses would result in cumulative effects throughout the RFO. Each disturbed area increases the opportunity for weed invasions and disrupts the spatial continuity of vegetation communities, and hence, habitat for plant and animal species. As human access increases, potential cumulative impacts to vegetation and wildlife habitat expand.

Direct impacts would be due to loss of vegetation or habitat from livestock forage use, fires, oil, and gas and other mineral-related development, and vegetative treatments. Indirect impacts would also occur with habitat fragmentation due to development, changes in OHV use due to increased routes and the use of those routes, and revegetation efforts from rehabilitation actions. Changes in land use and ownership could result in the loss of some vegetation used for wildlife habitat. Integrated weed management would reduce the spread and potential for noxious weeds and invasive species establishment.

Past fire suppression has contributed to increasing pinyon-juniper encroachment in the decision area and to a concurrent decrease in aspen and ponderosa pine communities. Fire use and vegetation treatments under the Proposed RMP would generally maintain or improve vegetation communities by removing undesired species, increase species diversity and age class, improve vegetation composition and structure, and increase vegetation cover. In addition, vegetation treatments and range improvements on lands adjacent to the decision area (public and private) would increase available forage and water for wildlife populations and livestock (for use by private operators) in these areas. This also would improve distribution of livestock and wildlife, improving vegetation condition. These incremental impacts would result in healthier vegetation communities that are more capable of retaining moisture and nutrients and resisting disease, non-native species invasion, drought, and other natural disturbances and stressors.

Major contributors to adverse impacts include OHV activities and activities related to mineral development. The potential for adverse cumulative impacts would be greatest under DRMP/DEIS Alternatives N and A, which allow for the most acres open to cross-country OHV use and minerals development. Long-term beneficial impacts to vegetation may not be realized under DRMP/DEIS Alternatives C and D, where vegetation acres and treatment types are limited. The Proposed RMP would provide an intermediate level of protection and mitigation of cumulative impacts. The overall incremental impact of BLM activities proposed for all resource decisions on vegetation is projected to be moderate within the short term. Over the long-term, BLM activities would improve vegetation composition and wildlife habitat through vegetative fire and fuels treatments.

Cultural Resources

Incremental impacts associated with resource decisions from this Proposed RMP, combined with other past, present, and reasonably foreseeable actions including non-BLM lands, could produce cumulative impacts on cultural resources and resources of religious or traditional importance to Native American tribes. The potential for cumulative impacts includes neighboring lands with connected cultural resources, including adjoining BLM Field Offices, other federal lands, state, local and private lands within the RFO. The same general management direction and resource uses occur on all BLM- and Forest Service-managed lands. Surface-disturbing activities such as mineral development taking place across the region can contribute to cumulative impacts of cultural resources. However, these activities would require adherence to cultural resource laws and regulations, resulting in the inventory and identification of cultural sites, avoidance, and, in some cases, data recovery.

Oil and gas development and mineral exploration and development have become factors in parts of the RFO and would continue into the future, both on BLM lands under the Proposed RMP and on state, local, private and other lands. Minerals development will continue to increase the human presence in the general area, thereby increasing the risk to cultural resources from looting, vandalism, and inadvertent impacts. Unregulated uses on BLM-administered lands that could also impact cultural resources include wildfires, dispersed recreation, and cross-country OHV use. However, the cumulative impacts of these activities on cultural resources in the general vicinity of the RFO would likely be less than the potential impacts from the increasing recreational visitation that cultural sites in the region are receiving. Recreational activity in and around the RFO would continue to increase under all DRMP/DEIS alternatives and the Proposed RMP.

Management from other resource programs (VRM, non-WSA with wilderness characteristic areas, WSAs, SSS, riparian, fish and wildlife, SRMAs, and ACECs) would also provide protection from surface disturbing activities that could damage cultural resource sites. Potential congressional designation of the WSR segment would require a Class III cultural resource survey to identify and monitor cultural resources. Some cultural resources would require additional mitigation as a result of public interaction with the resource. Under the Proposed RMP, cultural resources would be managed in compliance with federal law, regulation, and policies that require the preservation of cultural resources either in place or through data recovery, which would result in minor incremental impacts to cultural resources.

