

ENVIRONMENTAL ASSESSEMENT
DOI-BLM-CO-N040-2011-0029-EA
Roan Plateau Prescribed Fire and Fuels Reduction Project

Bureau of Land Management
Colorado River Valley Field Office
2300 River Frontage Road
Silt, Colorado 81652

Lands Managed by the Bureau of Land Management (BLM):

Township 5 South, Range 94 West, Sections 14-17, 19-36;
Township 5 South, Range 95 West, Sections 25, 36;
Township 6 South, Range 94 West, Sections 5-7;
Township 6 south, Range 95 West, Sections 1-4, 10-12;
Sixth Principal Meridian, Garfield County, Colorado

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action

The proposed action is to address the decline of communities of quaking aspen (*Populus tremuloides*) that are experiencing high rates of mortality, commonly referred to as Sudden Aspen Decline (SAD), on a portion of the Roan Plateau planning area of the Bureau of Land Management (BLM) Colorado River Valley Field Office (Figure 1). Although aimed primarily at address aspen decline, the proposed action would have other ecological and fire management benefits. General goals and objectives of the project are as follows:

1. Promote regeneration and sprouting of aspen in selected areas experiencing SAD.
2. Improve wildlife habitat, primarily for cavity-nesting birds, small mammals, and native ungulates.
3. Evaluate the effectiveness of the treatments and associated beneficial and adverse impacts to help guide potential future use.
4. Create units to modify fire behavior in the event of a wildfire in proximity to private property and potential oil and gas facilities.
5. Reduce fuel loading in decadent communities of snowberry (*Symphoricarpos cf. rotundifolia*) and other mountain shrubs within the units.
6. Reduce the risk of large-scale fires in critical watershed areas.
7. Maintain or create diverse seral stages and improve herbaceous understory in mixed mountain shrub and sagebrush communities.
8. Improve usable forage production for livestock and wildlife.

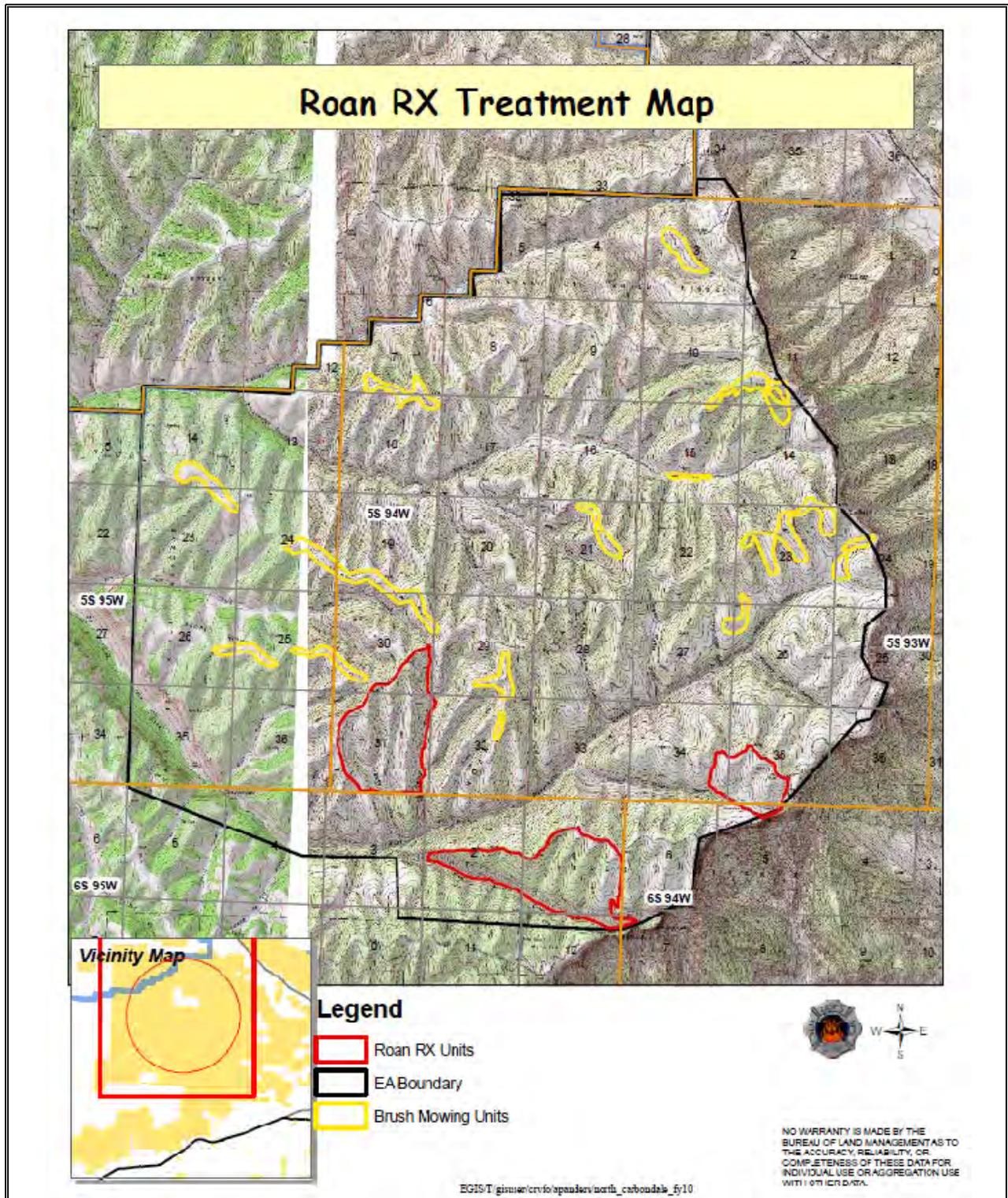


Figure 1. Roan Plateau Habitat Treatment Map

This is a programmatic environmental assessment that identifies specific prescribed fire and mechanical treatment areas but is not limited to those units. If the identified units are deemed successful in achieving the goals and objectives, other units within this environmental assessments boundary could be identified. With proper site-specific clearances and needed mitigation, these “add on” units could also be treated using similar techniques, as modified based on knowledge gained from the initial phase.

Prescribed fire units already identified include areas comprising approximately 35 percent to 50 percent aspen. Other vegetation within these units includes snowberry, other mountain shrubs, and a variety of native grasses and forbs (broadleaf herbs). Weeds are not abundant in the treatment areas.

The prescribed fire treatments are expected to have a low to moderate intensity due to seasonal timing, most likely extending from July 1 until snowfall, typically in October. Curing of grasses and forbs during this period is expected to allow sufficient heat to consume the bulk of snow berry and stimulate aspen sprouting. However, because of relatively moist conditions beneath aspen than in unwooded habitats—due to both the shading effect of the aspen canopy and the fact that the species does not occur on hot, dry sites—mortality of live trees is expected to be around 50 percent or less. A mosaic pattern is expected, with fire not moving uniformly or completely through the units. Differences in moisture, aspect, slope, and vegetation type would contribute to the mosaic resulting in the different units.

If the initial treatment occurs in 2011 as currently planned, the burn would definitely occur no earlier than July 1 to allow time for pre-treatment surveys of other resources potentially affected by the fires. At present, BLM anticipates that subsequent fire treatments would also occur during the period from July 1 to first snowfall. This period has the following advantages:

- Avoids direct mortality of arboreal or ground-nesting songbirds.
- Minimizes interference with use of treated and nearby habitats for hunting by birds of prey during the nesting season.
- Reduces stress to female and young-of-year elk (*Cervus elaphus*), which use aspen stands as a primary habitat during the critical calving season.
- Avoids removal of herbaceous and woody groundcover during the period of increased precipitation in late spring and early summer, thereby providing greater protection of surface waters and associated aquatic species.

A negative aspect of fall treatment is interference with hunting, which is the primary recreational activity on BLM lands atop the Roan Plateau. If a decision is made to burn during the spring in subsequent years, mitigation measures for minimizing impacts to songbirds, raptors, other wildlife, and surface waters wildlife would be implemented and closely monitored. Future treatments, regardless of timing, would use adaptive management to apply knowledge gained during the initial treatment and unplanned fires in the area.

Streams and adjacent riparian areas would be protected by a 100-foot buffer within which fire would not be initiated on the ground. Residual creeping and backing fire might come into these areas from an uphill area, but it is unlikely that any fire would spread into riparian areas due to elevated moisture levels of vegetation and other fuels and higher humidity

Any known cultural sites would be mitigated to ensure that they are unaffected during a prescribed fire event. Mitigation measures may include clearing around a site, cutting a fireline around site, ring firing around the site, or other practices that provide protection.

The project area does not currently contain a large amount of noxious weeds, but due to disturbance of the groundcover, it is possible that weeds might appear after implementation of the project. The project area would be monitored for a period of 3 years to determine if noxious weeds are present. If found, noxious weeds would be treated by spraying with an approved herbicide appropriate for the specific weed, magnitude and size of the infestation, and proximity to surface water. Where practicable, weeds may also be treated using hand tools. To reduce the potential for weed infestation, the fuels specialist would work with the project ecologist to determine appropriate staging sites for equipment and personnel. The staging sites would be placed where infestations of noxious weeds, other invasive species, or special status plants or significant plant communities are not located.

An approved and signed burn plan would be required prior to conducting a prescribed burn. The burn plan would identify prescription parameters, including wind, fuel moisture, temperature, and other factors that meet the required prescription for a successful burn. A State smoke permit from the Colorado Department of Public Health and Environment (CDPHE) would also be applied required. When received, stipulations attached to the smoke permit would be followed to meet any State concerns.

The proposed action also involves mowing selected sagebrush and snowberry stands. Equipment to be used would be selected to minimize impacts to soils. The brush would be mowed to a height of 8 to 12 inches. The mowing would be conducted mainly on ridgetops and upper slopes of some drainages where slopes are less than 30 percent. Mowing would be conducted between July 1 and September 30 as time and equipment allows and would be performed to create mosaic patterns within the identified areas. The project is expected to take between 2 to 5 years to implement fully. Additional units may be defined if mowing treatments are meeting resource objectives.

This is a comprehensive environmental assessment. If objectives are documented as being met during a post-treatment evaluation of identified units, other prescribed fire and mowing units could be added. Additional treatments would not occur until cultural and biological surveys are completed and mitigation measures are identified and in place.

This environmental assessment is valid for a period of 10 years from the date signed and covers additional treatments and maintenance activities consistent with resource protections. Any additional treatments or non-routine maintenance activities would under review by BLM's resource specialists and the project planning coordinator prior to implementation to ensure resource protections and compliance with the National Environmental Policy Act (NEPA).

No Action Alternative

No fuels reductions or treatments would be conducted on public land. SAD would not be addressed, and aspen stands would probably continue to decline without regeneration. Proposed development of oil and gas resources atop the Roan Plateau would also not benefit from reduced fuel loadings and modified fire behavior in the prescribed fire units.

Alternative Considered But Analyzed

Treating aspen stands mechanically, such as using hydro-ax equipment, was considered but rejected. This approach to treating SAD but would create an unacceptable level of soil damage and be costlier per acre.

NEED FOR THE ACTION

Primary Need

Aspen communities atop the Roan Plateau have been experiencing a rapid die-off that attributed to SAD. This phenomenon affects aspen trees and is thought to be caused by one or more pathogens attacking trees weakened by drought or other environmental stress. A period of severe drought in the early 2000s is believed to be the primary stressor that led not only to outbreaks of SAD in Colorado but also to widespread mortality lodgepole pine (*Pinus contorta*) in Colorado and pinyon pine (*Pinus cembroides* ssp. *edulis*) in northern New Mexico. Although the exact causes of these outbreaks differ among the different tree species, weakening by drought appears to be a consistent thread.

Studies have found that burning, cutting, and other stand manipulation methods have stimulated regeneration within affected aspen stands. To be effective, manipulation must occur before root systems have become too weak to produce vigorous sprouts. An evaluation of affected aspen stands atop the Roan Plateau area of BLM's Colorado River Valley Field Office (CRVFO) indicates that treatment with fire would be effective in stimulating regrowth.

Aspen is a fire-adapted species, meaning that it has accumulated adaptations that allow it to survive wildland fires. This does not mean that individual boles necessarily survive—although this often is the case because of the lower temperatures associated with relatively cool and moist microclimate of most aspen stands—but that the aspen's root system survives to send up new shoots that become new trees. Aspen is a particularly interesting species in this regard, because most of its reproduction occurs through suckering from roots to create new trees rather than through establishment of new plants from seeds. Thus what appears to be a clump or stand of aspen may be, genetically, a single individual. Very hot fires may eliminate aspen from an area by killing the shallow roots and creating a hostile (hot, dry, infertile) environment for the survival of any shoots that do emerge. However, most wildland fires are followed by regeneration of aspen, even in areas where aspen has been replaced by conifers through the process of succession.

In most of their range in the mountains of Colorado, aspen occur in areas of slightly elevated moisture related to soil, slope, and aspect. Because of this elevated moisture, and the cooling effect of the aspen canopy, aspen understories typically support a dense, rich cover of grasses and forbs. Atop the Roan Plateau, however, many of the aspen stands support a dense understory of snowberry. This may be a response to prior period heavy use by livestock that preferentially exploited herbaceous species, or the result of an unknown site-specific condition. Some have also suggested that the dense understory may be the result of prolonged fire suppression in Colorado. However, the extreme density and height of the snowberry beneath aspen on the Roan Plateau is unusual in comparison to other areas that have not seen fire for decades or centuries. Regardless of the factor(s) contributing to the dense snowberry layer, its removal through burning is likely to be important in the success of the project. This is because aspen regeneration by sprouting from roots is aided by warm temperatures—the result of its adaptation to surviving fires and to colonizing adjacent unwooded areas (aspen stands typically expand outward by root suckering).

Associated Benefits

While helping to reverse the effects of SAD on the Roan Plateau is the primary reason for the project, the prescribed burns would have additional benefits. Wherever it occurs in montane and subalpine habitats of the Southern Rockies—habitats typically dominated by conifers—the presence of aspen adds importantly

to habitat quality and diversity for other wildlife. These include a variety of perching birds that nest in the aspen boughs or in cavities excavated in previous years by woodpeckers. In general, the avian communities of aspen stands have limited overlap with the communities of conifer stands. Birds of prey often select aspen preferentially over conifers, and some raptors nest primarily in aspen.

Elk and mule deer (*Odocoileus hemionus*) often use aspen preferentially to conifers because of the lush herbaceous growth and, in many situations, less deadfall than among conifers. Both species commonly use aspen stands as a primary habitat for birthing and rearing of young, and the Colorado Division of Wildlife (CDOW) often considers aspen to constitute critical calving or fawning habitat. Elk also make use of aspen during late winter/early spring, when the rising sap is a source of sugars and nutrients while other foods are still dormant beneath the snow. Black bears (*Ursus americanus*) also are attracted to the lush foliage, the berries of associated shrubs in the understory, and the greater abundance of small mammal prey typically found beneath aspen than beneath dense conifers.

Some of these benefits to other wildlife, and especially those involving regrowth of sprouts that eventually mature into large aspen, would not be realized over the short term. However, given the present extent, and likely expansion, of SAD on the Roan Plateau, failing to take action to regenerate aspen stands could result in serious long-term impacts from continued reductions in the extent of aspen.

Other beneficial outcomes of the prescribed fire treatments are associated with fire management. While aspen are the primary target, adjacent portions of conifer stands within the conifer-aspen mosaic would also burn. This would remove some of the currently high fuel loading associated with dense deadfall, reducing the severity of future natural within the treated stands and creating areas with different burn characteristics within the larger forest. Reducing the potential for future intense fires to sweep across the top of the plateau would help retain the current visual and recreational appeal of the area.

Also importantly, reducing the severity and scale of future wildland fires would help protect streams that support genetically pure populations of Colorado River cutthroat trout. This BLM sensitive species would be vulnerable to extirpation from streams receiving inflow of sedimentation eroded from valley sideslopes following an intense fire. High sediment loads following an intense natural fire would cause direct mortality or reduced survivorship of trout as a result of lower water clarity, higher water temperatures, reduced oxygen concentrations, and siltation of coarse substrates required for spawning and that support the type of aquatic invertebrate prey on which the trout feed.

Use of the Roan Plateau for grazing of domestic livestock would also benefit from fire treatments by an increase in herbaceous growth, particularly if the burn is successful in eliminating or severely reducing the dense snowberry for a period of years.

The project would have benefits related to possible future oil and gas development on BLM lands atop the Roan Plateau. Oil and gas projects would add an element of additional WUI (Wildland Urban Interface) to the area. This project would provide a proactive fuels treatment before development occurs and increases the complexity of suppression efforts or prescribed fire operations. Prescribed fire units could act as fire behavior modifiers to allow for increased firefighter, industry, and public safety. For example, if a natural ignition burns toward newly developed infrastructure and its trajectory intersects a prescribed fire unit, the fire behavior would be modified to lessen flame lengths, intensity, and BTUs, thereby potentially increasing the success of suppression efforts.

Last, the fire and mechanical treatments in dense mountain shrub communities would result in diverse seral stages and greater habitat heterogeneity. At present, the spread of mountain shrubs has crowded out native grasses and forbs from portions of the plateau.

PLAN CONFORMANCE REVIEW

The proposed action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan.

Date Approved: Jan. 1984, revised 1988, amended in November 1991 – Oil and Gas Leasing and Development – Final Supplemental Environmental Impact Statement; amended Nov. 1996 – Colorado Standards and Guidelines; amended in August 1997 – Castle Peak Travel Management Plan; amended in March 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement; amended in November 1999 – Red Hill Plan Amendment; amended in September 2002 – Fire Management Plan for Wildland Fire Management and Prescriptive Vegetation Treatment Guidance; amended in June 2007 – Record of Decision for the Approval of Portions of the Roan Plateau Resource Management Plan Amendment; and amended in March 2009 – Record of Decision for the Designation of Areas of Critical Environmental Concern for the Roan Plateau Resource Management Plan.

Decision Number/Page: The proposed action is within Fire Management Unit C-140-02 – Roan Plateau and Cliffs. The fire management Objectives, Strategies (including Prescriptive Vegetative Treatments) and the Priority Ranking are in Appendix B, pages 46-50 of the Fire Management Plan for Wildland Fire Management and Prescriptive Vegetation Treatment Guidance 2002 and revised 09/2009. Also within the Fire Management Plan, Chapter III at pages 9 and 10 discusses Fuels Treatment Prioritization.

Decision Language: The priority ranking for Fuels Treatments is “MODERATE.” The goals for prescriptive vegetation treatments in this unit include the following:

- Reduce hazardous fuel loading and the risks of wildland fire escaping public lands.
- Reduce the risks of large scale fires in critical watershed areas.
- To maintain or create diverse seral stages and improve herbaceous understory in mixed mountain shrublands/oakbrush vegetation types
- To reduce fuels around significant cultural sites.

Decision Number/Page: The Record of Decision for the Roan Plateau Approved Resource Management Plan Amendment/ ROD-21.

