# ENVIRONMENTAL ASSESSMENT RECORD
## CO-210-2002-0013 EA

# SAN LUIS VALLEY FIRE AND FUELS MANAGEMENT PLAN

**for**
**Wildland Fire Management**
**&**
**Prescriptive Vegetative Treatment**
**Guidance**

**Covering Public Lands managed by the Bureau of Land Management Del Norte, La Jara, and Saguache Field Offices within Alamosa, Conejos, Costilla, Rio Grande, and Saguache Counties of Colorado**

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## SUMMARY DESCRIPTION OF THE PROPOSED ACTION

This Environmental Assessment (EA) describes and evaluates the proposed San Luis Valley (SLV) Fire and Fuels Management Plan (FMP). The approved SLV FMP would amend the San Luis Resource Management Plan (RMP) of 1991. The FMP defines a strategy for managing and prioritizing wildland fire and prescribing vegetation treatments for fuel hazard reduction and resource benefit for all public lands managed by Bureau of Land Management (BLM) Del Norte, La Jara, and Saguache Field Offices.

The major procedural change under the proposed SLV FMP is that BLM managers would have the option of managing wildland fires for resource benefit under particular situations in specific geographical areas. Current management and lack of a current FMP do not allow the use of wildland fire for resource benefit. Thus all wildland fires have been suppressed. As a result, fire managers have not allowed beneficial wildland fires to burn naturally in areas where fires are desired.

This EA examines wildland fire management and prescribed vegetation treatments as described in the proposed SLV FMP. This EA serves as the analysis for implementing the FMP. The FMP/EA also serves as a programmatic analysis for "fuel hazard reduction" vegetation treatments and vegetation treatments to benefit resources. This would give general direction to guide vegetation treatments and help coordinate vegetation treatments where possible. A future site-specific document that complies with the National Environmental Policy Act would be written for each prescribed vegetation treatment, incorporating this document by reference. Prescribed vegetation treatments may also be derived from research, monitoring, assessments and other plans.

## FIRE MANAGEMENT ZONE CLASSIFICATION

Public lands will be managed under one of four fire management zones (FMZs) for the purposes of wildland fire and prescribed vegetation management (see FMP). The descriptions of FMZs are based on Bureau of Land Management Instruction Memorandum No. 2002-034 (11/15/2001) and Clarification of Fire Management Categories and RMP-Level Decisions; and H-1601-1 - Land Use Planning Handbook (Appendix C; Part I. Subpart J. Page 9).

### **"A" FMZ** ***Areas where fire is not desired at all.***

*General description:* This category includes areas where mitigation and suppression is required to prevent direct threats to life or property. It also includes areas where fire never played a large historical role in the development and maintenance of the ecosystem, where because of human development fire can no longer be tolerated without significant loss, or where fire return intervals were very long.

*Fire Mitigation Considerations:* Emphasis should be focused on prevention, detection, and rapid suppression response and techniques that will reduce unwanted ignitions and threats to life, property, natural and cultural resources.

*Fire suppression considerations:* Virtually all wildland fires would be actively suppressed and no fire is prescribed except as required to combat an immediate threat to firefighter or public health and safety.

*Fuel treatment considerations:* Non-fire fuel treatments employed. Unit costs for prescribed fire would be too prohibitive to implement efficiently. Pile burning of mechanically removed vegetation is acceptable.

**"B" FMZ** ***Areas where unplanned wildland fire is not desired because of current conditions***

*General Description:* Fire plays a natural role in the function of the ecosystem, however, these are areas where an unplanned ignition could have negative effects unless/until some form of mitigation takes place. Sagebrush ecosystems, for example, can fall into this category because of encroachment of cheatgrass or a prolonged lack of fire, which leads to large monotypic stands of sagebrush that won't burn as they would have historically.

*Fire Mitigation Considerations:* Emphasize prevention/mitigation programs that reduce unplanned ignitions and threats to life, property, natural and cultural resources.

*Fire suppression/use considerations:* Fire suppression is usually aggressive.

*Fuel treatment considerations:* Fuel hazard reduction as a major means of mitigation potential risks and associated loss are a priority. Fire and non-fire fuels treatments are utilized to reduce the hazardous effects of unplanned wildland fire. Restorative treatments may consist of multiple non-fire treatments before the use of fire will be considered. Unit costs for prescribed fire are high and require stringent mitigation and contingencies. Try to concurrently achieve fire protection and resource benefits, when possible.

**"C" FMZ** ***Areas where wildland fire is desired, but there are significant constraints that must be considered for its use.***

*General Description:* Fire is a desirable component of the ecosystem, however, ecological, social or political constraints must be considered. These constraints could include air quality, threatened and endangered species considerations (effect of fire on survival of species), or wildlife habitat considerations.

*Fire Mitigation Considerations:* Programs should mitigate potential threats to values before ignitions occur and reduce unwanted human ignitions.

*Fire suppression/use considerations:* Ecological and resource constraints along with human health and safety, etc., are utilized in determining the appropriate suppression response on a case by case basis by the incident commander and sub-unit line officer. Areas in this category would generally receive lower suppression priority in multiple wildfire situations than would areas in "A" or "B" FMZs.

*Fuel treatment considerations:* Fire and non-fire fuels treatments may be utilized to ensure constraints are met or to reduce any hazardous effects of unplanned wildland fire. Significant prescribed fire activity would be expected to help attain desirable resource/ecological conditions. Prescribed fire for hazard/fuel reduction are of a lower priority than in "B" zones. Prescribed fire unit costs are low to moderate and are generally non-complex. Try to concurrently achieve fire protection and resource benefits, when possible.

**"D" FMZ** ***Areas where wildland fire is desired, and there are few or no constraints for its use.***

*General Description:* Areas where unplanned and planned wildland fire may be used to achieve desired objectives such as to improve vegetation, wildlife habitat or watershed conditions.

*Fire Mitigation Considerations:* Implement programs that reduce unwanted human-caused ignitions, as needed.

*Fire suppression/use considerations:* These areas offer the greatest opportunity to take advantage of the full range of options available for managing wildland fire under the appropriate management response. Health and safety constraints will apply. Resource use considerations similar to those described for Category C may be identified if needed to achieve resource objectives. Areas in this category would be the lowest suppression priority in a multiple fire situation.

*Fuel treatment considerations:* There is generally less need for hazard fuel treatment in this category. Prescribed fire for fuel hazard reduction is not a priority except where there is an immediate threat to public health and safety. If treatment is necessary, both fire and non-fire treatments may be utilized, as allowed by the land use plan. Prescribed fire to obtain desired resource/ecological condition is appropriate.

## Table 1 - Fire Management Zones Overview

| FMZ | | Wildland Fire Management | | | Vegetation Treatments | |
|---|---|---|---|---|---|---|
| | | **Suppression Priority** | **Suppression Strategy** | **Wildland Fire Use strategy *** | **Prescribed Fire** | **Mechanical/ Chemical/Hand Biological** |
| **A** | Fire not desired at all. | High | Aggressive suppression | No | **No**, except pile burning of mechanically removed vegetation. | **Yes**, fuel hazard reduction to mitigate risks a priority. |
| **B** | Unplanned wildland fire not desired. | High | Aggressive suppression | No | **Yes**, fuel hazard reduction to mitigate risks a priority. | **Yes**, fuel hazard reduction to mitigate risks a priority. |
| **C** | Wildland fire desired - must consider significant constraints. | Moderate | Appropriate suppression responses | Yes, under prescribed conditions | **Yes**, fuel hazard reduction lower priority than "A or B" FMZs; used to attain desirable resource conditions. | **Yes**, fuel hazard reduction lower priority than "A or B" FMZs; used to attain desirable resource conditions. |
| **D** | Wildland fire desired - fewer constraints. | Low | Appropriate suppression responses | Yes, under prescribed conditions | **Yes**, used to attain desirable resource conditions; fuel hazard reduction is lower priority than "C" FMZs. | **Yes**, used to attain desirable resource conditions; fuel hazard reduction is lower priority than "C" FMZs. |

* Wildland Fire Use (WFU) is the management of wildland fires to accomplish specific pre-stated resource management goals in predefined geographical areas.