Paleontological Resources

The cumulative impact analysis area for paleontological resources includes the RFO and neighboring lands with connected paleontological resources. The cumulative effects of surface-disturbing activities within areas with scientifically significant paleontological resources, especially mineral development in the region, have the potential to damage this fragile, nonrenewable resource. However, existing laws, regulations, and policies provide for mitigation of effects through avoidance or data recovery efforts. Although it is expected that some fossils would be destroyed in the course of legitimate uses of public lands, as well as by natural weathering and erosion, mitigation measures would likely bring paleontologists to areas in which fossils had not been previously studied. Thus, fossils that would otherwise have been destroyed or disintegrated over time would be collected, placed in repositories, and protected in perpetuity. Beyond mineral development, cumulative impacts on paleontological resources could occur through incremental degradation of the resource base from a variety of sources, including wildfires, dispersed recreation, and cross-country OHV use, reducing the information and interpretive potential of the paleontological resource values. This combined with the actions on BLM-administered lands could result in minor incremental impacts to paleontological resources.

Visual Resources

Past and present actions causing cumulative impacts to visual resources include various construction projects and activities on public lands (or visible from public lands due to proximity and topography), including fire suppression, vegetative treatments, prescribed burns, residential development, farming, and mineral exploration, development, and extraction. All of these activities produce surface disturbances and are examples of the types of activities that have created visual contrasts in the past and have resulted in contrasts of texture, form, line, and color that are often visible to the casual observer at varying distances. Reasonably foreseeable future actions in the RFO include these same types of actions, which would continue to create visual contrasts within the landscape.

Recreational opportunities and use are also expected to increase, including OHV use, backcountry camping, mountain biking, rock climbing, and on-road sightseeing, with expected increased visitation to the adjacent national parks and national forests. Other foreseeable future increases include the demand for recreational facilities, and mineral exploration, development and extraction, including oil and natural gas well drilling.

The potential cumulative impacts of DRMP/DEIS Alternative N combined with past, present, and reasonably foreseeable future actions on visual resources could adversely affect visual resources and scenic quality from increasing minerals and recreation-related surface disturbances and from wildfires. However, mitigation would likely limit the impacts in viewsheds with high scenic quality in the RFO and in the adjacent national parks and national forests.

Past and present management, and reasonably foreseeable future actions, combined with the proposed action alternatives (the Proposed RMP, DRMP/DEIS Alternatives A, C, and D), would reduce the

potential for cumulative impacts on visual resources and preserve scenic quality. The risks of wildland fire would be reduced within the RFO and on adjacent national forests through increased vegetation treatments to reduce fuel loads; recreation activities and off-road travel would be managed to limit surface disturbances by greatly reducing areas open to OHV use, so that areas inventoried as having high scenic quality would be preserved. Mineral exploration, development and extraction, including oil and natural gas well drilling, are expected to increase over the next 15 years to 20 years, but visual resource management and associated mitigation would likely limit the impacts in viewsheds with high scenic quality and in the adjacent national parks and national forests. Visual resource management would include conformance of minerals exploration and development activities with VRM class objectives, which would preserve scenic quality in the long term in areas that the plan has designated for scenic quality protection.

The overall contribution of the Proposed RMP to the cumulative impact on visual resources is expected to be a minor incremental increase to the visual disturbances as a result of mineral resource development, transportation, wildland fire and vegetation treatments. Additionally, there would be incremental increases in the areas managed to protect visual resources.

Special Status Species

Cumulative effects include other future federal, state, tribal, local, or private actions that are reasonably certain to occur in the planning areas. The Richfield planning area is interspersed with parcels of non-BLM managed lands including federal, tribal, state, and privately owned lands. Activities taking place on these lands do have the potential to cumulatively impact natural resources within the planning area.

Existing and proposed activities on non-federal lands in the planning areas that have the potential to cumulatively affect SSS include:

- Non-discretionary livestock grazing
- Non-discretionary OHV use
- Non-discretionary land development
- Non-discretionary development of energy and mineral resources
- Non-discretionary herbicide and insecticide treatments
- Other non-discretionary surface disturbing activities.

As public lands within the Richfield planning area are interspersed and bordered by federal, tribal, state, and private lands, activities within these non-BLM managed lands are likely to affect natural resources within BLM managed areas. Future land uses within these tribal, state, and private lands are likely to include water development (dams and irrigation projects), energy and mineral development, livestock grazing, recreational development and use, and wildlife habitat management. Of these, energy and mineral development and livestock grazing on state and private lands represent a significant source of future activity within the state of Utah. Quantified data on the existing and future extent of these land uses are not available, but moderate to detrimental at localized areas impacts are reasonably certain to occur. Where these existing and future activities on non-BLM lands that interface with the SSS habitats, they would cumulatively add to the impacts of activities authorized in the planning area.