Decision Language: VWR-7 states, “Use range, fuels and fire, and vegetation management activities that protect and/or enhance the health and productivity of native and other desirable plant communities and wildlife habitat.”

Standards for Public Land Health: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands.

A Land Health Assessment was completed for the Roan Cliffs Area in 1999. The report summarizing the findings of the assessment recommended the following; “Management actions designed to increase age

class diversity within and between vegetation communities may slightly improve wildlife habitat. Prescribed fire, or wildfire for resource benefit, could be used to set back succession in several community types and create a mosaic of vegetation age classes across the landscape, but would not be given high priority given the generally good condition of these types.”

Because a standard exists for these five categories, the impact analysis must address whether the proposed action or any alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions for that specific parameter. These analyses are located in specific elements listed below.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and natural environmental resources that could be affected by the proposed action and no action alternative. In addition, the section presents comparative analyses of the direct and indirect consequences on the affected environment stemming from the implementation of the various actions. During scoping for this project, the following elements of the human environment were identified as being present within the project area and/or potentially affected by the proposed action:

- Access and transportation
- Air quality
- Areas of Critical Environmental Concern (ACECs)
- Cultural resources
- Fire and fuels management
- Invasive non-native species
- Migratory birds
- Native American religious concerns
- Range management
- Recreation
- Soils*
- Special status species*
- Vegetation*
- Visual resources
- Wastes, hazardous or solid
- Water quality, surface*
- Wetlands and riparian zones*
- Wild and Scenic Rivers (WSRs)
- Wilderness and Wilderness Study Areas (WSAs)
- Wildlife, aquatic and terrestrial*

Potential impacts to these elements, and mitigation measures to avoid or minimize adverse impacts, are discussed in the following subsections. Elements indicated by an asterisk (*) are also analyzed in relation to the Public Land Health Standards.

Access and Transportation

Affected Environment

The proposed action would take place on public lands on top of the Roan Plateau northwest of Rifle, Colorado. Primary access to the top of the Roan Plateau is limited to two routes. From State Highway 13 (SH13) via the steep and narrow JQS Road, or via Cow Creek Road off Rio Blanco County Road 5 (Piceance Creek Road). JQS Road is impassable when wet and is closed in the winter. Cow Creek Road remains open year round, but snow typically limits travel to over-the-snow vehicles in winter.

This lack of winter road maintenance keeps overall vehicle use lower than on surrounding public lands. BLM currently maintains JQS Road and the main ridge roads on the Roan Plateau. Cow Creek Road, and the Rim Road (#8000) that follows the eastern and southeastern edges of the plateau, are maintained by oil and gas operators. Travel on the Roan Plateau is limited to designated routes, except for over-snow travel by snowmobile with a minimum of 12 inches of snow cover. These designations would not exclude vehicles used for emergency, official, or other authorized purposes. Other routes are maintained as needed, usually in conjunction with maintaining livestock improvements or during annual road maintenance.

The delineation of Travel Management Areas (TMAs) addresses other modes of travel not covered by OHV area designations (43 CFR 8342.1). The Roan Plateau Area TMA delineation allows muscle powered (i.e., foot, ski, horse, and stock) travel cross-country year-round. Mechanized (wheeled conveyance) travel in the Roan Plateau Area TMA is limited to designated routes year-round, as identified on signage or on maps available at the CRVFO. All TMA delineations are subject to additional restrictions (i.e., seasonal, area, type, and number) set forth in the ROD or in subsequent travel planning.

Environmental Consequences

Proposed Action

The proposed action would not change travel management on top of the Roan Plateau over the long term but could shift travel and visitation patterns during the short term. Both the burn unit boundaries and vegetation treatment boundaries intersect existing roads in some areas and lie adjacent to them in other areas. The incorporation of existing roads into the burn and vegetation treatment unit delineations should reduce the need to create new access roads, fire lines, or staging areas. Should new fire lines or access points be needed, impacts to travel management would be minimized through the following mitigation measures.

Mitigation: Access from existing routes to any new trails, fire lines, or staging areas created during the prescribed burn or vegetation treatments shall be closed using natural debris, such as trees or boulders, and shall be reclaimed to prevent further surface disturbance.

No Action Alternative

The no action alternative would result in no changes or impacts to access and transportation.

Air Quality

Affected Environment

Air pollution control programs are based on a combination of Federal and state legislation. The Clean Air Act (CAA) is the primary Federal legislation and additional state air quality management authority is based on state legislation. The US Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for several different pollutants, which are often referred to as criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, and suspended particulate matter). Standards for suspended particulate matter have been set for two size fractions: inhalable particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}). The Colorado Air Quality Control Commission has adopted state ambient air quality standards that are equal to or more stringent than the Federal NAAQS. The Air Pollution Control Division of the Colorado Department of Public Health and

Environment (CDPHE APCD) implements regulatory and planning programs based on Federal and state regulations. The CAA and the Federal Land Policy and Management Act of 1976 (FLPMA) require BLM and other Federal agencies to comply with Federal, state, tribal, and local air quality standards and regulations.

The project area encompasses a large portion of the Roan Plateau with targeted burn areas and mowing activities to be conducted within smaller sections of the project area. A detailed assessment of the air quality in the region is presented in the Roan Plateau RMPA/EIS (BLM 2006). Although specific air quality monitoring has not been conducted within the project area, regional air quality monitoring is generally good based on regional monitoring. Air pollutants measured in the region for which ambient air quality standards exist include carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter less than 10 microns (µ) in diameter (PM₁₀) and less than 2.5 µ in diameter (PM_{2.5}), and sulfur dioxide (SO₂).

The project area has been described as an attainment area under Colorado AAQS and NAAQS. An attainment area is an area in which ambient air pollution quantities are below (i.e., better than) NAAQS standards. As shown in Table 1, regional background values are well below established standards, and all areas within the cumulative study area are designated as attainment for all criteria pollutants. Federal air quality regulations are enforced by the Colorado Department of Public Health and Environment (CDPHE).

Table 1. Air Pollutant Background, Ambient Air Quality Standards, and Prevention of Significant Deterioration Incremental Concentrations (µg/m³) by Applicable Averaging Time

| <i>Pollutant and Averaging Time</i> | <i>Measured Background Concentration¹</i> | <i>National AAQS</i> | <i>Colorado AAQS</i> | <i>PSD Class I Increment</i> | <i>PSD Class II Increment</i> |
|---|--|----------------------|----------------------|------------------------------|-------------------------------|
| Carbon Monoxide (CO) | | | | | |
| 1 hour | 8,000 | 40,000 | -- | NA | NA |
| 8 hours | 4,444 | 10,000 | -- | NA | NA |
| Particulate Matter (PM ₁₀) | | | | | |
| 24 hours | 54 | 150 | -- | 8 | 30 |
| Annual | 24 | 50 | -- | 4 | 17 |
| Particulate Matter (PM _{2.5}) | | | | | |
| 24 hours | 19 | 65 | -- | NA | NA |
| Annual | 7 | 15 | -- | NA | NA |
| Sulfur Dioxide (SO ₂) | | | | | |
| 3 hours | 110 | 1,300 | 700 | 25 | 512 |
| 24 hours | 39 | 365 | -- | 5 | 91 |
| Annual | 11 | 80 | -- | 2 | 20 |
| Nitrogen Dioxide (NO ₂) | | | | | |
| Annual | 34 | 100 | -- | 2.5 | 25 |

¹All background values from Trinity 2003.

The Prevention of Significant Deterioration (PSD) Program within CDPHE is designed to limit incremental increases for specific air pollutant concentrations above a legally defined baseline level, as defined by an area's air quality classification. Incremental increases in PSD Class I areas are strictly

limited. All NEPA analysis comparisons to the PSD Class I and II increments are intended to evaluate a “threshold of concern.”

The project area and surrounding areas are classified as PSD Class II. The PSD Class I areas located within 100 miles are Flat Tops Wilderness, Maroon Bells – Snowmass Wilderness, West Elk Wilderness, Black Canyon of the Gunnison National Monument, and Eagles Nest Wilderness. Current Colorado and National AAQS and PSD Class I and II increments are provided in Table 1.

Environmental Consequences

Proposed Action

CDPHE, under its EPA-approved State Implementation Plan (SIP), is the primary air quality regulatory agency responsible for determining potential impacts. CDPHE has the ultimate responsibility for reviewing and permitting any project’s air quality impacts prior to its operation. Burning activities would be conducted in accordance with the current State of Colorado Smoke Management Plan and permitted by open burning permits issued by the CDPHE Air Pollution Control Division.

The proposed action would occur within lands for which land uses are anticipated and analyzed in the Roan Plateau RMPA/EIS (BLM 2006). The prescribed burn activities would result in short-term localized emissions from smoke associated with burning activities (USEPA 1995). While the affects of these activities appear to be minor, they could affect individuals in the vicinity who are sensitive to smoke. These individuals include the elderly, young children and infants, and those with breathing problems. Others that may be at risk include pregnant women, those active outdoors, and people with allergies or diabetes. In addition to burning activities, fence building and mowing activities would result in short term localized emissions from vehicles and equipment. Dust generation may also occur if these activities are implemented during dry conditions.

Mitigation measures would include implementation of best available control measures, as presented in the EPA’s *Air Quality Policy on Wildland and Prescribed Fires* (USEPA 1998), which includes guidance for smoke management. These control measures include burning techniques to reduce the amount of pollution generated from fire and exposure levels through meteorological conditions that favor smoke dispersion and transport (Sandberg 2002). In addition, visual monitoring of burning activities shall occur in the area by qualified individuals. Given the scale, location, and the timing of the proposed activities, it is anticipated that overall impacts to local air quality would be minimal if control measures are followed.

No Action Alternative

Under the no action alternative, no fuels reduction activities would occur. The result could be more severe wildland fires in the future, which could consume more fuel and have more of an effect on local air quality than the proposed fuels reduction activities (Sandberg 2002).

Areas of Critical Environmental Concern (ACECs)

Affected Environment

The proposed action covers all public lands above the rim of the Roan Plateau within the CRVFO with the exception of several hundred acres of land southwest of the East Fork Parachute Creek Falls. This Environmental Assessment (EA) encompasses two designated ACECs: East Fork Parachute Creek and

Trapper/Northwater Creek. The 2007 Record of Decision for the Roan Plateau RMP Amendment and Environmental Impact Statement (RMPA/EIS)(BLM 2007: 35) prescribed protective measures to preserve the identified Outstanding Remarkable Values (ORVs) for fish, botany and scenic values until such a time as a suitability study is completed. The overall objective is to not allow surface disturbing activities that might impair the identified values.

East Fork Parachute Creek ACEC

The East Fork Parachute Creek ACEC originates near the eastern rim of the Roan Plateau and flows westward, cutting through the Green River Shale to form a deep canyon before plunging 200 feet into a narrow scenic box canyon. The resource values found within the East Fork Parachute Creek ACEC are a scenic 200-foot high waterfall and deep box canyon; Colorado River cutthroat trout; the Roan Cliffs blazing star; and five significant plant communities. The plant communities include hanging garden sullivanian, a Green River Shale endemic plant; Colorado blue spruce/red osier dogwood and boxelder-narrowleaf cottonwood/red-osier dogwood riparian communities; a Great Basin wild rye grassland community; and an Indian ricegrass/shale barrens community.

The East Fork Parachute Creek Falls and the box canyon downstream present a dramatic scenic viewshed. The viewshed consists of steep canyon walls with vertical relief of over 2,000 feet from the canyon rim to the valley floor. Dramatic visual contrast is created by the narrow, incised canyon and the stark contrast of steep barren white cliffs falling off to deep green spruce-fir forests.

East Fork Parachute Creek contains a genetically pure population of native, wild, naturally reproducing Colorado River cutthroat trout. This population is considered a “core conservation population” (99 percent genetic purity or better) and is regionally and nationally important in the conservation of the species. The ACEC also includes the hanging garden sullivanian, a unique wetland plant which grows in seeps on the canyon walls. The Roan Plateau is regionally important habitat for the hanging garden sullivanian, supporting approximately 62 percent of the known global populations.

About 0.5 mile above the waterfall, a Colorado blue spruce/red osier dogwood plant community is found along East Fork Parachute Creek. This plant community is found in only a handful of riparian areas in Colorado and the community along the East Fork Parachute Creek is in good condition. Just below the waterfall, a small riparian community of boxelder-narrowleaf cottonwood/red-osier dogwood occurs. The site is in good condition with no roads or other surface-disturbances currently impacting the site. Some noxious weeds have been found in the vicinity, posing a risk for expansion into the community.

A mesic swale near the head of First Anvil Creek supports a small community of Great Basin wildrye. This community is in good condition, with one two-track road dissecting the site. Noxious weeds occur in the vicinity but have not been documented within the community itself.

The Indian ricegrass/shale barrens plant association is found in several locations along the south-facing talus slopes of the East Fork Parachute Creek between the confluences of First and Second Anvil Creeks.

Trapper/Northwater Creek ACEC

Trapper Creek and Northwater Creek are tributaries similar to East Fork Parachute Creek that originate at the eastern edge of the Plateau and flow four to five miles to the west before merging to form East Middle Fork Parachute Creek. This ACEC supports a “core conservation population” of the Colorado River cutthroat trout and several hanging garden sullivanian sites.

Environmental Consequences

Proposed Action

Two of the proposed burn units overlap the East Fork Parachute Creek ACEC. Several of the proposed mowing units would affect both the East Fork Parachute Creek and the Trapper/Northwater Creek ACEC. Prescribed burning and mowing would not target riparian areas or the Indian ricegrass shale barrens. Riparian areas and streams would have a 100-foot buffer in which fire would not be initiated on the ground. If fire were to escape into these areas, it is unlikely that fire would carry through the riparian areas due to the higher fuel moisture and humidity associated with these areas. Consequently, the proposed action should have very little effect on the Colorado cutthroat trout populations or habitat or on the significant riparian plant communities within the ACECs. Fire would also be unlikely to carry into or affect the Indian ricegrass shale barrens due to the lack of vegetation on these sites.

The Great Basin wild rye grassland community that lies within one of the proposed burn units could be adversely impacted if fire burned through them. Impacts such as plant mortality, increased weed invasion, or changes in species composition or diversity could degrade the integrity and functionality of this community. However, this community is well adapted to fire (FEIS 2010) and is not typically adversely impacted unless a severe fire burned through the area while the plants were actively growing. Also, potential weed invasion could degrade the quality of this community.

The East Fork Parachute Creek Falls would still dominate the viewshed within the canyon after the proposed action. The scenic value of the box canyon would retain its visual contrast and diversity unless fire carried below the rim of the canyon.

To minimize potential negative affects to the scenic values of the East Fork Parachute Creek ACEC, fires would not be initiated from the falls west into the box canyon. To maintain desirable native plant communities in the ACECs, these areas would be monitored and treated for weeds for a minimum of 3 years following treatment to prevent spread from treated areas. Livestock grazing would be deferred for two growing seasons on burned areas larger than 0.5 acre, or until site-specific analysis and monitoring data indicate that vegetation cover, species composition, and evidence of reproduction are adequate to sustain grazing use while maintaining plant health and watershed function.

No Action Alternative

Under the no action alternative, no burning or mowing activities would occur that could contribute to the long-term buildup of fuels in the aspen and mountain shrub communities. The buildup of fuels could leave the area susceptible to possible wildfire hazard in the future. A severe, high-intensity wildfire (especially during the middle of the growing season) could result in greater mortality of native plants and an increase in early seral, invasive forbs and weeds, hydrophobic soils, and potential flooding and sediment transport which would degrade the scenic and biological values of these ACECs.

Cultural Resources

Affected Environment

Two large Class III cultural resource inventories (CRVFO #s 786 and 8396 a & b) were conducted for the Naval Oil Shale Reserve in 1981 and 1996 that overlap portions of the fuel reduction and the vegetation mowing areas. One recent survey (CRVFO # 1111-18) was conducted to fill in the areas that had not

been previously inventoried. No cultural resources were located within the proposed fuel reduction areas. Within one of the proposed mowing areas is an “historic property” that is potentially eligible for listing on the National Register of Historic Places.

Proposed Action

Environmental Consequences

As long as no ground-disturbing activities occur within the Roan Plateau Cultural Resource Plan, as stated in the 2007 ROD for the Roan Plateau RMPA/EIS (BLM 2007), the project areas do not need to be monitored. The proposed prescribed fire treatments would cause no direct impacts to cultural resources within the currently identified project areas, and no historic properties were identified. However, possible indirect long-term cumulative impacts from fire treatments and mowing operations have the potential to increase public access, and the presence of project personnel could result in a range of impacts to undiscovered cultural resources, such as illegal collection, vandalism, and excavation.

No mitigation is required in relation to the prescribed fire treatments as currently planned. However, if heavy equipment such as graders, bulldozers, and tracked vehicles are used during additional phases, monitoring would be necessary to comply with the 2007 ROD for the Roan Plateau RMPA/EIS (BLM 2007). As originally planned, the mowing operation in the southern portion of Section 15, T5S, R94W, encompassed one historic property and would result in an Adverse Effect. To mitigate this potential impact, the western boundary shall be moved 400 feet east of Road 8006C to avoid this property.

Based on the above, a “Conditional No Adverse Effect” determination can be made for the proposed action in accordance with the National Historic Preservation Act (16U.S.C 470f), National BLM/SHPO Programmatic Agreement (1997), and Colorado Protocol (1998). If future treatment areas are added, these would require additional cultural resource monitoring and would require the concurrence of the Cultural Resources Specialist, who must also sign off on future actions prior to initiation. All project personnel shall be informed about requirements for reporting and protecting cultural resources, as laid out in the following *Inadvertent Discovery Stipulation*:

The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during project implementation, work in that area must stop and the agency Authorized Officer notified immediately (36 CFR 800.13). The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the BLM Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)). Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act.

Project personnel are also responsible for conformance with CRVFO’s *Education/Discovery Stipulation*, attached to the Decision Document at the end of this EA.

No Action Alternative

This alternative would be beneficial to cultural resources by allowing them to remain unobserved and possibly not subject to erosion from the loss of ground cover.

Fire and Fuels Management

Affected Environment

Fire is currently managed under the CRVFO Fire Management Plan (FMP) (2002 revised 9/2009) under the authorization of the Roan Plateau RMPA/EIS (BLM 2006). Current fire management identifies the top of the Roan Plateau as an area where fire is a desirable component of the ecosystem. The Roan Plateau was previously classified as a “D” fire management zone (FMZ) in which fire is desirable and placed a “low” priority on suppression efforts. The Roan Plateau FMZ classification was changed from “D” to a “C” with the decision to adopt the Roan Plateau RMPA/EIS (BLM 2006). Reasons for the change in classification was the constraints associated with oil and gas development and high resource values associated with the existing forest, riparian/wetlands, and aquatic habitats.