## NEED FOR PROPOSED ACTION

The Fire Management Plan (FMP) is needed to comply with the 2001 Federal Wildland Fire Management Policy (2001 Federal Fire Policy), Bureau of Land Management Instruction Memorandum (IM) No. 2002-034 (11/15/2001) and Clarification of Fire Management Categories and RMP-Level Decisions. The Policy and IM directs BLM Field Offices to have an approved FMP for every area with burnable vegetation. FMPs define a strategy for managing and prioritizing wildland fire; and prescribing vegetation treatments for fuel hazard reduction and resource benefit.

Current initial attack of unplanned ignitions followed BLM Initial Attack Policy Clarification (April 1995) that states;

> *"Consistent with approved suppression activity constraints, all new wildfires will receive aggressive initial attack with adequate forces to contain the fire prior to the start of the next burning period.*"

Until a FMP is approved, the BLM has to take aggressive suppression action on all wildland fires, taking into account firefighter and public safety and resources to be protected. Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, resource benefits could not be the primary consideration.

Without an approved FMP, the Del Norte, La Jara, and Saguache Field Offices have no defined strategy for:

1. managing and prioritizing wildland fire suppression,
2. prescribing vegetation treatments for fuel hazard reduction and resource benefit,
3. utilizing wildland fires to accomplish land use and resource management objectives.

Immediate suppression seems the logical choice for fire managers. There are, however, situations where a wildland fire may benefit resources or be more cost efficient to manage differently. The Proposed Action would allow fire managers the latitude to consider:

1. human safety;
2. protection of improvements, property, cultural resources, threatened or endangered species, and high value resources;
3. return fire to its natural role in the ecosystem;
4. enhancement of natural resources that can benefit from the careful application of fire;
5. hazardous fuel reduction; and
6. fiscal efficiency of fire management operations.

In addition, land uses, land issues and vegetation (fuels) have changed since the completion of the 1991 San Luis Resource Management Plan (RMP), especially in the private land - public land interface. The SLV FMP needs to reflect wildland fire and vegetation management in light of those changes.

## PLAN CONFORMANCE REVIEW

The Proposed Action is subject to and has been reviewed for conformance with the San Luis Resource Management Plan (RMP) of 1991, including an amendment (Standards for Public Land Health and Guidelines for Livestock Grazing Management on 2/97). The proposed FMP is not in conformance with the RMP. The approved FMP would amend the RMP.

## RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

The FMP was completed to comply with the 2001 Federal Wildland Fire Management Policy (2001 Federal Fire Policy). This Environmental Assessment tiers to the Federal Wildland Fire Management Policy and Program Review (December 1995) and the Wildland and Prescribed Fire Management Policy: Implementation Procedures and Reference Guidelines (August 1998) and tiers to the Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement (BLM 1991). Public lands in the planning area are subject to federal statutes and regulations, including: Federal Land Policy and Management Act (FLPMA), the Endangered Species Act of 1973, as amended, the 1969 National Environmental Policy Act (NEPA), and the National Historic Preservation Act of 1966, as amended. The objectives outlined in this FMP are in conformance with these federal regulations.

To protect wilderness characteristics (roadlessness and naturalness) in Wilderness Study Areas (WSAs), wildland fire vegetation management follows BLM Handbook H-8550-1 - Interim Management Policy for Lands Under Wilderness Review.

Fire management activities on public lands must also meet the State standards for air and water quality. Activities must be conducted in accordance with the current State of Colorado Smoke Management Plan and MOU and have an approved open burning permit issued by the Colorado Department of Public Health and Environment, Air Pollution Control Division.

Fire management strategies were developed following careful consideration of program specific resource management guidance.

The SLV FMP is meant to be in concert with the Rio Grande National Forest FMP and County FMPs that are being developed.

## STANDARDS FOR PUBLIC LAND HEALTH

On February 12, 1997, the *Colorado Standards for Public Land Health* became effective for all BLM lands in Colorado. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands. The Del Norte, La Jara, and Saguache Field Offices are in the ongoing process of conducting watershed level assessments to determine whether or not the standards are being achieved. These assessments are done on a watershed basis. At this time, three watersheds in the SLV have had formal assessments completed. Based on the findings of these assessments, the authorized officer shall take appropriate action to achieve conformance with the standards or implement further mitigating measures on future actions to maintain or prevent a further decline in land health.

**Standard 1:** Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

Indicators:

- Expression of rills, soil pedestals are minimal.
- Evidence of actively eroding gullies (incised channels) is minimal.
- Canopy and ground cover are appropriate.
- There is litter accumulating in place and is not sorted by normal overland water low.
- There is appropriate organic matter in soil.
- There is diversity of plant species with a variety of root depth.
- Upland swales have vegetation cover or density greater than that of adjacent uplands.
- There are vigorous, desirable plants.

**Standard 2:** Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Indicators:

- An appropriate mix of native or desirable introduced species dominates vegetation.
- Vigorous, desirable plants are present.
- There is vegetation with diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density.
- Streambank vegetation is present and is comprised of species and communities that have root systems capable of withstanding high streamflow events.
- Plant species present indicate maintenance of riparian moisture characteristics.
- Stream is in balance with the water and sediment being supplied by the watershed (e.g., no head cutting, no excessive erosion or deposition).
- Vegetation and free water indicate high water tables.
- Vegetation colonizes point bars with a range of age classes and successional stages.

- An active floodplain is present.
- Residual floodplain vegetation is available to capture and retain sediment and dissipate flood energies.
- Stream channels with size and meander pattern appropriate for the stream's position in the landscape, and parent materials.
- Woody debris contributes to the character of the stream channel morphology.

**Standard 3:** Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

Indicators:

- Noxious weeds and undesirable species are minimal in the overall plant community.
- Native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability.
- Plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations.
- Landscapes exhibit connectivity of habitat or presence of corridors to prevent habitat fragmentation.
- Photosynthetic activity is evident throughout the growing season.
- Diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities.
- Appropriate plant litter accumulates and is evenly distributed across the landscape.
- Landscapes composed of several plant communities that may be in a variety of successional stages and patterns.

**Standard 4:** Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Indicators:

- All the indicators associated with the plant and animal communities standard apply.
- There are stable and increasing populations of endemic and protected species in suitable habitat.
- Suitable habitat is available for recovery of endemic and protected species.

**Standard 5:** The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

Indicators:

- Appropriate populations of macroinvertabrates, vertebrates, and algae are present.
- Surface and ground waters only contain substances (e.g. sediment, scum, floating debris, odor, heavy metal precipitates on channel substrate) attributable to humans within the amounts, concentrations, or combinations as directed by the Water Quality Standards established by the State of Colorado (5 CCR 1002-8).

# PROPOSED ACTION AND ALTERNATIVES

## PROPOSED ACTION

Implementation of the proposed SLV Fire and Fuels Management Plan (FMP). The FMP defines a strategy for managing and prioritizing wildland fire and prescribing vegetation treatments for fuel hazard reduction and resource benefit for all public lands managed by Bureau of Land Management (BLM) Del Norte, La Jara, and Saguache Field Offices.

The major procedural change under the proposed SLV FMP is that BLM managers would have the option of managing wildland fires for resource benefit under particular situations in specific geographical areas. Current management and lack of a current FMP do not allow the use of wildland fire for resource benefit. Thus all wildland fires have been suppressed. As a result, fire managers have not allowed beneficial wildland fires to burn naturally in areas where fires are desired. Full suppression of human caused wildfires would continue to occur.