The contribution to the overall cumulative impact from the Proposed RMP would result in some increased level of cumulative impact greater than those non-discretionary actions alone. All future BLM-authorized management actions and developments would consider the cumulative impact of project implementation in conjunction with identified project-level and site-specific parameters. This would include the analyses of non-federal actions in the action area, and would provide a more meaningful cumulative impact

analysis than can be provided at the LUP level. Some SSS may be pushed closer to listing or extinction as a result of the cumulative degradation of BLM lands.

Some beneficial impacts would be obtained through the conservation measures identified in Chapter 2 of the PRMP/FEIS. The BLM- committed conservation measures have been developed in coordination with the USFWS, and are considered to be committed mitigation on the part of BLM. In addition, several best management practices (BMPs) which are optional measures that would further protect and conserve listed species when implemented. Implementation of these measures would provide flexibility of management, and more practicality in implementing protective measures for the conservation and recovery of listed species.

Fish and Wildlife

Cumulative effects include other future federal, state, tribal, local, or private actions that are reasonably certain to occur in the planning areas. The Richfield planning area is interspersed with parcels of non-BLM managed lands including federal, tribal, state, and privately owned lands. Activities taking place on these lands do have the potential to cumulatively impact natural resources within the planning area.

Existing and proposed activities on non-federal lands in the planning areas that have the potential to cumulatively affect SSS include:

- Non-discretionary livestock grazing
- Non-discretionary OHV use
- Non-discretionary land development
- Non-discretionary development of energy and mineral resources
- Non-discretionary herbicide and insecticide treatments
- Other non-discretionary surface disturbing activities

As public lands within the Richfield planning area are interspersed and bordered by federal, tribal, state, and private lands, activities within these non-BLM managed lands are likely to affect natural resources within BLM managed areas. Future land uses within these tribal, state, and private lands are likely to include water development (dams and irrigation projects), energy and mineral development, livestock grazing, recreational development and use, and wildlife habitat management. Of these, energy and mineral development and livestock grazing on state and private lands represent a significant source of future activity within the state of Utah. Quantified data on the existing and future extent of these land uses are not available, but moderate to detrimental at localized areas impacts are reasonably certain to occur. Where these existing and future activities on non-BLM lands that interface with the fish and wildlife habitats, they would cumulatively add to the impacts of activities authorized in the planning area.

The contribution to the overall cumulative impact from the Proposed RMP would result in some increased level of cumulative impact greater than those non-discretionary actions alone. All future BLM-authorized management actions and developments would consider the cumulative impact of project implementation in conjunction with identified project-level and site-specific parameters. This would include the analyses of non-federal actions in the action area, and would provide a more meaningful cumulative impact analysis than can be provided at the LUP level.

Some beneficial impacts would be obtained through the conservation measures identified in Chapter 2 of the PRMP/FEIS. The conservation strategy also includes those BLM- committed conservation measures which have been developed in coordination with the UDWR. In addition, several best management practices (BMPs) which are optional measures that would further protect fish and wildlife species when

implemented. Implementation of these measures would provide flexibility of management, and more practicality in implementing protective measures for the conservation and recovery of listed species.

Wild Horses and Burros

Cumulative impacts on wild horses and burros would result from vegetation removal, surface-disturbing activities, and general human disturbance from increased recreation use. The conversion or sale of State Trust lands that would include development within or adjacent to the Canyonlands HMA could result in reduced vegetation for wild horses and burros and additional disturbances from human activities. Land acquisitions by the BLM for the purposes of maintaining vegetation and wild horse and burro habitat could increase the potential to mitigate degradation of habitat, especially where such acquisitions by the BLM would result in large contiguous blocks of public land. The overall cumulative effect on the wild burros has been an increase in herd size exceeding previous forage allocations. The Proposed RMP would incrementally benefit the herd by allocating 600 AUMs for wild burros.

Fire and Fuels Management

Effects on fire frequency, intensity, and suppression activities resulting from actions taken by the BLM within the RFO would combine with similar effects caused by activities sponsored by other groups and private interests to create cumulative impacts to fire management. As development, recreational activities, and general use of the area increases, so would the number of potential ignition sources and consequently the probability of wildland fire occurrence, which would increase the need for federal, state, and local agencies to suppress wildland fires to protect life, property, and sensitive resources. Development of the area would also increase the amount of Wildland Urban Interface (WUI) areas, which would put additional pressure on fire suppression efforts, as these areas are high-priority areas for fire suppression. Suppression activities within WUI areas could be more dangerous, time-consuming, and expensive than suppression in undeveloped areas. Additionally, activities associated with fire suppression, recreation, development, and general land use would cumulatively contribute to the modification of the composition and structure of vegetation communities and increase the spread of noxious and invasive weeds. Such effects would, in turn, alter the fire regime of the planning area, potentially increasing the frequency, size, and intensity of wildland fires. Developed areas and associated roads and ROW corridors could also provide increased accessibility to remote areas for fire suppression equipment and provide fuel breaks in the case of wildland fire events. The Proposed RMP management actions would incrementally modify and improve the composition and structure of vegetation communities and move the decision area's fire regime towards condition Class I.