Fuels on the Roan Plateau are characterized by three separate fuel types mixed coniferous, aspen, and mountain shrub. The mixed coniferous fuel type consists of spruce and fir stands. Fuel loadings in these stands can be considered “high” with a considerable amount of dead and down.

Aspen stands within the project area have experienced a decline in vigor that is believed to be associated with SAD. These stands have a considerable amount of dead standing and downed trees that elevates the fuel loadings to be considered “high.” Research has shown that low to moderate intensity fire can stimulate regeneration of aspen, which in turn helps the overall vigor of the stand.

Mountain shrub mixed with sagebrush makes up a good portion of the vegetation outside timbered areas. The main vegetation within the identified units is snowberry. The lack of disturbance on the Roan has allowed for a dense, tall, and single age class stand of this species, which spreads from the roots to form clumps. The fuel loading of this would situation would be considered “high,” as it forms a continuous blanket across the landscape where it is found. This unusual density also contributes to lack of diversity in the grass and forb strata due to competition for space, light, and moisture.

Environmental Consequences

Proposed Action

The proposed action could modify future fire behavior in the project area from an expected high intensity fire to a low or moderate intensity fire that would enable emergency personnel to suppress it before it became a major threat to adjacent communities. Firefighter and public safety in the event of an unplanned wildfire within the units would also be improved by the prescribed burn under the proposed action. In the event of oil and gas development, associated infrastructure could benefit from modified fire behavior in the proposed units.

No Action Alternative

Under this alternative, no fuels treatments would occur. Fuel loading would continue to increase, thus increasing the threat of a stand replacing fire.

Invasive Non-native Species

Affected Environment

To date, some weed mapping has occurred on the Roan Plateau, but it has not been systematic or comprehensive and has covered only a small extent of the total land area. Observations by various BLM biologists have provided most of the information on weed distribution. Weed mapping on the Roan Plateau by the BLM is scheduled to be completed in 2011. Information on weeds gathered over the next year would be used to determine appropriate treatments in relation to the proposed action.

Houndstongue (*Cynoglossum officinale*) is the most prevalent weed on the Roan Plateau. It occurs in most drainages and is scattered in the uplands. Biennial thistles including bull thistle (*Cirsium vulgare*), musk thistle (*Carduus nutans*), and plumeless thistle (*Carduus acanthoides*), are frequently found in the uplands and drainages. Canada thistle (*Breca arvensis*) occurs along almost every riparian reach, sometimes in dense populations, and both Canada thistle and houndstongue occur along most roads on top of the plateau. While not common, spotted knapweed (*Centaurea maculosa*) occurs in one population near the north end of proposed Unit 1. Additional weeds such as burdock (*Arctium minus*), yellow toadflax (*Linaria vulgaris*), cheatgrass (*Anisantha tectorum*), and common mullein (*Verbascum thapsus*) were noted as present on the Roan with variable population sizes.

Environmental Consequences

Proposed Action

It is likely that noxious and invasive weeds would initially increase as a result of the disturbance associated with the project. Surface-disturbing activities such as prescribed burning and mowing provide a niche for the establishment and expansion of invasive non-native species, particularly when these species are already present in the surrounding area. Additionally, fire vehicles and mowing equipment could introduce and spread noxious and invasive weed seeds. To help minimize the potential for spread of invasive non-native species during or after the treatments, the project leader would ensure that equipment involved in surface disturbing actions is clean of noxious weed seeds or propagative parts prior to entry onsite. In addition, pre-treatment of weeds in proposed prescribed burn units would occur in areas with high weed density to minimize weed expansion following fire. Post-burn weed monitoring and treatments would be conducted for three years following prescribed burning and mowing treatments. Any Colorado-listed noxious weeds would be promptly treated and controlled according to the appropriate timing for each particular weed species. Staging of fire vehicles and mowing equipment would not occur in weed-infested areas. Prior to prescribed burning or mowing, the project leader would consult with the BLM Ecologist concerning appropriate staging areas.

No Action Alternative

Under this alternative, none of the ground disturbance associated with the proposed action would occur. Noxious and invasive plant species would be expected to continue at current levels.

Migratory Birds

Affected Environment

The term “migratory birds” applies to native bird species protected by the Migratory Bird Treaty Act (MBTA). As used in the MBTA, “migratory birds” include native resident species that remain in an area

throughout the year as well migratory species that move from northern to southern latitudes and from higher to lower elevations to avoid winter conditions and a seasonal shortage of suitable food.

For most migrant and native resident species, nesting habitat is of special importance because it is critical for supporting reproduction in terms of both nesting sites and food. Also, because birds are generally territorial during the nesting season, their ability to access and utilize sufficient food is limited by the quality of the territory occupied. During non-breeding seasons, birds are generally non-territorial and able to feed across a larger area and wider range of habitats.

BLM Instruction Memorandum No. 2008-050 provides guidance toward meeting the agency's responsibilities under the MBTA. This guidance directs Field Offices to promote the maintenance and improvement of habitat quantity and quality for migratory birds of conservation concern to avoid, reduce, or mitigate adverse impacts on their habitats to the extent feasible and in a manner consistent with regional or statewide bird conservation priorities. Because of the many species of migratory birds potentially present within Field Office boundaries, BLM has focused its protection on species listed by the USFWS as Birds of Conservation Concern (BCC). This listing resulted from the 1988 amendment to the Fish and Wildlife Conservation Act, which mandates USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973."

The current BCC list (USFWS 2008) for Bird Conservation Region 16 (Southern Rockies/Colorado Plateau) includes 12 species potentially present in or near the project area: the bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), flammulated owl (*Otus flammeolus*), yellow-billed cuckoo (*Coccyzus americanus*), Lewis's woodpecker (*Melanerpes lewis*), willow flycatcher (*Empidonax traillii*), gray vireo (*Vireo vicinior*), pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus griseus*), Brewer's sparrow (*Spizella breweri*), and Cassin's finch (*Carpodacus cassinii*).

The Roan Plateau contains a variety of a variety of vegetation types, including sagebrush, mountain shrubs, aspen and conifers. These community types typically provide nesting habitat for an array of migrants during the breeding season. Common species include in conifer-aspen communities include, among others, the broad-tailed hummingbird (*Selasphorus platycercus*), western wood-pewee (*Contopus sordidulus*), olive-sided flycatcher (*Contopus cooperi*), Hammond's flycatcher (*Empidonax hammondii*), western flycatcher (*E. difficilis*), violet-green swallow (*Tachycineta thalassina*), tree swallow (*Tachycineta bicolor*), hermit thrush (*Cathartes guttatus*), American robin (*Turdus migratorius*), mountain bluebird (*Sialia currucoides*), western bluebird (*S. mexicanus*), house wren (*Troglodytes aedon*), ruby-crowned (*Regulus calendula*), yellow-rumped warbler (*Dendroica coronata*), orange-crowned warbler (*Oreothlypis celata*), warbling vireo (*Vireo gilvus*), plumbeous vireo (*V. plumbeus*), western tanager (*Piranga ludoviciana*), dark-eyed junco (*Junco hyemalis*), and pine siskin (*Spinus pinus*). Two migratory woodpeckers, the Williamson's sapsucker (*Sphyrapicus thyroideus*) and red-naped sapsucker (*S. nuchalis*) are potentially present. This list does not include all of the potential migratory species that may be found in the area. In addition to these is a BCC species, Cassin's finch, which is a resident or short-distance migrant in the region.

Mixed mountain shrublands dominated by serviceberry and oak support migratory species such as the dusky flycatcher (*Empidonax oberholseri*), black-headed grosbeak (*Pheucticus melanocephalus*), green towhee (*Pipilo chlorurus*), and spotted towhee (*P. maculatus*). The most common migratory bird in sagebrush shrublands such as those where mowing would occur is the vesper sparrow (*Pooecetes*

gramineus). Potentially present in sagebrush along ridgetops of the Roan Plateau is Brewer's sparrow, a BCC species.

Raptors known to occur or potentially present in the project vicinity include two species on the BCC list (golden eagle and flammulated owl). Golden eagles nest on nearby cliffs but hunt across wide areas, including open habitats such as sagebrush atop the plateau. Flammulated owls, if present on the plateau, would be expected to nest and hunt for small prey in conifer and aspen forests. Other raptors in the area include the sharp-shinned hawk (*Accipiter striatus*) and Cooper's hawk (*A. cooperii*) in open woodlands and riparian woodlands; the red-tailed hawk (*Buteo jamaicensis*) and great horned owl (*Bubo virginiana*) on forest edges and scattered tree clumps within more open types; and the northern goshawk (*Accipiter gentilis*), northern saw-whet owl (*Aegolius acadicus*), northern pygmy-owl (*Glaucidium gnoma*), and (potentially) boreal owl (*Aegolius funereus*) in dense spruce-fir and mature aspen forests. The northern goshawk is a BLM sensitive species (see section on Special Status Species).

Suitable habitat for the Mexican spotted owl (*Strix occidentalis*), a raptor Federally listed as threatened, is also present in wooded canyons in the vicinity of the project area, but the known geographic range of this species does not include Garfield County. More information can be found in the section on Special Status Species.

Environmental Consequences

Limited specific bird count or species data exist for the area. The documented effects of prescribed fire on avian communities are poorly understood. Generally, responses of individual bird species to land management activities like prescribed fire are habitat and species specific. Most species are dependent on habitats beyond BLM lands for a substantial portion of their lives, and land use activities can at most only contribute to their conservation.

The proposed action would somewhat mimic a natural fire for species associated with mixed conifer-aspen and mountain shrub habitats. The overall short-term impact of the proposed action would be an increase in habitat for avian species that prefer a mosaic of habitat types, earlier seral stages, or more open forest canopies and understories. Impacts on species associated primarily with interiors of dense spruce-fir communities would depend on how much of this habitat type is burned at a level that results in loss of trees and creation of open clearings.

Over the long term, species associated primarily with mature aspen, including both bough nesters and cavity nesters, would benefit if the project is successful in reversing the effects of SAD and increasing aspen within the overall forest mosaic. Ground nesters such as the dark-eyed junco could also benefit from replacement of dense snowberry with a more diverse layer of mixed grasses and forbs.

No intentional take of native bird species is anticipated under the proposed action. Potential direct mortality of eggs, nestlings, and adults would be minimized by conducting the prescribed burns after July 1, when the young of most species have fledged and adults are no longer tied to specific territories. However, short-term impacts could include reduced survivorship if the fires result in reduced quality, quantity, or availability of food items.

Potential effects on migratory birds at the local scale also include disturbance of individuals by increased human presence and equipment operations during burning and pre- and post-fire activities. The activities would physically disrupt daily activities and may cause nest abandonment by adults of species that are intolerant of disturbance. It is likely that the proposed action would result in the temporary displacement of bird species due to noise associated with treatments and human presence and the natural instinct to flee

a fire. This impact would be minimal because of the limited project size in relation to the total amount of available habitat.

Mitigation measures for migratory birds, in addition to conducting the treatments after July 1 to minimize impacts on nesting species, would include avoiding a 0.25-mile buffer around any raptor nest when the nest is active and not initiating a fire within a 0.125-mile buffer of any nest identified during pre-treatment surveys, regardless of season.

No Action Alternative

If no large fires occur in the future, the aspen stands could continue to decline. This can lead to a potential loss of future nesting habitat. However, no migratory birds would be displaced or disturbed, or their nests destroyed, due to project-related activities. It is difficult to quantify the impacts of a potential catastrophic wildland fire before it occurs, because it would depend on the size, intensity, and duration of the fire and the season in which it occurs. In general, the impacts would be more negative than with the smaller scale prescribed fires, over at least the short term and, depending on the length of time for recovery, over the long term. On the other hand, future fires that result in major shifts in habitat type would be colonized by different species adapted to those habitats.

From a wildlife management standpoint, the desired long-term condition in which wildfires create early successional habitats at smaller patch scales and in a more heterogeneous pattern should protect and improve wildlife habitat compared to large-scale unplanned fires.

Native American Religious Concerns

Affected Environment

The Ute tribes claim this area as part of their ancestral homeland. At present, there are no areas of Native American concern within the proposed BLM fuel reduction area and the survey did not identify any either. The Ute Tribes have indicated that they do not want to be notified or consulted with if there are no areas of Native American concern within the proposed action.

Environmental Consequences

Proposed Action

Although the proposed action would have no direct impact on Native American religious concerns, indirect impacts could result from increased access and personnel in the vicinity of the any undiscovered Native American resources. These impacts could range from illegal collection to vandalism.

The *Inadvertent Discovery Stipulation* (see section on Cultural Resources) would be stressed to all personnel involved in this fuel reduction project about the importance of protecting Native American values, including informing them of their responsibilities to report any Native American resources encountered. Additional protections would be provided by adherence to CRVFO's *Education/Discovery Stipulation*, attached to the Decision Document at the end of this EA.

Environmental Consequences

No Action Alternative

This alternative would be beneficial to Native American resources by allowing them to remain unobserved and possibly not subject to erosion from the loss of ground cover.

Range Management

Affected Environment

The proposed action affects three livestock grazing allotments. Information related to the allotments and their permitted use is outlined in Table 2. An AUM (animal unit month) represents one cow and one calf for one month.

Table 2. Livestock Grazing Allotment Information for Proposed Project Area

| Allotment Name and No. | Authorization No. | Livestock No. and Type | Season Of Use | AUMs |
|-------------------------------|--------------------------|-------------------------------|----------------------|-------------|
| JQS Common #18908 | 0507632 | 387 Cattle | 6/16 to 9/30 | 1631 |
| | 0500228 | 159 Cattle | 6/16 to 9/30 | 559 |
| | 0503703 | 114 Cattle | 6/16 to 9/30 | 401 |
| | 0507607 | 1,200 Sheep | 6/16 to 9/30 | 844 |
| East Fork Common #18910 | 0501855 | 95 Cattle | 6/16 to 10/15 | 380 |
| | 0503688 | 112 Cattle | 6/16 to 10/15 | 448 |
| | 0507610 | 86 Cattle | 6/16 to 10/15 | 344 |
| | 0507593 | 173 Cattle | 6/16 to 10/15 | 695 |
| | 0507621 | 112 Cattle | 6/16 to 10/15 | 448 |
| | 0507671 | 44 Cattle | 6/16 to 10/15 | 177 |
| | 0507676 | 12 Cattle | 6/16 to 10/15 | 48 |
| Clough-Alber #18909 | 0507621 | 134 Cattle | 6/16 to 10/15 | 537 |
| | 0503994 | 1,000 Sheep | 5/16 to 7/06 | 274 |
| | 0503994 | 1,000 Sheep | 9/10 to 10/31 | 274 |

Environmental Consequences

Proposed Action

The proposed action would target aspen stands affected by SAD and selected mountain shrub communities on the Roan Plateau. Prescribed fire is anticipated to help rejuvenate old aspen stands and restore a better quality herbaceous understory in areas currently dominated by snowberry. This is intended to help diversify the age classes and seral stages in these communities. Earlier seral grasses are expected, which would improve the forage availability for livestock grazing. Mechanical treatments would be focused mainly on ridgetops and the upper ends of drainages where sagebrush and some mountain shrub communities are the dominant vegetation types. Early seral forage grasses would be expected to increase in the mechanical treatment areas. These treatments would have a long-term positive impact on livestock grazing.

As mitigation to help ensure that the intended benefits of the treatments are realized, grazing use may be deferred for two growing seasons on disturbed areas larger than 0.5 acre (e.g., including a fire event, mechanical vegetation treatment, or reclamation site). This deferral may extend beyond two growing seasons if site-specific analysis and monitoring data indicate that vegetation cover, species composition, and litter accumulation are not yet adequate to support and protect watershed values and meet vegetation objectives as outlined in the Roan Plateau RMPA/EIS (BLM 2006). This deferral could be accomplished in several ways, including complete rest of an entire allotment, rest for an individual pasture affected by the project, or temporary fencing around areas of concern. Deferring livestock grazing would have a short-term negative impact on the grazing permittees.

No Action Alternative

Grazing use would not be affected, either positively or negatively. The rangeland resource would continue in its current state, resulting in less forage being available to livestock in the long term. Deferral of livestock use would not occur, avoiding short-term impacts to this use.

Recreation

Affected Environment

Recreation Management

The proposed action occurs within lands that are part of the Roan Plateau Extensive Recreation Management Area (ERMA), in which management is limited to custodial actions aimed at providing for visitor health and safety, addressing conflicts among uses and users, and protecting resources. BLM's general recreation management responsibility in ERMAs is to address (1) dispersed recreation activities, (2) visitor safety, (3) use and user conflicts, and (4) resource protection issues. Specific management direction for the Glenwood Springs ERMA is to "provide visitor information, minimal sanitation facilities and access... [and to] manage ERMAs to resolve management issues and for off-road [vehicle] (ORV) use" (BLM 1984).

The area is not managed specifically for recreation. Instead, recreational opportunities and outcomes are shaped by other land uses and management actions. However, there are extensive areas of protections for sensitive ecological and visual resources that would tend to preserve existing recreational uses in most of the area.

Recreation Setting Character

The proposed action is located within the Semi-Primitive Motorized Recreation Opportunity Spectrum (ROS) class. The Semi-Primitive Motorized class is characterized by a predominately unmodified natural environmental of moderate to large size that provide (1) some opportunity for isolation from the sights and sounds of man, (2) an opportunity to have a high degree of interaction with the natural environment, (3) an opportunity for moderate challenge and risk and the ability to use outdoor skills, and (4) an explicit opportunity to use motorized equipment.

The landscape of the area appears generally natural even though numerous vehicle routes bisect the Roan Plateau. The creek bottoms and forested hillsides offer the best opportunities for solitude. No developed facilities exist, but primitive dispersed campsites abound. The level of visitor management and regulation

is low. Visitor services consist of informational signing at the Roan Cliffs Administration Site, route signing, and a visitor brochure/map.

Existing Recreation Activities

Dispersed, unstructured activities such as fishing, hiking, camping, birding, sightseeing, mountain biking, off-highway vehicle/all-terrain vehicle (OHV/ATV) riding, and snowmobiling all occur in the ERMA. Big-game hunting remains the most popular activity. As a dispersed recreational activity, hunting is not limited to specific areas. However, in some areas such as on top of the plateau and along the rugged side slopes, hunting becomes concentrated because of prime big game habitat. Observations indicate that recreational use is low except during the fall big game hunting seasons, which begin in late August and continue through November.

Recreation Facilities

No developed recreational facilities such as campgrounds, picnic areas, or maintained hiking/biking trails are located within or near the project area. A network of maintained routes provides recreation opportunities for OHV/ATV driving/riding.

Commercial Recreation Use

The top of the plateau is within CDOW GMU 32, which a popular hunting destination. At least three outfitters hold BLM permits to provide guide and outfitting services in the Northwater and Anvil Points Areas (Silver Spur Outfitters LLC, Magnum Outfitters, Rudy Steele Outfitter).