The FMP/EA also serves as a programmatic analysis for "fuel hazard reduction" vegetation treatments and vegetation treatments to benefit resources. This would give general direction to guide vegetation treatments and help coordinate vegetation treatments where possible. A future site-specific document that complies with the National Environmental Policy Act would be written for each prescribed vegetation treatment, incorporating this document by reference. Prescribed vegetation treatments may also be derived from research, monitoring, assessments and other plans.

## NO ACTION ALTERNATIVE (CONTINUATION OF CURRENT MANAGEMENT)

Initial attack of unplanned ignitions would continue to follow BLM Initial Attack Policy Clarification (April 1995) which states; "Consistent with approved suppression activity constraints, all new wildfires will receive aggressive initial attack with adequate forces to contain the fire prior to the start of the next burning period." Under this alternative, as dictated by agency policy, all wildland fires must be immediately suppressed in accordance with the Appropriate Management Response Guidelines.

Under this alternative, wildfires would be managed under the concept that fire is not desired at all on public lands. Land use and resource management objectives would receive little consideration in wildland fire management strategies. Wildland fires would not be used as a management tool to accomplish land use and resource management objectives. Comprehensive

prescription vegetation treatment guidance as described in the proposed action would not be utilized.

## ALTERNATIVES CONSIDERED BUT ELIMINATED

Allowing fires to burn, i.e., “let burn”, with no fire management response was considered. No fire management response would likely lead to unnecessary loss of life, property, and resources. Therefore, this alternative was eliminated from further consideration.

## COMPARISON OF ALTERNATIVES

### Table 3 – Comparison of Alternatives

| | **Proposed Action** | **Alternative A "Continuation of current management"** |
|---|---|---|
| **Wildland Fire Management- Suppression Strategy** | Varied suppression responses by fire management zone | No,<br>Wildland fires will not be allowed to burn without the appropriate suppression action. |
| **Wildland Fire Management - Wildland Fire Use Strategy *** | Yes,<br>Naturally occurring fires under prescribed conditions in "D" FMZ would be used to achieve responsible and definable land use benefits and resource management objectives. | No,<br>Wildland fires would not be used to achieve responsible and definable land use benefits and resource management objectives. |
| **Vegetation Treatments- Prescribed Fire** | Yes, all FMZs except for "A" | Yes |
| **Vegetation Treatments- Mechanical/Chemical Treatments** | Yes, for all FMZs | Yes |
| **Hazardous Fuels Reductions** | Yes<br>Prescribed burning and other fuel management guidance addresses the issue and opportunities for hazardous fuels reductions, especially near interface areas. | No<br>The issue and opportunities for hazardous fuels reductions, especially near interface areas, are not addressed. |
| **Land Use and Resource Management Objectives Considered** | Land use and resource management objectives receive higher and upfront consideration. | Land use and resource management objectives receive less consideration. |
| **Complies with Federal Wildland Fire Management Policy (December 1995 and the January 2001 Amendment and Update)** | Yes | No |
| **Improves Management Efficiency in the Use of Prescribed Fire and in Suppression of Wildfires.** | Considerations to improved management efficiency in the use of prescribed fire and in suppression of wildland fires. | Does not address improved management efficiency in the use of prescribed fire and in suppression of wildland fires. |

- Wildland Fire Use (WFU) is the management of wildland fires to accomplish specific pre-stated resource management goals in predefined geographical areas.

## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

### SETTING

The San Luis Valley is approximately 122 miles long and about 74 miles wide extending from the Continental Divide on the west/northwest, to the New Mexico state line on the south, and the Sangre De Cristo Mountains on the east. For purposes of analysis in this EA, a planning area has been designated, which is bordered on three sides by the Rio Grande National Forest and is within or part of Saguache, Alamosa, Rio Grande, Conejos, and Costilla Counties. Of the total 1,971,000 acres in the planning area, approximately 54 percent is privately owned, the U.S. Fish and Wildlife Service manages roughly 4 percent, around 11 percent is administered by various state agencies (i.e., Colorado Division of Wildlife, Colorado Land Board Commission, etc.), and about 2 percent is managed by other Federal Agencies, and nearly 27 percent is managed by BLM.

### CRITICAL ELEMENT - AIR QUALITY

**Affected Environment:**

Air quality within the San Luis Valley in the area of the proposed Fire Management Plan is very good. This may be due to relatively limited local emission from stationary and mobile sources. However, episodic events such as an exceedance of PM10 standard in Alamosa in 1999 and 2000 due to high winds and blowing dust; and smoke production from agriculture practices and wildland fires have temporarily influenced air quality in the past. The entire planning area is considered as attainment for all six criteria pollutants. The nearest non-attainment areas are Aspen (121 miles to the northwest) and Lamar (175 miles to the east) for PM10 and maintenance areas for PM10 are Pagosa Springs (60 miles to the WSW) and Canon City (75 miles to the northeast). There is a Class I area is within the planning area, Great Sand Dunes National Monument. The closest Class I Wilderness is Weminuche and LaGarita, both about 30 miles to the west and West Elk Wilderness about 60 miles to the northwest.

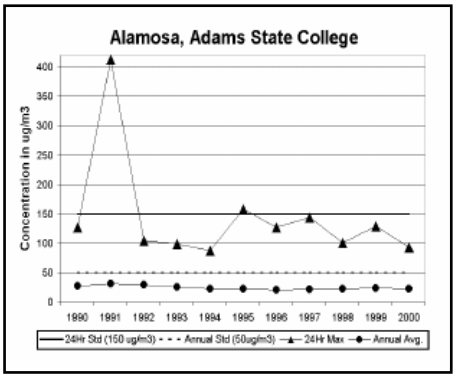
There is no specific information on air quality in the San Luis Valley as a whole, however, some information is available from two particulate monitors and an EPA emission inventory completed in 1996. There is one State of Colorado PM10 SLAMS (State and Local Air Monitoring Station) monitor in Alamosa and an IMPROVE (Interagency Monitoring of Protected Visual Environments) monitor at Great Sand Dunes N.M. Within the effected five counties, the only commercial source producing more than 100 tons per year of PM10 was a mineral product plant in Costilla County, producing 495 tons annually and in all counties the greatest contributor to annual PM10 production is agriculture crops and fugitive dust. An emission summary expressed in percentages for the town of Alamosa would look like the following:

- Fuel Combustion 2.7% (Majority of this is residential wood burning)
- Waste Disposal .7% (This includes incineration and open burning)
- Highway Vehicles .7% (Gas and diesel)

- Off Highway Vehicles .9%
- Miscellaneous 95% (Of this, 25% is agriculture crops and livestock and 75% fugitive dust)

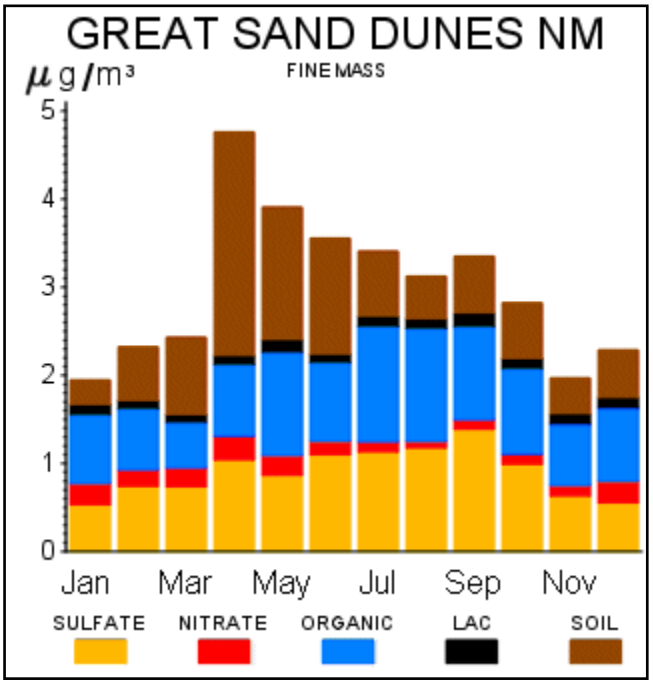
The three year annual average of PM10 as of 2000 for Alamosa County was 23.3 cubic micro grams. The National and State standard for PM10 annual average is 50 cubic micro grams.