Areas with Wilderness Characteristics (Wilderness, WSAs and Non-WSA Lands with Wilderness Characteristics)

The cumulative impact analysis boundary for areas with wilderness characteristics (designated wilderness, WSAs, and non-WSA lands with wilderness characteristics) includes areas within the planning area with identified wilderness characteristics and those areas that overlap outside the planning area. In addition, areas with wilderness characteristics of adjacent land management agencies were considered as cumulative management of adjacent lands described above. Using this criteria, there are 4.3 million acres of designated wilderness, BLM WSAs and NPS administratively endorsed wilderness and non-WSA lands with wilderness characteristics being carried forward in the Proposed RMP.

As a result of implementing the management prescriptions under the Proposed RMP, wilderness characteristics on approximately 78,600 acres of areas with wilderness characteristics would be protected, preserved, and maintained within the decision area. Because of BLM WSA management, management of existing wilderness by the BLM and management of lands administratively endorsed for wilderness by

the NPS, the cumulative effect would be the protection of wilderness characteristics on 4.3 million acres throughout the region (all areas except wilderness characteristics areas within GSENM, which are not specifically managed to protect their wilderness characteristics). Not managing 604,000 acres of non-WSAs lands with wilderness characteristic areas within the RFO would contribute to a loss of areas with wilderness characteristics in the region. However, cumulatively the number of acres being protected for their wilderness characteristics in the region is much larger. In this context, the loss of wilderness characteristics of approximately 14 percent of the wilderness characteristics areas in the decision area would not result in a significant incremental loss of these resources in the region.

Preserving, protecting, and maintaining the 78,600 acres of non-WSAs lands with wilderness characteristics would enhance long-term ecological and scenic values, and generally it would maintain naturalness, solitude, opportunities for primitive recreation and special features. Managing the 604,000 non-WSAs with wilderness characteristics for other resource values could lead to long –term degradation of wilderness values on those lands.

Forestry and Woodland Products

The cumulative impacts of past, present, and reasonably foreseeable future actions would have long-term, beneficial and adverse impacts on woodland resources. Fire Management Plans for the BLM and USDA Forest Service Districts, fuel load reductions, vegetation treatments, and woodland salvaging would reduce the risks of wildland fire and long-term loss of woodland resources and productivity within the RFO. These activities (including stand thinning and salvage of dead, diseased, and infested trees) would also improve woodland resource productivity by indirectly improving woodland ecological conditions. These beneficial impacts would be greatest under DRMP/DEIS Alternative A and the Proposed RMP, which would potentially treat the most acres annually. Woodland productivity would be lost as woodlands were converted into rangeland for increased livestock forage. Cumulative travel management impacts would be beneficial to woodland resources because surface disturbance and associated soil loss would be reduced under all of the action alternatives and the Proposed RMP. Other resource use management actions could have adverse impacts on woodland resources by restricting resource harvesting (WSAs, ACECs, SRMAs, and wilderness characteristics areas) into the future. However, the area of harvesting restrictions would be relatively small compared to the area managed as open to opportunities for resource harvesting. The Proposed RMP management actions on the harvest of forest and woodland products would have a negligible incremental impact to the overall cumulative impact on the resource in the planning area.

Livestock Grazing

Cumulative impacts could result from activities on adjacent private lands, activities scheduled for SITLA lands and actions on adjacent National Forest System lands. Because livestock grazing occurs throughout the area and adjacent lands, it is reasonable to assume that impacts similar to those identified earlier in this chapter would occur elsewhere in the area.

Removal of vegetation as a result of surface-disturbing activities, the presence and abundance of grazing wildlife, and general human disturbance would result in diminished potential for livestock grazing in the planning area. Increased recreation use, urban development, and the conversion of private or Utah State Institutional Trust Lands to other uses could reduce livestock numbers and forage available for livestock by increasing soil disturbance, vegetation removal, and noxious and invasive weed proliferation. Impacts on livestock grazing could be greater near areas with high recreation use or areas developed for residential, commercial, or industrial uses. These factors could increase the demand for grazable land, which in turn could create scarcity within the RFO. However, because the amount of acres available for livestock consumption is not expected to substantially change over the life of this Proposed RMP, this

increased demand would not result in a decrease in rangeland quality in the years following the implementation of the Richfield RMP. The BLM management actions would have a negligible incremental impact to the overall cumulative impact on the resource in the planning area.