Environmental Consequences

Proposed Action

The proposed action would not necessarily change the variety of experiences or targeted activity opportunities that occur. The proposed action could shift visitor use patterns, particularly big game hunters, during the short term. Impacts to visitors within the project area would be minor, depending on timing of implementation.

Impacts to recreational visitors, as well as to human health and safety concerns, would be reduced to acceptable levels based on the planned implementation timeframe and short duration. In order to minimize impacts to visitors, "Public Notices" would be posted by fuels crews at all main access and entry areas. Notices would specify when the project is occurring (start and end dates), why the project is being done, what is being done, who is doing it, where it is occurring (including a map). If possible, burning would be avoided during high use seasons, such as fall big-game rifle seasons. Project personnel would ensure that recreationists are not present within the project perimeter and that pertinent roads are blocked to preclude later entry by unauthorized persons. All Special Recreation Permit holders for the Roan Plateau would be notified of the project. The Colorado Division of Wildlife (CDOW) would be contacted in far in advance as sufficient details are available.

No Action Alternative

The no action alternative would result in no change to recreation opportunities on the Roan Plateau.

Soils (includes an analysis on Public Land Health Standard 1)

Affected Environment

Soils in the project area are described in the Roan Plateau RMPA/EIS (BLM 2006). The soils are described as moderately sloping uplands, at elevations of 7,500 to 9,300 feet, are mostly well-drained, cool soils with dark-colored, organic-rich surface layers (Cryoborolls). These soils are formed in material weathered from the Green River Shale and Uinta Sandstone. Surface textures are generally loam, with loam to clay loam subsoils and channery profiles (sandstone and shale fragments). Soil thicknesses range from deep (>60 inches) in swales to shallow (<20 inches) on ridge tops.

The soils on top of the plateau are not particularly susceptible to impacts from wind erosion. In an undisturbed condition, they tend to be relatively well vegetated. Where disturbed, the typically loamy texture, relatively high organic matter content, and granular surface structure tend to resist wind erosion. Except for a limited area of steep slopes along the East Fork Parachute Creek, all of the upland soils atop the plateau are in the low or medium erosion classes, and most occur on slopes of less than 30 percent. Annual precipitation is about 25 inches, and average annual temperature is about 40°F.

The targeted burn and mowing areas are contained within the project area. According to the *Soil Survey of Rifle Area, Colorado: Parts of Garfield and Mesa Counties* (USDA 1985), the proposed mowing and burn activities would be located on six soil map units which can be identified by the numerical code assigned by the soil survey. Soil types 35, 36, 53, 60, and 63 are found within the proposed burn areas. The areas to be mowed contain soil types 32, 36, 53, and 60. Some areas within the project area are mapped as CSU-4 (Controlled Surface Use) for erosive soils on slopes greater than 30 percent. Additionally a very small portion (<1 percent) on the boundaries of the two of three of the proposed burn areas contain NSO-15 (No Surface Occupancy) for slopes greater than 50 percent regardless of soil type. Following is a brief description of the seven soil map units encountered in the project area.

- Holderness Variant clay loam (32) – This complex consists of fine-textured soils derived from shale and sandstones that are found on alluvial fans and sides of valleys at elevations from 6,500 to 7,500 feet and on slopes of 6 to 25 percent. The soils are deep, well drained and has slow surface runoff with slight erosion hazard. Primary uses include grazing and wildlife habitat.
- Idefonso-Lazear complex (35) – This deep, well-drained soil is found on hillsides and mesa breaks at elevations from 5,000 to 6,500 feet and on slopes of 6 to 65 percent. Parent material for this soil is sandstone, shale, and basalt. Surface runoff for this soil is medium and the erosion hazard is moderate. Primary uses include grazing wildlife habitat and grazing.
- Irigul channery loam (36) – This shallow, well drained soil map is found on upland ridges and mountain sides at elevations from 7,800 to 8,700 feet and on slopes of 9 to 50 percent. Some small areas of Rock outcrop are found in the soil unit. The soils have medium surface runoff and slight erosion hazard. Primary uses include grazing and wildlife habitat.
- Parachute-Rhone loams (53) – This complex consists of well drained soils originating from sandstone and marlstone that are found on gently sloping to steep soils on ridge crests and mountainsides at elevations from 7,600 to 8,600 feet. This soil unit occurs on slopes of 5 to 30 percent. Approximately 55 percent of this complex is Parachute soil, 30 percent is Rhone soil, and 15% are other soils. Parachute soils are moderately deep, well drained with medium surface runoff and

moderate erosion hazards. Rhone soils are deep and well drained, with slow surface runoff and slight erosion hazard. Primary uses include grazing and wildlife habitat.

- Rhone loam (60) – This soil occurs on mountainsides and ridges at elevations from 7,600 to 8,600 feet and on slopes of 5 to 30 percent. Rhone soils are deep, well-drained soils on gently sloping to steep slopes and have slow surface runoff with slight erosion hazard. Primary uses include limited grazing and wildlife habitat.
- Silas loam (63) – This deep, moderately well-drained soil is found in mountain valleys at elevations from 7,600 to 8,300 feet. Silas soils develop on alluvial derived from sandstone and marlstone and have slopes of 3 to 12 percent. Small areas of coarse loamy soils are found in the mapping unit. Runoff is slow, and erosion hazard is slight. Primary uses include grazing, wildlife habitat, and limited irrigated hay.

Environmental Consequences

Proposed Action

Proposed burning and mowing activities would remove vegetation but should allow the root systems to remain intact. Mowing and fence building activities would result in soil displacement and compaction associated with vehicles and equipment. Burn activities could alter soil conditions through the development of a hydrophobic soil layer. These impacts would result in an increase in erosion potential, offsite sedimentation, and potential nutrient loading in area waterbodies. The potential exists for impacts to soils from spills of contaminants associated with fuel and lubricants for equipment.

To minimize potential erosion and transport, proposed activities would avoid steep slopes and drainages. Additionally, it is anticipated that burn intensities would be moderate to low based on the fuel compositions minimizing soil burn severity. Based on the distance of the proposed activities from area drainages, the existing slope angle, and good vegetation cover; it is unlikely that sediment, contaminants, and nutrients would be transported to area waterbodies. Any potential negative impacts to water quality shall be mitigated through use of best management practices outlined in the US Forest Service fire management recommendations (Neary 2005) and the BLM Fire Management Plan (BLM 2002b).

The targeted burn and mowing areas represent a small portion of a much larger project area. additional burn or mowing units are added in the future, location-specific soil surveys and mitigation measures must be assessed before beginning work outside of the currently evaluated target areas.

No Action Alternative

Under the no action alternative no burning activities would occur, which could leave the area susceptible to possible wildfire hazard in the future. In the event of a severe wildfire, potential negative impacts associated with denuded groundcover, hydrophobic soils, and sediment transport would be much greater than negative impacts associated with the proposed activities.

Analysis on Public Land Health Standard 1 for Upland Soils: In 2009, the BLM Glenwood Springs Field Office evaluated area soil conditions as part of the Roan Cliffs Land Health Assessment. The report concluded that all of the upland sites and the majority of the soil conditions are meeting Standard 1. At this time, it can be assumed that the proposed action or no action alternative would not prevent Standard 1 for upland soils from being met.

Special Status Species (includes an analysis on Public Land Health Standard 4)

PLANT SPECIES AND SIGNIFICANT PLANT COMMUNITIES

Affected Environment

Federally Listed, Proposed or Candidate Plant Species

According to the latest species list from the USFWS, the following Federally listed, proposed, or candidate plant species may occur within or be impacted by actions occurring in Garfield County: Parachute beardtongue (*Penstemon debilis*), DeBeque phacelia (*Phacelia submutica*), Colorado hookless cactus (*Sclerocactus glaucus*), and Ute ladies'-tresses orchid (*Spiranthes diluvialis*).

BLM Sensitive Plant Species

BLM sensitive plant species with habitat and/or occurrence records in the area include DeBeque milkvetch (*Astragalus debequaeus*), Naturita milkvetch (*Astragalus naturitensis*), Piceance bladderpod (*Lesquerella parviflora*), Roan Cliffs blazing star (*Mentzelia rhizomata*), Harrington's penstemon (*Penstemon harringtonii*), and Cathedral Bluffs meadow-rue (*Thalictrum heliophilum*).

Significant Plant Communities

Significant plant communities include communities that are (1) globally rare, (2) rare within Colorado, or (3) substantially unaltered by human activity. The first two categories include plant communities in which the individual species may not be rare, but the particular combination of species is rare or uncommon. The third category includes native plant communities that are relatively undisturbed and contain few non-native species. While numerous significant plant communities exist within the project area, only a few occur in or adjacent to a proposed prescribed burn unit. None of the communities occurs near sites currently proposed for mowing.

Communities that occur within a known prescribed burn unit are described below:

- Great Basin Montane Grassland (Beardless bluebunch wheatgrass [*Pseudoroegneria spicata* ssp. *inermis*]/Sandberg bluegrass [*Poa secunda*] community) – This grassland assemblage reaches its southern limit in Utah and Colorado. It is more widely distributed in Idaho, Montana, Wyoming, and eastern Washington and Oregon. It occurs on extremely dry windswept knolls and exposed slopes with grades of 2 to 10 percent. On the Roan, this community occurs only once, on Gardner Peak.
- Sagebrush Bottomland Shrubland (Mountain big sagebrush [*Artemisia tridentata* ssp. *vaseyana*]/Great Basin wildrye [*Leymus cinereus*]) – This association is known from Idaho, Nevada, and northwestern Colorado. Its limited distribution may be explained by an unusual combination of habitat characteristics: moist, but not saturated, deep soils along flat to gently sloping areas, in a narrow elevation range of 7,000 to 8,800 feet. It may also be rare due to livestock grazing, as wild rye is very palatable to cattle and is quickly utilized. This community is found in three locations on the Roan: two near Anvil Points and one along Bull Gulch. All are considered to be in fair to moderate condition. Several roads dissect these communities, causing fragmentation and increased risk of noxious weed infestation.

Significant plant communities that occur adjacent to a known prescribed burn unit include:

- Aspen/Rocky Mountain Maple Forest (*Populus tremuloides*/*Acer glabrum*) – This community type is dominated by two relatively common mountain species that rarely co-occur to form communities. These areas appear to be healthy, climax stands with good regeneration of both aspen and Rocky Mountain maple. The understory in these areas is productive and diverse.
- Great Basin Grassland (Beardless bluebunch wheatgrass community [*Pseudoroegneria spicata* subsp. *inermis*]) – Great Basin grassland, dominated by beardless bluebunch wheatgrass, has been recorded at only three locations in Colorado in the Piceance Basin, specifically in Rio Blanco and Garfield counties (CNHP 1997). The rarity of this community may be due to heavy grazing pressures throughout much of its historical natural range (Baker 1983). It occurs on slopes or on broad ridge tops and plateaus that often gently slope to the south or southwest. On the Roan, this community occurs along the eastern rim of the cliffs from East Anvil Point to the vicinity of the JQS trail. Several spurs off the Anvil Points Rim Road dissect portions of the area, causing fragmentation of the grassland community and increasing the potential for noxious weed invasion.

Significant plant communities that occur within the project area and could occur adjacent to or within future prescribed burn or mowing units include:

- Boxelder/Narrowleaf Cottonwood/Red-Osier Dogwood Riparian Forest (*Acer negundo*/*Populus angustifolia*/*Cornus stolonifera*) – Although all of these species are common in Colorado, this combination is restricted to a few sites in western Colorado. One high-quality example is located along the box canyon below the falls in East Parachute Creek. No noxious weeds have been documented along this reach of the stream. Noxious weeds in adjacent areas pose a concern for the continuing health of this community.
- Hanging Garden Sullivantia (*Sullivantia hapemanii* var. *purpusii*) – A Colorado endemic, this species is restricted to “hanging gardens” with a substrate of Green River Formation shale. These gardens occur where moisture seeps between layers of shale or in proximity to waterfalls. This species is most abundant on the East Fork Parachute Creek and its tributaries as well as in Northwater Creek Canyon. These populations appear stable and secure because their relative inaccessibility on steep cliffs protects them from surface disturbances, grazing, and noxious weed invasion. However, any physical disruption to the cliffs, or changes to the local hydrological processes that support the species’ habitat, could have severe effects on these populations. While the species is known from several occurrences in five counties in western Colorado, 62 percent occur on the Roan Plateau. Therefore, negative impacts to any of these occurrences would result in impacts to, or the loss of, a major portion of the global population.
- Montane Riparian Blue Spruce/Red-Osier Dogwood Forest (*Picea pungens*/*Cornus stolonifera*) – Considered globally rare, this combination of species is only found in western Wyoming, northern New Mexico, Arizona, and a few locations in western Colorado, including along East Fork Parachute Creek above the falls. Noxious weeds such as houndstongue and Canada thistle are threats to this community as they are increasingly common along riparian habitats on the Roan and can out-compete native vegetation. This results in changes to community composition and reduced bank stability.
- Western Slope Grassland (Indian ricegrass [*Achnatherum hymenoides*] shale barrens) – This sparse grassland community (often less than 25 percent vegetation cover) is extremely limited in distribution. It occurs only in three counties in western Colorado. It is restricted to south-facing slopes with soils derived from shales or mudstones. Within the project area, this community is found on south-facing slopes of East Fork Parachute, Northwater, Trapper, and Ben Good Creeks.

Environmental Consequences

Proposed Action

Federally Listed, Proposed or Candidate Plant Species

The project area contains no habitat for Federally listed, proposed, or candidate plant species. However, immediately adjacent to and outside of the project boundary is a known occurrence of Parachute beardtongue. This species occurs on sparsely vegetated, south-facing, steep, white shale talus slopes of the Parachute Creek Member of the Green River Formation. A No Surface Occupancy stipulation (NSO-12) protects this species along the Roan Rim. This NSO overlaps into prescribed burn Units 2 and 3, but since neither Parachute penstemon nor its habitat occurs in either of these units, the NSO would not apply.

An increased risk of weed invasion in this community could result if the adjacent lands became more infested with weeds following fire; however, no direct impacts to this species would result from the proposed action. Therefore, the proposed action would have “No Effect” on this species or any other Federally listed, proposed, or candidate plant species.

BLM Sensitive Plant Species

Roan Cliffs blazing star is known to occur in the project area. This species is considered a Colorado endemic, widely distributed but edaphically restricted to steep, shale talus or scree slopes derived from the Parachute Creek member of the Green River Formation. A population of Roan Cliffs blazing star occurs in the southwestern portion of the project area on talus slopes. Another population occurs outside of but immediately adjacent to the project boundary along the south rim of the Roan Cliffs.

Suitable habitat is present within the project area for Cathedral Bluffs meadow-rue, but no occurrences have been identified. This species is endemic to sparsely vegetated, steep, shale talus slopes of the Green River Formation, ranging in elevation from 6,300-8,800 feet.

Prescribed burning and mowing would not include steep, shale talus slopes where Roan Cliffs blazing star and Cathedral Bluffs meadow-rue are known to occur; therefore, neither of these species nor their habitat would be directly impacted by the proposed action. If fire were to escape into this habitat it would not carry due to the limited fuels and rocky substrate. An indirect impact could be an increased risk of weed invasion if the adjacent lands became more infested with weeds following fire.

A Controlled Surface Use stipulation (CSU-3) protects sensitive plant species in various areas on the Roan. This CSU overlaps into all proposed burn units. Since no sensitive plants or their habitats are known to fall within the proposed units, this stipulation would not apply. However, if sensitive plants were found to occur within future proposed units, the CSU would allow for relocation of operations by more than 200 meters to avoid sensitive plant populations.

Significant Plant Communities

The project should not directly impact those communities that lie adjacent to the prescribed burn boundaries. There is a slight chance that fire could cross the boundary into a significant plant community, but the likelihood is low due to geological barriers such as rock outcrops and ridges, and roads that lie

between the burn unit and the communities. An indirect impact to these communities could be increased risk of weed invasion if the adjacent lands became more infested with weeds following fire.

Prescribed burning or mowing would not target those significant plant communities that are riparian in nature such as the boxelder/narrowleaf cottonwood/red-osier dogwood riparian forest, hanging garden *Sullivantia*, and the montane riparian blue spruce/red-osier dogwood forest. The project would also not target the Indian ricegrass shale barrens. If fire were to escape into these areas, it would likely not carry due to the moist vegetation in the riparian areas, and the lack of vegetation in the shale barrens site.

The two communities that lie within prescribed burn units could experience adverse impacts if fire moved through them. Impacts such as plant mortality, increased weed invasion, or a change in species composition or diversity, could degrade the integrity and functionality of the communities. However, according to the Fire Effects Information System (FEIS 2010), the two communities that fall within the units—Great Basin montane grassland and Great Basin tallgrass prairie—are either stimulated by fire or not typically adversely affected by fire, depending on the time of year.

Burning of bluebunch wheatgrass may remove most of the aboveground biomass but does not usually result in plant mortality. Bluebunch wheatgrass is generally favored by burning because it stimulates flowering and seed setting; however, the season of burning affects mortality. Bluebunch wheatgrass probably suffers the least amount of damage if burned while dormant, and the most if burned while actively growing, prior to dormancy. Recovery of bluebunch wheatgrass following fire is rapid to very rapid, usually 1 to 3 years or 3 to 5 years. However, the plants may be damaged and recover more slowly if burned in a dry year. One of the most important factors affecting the ability of bluebunch wheatgrass to recover from fire is the availability of soil moisture following the burn, regardless of season (Zlatnik 1999).

Sandberg bluegrass (*Poa secunda*) is generally unharmed by fire and generally increases after fire (Howard 1997). Great Basin wildrye (*Leymus cinereus*) has high survival rates following fire due to resprouting from the surviving root crown and rhizomes. It recovers rapidly, especially after dormant-season fires. Basin wildrye is well adapted to fire, growing vigorously after burning when moisture is adequate, and increasing in percent cover. Annual biomass production may increase following fire for several years. Basin wildrye is stimulated to flower after burning (Anderson 2002).

Stipulation CSU-3 also protects significant plant communities on the Roan. This CSU overlaps into all proposed burn units. The CSU would not be applied to the proposed burn units that contain the Great Basin montane grassland and Great Basin tallgrass prairie, because research (FEIS 2010) indicates that these communities are stimulated by fire. However, if significant plant communities are found to occur within future proposed units and are known to be adversely affected by fire, this CSU would allow for relocation of operations by more than 200 meters to avoid these sensitive communities.

Mitigation measures would also include not staging fire vehicles and mowing equipment in significant plant communities. Prior to prescribed burning or mowing, the project leader would consult with the BLM project ecologist concerning appropriate staging areas.

Burn units in which significant plant communities occur would only be burned in the fall when the communities are dormant. This would help prevent plant mortality. Weed treatments would occur as needed to prevent weed introduction and spread in these communities. Mowing of significant plant communities would not occur.