The following figure[1] shows the historic trend for PM10 at the SLAMS monitor located at Adams State College.




[1] Colorado Air Quality Report 2000, Colorado Department of Public Health and Environment, pg. 47.

The Great Sand Dunes National Monument has a speciated aerosol monitor and a visibility camera as part of a National network known as the IMPROVE program. The IMPROVE monitoring program was established in 1995 to aid the creation of Federal and State implementation plans for the protection of visibility in Class I areas as stipulated in the 1977 amendments to the Clean Air Act. A recent National Park Service publication[2] on the air quality in the National Parks stated that for Great Sand Dunes…the average best 20% days was better than the NPS average and the trend was for significant improvement and the average worst 20% days was much better than the NPS average and also the trend was for significant improvement. An example of the seasonal trends[3] for fine particulate matter shows that soil and organic matter is a large contributor.




The San Luis Valley is the first of a series of basins along the Rio Grande River. The mountain ranges to the east reach altitudes over 14,000 feet and those to the west are between 13,000 and 14,000 feet. The length of the valley from north to south is over 122 miles, and its greatest width is about 74 miles. The valley floor ranges in altitude from 7,500 to near 8,000 feet and has a remarkably flat surface, except for a range of low hills across the southern portion. From the lowest areas, which lie along an axis near the eastern border, the valley floor rises to the foothills, steeply to the east and more gently to the west.

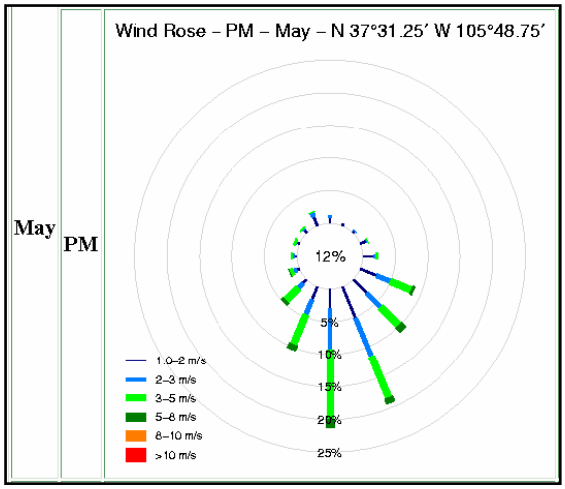
Cold winters and moderate summers, light precipitation, and much sunshine mark the climate of the San Luis Valley. At Alamosa about 80 percent of the annual precipitation occurs from April to October, most of it in the form of scattered light showers and thunderstorms that develop over the mountains and move into the valley during the afternoon. More than half of these thunderstorms occur during July and August. Hail frequently falls in some parts of the valley during their movement. Winter snows occur mainly in frequent light falls, with occasional falls as early as September or as late as May. A good snow cover will remain on the ground for several weeks during the coldest months. All agriculture in the valley is dependent on irrigation, using water supplied by the more abundant precipitation in the surrounding mountains. Summer grazing of cattle and sheep on nearby mountain ranges and smaller valleys is extensive. A wide variety of vegetables, grains feed crops are grown locally, with potatoes being the main commercial crop. Frequent days with maximum temperatures in the middle 80s and minimum

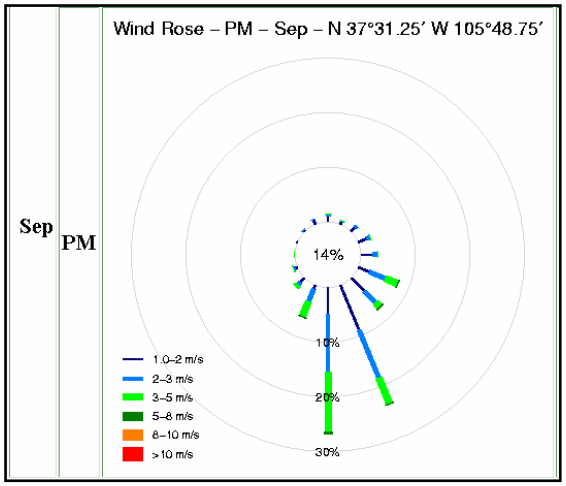
[2] Air Quality in the National Parks, Second Edition, D-2266, September, 2000.
[3] IMPROVE National Website, Spatial & Seasonal Patterns:
http://vista.cira.colostate.edu/improve/Data/GraphicViewer/seasonal.htm

temperatures in the low 40s characterize summer. Relative humidity ranges from about 76 percent in the early mornings to around 40 percent during the afternoons. Winds are light during the coldest weather, but are strong with occasional blowing dust during the spring and early summer months. Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is September 8 and the average last occurrence in the spring is June 8.

An excellent source for wind, mixing heights and dispersion characteristics modeled on historic weather information is from a website called Ventilation Climate Information System[4].

By selecting a location within the center of the planning area the following historic wind speeds and direction, historic mixing height and dispersion conditions provide information for a prescribed fire in the spring (May) and in the fall (September).



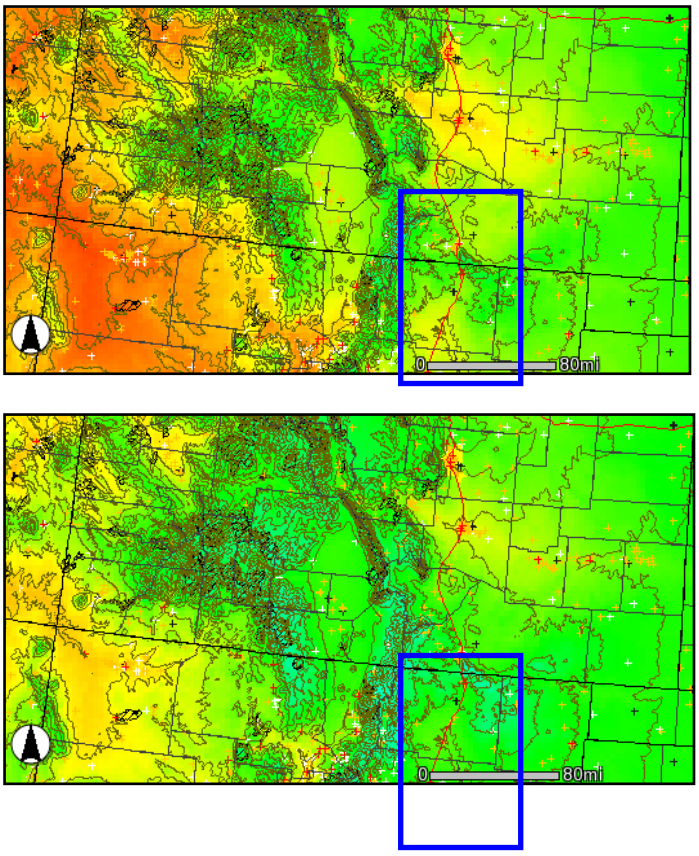




The left wind rose (May) shows that winds predominately blow from the south-to-south east 6 to 11 miles per hour or less, however winds can occasionally blow from the southwest. The right wind rose (September) is similar, however the likely-hood of winds blowing from the southwest is much less.