Recreation

Various past, present, and reasonably foreseeable future BLM actions have affected and will continue to affect recreational opportunities within the planning area, including 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. The increase in vehicle-based recreation and urban development and associated population growth all contribute to increased demand for recreational opportunities in the region. As a result, the planning area could experience increased recreational visitors over the life of the plan, which could degrade certain recreational settings, resulting in diminished recreational opportunities and experiences, or increase user conflicts associated with dispersed unconfined recreational opportunities. Similarly, increasing development or utilities within or near the RFO could degrade certain recreational settings. The increase in recreational activities is minimally a result of BLM actions. There would be a minor incremental impact to recreational opportunities and experiences from the Proposed RMP management actions.

Travel Management

The cumulative impact analysis boundary includes the planning area and immediately adjacent segments of state and local road networks including portions of Canyonlands National Park, Capital Reef National Park, Glen Canyon National Recreation Area, GSENM, Kanab Field Office, Price Field Office, Fillmore Field Office, Cedar City Field Office, Dixie National Forest, and regional State Trust Lands. These road networks include routes shared with BLM and other federal agencies and routes shared with GSENM. Past, present, and reasonably foreseeable future non-federal actions have affected, and will continue to affect, travel management within the planning area. These actions, which include urban development patterns, the continuing growth of vehicle-based recreation, planned road and highway projects, and population growth are expected to increase demand and construction of transportation routes near the RFO. Areas protected from development have guided in the past, and will continue to guide, the location and development of many highways and roads near and within the RFO. In contrast, the Proposed RMP and Alternatives A, C, and D management actions restrict travel within the RFO mostly to designated routes and very few, if any, additional routes would be developed. As a result, there could be increased concentrations of vehicles within certain areas of the RFO, that is, restricting the miles of roads open for motorized travel would be expected to increase vehicle concentrations more in the RFO than in surrounding areas that do not impose travel restrictions. 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 Proposed RMP management actions for closing 99 percent of the decision area to cross-country OHV travel in combination with similar management actions of adjacent field offices and agencies would incrementally reduce opportunities for cross-country OHV travel. Other Proposed RMP management actions that could affect travel management would include the construction of routes for fire and fuels management to reduce the risks of wildland fire, vegetation treatments to control invasive species, new minerals exploration and development routes, managing for increasing recreational demand and visitation, and other changes in travel management. However, these incremental actions would likely be minor to the overall cumulative effect.

Lands and Realty

The number of land use authorizations, particularly ROWs 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 generally encourage land development adjacent to BLM lands.

Restrictions on ROWs and utilities near the RFO could result from areas protected as open space, such as Canyonlands National Park, Glen Canyon National Recreation Area, and state parks. This could result in increased concentration of ROWs for utilities on public lands within the RFO. Sales or exchanges of state lands could result in extensive changes to surface management within the RFO. If the BLM acquired non-federal lands, the demand for both major utilities and smaller-scale distribution utilities could decrease over time because the potential for development of those lands (and the associated need for utilities) would decrease. In contrast, the BLM likely would need to issue increased ROWs to new areas if state lands were sold to private parties for future development.

The designation of ROW avoidance and exclusion areas on BLM lands, along with similar restrictions on ROW development on adjacent lands, particularly National Forest lands, would have a cumulative impact of reducing routing options for ROW facilities such as utilities and roads. Under the Proposed RMP, restrictions on ROWs in the decision area, combined with restrictions form other management plans in the planning area, would have a minor incremental effect by limiting the location of the ROW. DRMP/DEIS Alternatives C and D have the most avoidance and exclusion areas, with the least being in DRMP/DEIS Alternative A and the Proposed RMP.

Minerals and Energy

The cumulative impact analysis boundary for minerals and energy resources varies by the type of minerals resource. The analysis boundary for oil and gas is the RFO and contiguous geological structures and oil and gas fields that intersect the RFO. The analysis boundary for coal is the RFO and the boundaries of adjacent coal fields. The analysis boundary for locatable minerals is the RFO. The analysis boundary for salable minerals is the RFO and adjacent mineral material sources. Under the Proposed RMP, exploration and development of the various categories of minerals would be conducted in accordance with established rules and regulations in a program that allows for reasonable access to lands and provides protection for other natural resources. The primary impact to other resources would be the potential additional surface disturbance over the reasonably foreseeable future. Over the long term, most of these incremental impacts can be mitigated. BMPs would also reduce the incremental impact on other natural resources.