AQUATIC AND TERRESTRIAL VERTEBRATE SPECIES

Affected Environment

Federally Listed, Proposed, or Candidate Fish and Wildlife Species

Nine Federally listed, proposed, or candidate threatened or endangered aquatic and terrestrial vertebrate species are potentially present in or affected by actions occurring in Garfield County. These species, their status, and their distributions and habitat associations in the region are summarized below:

Colorado River Fishes. Federally listed as Endangered. Four species of Federally listed big-river fishes occur within the Colorado River drainage basin south of the Roan Plateau, downstream from the project area. These endangered species are the razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail [chub] (*G. elegans*). Designated Critical Habitat for the razorback sucker and Colorado pikeminnow includes the Colorado River and its 100-year floodplain west (downstream) from the town of Rifle. This portion of the Colorado River lies a few miles north of the project area, and project streams are tributary to the Colorado River via Parachute Creek. The nearest known habitat for the humpback chub and bonytail is within the Colorado River approximately 70 miles downstream from the project area. Only one population of humpback chub, at Black Rocks west of Grand Junction, is known to exist in Colorado. However, because drainages within the project area do not support these species, they are not considered further.

Greenback Cutthroat Trout (*Oncorhynchus clarki stomias*). Federally listed as Threatened. Recent surveys have identified a population in Cache Creek, located several drainages southeast of the project area. The greenback is the subspecies of cutthroat trout native to the Platte River drainage on the Eastern Slope of Colorado, while the Colorado River cutthroat trout (*O. c. pleuriticus*) is the subspecies native to Garfield County and throughout the Western Slope of Colorado. Although the occurrence of greenbacks in Cache Creek and potentially elsewhere in the CRVFO areas is apparently the result of human intervention its status as threatened applies to Western Slope populations. However, because drainages within the project area do not support this species, it is not considered further.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*). Candidate for Federal listing. This subspecies occurs in mature riparian forests of cottonwoods and other large deciduous trees with a well-developed understory of tall riparian shrubs. Riparian areas in the project area do not provide suitable habitat for this species. Habitat along Parachute Creek downstream from the project area and the Colorado River to which it is tributary provide habitat that is potentially suitable, but occurrence of the species in the associated riparian habitats is considered unlikely due to the patchy nature of the stands and the general lack of a tall-shrub understory. For these reasons, this species is not considered further in this document.

Mexican Spotted Owl (*Strix occidentalis lucida*). Federally listed as Threatened. This subspecies (*Strix occidentalis lucida*) is typically found in moist, mature forests in canyons of the southwestern U.S. Its documented geographic range does not include the planning area or surrounding portions of Colorado (Kingery 1998). However, BLM has mapped suitable habitat in the first mile extending downstream from the East Fork Parachute Creek waterfall. Potentially suitable habitat also occurs on private land in lower portions of the East Fork and East Middle Fork drainages and the Magpie Gulch area. In the northern part of their range, i.e., Colorado, they often nest in caves or cliff ledges in canyons, and seem to prefer shady habitat with steep cliffs and rocky terrain (Willey 1998) Specific surveys for sensitive species (e.g., CNHP 1997a, 1998) have not resulted in observations of this secretive owl.

Greater Sage-grouse (*Centrocercus urophasianus*). Candidate for Federal listing. The greater sage-grouse is a large, rounded-winged, ground-dwelling bird, up to 30 inches long and two feet tall, weighing from two to seven pounds. The birds are found at elevations from 4,000 to over 9,000 feet and are highly dependent on sagebrush for cover and food. Although the species is not currently known to occur in the project area, historic records do exist. Occupied habitat is present north of the project area in Rio Blanco County and west in parts of Garfield County and extends northward through much of northern and northwestern Colorado. Since this species is currently not known to occur in the project area, it is not considered further in this document.

Canada Lynx (*Lynx canadensis*) – Federally listed as Threatened. Canada lynx occupy high-latitude or high-elevation coniferous forests characterized by cold, snowy winters and an adequate prey base (Ruggiero et al. 1999). The preferred prey of Canada lynx throughout their range is the snowshoe hare (*Lepus americanus*). In the western United States, lynx are associated with mesic forests of lodgepole pine, subalpine fir, Engelmann spruce, and quaking aspen in the upper montane and subalpine zones, generally between 8,000 and 12,000 feet in elevation. Although snowshoe hares are the preferred prey in Colorado, lynx in also feed on other species such as the mountain cottontail (*Sylvilagus nuttallii*), red squirrel (*Tamiasciurus hudsonicus*), and dusky grouse (*Dendragapus obscurus*). Overall, the Roan Plateau is not considered suitable habitat, and the potential for dispersal of lynx into the project area is reduced by its isolation from more suitable, more extensive habitats in the White River National Forest.

BLM Sensitive Fish and Wildlife Species

Species listed by the BLM in Colorado as sensitive that are known to occur or potentially present within or near the project area are listed in Table 3.

Table 3. BLM Sensitive Vertebrate Species Present or Potentially Present in the Project Area.

| Common Name | Habitat | Potential for Occurrence |
|--------------------------------|---|---------------------------------|
| Fringed myotis | Breeds and roosts in caves, trees, mines, and buildings; hunts over pinyon-juniper, montane conifer, and semi-desert shrubland habitats. | Likely |
| Townsend's big-eared bat | Breeds and roosts in caves, trees, mines, and buildings; hunts over pinyon-juniper, montane conifer, and semi-desert shrubland habitats. | Likely |
| Northern goshawk | Predominantly uses spruce/fir forests but also use Douglas-fir, various pines, and aspens. | Likely |
| Ferruginous hawk | Hunts in grasslands and semi-desert shrublands; nests on cliffs or trees. | Unlikely |
| Peregrine falcon | Found in a variety of habitats, most with cliffs for nesting and open areas for foraging. | Unlikely |
| Northern leopard frog | Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches. | Unlikely |
| Colorado River cutthroat trout | Occurs in clear, cool headwaters streams with coarse substrates, well-distributed pools, stable streambanks, and abundant stream cover. | Present |

Fringed Myotis (*Myotis thysanodes*) and Townsend's Big-eared Bat (*Corynorhinus townsendii*). Both of these species hunt for aerial insects over a variety of low- and mid-elevation habitats, including montane coniferous forests such as occur in the proposed project area. Although they commonly roost in caves, rock crevices, mines, or buildings, they also may roost in tree cavities.

Northern Goshawk (*Accipiter gentilis*). Suitable habitat consists of unfragmented aspen or coniferous forests in the upper montane and subalpine zones. This is a forest species that nests in tall trees and hunts for small birds and diurnal small mammals by darting through the forest and flushing its prey. It may winter at lower elevations, including pinyon/juniper woodland, adjacent to its breeding range. The species is not documented to occur atop the plateau, possibly because the conifer forest is too limited in extent.

Ferruginous Hawk (*Buteo regalis*). Although this species is not documented to nest in the planning area, suitable nest sites occur along rock ledges and cliffs along the edge of the Roan Plateau. The ferruginous hawk is a species primarily associated with open habitats at lower elevations. However, vagrants could make occasional use of the sagebrush-dominated ridgetops. Breeding in the area is not expected.

Peregrine Falcon (*Falco peregrinus*). Previously federally listed as endangered, downgraded to threatened, and then delisted following successful recovery, the peregrine falcon is mostly associated with high cliffs, where it nests, located near rivers or reservoirs, where it hunts primarily for waterfowl. The species nests along the Roan Cliffs and hunts along the Colorado River, often flying many miles in search of prey. Peregrines may also take other birds, such as pigeons and grouse, in upland habitats. The wooded habitats that dominate the prescribed fire area are unsuitable for this species. While the sagebrush-dominated ridgetops are suitable for hunting, being open habitats, they lack suitable prey.

Northern Leopard Frog (*Rana pipiens*). Northern leopard frogs are generally found between 3,500 and 11,000 feet in Colorado, in wet meadows and in shallow lentic habitats. Northern leopard frogs require year-round water sources, deep enough to provide ice free refugia in the winter. The presence of northern leopard frogs has been associated with sites with more herbaceous cover as opposed to sites with earlier successional stages of emergent vegetation. Leopard frogs feed primarily on emergent adults of aquatic insects or on terrestrial insects attracted to the water. Within the CRVFO, this species has been documented in various locales but has not been found in the project area despite numerous aquatic surveys.

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*). This subspecies occurs in clear, cool headwaters streams with coarse substrates, well-distributed pools, stable streambanks, and abundant stream cover. Streams within the planning area that currently contain populations of Colorado River cutthroat trout include portions of Northwater Creek, Trapper Creek, East Fork Parachute Creek, East Middle Fork Parachute Creek, mainstem Parachute Creek, JQS Gulch, First Anvil Creek, and Second Anvil Creek. Results of DNA analyses show that the Roan Plateau populations of Colorado River cutthroat trout are between 90 to 99 percent genetically pure and are therefore considered nationally and regionally significant (Evans and Shiozawa 2004). The Roan Plateau contains one of only a few remaining watersheds where genetically pure, reproducing populations of Colorado River cutthroat trout are found in all streams capable of sustaining a fishery. Maintaining or expanding these populations would play an important role in the overall recovery of this subspecies.

Environmental Consequences

Proposed Action

Federally Listed, Proposed, or Candidate Fish and Wildlife Species

Mexican Spotted Owl. Few researchers have measured the effects of fire or fire suppression on any aspect of Mexican spotted owls. Mexican spotted owls in the Gila National Forest have been observed to return to their territories after prescribed natural fires, provided that the stand structure remained intact

(Jeness et al. 2004). Fire could affect Mexican spotted owls indirectly through their prey base. Spotted owls may select habitats partially based on prey availability (Ward and Block 1995) so fire-caused changes in prey populations could potentially alter the quality of the habitat. The Mexican spotted owl recovery team, based on a general knowledge of the habitat requirements of the owl, stated that small-scale fires would be beneficial to the owl by creating canopy gaps, reducing fuel loads, thinning dense stands and generally reducing the chance of catastrophic fire. Small fires would also benefit both the owl and its prey base by creating snags and logs and perpetuating understory shrubs, grasses and forbs. Large crown fires would be detrimental to the owl by reducing or eliminating nesting, roosting, and foraging habitat (USFWS 1995).

The proposed action is intended to occur outside potential Mexican spotted owl habitat, which is limited to deep canyons below the proposed polygons. Fire intensity is expected to be low due to the moist fuel conditions that are typically found in aspen and mixed conifer stands particularly at higher elevations. Given these factors, there is little expected impact on the potential Mexican Spotted Owl habitat. However, if the fire were to exceed expectations and reach the MMA boundary, potential habitat could be affected depending on the intensity of the fire behavior.

Section 7 of ESA requires BLM to ensure that any action authorized, funded, or implemented or authorized by the agency is not likely to jeopardize the continued existence of any species that is Federally listed, or proposed for listing, as threatened or endangered and does not reduce the likelihood of recovery of any affected species. Species proposed for Federal listing are managed with the same level of protection as for listed species. BLM policy also ensures that no action contributes to the need to list a species as threatened or endangered (BLM 1997a). This policy applies to candidate species under ESA and to BLM sensitive species.

Mitigation for impacts to potential Mexican spotted owl habitat in conjunction with the proposed project includes application of stipulation NSO-12, which requires avoidance of occupied habitat and of any habitat required for maintenance or recovery of a Federally listed or proposed species. The prescribed fires would not be initiated within the potential habitat and are not expected to spread to those areas, which are located on canyon floors and steep sideslopes.

BLM Sensitive Fish and Wildlife Species

Fringed Myotis and Townsend's Big-eared Bat. Distribution of these species is likely to be locally determined by the availability of roosts such as caves, mines, tunnels, crevices, and masonry structures with suitable temperatures. No bat roosts or hibernacula have been documented within the area of the proposed action. Roosting habitat for bats in cliffs, rock crevices, and abandoned mines would not be affected by the proposed action. Burning of aspen and conifer stands and mowing of shrub communities would increase foraging habitat for bat species that use more open areas for foraging but would cause a short-term loss of foraging habitat for species, like the two BLM sensitive bats, that forage over mature shrublands and trees. Overall, the proposed action would not cause a long-term threat to these bat species or their habitat.

Northern Goshawk, Ferruginous hawk, and Peregrine Falcon. The current CRVFO land use plan protects raptor nesting and fledging habitat with a NSO and TL stipulations. The TL stipulation restricts certain disturbances within a 0.25-mile buffer zone around a nest site from February 1 to August 15. The NSO prohibits any long-term ground disturbance within 0.125 acre of a nest site. No nests of these species are known to occur within the area of the proposed action. However, nesting by the northern goshawk seems likely, based on habitats present. Although short-term loss of goshawk foraging habitat would occur, the

proposed action would not cause a significant long-term threat to this species or its habitat. Long-term benefits are expected as the treated aspen stands regenerate following removal of the understory.

Northern Leopard Frog. If this species were present, it would be vulnerable to the same types of impacts as fishes—i.e., inflow of sediments that decrease water quality for reproduction and for survival of aquatic plants. However, because this species has not been found in streams or ponds in the project area despite numerous aquatic surveys, no direct or indirect impacts are expected from the proposed action.

Colorado River Cutthroat Trout. Given the distance to any perennial stream from proposed habitat treatment areas—using either prescribed fire or mowing—an adequate buffer exists to filter any potential sediment or litter removed from the proposed mowing. Therefore little to no effect on aquatic wildlife species is expected. If the fire needs to be suppressed, suppression activities may also increase sediment input into streams. Fire lines would need to be properly constructed and rehabilitated to minimize possible sedimentation. Use of fire retardant would not be allowed within 300 feet of any streams. The use of water from streams for fire suppression would have to be approved by the resource advisor and closely tracked and monitored throughout the suppression period (see section on Wildlife, Aquatic)

Mitigation for impacts would be provide by stipulation CSU-3, which requires provides for special design and implementation measures to reduce impacts to special status species and, if required, relocation of the project by more than 200 meters from the proposed location.

No Action Alternative

Federally Listed, Proposed or Candidate Fish and Wildlife Species.

Due to the absence of any known occurrences, suitable habitat, or landscape linkage for any listed, proposed or candidate terrestrial wildlife species, the no action alternative should have “No Effect” on these species.

BLM Sensitive Fish and Wildlife Species.

Under the no action alternative, no fuel reductions or treatment would be conducted on public land atop the Roan Plateau. SAD would not be addressed and aspen stands would likely continue to decline without resprouting. No species would be displaced, disturbed, or killed due to prescribed or wildland fires. If a catastrophic wildfire were to occur, some individuals of BLM sensitive species would likely perish. The number and type of species would depend on the location, size, and intensity of the unplanned fire. Terrestrial wildlife would be threatened by long-term changes in habitat. Large fires destroy habitat locally and increase habitat fragmentation across the region. Direct and indirect impacts would result from the loss of vegetation cover within the burned area. However, it must be recognized that some terrestrial wildlife species and their prey utilize early successional habitats that develop following wildland fires.

Analysis on Public Land Health Standard 4 for Special Status Species (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): In 1999, the BLM evaluated vegetation and other land health conditions within the project area known as the Roan Cliffs Unit. The area was determined to provide suitable habitat for numerous special status plant species, including Parachute penstemon. Parachute penstemon was in decline in 1999 but the cause was unknown. No special status plant species occurs within a unit planned for prescribed burning or mowing; therefore, the proposed action would have no bearing on the ability of

the landscape to meet Land Health Standard 4 for special status plants. Significant plant communities were not evaluated under Land Health Standard 4.

This standard is mostly being met for special status wildlife species, except for the decline of Colorado River cutthroat trout populations in JQS Gulch and East Fork Parachute Creek. Measures described for Land Health Standard 2 to improve the riparian vegetation along JQS Gulch in JQS Pasture, and similar measures (reduced grazing use or fencing) to reduce the impact of livestock along other streams, would benefit the trout and other species associated with riparian communities throughout the planning area.

The proposed action would not jeopardize the viability of any special status wildlife species. The project would have no long-term significant consequences on habitat condition, utility, or function or discernible adverse effects on species abundance or distribution at any landscape scale. The no action alternative would not result in a failure of the area to achieve Standard 4 because it would not result in adverse impacts to special status plant species.

Vegetation (includes an analysis on Public Land Health Standard 3)

Affected Environment

Prescribed burning would target quaking aspen woodlands and mixed mountain shrublands on top of the Roan Plateau. Mowing would target both mountain big sagebrush (*Artemisia tridentata* var. *pauciflora*) and mixed mountain shrubland communities.

Aspen communities typically occur in a mosaic with conifer and sagebrush communities. Understory vegetation is often a dense mix of grasses and forbs with an occasional shrub component (CNHP 2005). Aspen sprout vigorously following fire, establishing early seral communities, which are later converted to shade-tolerant species, such as subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*) and Douglas-fir (*Pseudotsuga menziesii*). Disturbance is needed to maintain aspen communities as mature trees become increasingly susceptible to insects and disease (CNHP 2005). Fire suppression has increased stand density and created even-aged communities. Individual groves of aspen on the Roan Plateau are showing high mortality rates which are contributed to SAD.

Mixed mountain shrublands on the Roan Plateau are dominated by roundleaf snowberry (*Symphoricarpos rotundifolius*) and Utah serviceberry (*Amelanchier utahensis*), with Gambel's oak (*Quercus gambelii*), mountain sagebrush, mountain-mahogany (*Cercocarpus montanus*), and green rabbitbrush (*Chrysothamnus viscidiflorus*). The understory density and diversity is inversely proportional to the amount of overstory canopy cover. Commonly associated herbaceous plants include native grasses such as Letterman's and Columbia needlegrasses (*Achnatherum lettermanii* and *A. nelsonii*), prairie junegrass (*Koeleria macrantha*), and bluebunch wheatgrass (*Pseudoroegneria spicata*) and native forbs such as Indian paintbrush (*Castilleja* spp.), wild-buckwheat (*Eriogonum* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), and hawkbeard (*Crepis* spp.).

Mountain sagebrush shrublands targeted for mowing have a dense component of roundleaf snowberry. Because the understory density and diversity is inversely proportional to the amount of overstory canopy cover, herbaceous grasses and forbs are limited in these communities. The goal would be to improve the herbaceous understory by removing the dense overstory structure. Mountain big sagebrush increases in canopy cover without periodic fire, disease, or other disturbance. Canopy cover on areas that have not had disturbance for several decades can reach between 40 and 50 percent (Winward 2004). Other shrubs typically associated with mountain big sagebrush include serviceberry, mountain-mahogany, or antelope bitterbrush (*Purshia tridentata*).

Environmental Consequences

Proposed Action

Prescribed fire could create more diverse age class structures in aspen woodlands, which would help prevent widespread disease and insect outbreaks. Decadent trees are typically more susceptible to these invasions than younger ones. Regeneration of aspen could help modify fire behavior due to the herbaceous understory cover acting as a firebreak. Mechanical vegetation treatments would reduce canopy cover and increase diversity of understory vegetation, create a variety of age classes, and change vegetation density, canopy cover, and structure. These effects could lead to changes in habitat type.