[4] Ventilation Climatic Information System at: http://www.fs.fed.us/pnw/fera/vent/data.html

The upper map represents the afternoon average mixing height for the planning area in the month of May. As you can see mixing heights are generally above 2000 meters or 6600 feet above ground levels.

The lower map represents the month of September. Mixing heights this time of year are somewhat lower than in the spring as one might expect.

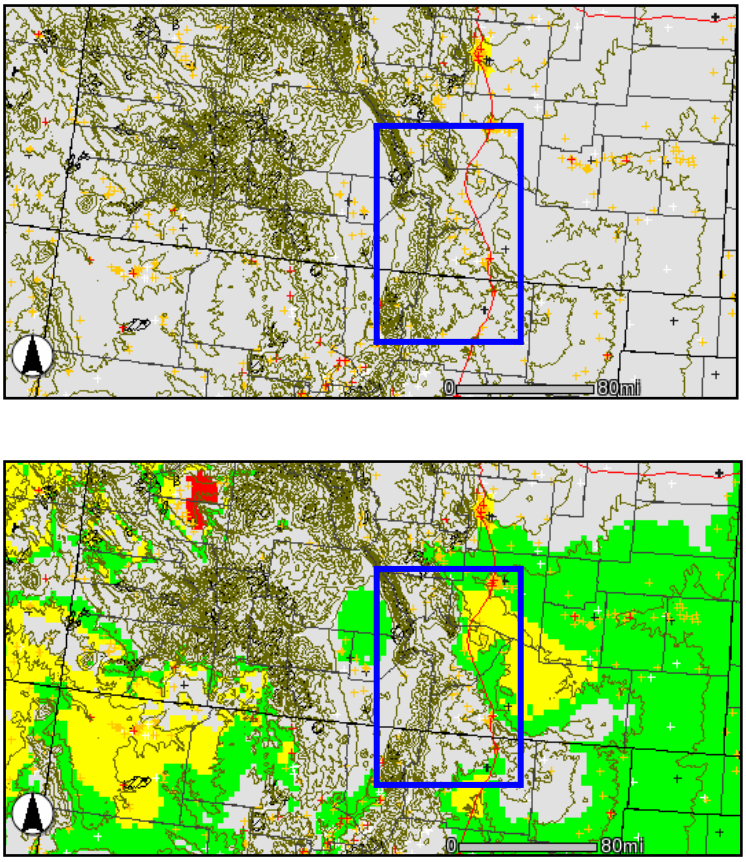



**Mixing Height Map Legend (PM)**

**0** **> 4000 m**

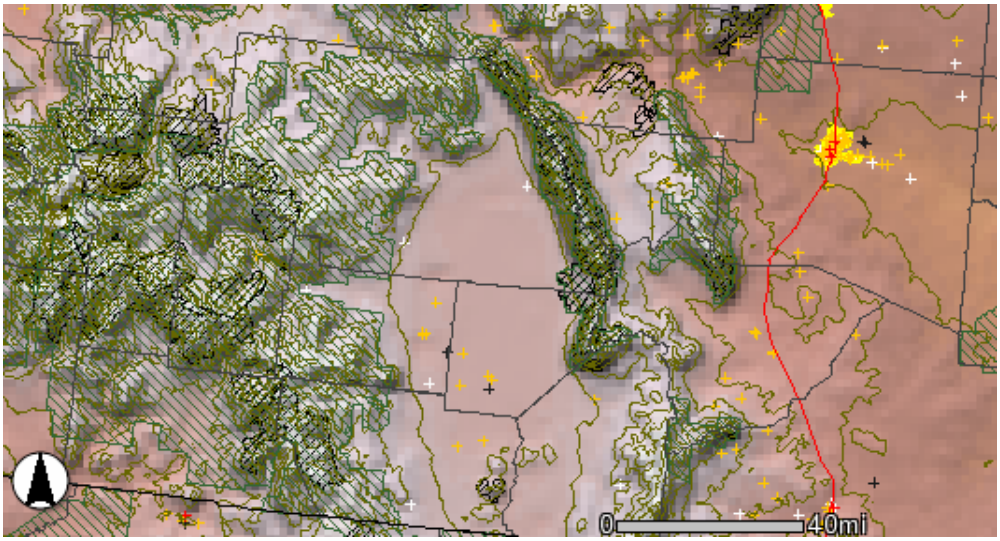
The upper map shows the afternoon ventilation index for May. Ventilation is shown to be in the good range throughout the spring, summer and early fall.

Beginning in October, ventilation on the northern portion of the planning unit begins to degrade. This remains the same through the month of February.




**Ventilation Index Map Legend**

**Poor** **Good**




This is a map of some known sensitive receptors within the planning area. Obviously there are more sensitive receptors than these listed here and those will be identified in more detail with each project.

+ Hospitals
+ Schools
+ Churches
+ Airport

**Environmental Consequences & Mitigation:**

**Proposed Action:**
The scope of this Fire Management Plan deals with wildland fire and hazard fuels treatment. In order to truly understand the environmental consequences of the proposed action, it must be remembered that the yardstick to measure against is unwanted wildland or wildfire. Decades of suppressing fire have led to an unnatural fuel buildup and as statistics have shown us, more frequent and devastating larger fires are occurring in the planning area. If all fire ignitions could be suppressed when small, then the issue of smoke emissions from wildfire would be non-existent. Unfortunately this is not always possible with the current fuel loadings and the health of our ecosystems.

This proposed action allows the land manager to select the right tool in Wildland Fire management that includes full suppression, wildland fire use, prescribed fire and mechanical treatments.

**Direct Impacts**:
Full suppression would be the same as the no action alternative. Wildland Fire Use, which allows a natural ignited fire to be managed for resource benefits, or prescribed fire, would

increase particulate matter emissions in the short term from the background levels. Calculations of PM emission production based on the expected and historic size of a fire use projects and the accumulative prescribed fire acres burned for any given year was calculated using Consume 2.1[5]. The software predicts the amount of fuel consumption and emissions from the burning of logged units, piled debris, and natural fuels based on weather data, the amount and fuel moisture of fuels, and a number of other factors. The maximum amount of particulate matter produced in one year would be approximately 130 tons of PM10 and 110 tons of PM2.5.

Mechanical treatments will reduce fire emissions in two ways. The first is that this is a non-fire treatment, saving emissions that could have been produced using fire. Secondly, this treatment is reducing the potential for future, high emission wildfires. It is recognized that prolonged and even short-term exposure to smoke can exacerbate health problems with sensitive individuals. The practice of prescribed fire and wildland fire use in this alternative will ultimately reduce the amount and duration of smoke impacts on this portion of the population. Smoke management techniques are used to reduce emissions and mitigation measures are used to make sensitive individuals aware of the potential smoke impacts allowing them to take appropriate actions.

**Indirect Impacts**:
Full Suppression indirect impacts will be discussed in the No Action alternative. Wildland Fire Use and Prescribed Fire reduces the fuel loadings generally with lower fire intensity producing lower emissions that would be produced under wildfire conditions. Using this treatment method reduces the potential for future, higher emission wildfires. A recent scientific research report[6] analyzing the effects of prescribed fire and other fuel treatment methods in reducing wildfire severity said:

> "Crown fire hazard (height to crown, crown bulk density, stand density, and basal area), fire resistance (height and diameter), and fire severity (scorch height, crown volume scorch, stand damage, and depth of ground char) were compared between treated and untreated areas. Our results unanimously indicate that treated stands experience lower fire severity than untreated stands that burn under similar weather and topographic conditions. Correlations between fire severity indicators and measures of crown fire hazard and fire resistance were generally good, but individual sites provide unique lessons that illustrate the importance of treating fuel profiles in their entirety."