The development of oil and gas in the RFO could increase over the next several years. Stipulations on oil and gas leasing in the Proposed RMP would have a minor cumulative effect on the ability to develop oil and gas resources. Closing WSAs and the five mile stretch of WSR would preclude oil and gas leasing altogether. Applying NSO stipulations in order to protect some SSS, non-WSAs lands with wilderness characteristics, ACECs, Bull Creek Archeological District, part of the Dirty Devil SRMA, sensitive soils, riparian areas and recreation sites would likely incrementally impact or prevent some oil and gas recovery and could increase development costs. Applying CSU on the part of the Dirty Devil SRMA, some SSS, crucial mule deer, elk, bison, bighorn sheep, pronghorn, raptor habitats and protect sensitive soils would result in incremental impact or an increased cost to development and reclamation activities. Added cost associated with special leasing stipulations may lead to lower bids on lease parcels. Timing limitation stipulations incrementally impact or affect exploration and drilling operations by causing delays in operations, which may affect internal company project funding. However, adequate industry planning could substantially reduce this type of impact. Two or more timing stipulations, having different overlapping dates that encompass the same parcel could cause significant financial impact, depending on the total length of time the operations would be delayed.

Continued development along U.S. Highway 89, State Highways 12 and 24, and in local communities could increase the demand for mineral materials. Mineral material closures in the RFO would have a minor cumulative effect on the ability to develop mineral materials in the Proposed RMP. The application of surface stipulations could incrementally impact companies to look elsewhere to extract mineral materials. Suitable mineral material could likely be found in adjacent areas. However, relocating a site could incrementally impact or increase the cost of materials because of longer hauling costs. Good quality sand and gravel occurring within riparian areas would not be available for disposal actions. In addition to the above constraints, permittees would also have the incremental impacts or added costs associated with the control of fugitive dust, controlling noxious weeds, and assuring that equipment and reclamation materials are free of weeds in the weed free zone areas.

Under the Proposed RMP, restrictions and stipulations on mineral and energy development in the decision area, combined with restrictions form other management plans in the planning area, would have a minor incremental effect by limiting the timing and locations available for mineral and energy development.

Special Designations

Wild and Scenic Rivers

The Proposed RMP would recommend one segment with a tentative classification of Wild - the five mile Capitol Gorge as suitable for inclusion within the NWSRS. Impacts to the WSR would result from the river being managed to maintain its classification, free-flowing nature, and outstandingly remarkable values. Incremental impacts likely would not occur because eligible rivers are reviewed during the suitability process, and suitability is based on the environmental and economic consequences that would result from designation. Therefore, the overall cumulative effect would be minimal.

Areas of Critical Environmental Concern

The cumulative impact analysis area for ACECs is the potential ACEC boundaries. Cumulative impacts from the implementation of other federal agency and non-federal resource decisions within and outside of the RFO on currently designated and potential ACECs would be minimal, with the exception of mineral and travel management decisions. The nature of the relevant and important values associated with the potential ACECs tends to result in impacts that occur quickly but recover slowly, if at all in the case of some visual impacts, and impacts on cultural sites. As such, any impact would result in an incremental increase in the potential for irreparable damage to relevant and important values. Under the Proposed RMP, only the Old Woman Front and North Caineville Mesas would be designated; management associated with other resource program decisions would protect the R & I value, resources, processes, or systems in the other potential ACECs. Management actions of adjacent lands would incrementally protect the R & I values from irreparable damage. The relevant and important values of the potential ACECs not identified for designation would be protected through other resource decisions of the Proposed RMP, laws, rules and regulations.

Socioeconomic Environment

The boundary for cumulative impacts for social and economic conditions is the socioeconomic study area, which includes the entirety of the five-county area. Such impacts would include economic and social impacts related to short-term economic stimuli and possible short-term local community service impacts related to major construction projects and resource extraction activities in the socioeconomic study area. In addition to the SUFCO coal mine on RFO lands, such major projects would also include the possibility of additional oil and gas development and its ancillary facilities, the Westwide corridor project and development of tar sands in and adjacent to Glen Canyon. The Proposed RMP management actions would allow for the increased demand for salable minerals (sand and gravel) to complete these major projects.

The completion of these projects would indirectly allow for economic and population growth and the expansion of communities. Conversion of private agricultural lands to residential and other uses as the area grows would cumulatively add to the importance of public lands for the maintenance of the economy and culture of livestock grazing. The importance of public lands to maintenance of other local livelihoods, customs, and culture would also depend on cumulative decisions regarding management of other lands in the area, including NPS, USFS, BLM, State, and private lands.