The proposed burn would not consume all of the existing vegetation. The goal would be to create a mosaic pattern and leave some vegetation intact, similar to the way a wildfire would burn. Following a fire of low to moderate intensity, the shrubs, grasses, and forbs mentioned above, as well as aspen, should resprout within 1 to 3 years following fire.

Adverse impacts could include increased soil erosion from loss of vegetation cover, increased weed invasion, and long-term changes in habitat and species composition. The duration of these effects would vary by treatment method, habitat and community type, proximity of native seed sources, and the amount and timing of precipitation.

The project area receives some concentrated livestock and wildlife use, particularly in the drainages. The burned areas may attract more livestock and wildlife use due to an increase in palatable and nutritious early seral grass and forb production. Mowing on the ridge tops is designed to create more palatable vegetation in areas that are less environmentally sensitive, drawing wildlife and livestock away from more sensitive areas. Concentrated or extended grazing on the palatable plants that sprout or regenerate following a fire would deplete the plants' carbohydrate reserves and could cause mortality of weakened plants. This would alter the vegetation composition following a fire and would increase the risk of noxious weeds becoming established.

Mitigation measures aimed at facilitating recovery of desired herbs and aspen would include deferring grazing use for two growing seasons on disturbed areas larger than 0.5 acre, including areas disturbed by fire, mechanical treatment, or reclamation activities. Grazing use could be deferred beyond two growing seasons, based on site-specific analysis and monitoring data. The intent would be to defer livestock use until vegetation cover, species composition, and litter accumulation are adequate to support and protect watershed values and meet vegetation objectives. Weed monitoring and treatments would occur as specified in the section on Invasive Non-Native Species.

No Action Alternative

Under this alternative, the proposed action would not take place, and the ground disturbance associated with the proposed action would not occur. However, with the absence of the proposed action, the area could be susceptible to wildfire hazard in the future from the buildup of woody fuels. Decadent shrub cover would probably increase over time, providing less palatable forage for wildlife and livestock. Even-aged stands of aspens would be more susceptible to insect outbreaks and disease, including SAD. Aspen stands would probably continue to decline over time.

Analysis on Public Land Health Standard 3 for Plant Communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): The Land Health Assessment conducted for the Roan Plateau in 1999 determined

that plant communities in the Roan Cliffs Unit were healthy and productive and were adequately distributed across the landscape to ensure sustainability. Plants were present in mixed age classes sufficient to sustain recruitment. However, across the landscape, vegetation communities were predominantly in mid to late seral stage, and age-class diversity within and between communities could be improved. Many aspen stands in this landscape were beyond late seral stage, and the mature trees were becoming decadent (BLM 2001). Since that time, aspens have succumbed to SAD and the health of these communities has declined. Shrublands have grown more decadent and herbaceous understory vegetation has decreased in cover.

The prescribed burns are expected to stimulate new growth in aspen stands, improving the overall health and age class distribution of these communities. Both prescribed burning and mowing should improve decadent shrublands, thereby increasing herbaceous forage for wildlife and livestock. However, weeds could increase the first few years following treatments. Annual monitoring and treatment of weeds for 3 years following the project work should mitigate this adverse impact.

The no action alternative could have negative impacts on vegetation communities by allowing for continued degradation of aspen stands and increasing decadence of shrublands.

Visual Resources

Affected Environment

The proposed action would take place on public lands on top of the Roan Plateau, which encompasses areas classified as Visual Resource Management (VRM) Class I and III, as identified in the 2006 Roan Plateau RMPA/EIS (BLM 2006) (Figure 2). The objectives for VRM Class I and III, as defined in the BLM Manual H-8410-1, Visual Resource Inventory (BLM 1986), are described below.

- VRM Class I – The objective is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- VRM Class III – The objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention 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.

The top of the plateau is managed as VRM Class III. The exception to this designation is that 1,612 acres (the East Fork Parachute Creek waterfall viewshed) is managed as VRM Class I to preserve this visually sensitive area (Figure 2). In addition to the VRM Classifications are other designations that contribute to the overall visual sensitivity of the area. These include the following:

- Wild and Scenic River Eligibility Determination “Outstanding Remarkable Values” (ORVs), Scenic Category
- The East Fork Parachute Creek Waterfall Viewshed
- Four ACECs noted for their scenic values (Figure 3)
- The I-70, SH 13, and Rim Road Viewsheds

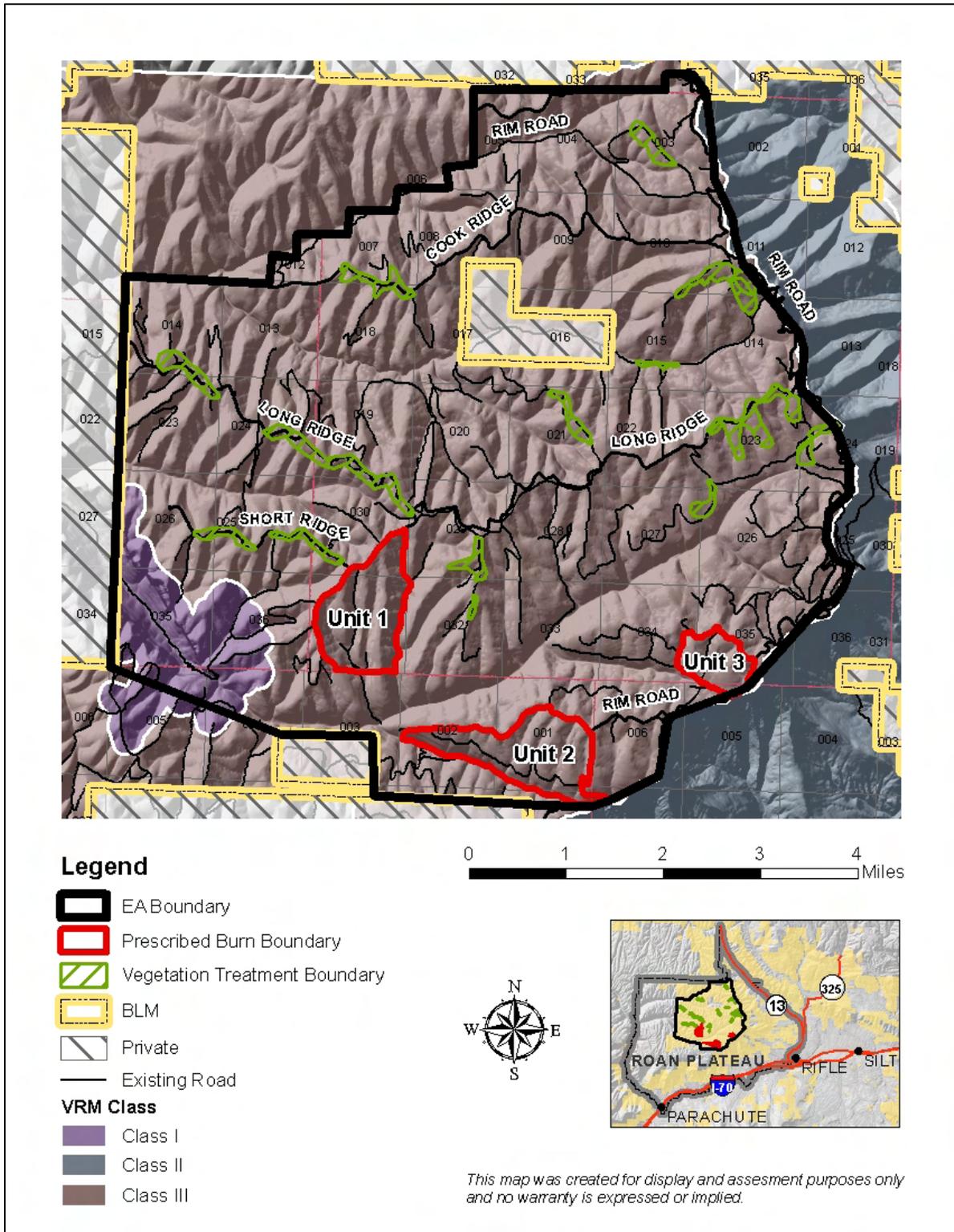


Figure 2: Roan Plateau Visual Resource Management (VRM) Class Designations

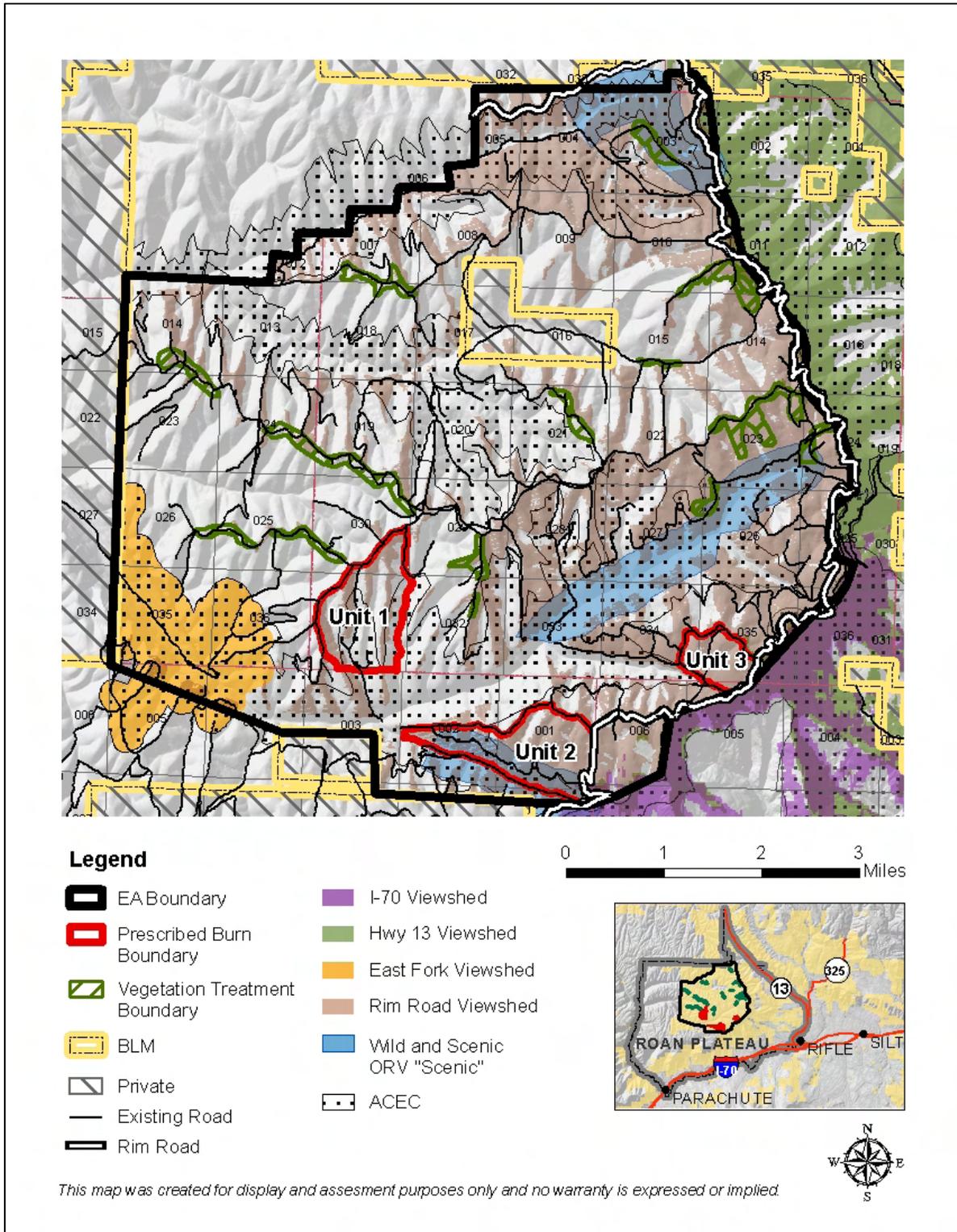


Figure 3: Roan Plateau Special Designations that Include Scenic Values

Wastes, Hazardous or Solid

Although the top of the Roan Plateau cannot be seen from the I-70 and SH 13 travel corridors, the proposed action may occur in sufficient proximity to the edge of the rim to cause the plumes of smoke to be visible from these travel corridors. The proposed action would be in the foreground/middle ground of the viewer traveling along the Rim Road, Cook Ridge, Long Ridge, and Short Ridge.

The existing landscape on top the Roan Plateau consists of long ridgelines that slope to the north and are deeply incised by west-flowing tributaries of Parachute. This effect creates an undulating horizontal line in the landscape broken by steep vertical lines created by drainages. The top of the plateau is dominated by a mosaic of aspen woodlands, sagebrush flats, and mixed mountain shrublands, with riparian habitats along the deep stream valleys. The Roan Plateau landscape is visually fragmented by existing development that occurred prior to current VRM objectives (BLM 2006) and includes roads, cabins, grazing improvements, old vegetation treatments, communication towers, limited oil shale development, and (on private land) limited oil and gas development.

Environmental Consequences:

The proposed action would result in contrasts in line, color, and texture. In general, these contrasts would be of small scale associated with the surrounding landscape, would be localized, and would be viewed for a relatively small period of time. The visual impacts are affected by the distance of the viewer. Details become more apparent when an activity is viewed in close proximity.

The prescribed fire can mimic a natural disturbance, like a wildland fire, but visually it may be perceived differently. The prescribed fire units would incorporate design features that would maintain a natural appearing landscape. The burn unit boundaries cross roads in some areas and remain adjacent to them in others; this would maintain a sense of ecological and visual continuity along travel corridors and would create a more organic/natural appearance. These areas would blend with those areas that would remain undisturbed. Within the burn unit boundaries there would be burned and unburned areas that would naturally occur. This would create a mosaic of visual conditions that would provide visual variety within the landscape.

Short-term visual impacts such as smoke, dust from fire management activities; and burned organic matter or ash on the surface of the landscape would occur. Mechanical vegetation treatments can alter the appearance of the vegetation and may contrast with adjacent vegetation by creating openings and obvious changes in color and texture due to the change in the vegetation height.

Over the long term, vegetation treatments would likely improve visual resources and with the inclusion of design and mitigation measures no new contrast or long term impacts would be introduced. As revegetation occurs, the fire's visual effects could change. The prescribed fire would stimulate regeneration, which would improve the variety and diversity in the overall vegetation cover. This would create a more natural visual character of the landscape.

The currently identified project units would occur in VRM class III. However, if the units are deemed successful in achieving the goals and objectives, other units within the environmental assessment boundary could be identified, including areas within VRM Class I. With proper site-specific clearances and mitigation, "add on" units could be implemented. The proposed action would meet Class I and III standards with the following mitigation measures.

- Any new access roads/points or staging areas created should be closed and reclaimed once the project is complete to prevent further surface disturbance and visual contrast.
- Any fire lines that are created should have an organic or undulating form that blends in with the natural topography to avoid the creation of linear features that would visually contrast with the surrounding landscape.
- Vegetation treatments should be designed and flagged prior to treatment and visually monitored during treatment to avoid the creation or enhancement of linear features within the landscape. Vegetation treatments should repeat natural mosaic openings found within the landscape, particularly when the treatment occurs within sagebrush and snowberry stands. Feathering or undulating edges should be incorporated into treatments to break up any distinct lines created in the landscape.

Environmental Consequences

No Action Alternative

Under the no action alternative, no fuels treatment projects or vegetation treatments would be implemented. The existing visual environment would remain in its current condition, with no new or additional impacts to scenic quality or visual resources VRM Class I and III objectives would be met. However, if a catastrophic wildfire occurred within the area, while it would be a natural process, the landscape could experience a high degree of modification and visual contrasts to the existing landscape.

Affected Environment

Implementation of the proposed action would require the use of fuel and lubricants for vehicles during transportation of personnel, for ignition activities, and for vehicles and equipment during fence-building activities. These activities would occur in close proximity to several ephemeral drainages that include Trapper Creek, Northwater Creek, East Fork of Parachute Creek, JQS Gulch, Golden Castle Creek, First Anvil Creek, Second Anvil Creek, and East Middle Fork Parachute Creek.

Environmental Consequences

Proposed Action

As mentioned above, the project area contains several ephemeral drainages. In the event of a spill, hazardous materials could reach area drainages if proper containment and cleanup do not occur before the materials are carried into the drainages. To avoid these potential threats, fuel and lubricants would be stored in appropriate containers and refueling would occur in designated areas. In addition, proposed activities would avoid steep slopes and drainages to minimize the potential for contaminant transport to perennial streams and other negative impacts associated with spills and contaminant distribution. Based on existing slope angles and good vegetation cover; it is unlikely that fuels and lubricants would be transported to area drainages.

No Action Alternative

Under the no action alternative, no fuels or lubricants would be present in association with the proposed burning and mowing activities, and accidental releases of hazardous materials would not occur.

Water Quality/Waters of the US (includes an analysis on Public Land Health Standard 5)

SURFACE WATER QUALITY

Affected Environment

The proposed action on BLM lands would occur north of I-70 on the top of the Roan Plateau. The water quality of the area has been characterized and is currently being managed under guidance in the Roan Plateau RMPA/EIS (BLM 2006). Various Federal and state laws regulate surface water quality and yield, including the Clean Water Act, Water Quality Control Act, Colorado River Salinity Control Act, Safe Drinking Water Act, FLPMA, and Public Land Health Standards.

The top of the Roan Plateau lies within the Upper Colorado River Basin, which originates in the mountains of central Colorado and flows southwesterly for more than 200 miles into Utah. The project boundary encompasses two 6th code watersheds: East Fork Parachute Creek and Trapper/Northwater Creek. The proposed project area includes segments of creeks (Trapper Creek, Northwater Creek, East Fork of Parachute Creek, JQS Gulch, Golden Castle Creek, First Anvil Creek, Second Anvil Creek, and East Middle Fork Parachute Creek) which were found to be eligible under a Wild and Scenic Eligibility Study in 2002 (BLM 2002a). The 2007 Record of Decision for the Roan Plateau RMPA/EIS (BLM 2007: 35) prescribed protective measures to preserve the identified Outstanding Remarkable Values (ORVs) for fish, botany and scenic values until such a time as a suitability study is completed.

The three targeted burn areas are planned on the southeast portion of the project area within the East Fork Parachute Creek 6th code watershed field. Two of three targeted burn areas are bounded by small sections of BLM Wild and Scenic River buffers on the First and Second Anvil Creeks, which drain directly to the East Fork of the Parachute Creek. One targeted area is bounded to the south by a section (1.8 miles) of the First Anvil Creek and the other is bounded to the southwest by 0.3 mile of the Second Anvil Creek. The mowing activities are spread throughout the project area and are within both the East Fork of Parachute Creek and Trapper Creek 6th field watershed but do not contact any segments of perennial creeks. Detailed assessments of the watersheds are presented in the Roan Plateau RMPA/EIS (BLM 2006).