Mechanical treatment, like the previous two treatment methods reduce future wildland fire emissions. Mechanical treatments change the fuel profile and very often must be accompanied with fuel removal by commercial methods if there is an available market or by prescribed fire.

**Cumulative Effects:**
Air resources are somewhat unique in that the past impacts to air quality are not usually evident. The emissions produced through this Fire Management Plan would be cumulative only with the local emission sources described in the affected environment occurring at the time of burning. Taking Alamosa emission inventory as a surrogate for the rest of the planning area, the additional emissions from the proposed alternative even in the short term should not violate the

[5] Consume 2.1, Pacific Northwest Research Station, Roger D. Ottmar
[6] Effect of Fuels Treatment on Fire Severity, Omi, Martinson and CSO. March 25,2002

NAAQS (National Ambient Air Quality Standard) or the State of Colorado's air quality standards and cause minimal degradation to visibility and Regional Haze.

**Mitigation:**
All prescribed and fire use burning would be coordinated with the Colorado Department of Public Health and Environment's Division of Air Quality. There would be strict adherence to Colorado Regulation 9 to insure protection of the State Standard for Air Quality. Smoke mitigation techniques used for this Proposed Action are found in the Smoke Management Guide for Prescribed and Wildland Fire[7]. Some techniques that would be used, but not inclusive are: burning when fuel moisture is high in large woody fuels, rapid mop-up, aerial/mass ignition, utilizing favorable meteorological conditions to avoid sensitive areas and utilizing piles to increase combustion efficiency. Alternatives to fire would be analyzed and used where appropriate. The public would be notified and updated on the ignition, progress and duration of smoke impacts caused by prescribed fire or fire use. Daily evaluations are made to determine that the fire is within prescription. Unwanted or unexpected potential serious smoke impacts would be cause to stop a prescribed burn or suppress a wildland fire use.

**Monitoring:**
Smoke from prescribed fire and Wildland Fire Use would be monitored. All Burn Plans and Wildland Fire Implementation Plans would contain a monitoring plan. Monitoring can consist of visually tracking smoke plumes by persons on the ground or in aircraft or installing PM10/PM2.5 particulate monitors at sensitive receptors.

**No Action:**
The No Action alternative in which all fire is suppressed and no fires are managed or prescribed is just the action that has lead to the problems that the Fire Management Plan is trying to correct. This alternative will reduce emissions or not add new emissions to the airshed in the short term but because of the abnormal fuel loadings, new ignitions have more potential to get large producing more emissions in the long term. Recent fire seasons, 2000 and 2002 have dramatically shown us how wildfire emissions can be high, long duration and potentially detrimental to public health and welfare.

**Name of specialist:** Marcus D. Schmidt
Smoke Management Specialist
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## CRITICAL ELEMENT - CULTURAL RESOURCES

**Affected Environment:**
Evidence exists for human occupation in the SLV along the Rio Grande River drainage basin and mountains from Paleo-Indian through Historic periods, a time span of more than 12,000 years. The region may not have been extensively or intensively occupied during all time periods, since

[7] Smoke Management Guide for Prescribed and Wildand Fire; 2001 Edition; Chapter 8.

aboriginal populations fluctuate principally in response to changing environmental conditions. However, aboriginal people never abandoned the area until 1882, when the Ute tribes were removed from the area to reservations. Despite the fluctuations in populations and usage of any one area, the aboriginal inhabitants of the SLV, have generally pursued an archaic subsistence pattern consisting of broad-spectrum hunting and gathering and seasonal transhumance. No sedentary horticultural subsistence habitation sites have been identified in the area. Based upon diagnostic artifact assemblages, it is presumed that these Formative groups, such as the Fremont, were at least hunting in the area, as well as trading with the local inhabitants. In general, radiocarbon dates indicate a general increase in occupation frequency from about 7000 B.C. until around 800 A.D. Four periods of possible higher frequency of occupation occurred at about 5100 B.C., 3800 B.C., 2000 B.C., and A.D. 800.

Historic Euro-American occupation began in the late 1800s and was generally well established by the early 1900s. Sheep and cattle operations dominated the early Anglo use of the area along with minor mining operations, logging, and the railroads. These types of utilization continue today but, is rapidly being replaced by increasing recreational activities and urbanization associated with ski areas, rafting, hiking/bicycling trails, and motor vehicular uses.

Cultural properties that could be potentially affected by fire include: any structure composed of tree limbs, logs, or lumber whether historic or prehistoric; rock art; rock shelters; open prehistoric camps; historic bridges; transportation devices.

Of the known historic properties and places in the San Luis Valley that may be affected by BLM actions, six are identified as potentially eligible for inclusion in the National Register of Historic Places. These sites are: La Garita Wagon Ruts, the Poncha Pass Rail line, Villa Grove-Orient Railroad Bed, Ute Pass Road, Cumbres and Toltec Scenic Railroad near Antonito, Colorado, and Pike Stockade east of La Jara, Colorado. These sites are located whole or in part on BLM administered lands.

**Environmental Consequences and Mitigation:**

Allowing wildland fires to burn may put increased numbers of cultural resources at risk for loss than might otherwise be threatened by more aggressive fire suppression. Fast moving low intensity wildland fires may cause structures to be impacted or destroyed; surface artifacts to be discolored or show signs of heat crazing; and subsurface remains, if any will not be substantially effected. Rehabilitating burned areas, control lines, and suppression equipment trails may cause additional displacement and breakage of surface artifacts. Limiting off road travel and mechanized line construction greatly reduces impacts to surface artifacts and features.

Cultural resources that are particularly subject to fire damage include:

Historic sites with standing, or down wooden structures or other flammable features

- Prehistoric sites with flammable architectural elements and other flammable features (i.e., wickiups, platform trees, game traps, cabins, and homesteads)

- Prehistoric artifact scatters located in potentially unstable geomorphological settings
- Historic and prehistoric sites with the potential for hearths and datable charcoal or other fire sensitive deposits
- Aspen tree art
- Traditional cultural properties and sacred sites
- Rock shelters and Rock art sites (heat causes rock spalls)
- Cultural landscapes and Historic districts
- Peeled trees (specifically in Ponderosa pine forests)

Cultural resources that are of lower risk to fire damage include:

- Prehistoric and historic sites with deeply buried cultural deposits
- Prehistoric and historic sites with non-flammable surface features, i.e., cement foundations or open lithic scatters
- Historic earthworks
- Sites officially determined to be Not Eligible for listing on the National Register of Historic Places

**Proposed Action:**
Heritage resources in the SLV will likely be impacted by the proposed action due to the increase in acres burned yearly. However, these impacts can be greatly reduced to cultural properties by: limiting off road travel and mechanized line construction; identifying known resources with highest values at risk (i.e., wickiups, traps, cabins, and homesteads) and protecting them with fuel breaks and hazardous fuel reductions where feasible; protecting all known resources to the extent possible without compromising fire fighter safety; inventorying fire line construction in sensitive area whenever possible; avoiding placement of control line, base camps, and support facilities within site boundaries; inventorying all ground disturbing rehabilitation activities and use non-ground disturbing techniques within known and newly identified site boundaries; and utilizing resource advisors on large wildland fires. Areas with a high potential for unknown cultural sites and significant cultural properties have been identified and management strategies have been written into the plan to protect these resources.

All fire activities within the SLV would be conducted in accordance with existing laws which provide for the protection of prehistoric and historic heritage resources under both the Proposed Action and the Alternative A (No Action). Specifically, all fire management activities would continue to be guided by any National Historic Preservation Act National Programmatic Agreement and the Colorado Protocol between the BLM and State Historic Preservation Officer, Advisory Council of Historic Preservation, and Forest Service.

All wildland fires within Category A will be suppressed to the fullest extent possible with no prescribed burns, unless public or firefighter safety is under immediate threat. Therefore, there is a very limited potential for cultural property damage. All heritage sites will be protected under this category.