Resource decisions from the Proposed RMP would combine with other past, present, and reasonably foreseeable actions to produce cumulative impacts to the social and economic conditions of each of the affected counties. Resource decisions could also potentially result in socioeconomic impacts to local communities. Changes in management actions that increase or decrease visitation to these areas could have beneficial or adverse impacts on the local economy, with regard to tourism-based revenue.

Mineral development outside the RFO's jurisdiction, but within or near the RFO, could also impact social and economic conditions. Under the Proposed RMP, oil and gas exploration, drilling and production would provide cumulative local economic benefits, including jobs and income. Continued livestock grazing, increased recreation and OHV recreation use, and reasonably foreseeable mineral development in the RFO, in conjunction with these activities on other lands, provides local economic benefits, including jobs and income. Mineral development, including the potential increase in uranium mining on BLM and non-BLM lands, could have short- and long-term beneficial impacts on local economic conditions with regard to employment and tax revenue. Increased mining activity could adversely impact visitor experience and recreation-related revenues, depending on the scale and location of those activities. However, uranium development is not projected to be extensive and, therefore, should not adversely impact visitor experience and recreation-related revenues. However, conflicts between these uses and user groups could occur in the long term. The Proposed RMP management actions would have a moderate cumulative effect on the overall economics of the planning area.

4.8 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Section 102(2) (C) of NEPA requires a discussion of any irreversible or irretrievable commitments of resources that are involved in the proposal, should it be implemented. An *irreversible or irretrievable commitment* of a resource is one in which the resource or its use is permanently lost and cannot be reversed (e.g., extraction of any locatable mineral ore or oil and gas or the extinction of a species).

The Proposed RMP would result in surface-disturbing activities, including dispersed recreation, recreational OHV use, fire and fuels management, mineral and energy development, livestock grazing, and infrastructure development that could result in loss of irreversible or irretrievable resources. These surface-disturbing activities may permanently alter soil, water, and vegetation, visual resources, relevant and important values, ACECs, OHV use, tentative classifications of WSR segments, and potentially damage cultural and paleontological resources.

Habitats in nonfunctional condition may sustain sufficient degradation that they may no longer be capable of being restored to original site potential. If this change results in significant soil loss through channel down-cutting or incisement, or if riparian-wetland obligate plant species are replaced by facultative or upland species, these could represent irretrievable and irreversible impacts that cannot be corrected even through costly rehabilitation efforts.

Fire suppression in low-to-mid elevation forest and woodlands has led to the accumulation of fuels and makes these forests more susceptible to stand-replacing fires. The loss of forest products from stand-replacing fires is considered an irreversible, and in some instances, irretrievable commitment of resources if an extremely hot fire burned over a long time. If aspen continue to decline in the lands managed by the RFO, they could become rare to non-existent in some watersheds and might not be able to be restored.

Lands and realty policies may lead to irretrievable commitments of resources. This includes disposals of land and subsequent development and acquisition of land that results in removal of that land from the private property tax base.

Development of up to 454 oil and gas wells and leasable minerals over the next 15 years would represent an irretrievable commitment of nonrenewable fossil fuels. The extraction of locatable mineral resources also constitutes an irretrievable commitment of resources.

4.9 UNAVOIDABLE ADVERSE IMPACTS

Section 102(C) of NEPA requires disclosure of any adverse environmental effects that cannot be avoided should the proposal be implemented. Unavoidable adverse impacts are those that remain following the implementation of mitigation measures or impacts for which there are no mitigation measures. Implementing the Proposed RMP would cause some unavoidable adverse impacts.

Surface-disturbing activities could cause unavoidable adverse impacts. Although these impacts are mitigated to the extent possible, unavoidable damage is inevitable. Conversion of vegetation resources to other uses, such as transportation and mineral and energy development, reduces the quantity of vegetation resources. Energy and mineral resource extraction on public lands potentially creates air quality, water quality, visual intrusions, soil erosion, and soil compaction problems. Portions of the resource area with more intense recreational use experience scarring, increased soil erosion, and loss of vegetation. Although these impacts are unavoidable, they are usually concentrated in previously disturbed areas, which reduce the spread of impacts to more remote or less frequented areas.

Because some specific wildlife habitats coincide with the known areas of oil and gas potential, impacts to these habitats are unavoidable under current BLM policy to encourage responsible oil and gas development. However, oil and gas well sites and their associated infrastructure are mitigated to the extent possible to minimize impacts and avoid wildlife habitat values when possible. Competition is anticipated for habitat resources between wildlife, livestock, and wild horses and burros. The extent of the impacts varies by season as well as by drought cycle. Although there could be short-term periods of significant impacts, long-term management would endeavor to make these uses compatible to the extent possible.