The State of Colorado has developed a *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission, Regulation No. 37) list that identifies beneficial uses of water and numeric standards used to determine allowable concentrations of water quality parameters. The proposed mowing area is located in the northern portion of the project area draining to the Northwater and Trapper Creeks are in segment 8. None of the currently proposed burn areas drains to the same area as the proposed mowing operations.

- Segment 8 – This segment has been classified as aquatic life coldwater 1, recreation 2, water supply, and agriculture. Aquatic life cold 1 indicates that this water course is currently capable of sustaining a wide variety of cold water biota, including sensitive species, or could sustain such biota but for

correctable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. This segment is, however, suitable or intended to become suitable for potable water supplies and agricultural purposes that include irrigation and livestock use.

The targeted burn areas and the proposed mowing activities draining to East Fort Parachute Creek in the project area are within segment 12a. The First Anvil Creek and Second Anvil Creek are boundaries for containing the extent of the fire on two of the three prescribed burn areas.

- Segment 12a – This segment has been classified as aquatic life coldwater 1, recreation 2, and agriculture. Aquatic life cold 1 indicates that this water course is currently capable of sustaining a wide variety of cold water biota, including sensitive species, or could sustain such biota but for correctable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. Agriculture is a use described for segment 12a.

The proposed mowing activities draining to East Fort Parachute Creek (downstream of segment 12a) in the project area are within segment 12b. None of the burn areas currently proposed drain to this area.

- Segment 12b – This segment has been classified as aquatic life coldwater 2, recreation 2, water supply, and agriculture. Aquatic life cold 2 indicates that this water course is not capable of sustaining a wide variety of cold or warm water biota due to habitat, flows, or uncorrectable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. This segment is, however, suitable or intended to become suitable for potable water supplies and agricultural purposes that include irrigation and livestock use.

The drainages mentioned above are not currently listed on the State of Colorado's *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, Water Quality Control Commission, Regulation No. 93) or the *Monitoring and Evaluation List* (CDPHE, Water Quality Control Commission, Regulation No. 94) as waterbodies suspected to have water quality problems. A combination of USGS, DOE and BLM data collected from East Fork Parachute Creek, Trapper Creek and their tributaries indicate low base flows between 0 to 7 cfs and peak instantaneous discharge up to 119 cfs. Water quality parameters from the dataset show pH ranging from 7.3 to 9.1, specific conductivity ranging from 350 to 697 micro Siemens per centimeter ($\mu\text{S}/\text{cm}$), and temperatures ranging from 0 to 24°C (TRW 1982, BLM 2001, USGS 2007). The warmer temperatures have been measured during low flows in the summer months in upstream areas that are not shaded. Data collected by USGS in the project area from 1976 to 1983 are presented in Table 4. More detailed information on water quality can be found in Roan Plateau RMPA/EIS (BLM 2006).

Environmental Consequences

Proposed Action

Proposed burning activities would remove vegetation and could alter soil conditions through the development of a hydrophobic soil layer associated. Fence building and mowing activities would also remove vegetation and could alter soil conditions through compaction and displacement associated with vehicles and equipment. These impacts would result in an increase in erosion potential, increased flow rates, sedimentation, and potential nutrient loading in area waterbodies. Additionally, there is a potential for contaminants associated with fuel and lubricant spills to reach area drainages.

Table 4. Selected Water Quality Data for Locations on the top of the Roan Plateau

| <i>Parameter</i> | <i>East Fork Parachute Creek USGS Site #09092960 1976-1983</i> | <i>Northwater Creek USGS Site #09092838 1976-1983</i> |
|---------------------------------------|--|---|
| Average Instantaneous discharge (cfs) | 0.5 | 5.5 |
| Temperature, water (°C) | 9 | 3.3 |
| Filtered pH (standard units) | 8.2 | 8.1 |
| Specific conductance (µS/cm at 25°C) | 478 | 508 |
| Hardness as CaCO ₃ (mg/L) | 234 | 223 |
| Chloride (mg/L) | 1.7 | 2.3 |
| Selenium (µg/L) | 0.9 | 0.7 |
| Dissolved oxygen (mg/L) | 8.4 | 9.6 |
| Nitrate + Nitrite (mg/L N) | 0.5 | 0.3 |

Source: USGS 2007

Effects on water quality are driven by the location of the fire and the intensity of the fire as determined by the amount of fuel consumed (Neary 2005). It is anticipated that burn intensities would be moderate to low based on the fuel compositions minimizing soil burn severity. Based on the distance of the proposed activities from area drainages, the existing slope angle, and good vegetation cover; it is unlikely that sediment, contaminants, and nutrients would be transported to area waterbodies. Any potential negative impacts to water quality shall be mitigated through use of best management practices outlined in the Forest Service fire management recommendations (Neary 2005) and the BLM Fire Management Plan (BLM 2002b). Specifically, the burn would be managed to limit the fire severity and proximity to waterways and steep slopes.

Mitigation measures would include a 100-foot buffer within which fire would not be initiated on the ground. Residual creeping and backing fire might come into these areas from an uphill area but it is unlikely that any fire would spread into riparian areas due to adequate moisture associated with these areas. Grazing use may be deferred for two growing seasons on disturbed areas larger than 0.5 acre (e.g., a fire event, reclamation of disturbed lands, or vegetation treatment), or until site-specific analysis and monitoring data indicate that vegetation cover, species composition, and litter accumulation are adequate to support and protect watershed values and meet vegetation objectives as outlined in the Roan Plateau RMPA/EIS (BLM 2006). With proper precautions, any potential negative impacts to water quality should be short in duration and localized, making the likelihood of measureable water quality degradation minimal.

The targeted burn and mowing areas are a portion of a much larger project area. If additional burn or mowing units are added in the future, location specific water quality impacts and mitigation measures must be assessed before beginning work outside of the current evaluated target areas.

No Action Alternative

Under the no action alternative no burning activities would occur, which could leave the area susceptible to possible wildfire hazard in the future. In the event of a severe wildfire, potential negative impacts associated with denuded groundcover, hydrophobic soils, flooding and sediment transport would be much greater than negative impacts associated with the proposed activities. In addition, the potential for nutrient loading in nearby drainages would be much greater in the event of a wildfire.

WATERS OF THE U.S.

Affected Environment

Waters of the U.S. located in the project vicinity include Trapper Creek, Northwater Creek, East Fork of Parachute Creek, JQS Gulch, Golden Castle Creek, First Anvil Creek, Second Anvil Creek, and East Middle Fork Parachute Creek and certain of its ephemeral tributaries. Section 404 of the Clean Water Act requires a Department of the Army permit from the U.S. Army Corps of Engineers (USACE) prior to discharging dredged or fill material into waters of the U.S. as defined by 33 CFR Part 328.

Environmental Consequences

Proposed Action

No new crossings of waters of the U.S. are included in the proposed action. Erosion and sediment from the targeted burn areas and the proposed mowing areas may migrate to nearby drainageways that are tributary to the Colorado River. Any potential negative impacts to water quality shall be mitigated through use of best management practices outlined in the Forest Service fire management recommendations (Neary 2005) and the BLM Fire Management Plan (BLM 2002b).

No Action Alternative

Under the no action alternative, no burning activities would occur, which could leave the area susceptible to possible wildfire hazard in the future. In the event of a severe wildfire, potential negative impacts associated with denuded groundcover, hydrophobic soils, flooding and sediment transport would be much greater than negative impacts associated with the proposed activities. In addition, the potential for nutrient loading in nearby drainages would be much greater in the event of a wildfire.

Analysis on Public Land Health Standard 5 for Water Quality: In 1999, the BLM Glenwood Springs Office evaluated area drainages as part of the Roan Plateau Land Health Assessment. Streams were sampled at that time and it was determined that state water quality standards were being met in area drainages. Based on the findings from the land health assessment and the above analysis, the proposed action and no action alternative would not likely prevent Standard 5 for Water Quality from being achieved.

Wild and Scenic Rivers (WSRs)

Affected Environment

The proposed project area covers all public land atop the Roan Plateau, encompassing the river segments of Trapper Creek, Northwater Creek, East Fork of Parachute Creek, JQS Gulch, Golden Castle Creek, First Anvil Creek, Second Anvil Creek, and East Middle Fork Parachute Creek found to be eligible under

a Wild and Scenic Eligibility Study in 2002. The 2007 Record of Decision for the Roan Plateau RMPA/EIS (BLM 2007: 35) prescribed protective measures to preserve the identified Outstanding Remarkable Values (ORVs) for fish, botany and scenic values until such a time as a suitability study is completed. The overall objective is to not allow surface disturbing activities that might impair the identified values.

Environmental Consequences

Proposed Action

The proposed action should have negligible effect on the fish and botanical ORVs, as riparian areas and streams would have a 100-foot buffer in which fire would not be initiated on the ground. Residual creeping and backing fire might come into these areas from an uphill area but it is unlikely that any fire would spread into riparian areas due to adequate moisture, green grass, and higher fuel moistures and humidity associated with these areas. Therefore, it is unlikely that the fish and botanical ORVs would be affected. The scenic ORV on the segment from East Fork of Parachute Creek Falls west into the box canyon would still retain its visual contrast and diversity in the narrow box canyon in line, form and color and the waterfall would still dominate the viewshed within the reach of the canyon after the proposed action. However, the natural setting would be disturbed with this action.

To minimize potential negative effects to the scenic ORV on East Fork of Parachute Creek, fire would not be initiated on the ground from the falls west into the box canyon.

No Action Alternative

This alternative would have no effect on the ORVs.

Wilderness and Wilderness Study Areas (WSAs)

Affected Environment

The proposed action is within an area that has been proposed by the public for wilderness designation. The Roan Plateau has areas containing characteristics associated with wilderness.

Environmental Consequences

Proposed Action

The proposed action would still allow for the wilderness criteria of outstanding opportunities for solitude and primitive and unconfined types of recreation in the long-term. Mechanical use for the burning and mowing portions of the project would affect solitude, naturalness, and primitive/unconfined types of recreation negatively during the duration of the proposed action. The naturalness criteria would be affected in the short-term negatively until the new growth occurred within the aspen communities. Since one purpose of this action is to promote regeneration and sprouting within aspen communities that are experiencing SAD, the naturalness criteria should remain and benefit from this proposed action long-term. Another stated purpose of this proposed action is to reduce, to an acceptable level, the risks and consequences of wildfire, which is consistent with The Wilderness Act, with qualifications. New temporary roads

and fire line may be built in order to perform the proposed action, but those roads and line would not remain open for public use, would not be part of the Roan Plateau Travel Management Plan and would be rehabilitated to BLM specifications after the project is completed.

No Action Alternative

This alternative would not affect the wilderness characteristics and no benefits of regeneration or sprouting within the aspen communities to enhance the naturalness criteria would occur.

Wetlands and Riparian Zones (includes an analysis on Public Land Health Standard 2)

Affected Environment

Riparian zones and wetlands exist throughout the project area. Wetlands and riparian areas are found along the perennial streams and creeks. Additionally, the project area contains many springs and seeps which feed wetlands and riparian areas. Dominant vegetation along the riparian zone consists of narrowleaf cottonwood with an understory of shrubs and herbaceous species such as willows, buffaloberry, woods rose, horsetail and rush.

A riparian zone exists along Camp Creek on the eastern boundary of one of the proposed burn areas. Riparian areas exist along perennial First Anvil Creek and the Second Anvil Creek on the southern boundaries of two of the burn areas. The riparian areas are drawn as a boundary for the fire, but are not a target area for the burn. Additionally, small riparian areas and wetlands fed by spring can be found dispersed throughout the proposed burn areas. The mowing is targeted on uplands.

Environmental Consequences

Proposed Action

Riparian areas can be impacted by fire by the combined effects of burned vegetation, sedimentation, and flooding. Any potential negative impacts to water quality shall be mitigated through use of best management practices outlined in the USFS fire management recommendations (Nearby 2005) and the BLM Fire Management Plan (BLM 2002b). Specifically, riparian areas and streams shall have a 100ft buffer where fire would not be initiated on the ground. Since the riparian areas along perennial creeks are not within the area targeted for prescribed burning the likelihood of fire escaping beyond the target area is remote and it is unlikely that any fire would spread into riparian areas due to adequate moisture associated with these areas. Due to the natural ecological role of fire, many riparian communities (e.g., willows) regenerate and even proliferate after fire (Nearby 2005). Additionally, to avoid damage to wetlands and riparian communities these areas shall be avoided if fire suppression activities become necessary.

The proposed mowing activities are not proposed in riparian areas or adjacent to any wetlands. The targeted burn and mowing areas are a small portion of the larger project area. If additional burn or mowing units are added in the future, location specific water quality impacts and mitigation measures must be assessed before beginning work outside of the current evaluated target areas.

No Action Alternative

Under the no action alternative, no burning activities would occur, which could leave the area susceptible to possible wildfire hazard in the future. In the event of a severe wildfire, potential negative impacts

associated with burned vegetation, hydrophobic soils, and damage to the stability of the drainage basin causing flooding, nutrient loading and sediment transport would be much greater than negative impacts associated with the proposed activities.

Analysis on Public Land Health Standard 2 for Riparian Systems: Based on the above analysis, the proposed action and no action alternative would not prevent Land Health Standard 2 from being achieved.

Wildlife, Aquatic (includes an analysis of Public Land Health Standard 3)

Affected Environment

The project area supports two fish species, nonnative brook trout (*Salvelinus fontinalis*) in the East Fork Parachute Creek drainage including JQS Gulch, East Fork Parachute Creek, First Anvil Creek, and Second Anvil Creek, and Colorado River cutthroat trout in the same waters as well as Northwater Creek and Trapper Creek. Colorado River cutthroat trout are a BLM sensitive species (see section on Special Status Species).

Environmental Consequences

Proposed Action

Trout are typically resilient species that have become adapted to fluctuations in climate and environmental conditions over their evolutionary history. However, a hot fire in proximity to an occupied stream, in combination with low flows and high air temperatures, could render some stream reaches inhospitable by removal of riparian vegetation as well as upland vegetation on nearby slopes. Trout are particularly vulnerable to environmental change brought on by fire due to their dependence on cold, clean water. Loss of riparian vegetation could result in unfavorably warm water temperatures due to loss of shading. Warm water temperatures may affect trout survivorship and reproduction, in part because warmer waters have lower levels of dissolved oxygen. Denuded riparian habitats also make streambanks vulnerable to erosion and increase the potential for inflow of upland runoff containing high levels of sediments that would normally be filtered. Loss of riparian vegetation could also reduce the amount of allochthonous prey (from outside the stream) available for trout. For the purpose of this project, introduction of fire is not intended to occur near any of the resident fish bearing streams. However, the possibility exists that that low intensity backing fires could move toward stream edges. Burning of riparian areas under proposed burning plans is unlikely due to low intensity burning strategies and moist riparian plan communities.

Complete removal of upland vegetation is also unlikely, but if it were to occur as a result of the fire, it could lead to increased erosion and sediment loading, which would reduce stream habitat quality. Fine sediments would reduce productivity of macroinvertebrates that serve as the principal prey for trout. A slight to moderate amount of impacted riparian vegetation, which is the more likely scenario, could benefit the fish populations. A moderate removal would maintain the function of the stream yet increase the age-class and species diversity of the riparian habitat.

The proposed prescribed fire would also contribute locally to decreasing the threat of a future catastrophic wildland fire that would change large blocks of habitat indiscriminately and probably result in substantial increases in sediment loading.

Soil erosion after fire can increase sediment input into the stream, which can lead to silting of spawning gravels, smothering of macroinvertebrate habitat, and filling of pools. This effect is dependent on the intensity of the burn. In the proposed prescribed burn, fire intensities are expected to be low which would reduce sedimentation effects. Some potential also exists for increased transport of soils into streams from the proposed mowing treatments in upland shrubland habitat.

If the fire needed to be suppressed, suppression activities may also increase sediment input into streams. Fire lines would need to be properly constructed and rehabilitated to minimize possible sedimentation. Use of fire retardant would not be allowed within 300 feet of any stream, and use of stream water for fire suppression would have to be approved by the resource advisor and closely tracked and monitored throughout the suppression period.

Mitigation would result from the minimum 100-foot buffers from any stream, as well as the limited scope and intensity of the proposed burns. Mitigation related to mowing treatments includes limiting the activities to ridgetops and upper slopes of drainages, creating large buffers from streams with an intervening zone of undisturbed vegetation to act as a filter for sediments.

Stipulations attached to the project would include an NSO prohibiting ground-disturbing activities within the zone of riparian vegetation and a CSU providing for special design and implementation within 500 feet of riparian habitat or relocation of project components by more than 200 meters to protect the resource.

No Action Alternative

Under the no action alternative, no treatments would occur, resulting in no impact to aquatic wildlife species.

Analysis on Public Land Health Standard 3 for Plant and Animal Communities (partial, see also Vegetation and Wildlife, Terrestrial):

Streams atop the plateau were found to be generally healthy in the 1999 land health assessment and to support productive and healthy fish populations in reaches with adequate year-round flows.

However, Land Health Standard 3 is not being met relative to the Colorado River cutthroat trout in JQS Gulch or

East Fork Parachute Creek due to an inability to compete with non-native brook trout.

The proposed action would not jeopardize the viability of any aquatic vertebrate species. The project would have no significant consequences on habitat condition, utility, or function or discernible adverse effects on species abundance or distribution at any landscape scale.

Wildlife, Terrestrial (includes an analysis on Public Land Health Standard 3)

Affected Environment

The Roan Plateau comprises a variety of vegetation types, including sagebrush shrublands, mixed mountain shrublands, and aspen-conifer forests. These habitats provide cover and forage for a variety of wildlife species, described below by taxonomic group.

Mammals

The project area provides regionally important habitat for two native ungulates: mule deer and Rocky Mountain elk. These are the most abundant, widely distributed, intensively managed, and sought-after big game species in Colorado. Mule deer occur throughout the mountains and valleys of western Colorado. Historically, mule deer populations have fluctuated due to natural factors such as drought and severe winter weather. Deer populations in the project area and throughout Colorado have reflected this pattern of periodic fluctuations, with a population high in the early 1980s followed by a major decline following the severe winter of 1983-84 due to deep and protracted snow cover and extremely cold temperatures. Since that time, deer populations have gradually increased and stabilized.

A typical annual pattern in the project area begins with deer moving onto irrigated hay fields and sagebrush flats during green-up in early spring. Irrigated pastures, where available, may receive heavy use due to the much more palatable and nutritious forage than typically present on winter range at the end of the winter season. As green-up of native vegetation progresses to higher elevations, deer follow and arrive atop the plateau during May. They remain on summer range throughout the summer months, during which time they bear and raise their young. Fawning and other summer uses for deer are dispersed across the top of the plateau. Site-specific studies indicate that Gambel's oak and mountain sagebrush communities receive the heaviest use by deer. Stands of quaking aspen or conifers provide ideal hiding and thermal cover for fawns, while streams and springs provide water and lush forage. Bitterbrush, mountain-mahogany, and serviceberry receive preferential use when present due to higher palatability and nutritive value. The selective use of bitterbrush and serviceberry is exhibited by extreme clipping (hedging, pruning) of the branches. These three shrub species are also present in some winter habitats within the project area, although not in the lowest and therefore warmest and driest areas. In late September, deer begin moving off the plateau and onto transitional habitat and winter range in the piñon/juniper, mountain shrub, and sagebrush zones, including most of the area below the rim.