Under Category B, known heritage sites and values would be managed and protected by full suppression of wildland fires. Additional suppression constraints have been identified in the FMP for these areas or sites, specifying that fire lines would be place at a sufficient distance so as not to visibly affect the setting, integrity, or sub-surface cultural deposits.

Areas designated as Category C, which have a high potential for unknown standing structures, rock art, or rock shelters, would require some measure of protection. Although known sites and potential areas are identified on the planning and cultural maps, many other areas may include fragile standing resources, and rock or aspen art. Wildland fires would require that the resource advisor be aware of potential cultural properties and have contacted the field archaeologist to help develop a response strategy where heritage resources are threatened. Discovered heritage resources that have wooden structures, of any kind, should be upgraded to a Category B status, and the fire suppressed, as wildland fires can cause irreparable damage to these resources.

Additionally all prescribed burns, mechanical, or chemical treatments would, regardless of the Category, require a cultural resource inventory prior to initiating the treatment. Individual, project specific requirements for protection of heritage resources would also be developed for each EA.

Although the FMP would slightly increase the potential for impact to cultural resources, due to the increased use of managed fires, this alternative would provide the greatest management flexibility in using fire to achieve resource and landscape objectives in a timely fashion. Therefore, the cumulative impact would be positive overall by reducing fuel loads and lowering the risk of large catastrophic wildland fires that could result in permanent damage or the destruction of the heritage resources.

**No Action:**
Under the No Action Alternative, aggressive fire suppression would continue to limit the overall threat to heritage resources from fire, but sites would continue to be impacted by wildland fires. Hazardous fuel build up would continue to occur, increasing the likelihood of large catastrophic wildland fires that would pose greater threats to the resource. Sites would be under slightly greater threat from control line construction and off road use of suppression equipment. However, some impacts would be long term and irretrievable. One long-term negative impact of this alternative to cultural resources would be from the increased risk of large, catastrophic wildland fires. There would be also be secondary effects from increased potential for erosion due to the loss of ground cover and vegetative overstory, which protect the resource values. Even though protection of the resources is a priority by law, areas of concern have not been properly identified and mitigation measures have not been written into the FMP for the protection of cultural properties.

Name of specialist: Bill B. Wyatt
Archeologist, Front Range Fuels Team
Kremmling Field Office

## CRITICAL ELEMENT - FLOODPLAINS, RIPARIAN VEGETATION, AND WETLANDS

**Affected Environment:**
There are approximately 66 miles of perennial, ephemeral, and intermittent streams that support riparian vegetation in the La Jara and Saguache Field Offices. Including springs and seeps, it is estimated that there is 3500 acres of riparian vegetation on public lands within the Field Offices.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
This analysis will focus on the impacts to riparian areas in the C and D zones since these are the only areas that allow varied wildland fire suppression responses that may affect riparian areas. Since wildland fires would be aggressively suppressed in A and B zones, impacts to riparian areas within these zones would be similar to those discussed under Alternative A. Restrictions and fire rehabilitation actions are designed to minimize or eliminate impacts to riparian vegetation and would be addressed in site-specific environmental analysis for vegetation treatments. Therefore, except where specific treatments are designed to control or manage vegetation within riparian areas, adverse impacts to riparian zones are expected to be minimal. For these reasons, impacts to riparian zones from vegetation treatments would not be discussed in this impact analysis.

Wildland fire suppression strategy in the C and D zones is expected to have minimal direct impact to riparian vegetation. Riparian areas are unlikely to burn as a result of natural ignition because of their position on the landscape and due to the high live fuel moisture content that riparian vegetation typically has. In the remote chance that riparian vegetation does burn, these are typically resilient systems and would be expected to recover rapidly after a fire. The return to the vegetation condition that existed prior to disturbance would vary considerably depending upon the riparian vegetation type. For example, riparian vegetation that consisted of mature cottonwood trees could take hundreds of years before conditions returned to what existed prior to fire. Willow communities could take five to 10 years, and riparian grass/forb communities would take one to two years. Again, the chance of riparian vegetation burning to any consequential degree is remote.

Since more upland area vegetation should burn on a typical year in the C and D zones, indirect impacts to riparian vegetation could result. There might be short-term, localized increases in runoff and sedimentation into the stream channels and riparian zones. In the long-term, positive impacts to riparian areas should result. In most burn areas, percent ground cover of vegetation would be greater than what existed prior to the burn. This would result in an increase in water infiltration, a corresponding reduction in erosive runoff within watersheds, and a reduction of within-channel erosion. Finally, as fuel continuity is reduced overall as a result of the FMP, it would reduce the likelihood of catastrophic wildland fires, which could cause damage to riparian systems by destroying the vegetation and causing sedimentation in channels.

**No Action:**
Under current fire management policy, direct impacts to riparian vegetation and wetlands would be minor since fire occurrence within these areas is infrequent. Over the long-term, fuels and fuel continuity would continue to increase which would increase the chance of catastrophic fire. Catastrophic fire has the potential to cause consequential damage to riparian zones and channel morphology. In addition, as woody vegetation increasing dominates the landscape, the flow in some streams may be further reduced which would reduce the vigor and amount of associated riparian vegetation.

Name of specialist: Mike Cassell
Natural Resource Specialist
LaJara Field Office

## CRITICAL ELEMENT - NATIVE AMERICAN RELIGIOUS CONCERNS

**Affected Environment:**
This area of Colorado was once part of the Ute tribe homeland and as such there are sites, places, and objects that have heritage value beyond their historical value. There are also sacred sites, places, and objects that have religious or traditional value to the Native American tribes. These areas/objects involve tribal beliefs and behaviors, generally transmitted across generation, that are necessary to perpetuate tribal cultures. Traditional values generally, involve cultural practices so interrelated with religious activities that they are not totally separable from subsistence, family life, or other cultural features. These properties/objects must also be protected based upon Federal laws such as the Archaeological and Historic Preservation Act, Native American Graves Repatriation Act, and Native American Religious Freedom Act.

The types of sites/artifacts with religious or traditional cultural properties potentially affected by fire include: wickiups and other brush structures; eagle traps; corrals; tree platforms; peeled or scared trees; hunting blinds; drying racks; game drives and traps; rock and tree art; and special plant or mineral gathering areas.

Even though areas with a high potential for these resources have been identified on the FMP, there is always the chance for additional unknown cultural properties. This is particularly true in pinyon-juniper forests near a water source, near caves, cliffs, or on expansive view areas. Ponderosa pine forests are also potential areas for scarred or peeled trees, as are aspen forests for tree art.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Same as for Cultural Resources.

**No Action:**
Same as for Cultural Resources.

Name of specialist: Bill B. Wyatt
Archeologist, Front Range Fuels Team
Kremmling Field Office

## CRITICAL ELEMENT - PRIME AND UNIQUE FARMLANDS

**Affected Environment:**
Prime Farmland is land that has the best combination of physical and chemical characteristics, for producing food, feed fiber and oilseed crops and is also available for these uses. Unique Farmland is land other than Prime Farmland that is used for the production of specific high value food and fiber crops. The Natural Resource Conservation Service (NRCS) has the responsibility for designating lands as Prime or Unique Farmlands.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
No land within the SLV area has been designated as Prime and/or Unique Farmland and, therefore, there would be no impacts from implementation of either alternative on Prime and Unique Farmlands within the Field Offices area. It is also anticipated that high intensity precipitation events on recently burned watersheds would not result in debris flows and sediments loads large enough to affect Prime and Unique Farmlands downstream.

**No Action:**

No affect.