Travel on or off roads could cause soil compaction and loss of protective vegetation cover, thereby increasing soil erosion and fugitive dust emissions. Increased soil erosion can adversely impact riparian-wetland areas through increased soil sedimentation. Weeds introduced by these and other management activities could cause a reduction in canopy coverage and leave soils subject to increased erosion as well. Any facility developments, including but not limited to recreation sites, livestock water and other range improvements, and utility and road facilities, that are not properly restored even after mitigation measures are applied, could result in increased soil erosion.

Inadvertent damage to, or loss of, cultural and paleontological resources from increased recreational use, OHV use, surface-disturbing activities, or natural deterioration is unavoidable. Although mitigation measures could be implemented for scientific data recovery (leaving portions of cultural resource sites undisturbed for future exploration), the area of excavation would be destroyed and future research would not be possible. The number of cultural sites or paleontological localities anticipated to be inadvertently damaged is unknown, but it is anticipated to be very low given the management decisions in the Proposed RMP.

Conflicts between user types, such as motorized recreationists and recreationists who seek more primitive types of recreation and motorized users who share recreation areas, are unavoidable adverse impacts. As recreation demand increases, recreational use disperses to other areas of the lands managed by the RFO, which could create conflicts with existing uses of those areas. Increasing recreation use can cause conflicts with other resource uses, such as livestock grazing or forest and woodland products harvest. Recreation use and experiences could conflict with the results of livestock grazing and timber harvest. Under the DRMP/DEIS alternatives in which mineral development is expected to be higher, recreational use is transferred from those areas, which would increase the extent and frequency of conflict between these incompatible user groups.

Numerous land use restrictions, imposed throughout the RFO to protect sensitive resources and other important values, by their nature, impact the ability of operators, individuals, and groups who use the public lands to do so freely without limitations. Although attempts are made to minimize these impacts by limiting the level of protection necessary to accomplish management objectives and by providing alternative use areas for impacted activities, some adverse impacts to such users are simply unavoidable.

4.10 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Section 102(C) of NEPA requires discussion of the relationship between local, short-term uses of man's environment and the maintenance and enhancement of long-term productivity of resources. As described in the introduction to this chapter, *short term* is defined as anticipated to occur within 1 to 5 years of implementation of the activity. *Long term* is defined as following the first 5 years of implementation but within the life of the Proposed RMP.

Management actions result in various short-term effects, such as increased localized soil erosion, fugitive dust emissions, vegetation damage, and decreased visual resource quality. Surface-disturbing activities, including concentrated recreation, recreational OHV use, mineral and energy development, range improvements and developments, and infrastructure development, result in the greatest potential for impacts to long-term productivity. Management actions and best management practices are intended to minimize the effects of short-term uses and reverse change over the long term. However, BLM lands are managed to foster multiple uses and some long-term productivity impacts could result regardless of management approach.

The short-term effects of mineral development decrease the area and productivity of potential crucial mule deer, elk, and SSS habitats. Development of roads associated with oil and gas development is possibly the greatest contributor to habitat fragmentation. However, permanent mineral development sites and their associated infrastructure are mitigated to the extent possible to minimize fragmentation and avoid the most significant wildlife habitat values. In addition, management actions to improve soil, water, riparian, vegetation, and habitat resources improve the productivity of wildlife and SSS habitats throughout the lands managed by the RFO.

Management actions that disturb soil surfaces can cause short-term impacts to riparian-wetland areas and vegetation resources by increasing soil erosion and converting areas to early seral stages. Over the long term, these management actions are likely to improve riparian-wetland areas to proper functioning condition and increase vegetation productivity.

Management actions to implement the *Fundamentals of Rangeland Health* and *Standards and Guidelines for Grazing Administration*, and the Healthy Forests Restoration Act of 2003, could affect the areas available for livestock grazing and commercial forest and woodland products harvest. In the long term, these actions are anticipated to improve vegetation and forest productivity. Maximizing short-term use of forest resources, without an increase in woodland products harvest or vegetation treatments, results in a long-term continued build-up of large fuels, which results in uncharacteristically intense wildland fires and longer fire return intervals.

Concentrated recreation use could cause some long-term impacts to soil structure and vegetation. However, concentrating recreational use in certain areas prevents these adverse impacts from extending to other areas of the lands managed by the RFO. However, increases in short-term woodland product harvest (such as pole/post, dead and down fuel collection) and forest harvests reduce the long-term buildup of large fuels.