Unlike the pattern for deer, most of the elk herd in the project area migrates northward from summer range atop the plateau to winter range along Piceance Creek and Roan Creek. This may reflect a combination of the difficult access routes through the cliffs but is probably more associated with the relative poor quality (for elk) of the dry, grass-impooverished habitats south of the cliffs. Some of the elk that summer in the project area spend winter months on slopes along Parachute Creek and Government Creek near the western and northeastern edges of the project area, respectively. The top of the plateau is summer range and, with the combination of wooded areas for thermal and hiding cover, grassy areas for forage, and ample surface water, to area supports dispersed use for elk calving and calf rearing. Aspen are an important habitat type for this use, although the dense snowberry understory is less suitable for elk use than areas with a diverse grass-forb understory.

Two common large carnivores in Colorado, the mountain lion (*Felis concolor*) and black bear, also occur on the Roan Plateau. Mountain lions typically follow their primary food source, which in the project area includes deer, young elk, smaller mammals, and upland gamebirds, showing the same general elevational pattern as the ungulates. Mountain lions are generally dispersed throughout the summer but may make more intensive use of smaller areas during winter, when deer are concentrated on winter range. Populations are cyclical, reflecting cycles in their prey. The black bear is an omnivore in terms of diet. It inhabits transitional habitat on rugged slopes, and riparian habitats along major drainages. Black bears make heavy use of acorn and berry crops in mountain shrub habitats in fall and aspen buds in spring. Throughout the summer, bears feed on a variety of plants and small animals as well as carrion. Black bears typically seek dens in rocky areas, small caves, or tunnels under tree roots to hibernate.

Small carnivores potentially include the bobcat (*Lynx rufus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), and long-tailed weasel (*Mustela frenata*). The coyote occurs throughout the project area, while the similarly sized bobcat is mostly limited to rugged or wooded areas. The red fox and long-tailed weasel, and short-tailed weasel prefer mosaics of wooded and open terrain and can be most commonly found along the main streams. Two other small carnivores—the ringtail (*Bassariscus astutus*) and spotted skunk (*Spilogale gracilis*)—are secretive and easily overlooked by potentially present atop the Roan Plateau.

Small herbivorous mammals in the project area and vicinity include the mountain cottontail and red squirrel, as well as the porcupine (*Erethizon dorsatum*), least chipmunk (*Neotamias minimus*), golden-mantled ground squirrel (*Spermophilus lateralis*), bushy-tailed woodrat (*Neotoma cinerea*) and ubiquitous deer mouse (*Peromyscus maniculatus*). Other small rodents include the southern red-backed vole (*Myodes gapperi*) in coniferous forests and the long-tailed vole (*Microtus longicaudus*) beneath aspen, mixed mountain shrubs, and sagebrush.

Birds

Perching birds commonly associated with habitats such as present in the proposed burn areas include a variety of Neotropical migrants (see section on Migratory Birds) as well as resident or short-distance migrants such as the northern flicker (*Colaptes auratus*), hairy woodpecker (*Picoides villosus*), common raven (*Corvus corax*), Steller's jay (*Cyanocitta stelleri*), Townsend's solitaire (*Myadestes townsendii*), mountain chickadee (*Poecile gambeli*), white-breasted nuthatch (*Sitta carolinensis*), red-breasted nuthatch (*S. canadensis*), and brown creeper (*Certhia americana*).

One gallinaceous species, the wild turkey (*Meleagris gallopavo*), is common in mountain shrub habitats, where the acorns, berries, and invertebrate prey in the dense leaf litter provide abundant food. Another upland gamebird, the dusky grouse (*Dendragapus obscurus*), is potentially present in aspen and conifer habitats in the project area.

Raptors most likely to occur in the project area and vicinity are the sharp-shinned hawk, Cooper's hawk, northern goshawk, red-tailed hawk, and great horned owl. See the sections on Migratory Birds and (for the goshawk) Special Status Species.

Reptiles

Lizards and snakes are not common at elevations atop the Roan Plateau, or in the habitat types found there. However, one species—the western terrestrial garter snake (*Thamnophis elegans*)—occurs along riparian habitats. Despite its name, this species is commonly found in proximity to water and in other lush habitats. The lizard most likely to occur, primarily in warmer, drier habitats on the plateau, is the western plateau lizard (*Sceloporus undulatus*).

Amphibians

Aside from the northern leopard frog (see section on Special Status Species), which is not known to occur on the Roan Plateau, amphibian species potentially present based on habitat types and geographic range are limited to the tiger salamander (*Ambystoma tigrinum*), boreal toad (*Anaxyrus [Bufo] boreas*) and northern chorus frog (*Pseudacris triseriata*).

The tiger salamander is potentially present in virtually any suitable aquatic habitat within its elevational range, given its ability to disperse much more widely than frogs and toads. The salamander breeds in

ponds ranging in size from a few meters in diameter to several acres. Suitable habitat in the mountains includes the clear waters of glacial kettles and beaver ponds, as well as stock-watering ponds. The larvae are entirely aquatic and able to tolerate poor water quality, supplementing oxygen uptake through their gills with the ability to gulp air at the surface.

The northern chorus frog is the amphibian most likely to occur in streams on top of the Roan Plateau. This small relative of tree frogs is a widespread species adapted to seasonal waters and marshes as well as the vegetated shorelines of permanent waters lacking fish. Like all frogs and toads, the larvae (tadpoles) need sufficiently persistent surface water to allow growth and metamorphosis to the adult form.

Historically, the boreal toad was widespread in Colorado in beaver ponds, oxbows, and isolated ponds at elevations between approximately 8,500 and 11,500 feet. In recent decades, however, the species has undergone a significant decline in terms of both the number and size of populations. Although potentially suitable habitat occurs along drainages at higher elevations in the project area, no populations have been documented there, nor is it known whether the species was ever present, given the relative isolation of the plateau from more extensive areas with suitable habitats.

Environmental Consequences

Proposed Action

The decadent stands of aspen afflicted by SAD are in need of rejuvenation if this ecologically important species is to remain a major component of the Roan Plateau ecosystem. The condition of the understory is such that any sprouting clones as well as grasses and forbs have to compete with dense snowberry for sunlight and nutrients to the point of being suppressed. In addition, prolonged fire suppression has allowed fuels to build up to the point that an unplanned wildfire is likely to be much larger in size and greater in intensity.

Some wildlife species thrive on the occurrence of fire. The herbaceous and woody plants that establish following a burn provide abundant foliar tissue and seeds, which are used by small rodents and birds that in turn are important prey for a variety of avian and mammalian predators. Over the short term, the wildlife community is changed dramatically by a fire, as taller and denser vegetation is replaced by a more open habitat. As the area gradually recovers, however, many of the pre-fire components become reestablished, and the area again supports a community associated with denser forests. This cycle may take decades or centuries, depending on the dominant plant species, or never occur if climatic conditions are no longer suitable for the former dominants. For aspen, the target species of the proposed action, the period of renewal is relative short, as the species is fast growing and relatively short lived. Because the proposed action has been designed to be primarily a low- to moderate-intensity fire, both the severity of impacts to existing wildlife communities and the timeframe required for their restoration are much less than with an unplanned natural fire burning during hot, dry, and windy conditions over a much larger area.

For mule deer and elk, the proposed action would somewhat mimic a natural fire disturbance for aspen and mountain brush species. Deer and elk would benefit from the increase in growth and palatability of browse species available on burned and mowed areas. Foraging opportunities for big game and other herbivores would increase as understory grasses, forbs, and shrubs reestablish. The benefits for mule deer and elk are likely to be long-term. Intense sprouting follows almost immediately and usually provides valuable forage for elk. Despite the benefits of wildland fires, there is also the drawback that disturbance increases the possibility of noxious weed invasion, particularly of cheatgrass (CDOW 2007a). In the

long-term, the cumulative effect on wildlife from proposed action would be beneficial to the extent that the proposed action reduces the intensity of future wildfires.

For other mammals and for birds, the habitat types to be treated currently provide cover and nesting/denning/feeding habitat that would be temporarily lost or modified. The foliage and seeds offer valuable food and cover for many wildlife species, such as squirrels and jays. This may be beneficial for species dependent on younger seral stages, but not for others. For example, some raptors and small mammalian predators would be able to locate prey more easily in burned areas. Sufficient thermal and hiding cover would be retained adjacent to drainages and in unburned forest areas. Wildlife and their habitats are adapted to periodic fires. Some direct mortality of small birds and mammals (young of the year) may occur, but most wildlife species would move into adjacent unburned areas away from the fire.

Few reports have documented fire-caused injury to reptile and amphibians, although many species have limited mobility (Russell 1999). The immediate response of individual reptiles would be to seek shelter under rocks and underground. The terrain within the project area is not expected to support amphibians and only minimal numbers of reptiles. Amphibians, however, are similar to fish in that they rely on freshwater resources, although varying depending on the species. Some amphibians spend their entire life in water, while others breed in water but live on land as adults. Fire can remove/alter microhabitat structures (e.g. snags, decaying wood, and leaf litter) favored by amphibians and can cause loss or severe impacts to surface waters on which they rely.

Mitigation measures for wildlife include avoiding burning during spring and early summer, which includes the deer and elk birthing and rearing season, the raptor and songbird nesting season, and the amphibian breeding season. Mitigation would also result from the planned low to moderate intensity and short duration of the fire and the limited area within which it would occur in any year. For amphibians and other species tied to surface waters, the same mitigation measures described for fish would apply (section on Wildlife, Aquatic).

Protective stipulations applicable to the project include a 0.125-mile NSO and 0.25-mile TL for raptor nesting areas and avoidance of the migratory bird nesting season of May 1 to July 1. For species associated with streams and riparian habitats, the NSO and CSU for riparian vegetation zones would minimize the potential for adverse impacts. Another CSU would apply to protect wildlife security areas above the rim of the plateau. This CSU allows BLM to require that an action be relocated by more than 200 meters to protect the resource. The area covered by this CSU is approximately 6,300 acres. The treatments also would avoid impacts to big game migration corridors, protected by another CSU. The migration corridors include a small number of places where deer and elk can move through the formidable barrier of the Roan Cliffs when migrating between summer and winter ranges.

No Action Alternative

No fuel reductions or treatment would be conducted on public land on the Roan Plateau. The current decline of aspen due to SAD would not be addressed, and aspen stands would be likely to suffer more extensive loss. The potential for future catastrophic wildfire would increase. It is difficult to quantify the impacts of a potential catastrophic wildfire before it occurs. Impacts of a large, severe wildfire could affect a much larger habitat area and have a much greater impact on local wildlife populations. The direct impact of a catastrophic wildfire would be large-scale vegetation changes likely reduce the local populations of wildlife in the short-term.

Also as part of the no action alternative, no mowing treatments would occur. Although this would avoid any potential harm to terrestrial wildlife for direct and indirect impacts of mowing, it would not provide the important benefits expected to result from implementation of the project.

Analysis on Public Land Health Standard 3 for Plant and Animal communities (partial, see also Vegetation and Wildlife, Aquatic): One of the issues identified in the 1999 Land Health Assessment for the top of the Roan Plateau was that many stands of aspen forest are becoming decadent and lack age class diversity. Prescribed fires such as the ones planned in the proposed action, could be used to improve age-class diversity. Efforts to improve age class diversity should include a focus on ensuring the long-term presence of aspen forest rather than merely providing improved forage quantity and quality for ungulates.

The proposed action would not jeopardize the viability of any terrestrial wildlife species. The project would have no significant long-term adverse impacts on habitat condition, utility, or function or discernible adverse effects on species abundance or distribution at any landscape scale.

SUMMARY OF CUMULATIVE IMPACTS

The proposed action would cause both short-term and long-term changes in habitat composition, structure, and function of aspen and conifer areas treated using prescribed fire and primarily short-term to mid-term impacts of shrublands treated by mowing. No actual habitat loss would occur, aside from temporary disuse of areas no longer suitable for wildlife use due to burning. Changes in habitat suitability for component members of the plant and wildlife communities in the treated areas are therefore not cumulative with habitat loss or modification associated with other types of projects. These other types of projects include residential and commercial expansion and industrial activities such as associated with oil and gas development and sand and gravel production.

However, the adverse impacts of SAD in the project area, if not treated, would be cumulative with loss of aspen habitat due to this condition in other areas—which is widespread throughout the region—as well as aspen loss due to resource development activities and residential, commercial, and industrial expansion. To the extent that the project achieves its goal, the benefits would be cumulative with prescribed fires for SAD being implemented by the USFS in the region and with mowing treatments primarily by BLM to stimulate regeneration of over-mature shrubland habitats.

While some adverse impacts would occur to some resources, these are either transitory (e.g., air quality impacts and disturbance of sensitive wildlife species), short-lived (e.g., temporary loss of freshly burned areas as usable habitat by most species), or beneficial (i.e., associated with rejuvenation of aspen, removing snowberry from the understory, and reducing the potential for a future catastrophic wildfire). Furthermore, project design and mitigation measures have been specifically selected to minimize adverse impacts to other resources, including sensitive resources associated with streams that dissect the Roan Plateau.

PERSONS AND AGENCIES CONSULTED

U.S. Fish and Wildlife Service
Colorado Division of Wildlife
Rifle Fire Department
Grand Junction Board of Grazing Advisors

Trout Unlimited
Williams Production RMT Company
Bill Barrett Corporation

INTERDISCIPLINARY REVIEW

| Name | Title | Responsibility |
|-----------------|--------------------------------|--|
| Ody Anderson | Fuels Management Specialist | Fire/Fuels Management, Project Lead |
| Allen Crockett | Acting Associate Field Manager | NEPA Review |
| Cheryl Harrison | Archaeologist | Cultural and Native American Resources |
| Carla DeYoung | Ecologist | Areas of Critical Environmental Concern |
| Beth Brenneman | Ecologist | Invasive Non-Native Species, Special Status Species (Plants), Vegetation |
| Shauna Kocman | Hydrologist | Air/ Water Quality, Wetlands/Riparian, Soils |
| Julie McGrew | Natural Resource Specialist | Visual Resources, Access and Transportation, Recreation |
| Kimberly Miller | Outdoor Recreation Planner | Recreation, Wild and Scenic Rivers, Wilderness |
| Isaac Pittman | Range Specialist | Range |
| Sylvia Ringer | Wildlife Biologist | Migratory Birds, Special Status Species (Wildlife), Aquatic Wildlife, Terrestrial Wildlife |

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The environmental assessment analyzing the environmental effects of the proposed action has been reviewed. The approved mitigation measures result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION RECORD

DECISION: It is my decision to approve and implement this proposed action with the mitigation measures listed below being taken into consideration.

RATIONALE: This proposed action would address declining aspen stands on top of the Roan Plateau. It would also create age class diversity in the understory vegetation. The proposed action would also reduce the risk of a wildfire burning from BLM administered land on to private property and improve safety to the public and firefighter in the event of a wildfire. Fire behavior could potentially be modified before planned development of resources.

MITIGATION MEASURES:

- Conduct prescribed fire operations in accordance with a current smoke permit issued by Colorado APCD.
- Do not initiate fire treatments near or downstream from the East Fork of Parachute Creek falls.
- Monitor and treat noxious weeds for 3 years following treatment.
- Apply the inadvertent discovery stipulation in the event an unknown cultural resource is found during any operations.
- Wash any equipment entering project area to prevent spread of noxious weeds.
- Treatments would not occur between May 1 and July 1 to mitigate disturbance to migratory birds.
- Prior to implementation, consult with BLM ecologist on appropriate vehicle staging areas to eliminate risk to special status species plants.
- Ensure that refueling areas are equipped to deal with any spills of hazardous materials.
- Provide a 100-foot buffer from streams where fire would not be initiated.
- Defer grazing for two growing seasons on disturbed areas larger than 0.5 acre (e.g., a fire event, reclamation of disturbed lands, or vegetation treatment), or until site-specific analysis and monitoring data indicate that vegetation cover, species composition, and litter accumulation are adequate to support and protect watershed values and meet vegetation objectives as outlined in the Roan Plateau Resource Management Plan Amendment.
- Rehabilitate any firelines or new roads that are developed as part of the project.
- Public notices would be placed at any access route into project area to warn public.
- Notify all special recreation permit holders prior to implementation.

- If burning occurs during hunting season, contact CDOW to coordinate informing hunters in the area.
- Avoid creating straight lines with firelines or mechanical operations. Feather edges to blend into the surrounding vegetation.
- Avoid ground disturbing activities within a riparian zone.

NAME OF PREPARER: Alton Anderson, UCRIFM Prescribed Fire and Fuels Specialist

SIGNATURE OF AUTHORIZED OFFICIAL:

Alton Anderson
Authorized Officer

3/16/11
Date

ATTACHMENT 1

Education/Discovery Stipulation

All persons in the area who are associated with this project must be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons will be subject to prosecution.

Pursuant to 43CFR10.4(g), the BLM authorized officer must be notified, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), activities must stop in the vicinity of the discovery and the discovery must be protected for 30 days or until notified to proceed by the authorized officer. If in connection with operations under this contract the project proponent, his contractors, subcontractors, or the employees of any of them, discovers, encounters or becomes aware of any objects or sites of cultural or paleontological value or scientific interest such as historic or prehistoric ruins, graves or grave markers, fossils, or artifacts, the proponent shall immediately suspend all operations in the vicinity of the cultural or paleontological resource and shall notify the BLM authorized officer of the findings (16 U.S.C. 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the authorized officer. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the authorized officer from a Federal agency insofar as practicable. When not practicable, the holder shall bear the cost of the services of a non-Federal professional.

Within five working days, the authorized officer will inform the holder as to:

- whether the materials appear eligible for the National Register of Historic Places
- the mitigation measures the holder will likely have to undertake before the site can be used (assuming in situ preservation is not necessary)
- a timeframe for the authorized officer to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the State Historic Preservation Officer that the findings of the authorized officer are correct and the mitigation is appropriate

The proponent may relocate activities to avoid the expense of mitigation and/or the delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the proponent will be responsible for mitigation costs. The authorized officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the proponent will then be allowed to resume construction.

Antiquities, historic ruins, prehistoric ruins, paleontological or objects of scientific interest that are outside of the authorization boundaries but directly associated with the impacted resource will also be included in this evaluation and/or mitigation.

Antiquities, historic ruins, prehistoric ruins, paleontological or objects of scientific interest, identified or unidentified, that are outside of the authorization and not associated with the resource within the authorization will also be protected. Impacts that occur to such resources, that are related to the authorizations activities, will be mitigated at the proponent's cost including the cost of consultation with Native American groups.