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Monte Vista Front Range Detached Center Office

## CRITICAL ELEMENT - THREATENED, ENDANGERED, AND SENSITIVE SPECIES

**Affected Environment:**
This Environmental Assessment (EA) analyzes the effects of implementing the ***San Luis Valley Fire and Fuels Management Plan*** on threatened, endangered, proposed and candidate species, and on species tending toward listing. Effects to these species are analyzed in terms of the effects of implementing the proposed action FMP versus the current management of suppressing all wild land fires. The FMP would update and amend the fire portions of the San Luis Resource Area Resource Management Plan dated 1991, and would set the foundation for fire related activities within the SLV Bureau of Land Management boundaries, and would guide firefighters in suppression related strategies.

The following species may be found on lands managed by the BLM at certain times of the year and require special management attention under the Endangered Species Act (ESA) of 1973, as amended. While sensitive species are not federally protected, it is BLM policy to manage these species to prevent future listing, thereby affording them the same level of protection in BLM programs as Threatened and Endangered (T&E) species. Only those species that may be affected by the implementation of the FMP will be addressed in this section. Federally listed or candidate species not addressed include: black-footed ferret (FE), boreal toad (FC), peregrine falcon (delisted) and Mexican spotted owl (FE). The species not addressed in this document either do not occur on BLM lands or are outside any areas where wildfire or prescribed fire occur and or are found in habitats that are unlikely to burn. Further justification for omission of these species is outlined in a species revision list that was submitted to the U.S. Fish and Wildlife Service (FWS) on 23 July 2002 for concurrence and is listed below for further clarification.

**Whooping crane, (*Grus Americana):***

The whooping crane follows a similar pattern of migration as the Sandhill crane (Grus canadensis) and normally arrives in the San Luis Valley around late February early March. The Monte Vista Crane Festival honors these birds and crane fanciers can see the whooping crane as well as thousands of sandhill cranes at the Monte Vista National Wildlife Refuge.

**Black-footed ferret, (*Mustela nigripes):***

Despite considerable search time in western Colorado and on the eastern plains by various personnel from state and federal agencies, no live ferrets have been found, although several skulls have been recovered statewide, one being of the southern SLV Field Offices [E. Anderson et al. (1986), Armstrong (1972), and Torres (1973]). This species is considered to be extirpated from the entire San Luis valley area because of the limited habitat that currently exists for ferrets. Black-footed ferrets have co-evolved with prairie dogs; their ranges and habitats closely overlap (Hall 1981; Fagerston 1987b). Vic Keenan who worked on the "Black footed Ferret Investigation Report" did the most recent surveys in the fall season of 1974 and another survey was conducted in the summer season of 1988 in collaboration with the San Luis Valley Prairie Dog Inventory. This study was done by Gary D. Patton during the summer of 1988 on BLM administered properties in the San Luis Valley. The objective was to inventory and map prairie dog colonies in historic black-footed ferret habitat. This inventory was needed to evaluate sites for potential reintroduction of captive reared black-footed ferrets on public lands in Colorado. The results of this survey provided confirmation of two active prairie dog colonies but both were less than 25 acres. Numerous prairie dog mounds were visible but most were filled with debris or taken over by other ground squirrels or kangaroo rats. None of the burrows showed any indication of recent activity, therefore, the final results provided insufficient population sizes of prairie dogs to support black-footed ferrets (Patton 1988).

**Boreal Toad, *(Bufo boreas boreas)***

There are several established boreal toad sightings on the Rio Grande National Forest. A majority of the recorded sightings have been on the Divide District (Lake Humphrey's-98; Trout Lake- 71, 96; Trout Creek-96, 01; Love Lake area-92, 94, 01; Upper Red Mtn.Creek-91; Jump Creek-97, 98, 01; Jump Lake-92, and Upper Cliff Creek-93, 96, 01). The Saguache District has two reports at Miners Creek in 95, 98; and the Conejos District with one in the Cumbres Pass area in 1979. The Forest

has several historic breeding sights within or surrounding the Weminuche Wilderness area. However, BLM surveys conducted on Blanca Wetlands in the summer of 2002 provided no evidence of *Bufo boreas*. Distribution of the toad is restricted to areas with suitable breeding habitat in lodgepole pine, spruce-fir forests, and alpine meadow areas. It is commonly found in shallow water or among sedges and shrubby willows where the microclimate is moist (Hammerson 1982). Breeding habitat includes lakes, marshes, ponds, bogs, and wet meadows with sunny exposures and quiet, shallow water (Hammerson 1982; Nesler and Goettl 1994). The BLM land in the San Luis Valley does not possess this type of habitat and potential areas near the Forest Service border are marginal at best. While few individuals have been reported from historic sites on the Rio Grande NF in recent years, the probability of their persistence in the area remains hopeful.

**Peregrine Falcon, (*Falco peregrinus)*:**
See section on Peregrine below for justification of determination.

**Mexican Spotted Owl, (*Strix occidentalis lucida)*:**
See section on Mexican spotted owl below for justification of determination.

Those species that may be affected by fire activities are listed below.

| | |
|---|---|
| *1. Canada Lynx* | *Threatened* |
| *2. Bald Eagle* | *Threatened* |
| *3. Southwestern Willow Flycatcher* | *Endangered* |
| *4. Mountain Plover* | *Proposed Threatened* |
| *5. Gunnison Sage Grouse* | *Candidate* |
| *6 Yellow-billed Cuckoo* | *Candidate* |

## Species Descriptions, Habitat, Evaluations, and Determinations

## Canada Lynx (*Lynx canadensis*)

**Affected habitat description and status within the planning area:**
This summary of lynx habitat is derived from information compiled in the Canada Lynx Conservation Assessment and Strategy (Lynx Biology Team 2000). Lynx occur in mesic coniferous forests that have cold, snowy winters that provide a prey base of snowshoe hare (Ruggiero et al 2000b). Lynx occupy boreal, sub-boreal, and western montane forests (Lynx Biology Team 2000). In the western United States, they are associated with lodgepole pine; sub alpine fir, Engelmann spruce, and aspen cover types as well as sub-alpine fir habitat types. Snowshoe hare are the primary prey of lynx (Koehler and Aubrey 1994), but red squirrels are an important alternative prey species (Koehler 1990, Lynx Biology Team 2000). (Engelmann spruce is mentioned throughout this section merely as a description of a forest type that provides viable habitat for Canada lynx and is referred to as a habitat description only. No fuel reduction activities within this forest type would be associated with this plan).

Primary lynx habitat in the Southern Rocky Mountain region is found in the sub alpine and upper

montane forest zone, roughly between 8,000 and 12,000 feet elevation (Lynx Biology Team 2000). Lower montane forests are likely to be important for movement and dispersal.

Foraging habitat for lynx in the Southern Rocky Mountain region include sub-alpine fir, lodge-pole pine, and Engelmann spruce cover types with abundant prey species. Densely regenerating coniferous forests typically produce the highest densities of snowshoe hares (Koehler 1990, Koehler et al. 1979, Weaver 1993, Koehler and Aubry 1994). Conifer-aspen forests with dense regeneration or with an extensive shrub and woody debris under-story may be important for snowshoe hare or other prey species (Lynx Biology Team 2000). Extensive stands of pure aspen are likely poor lynx foraging habitat, unless intermixed with spruce-fir or young lodge-pole pine stands. Regenerating burns are often quite productive for prey species due to the multiple age classes, shrub layer, dense herbaceous layer, and extensive downed woody debris of mixed deciduous/conifer forests. Sagebrush communities at higher elevations and in proximity to sub alpine and upper montane forests may be important foraging areas for lynx due to high prey abundance (Squires and Laurion 2000). Sagebrush communities also serve as movement corridors for lynx. Other habitats that may be important for foraging include large and medium willow carrs, beaver pond complexes, and shrub dominated riparian communities (Lynx Biology Team 2000).

The common component of den sites appears to be large woody debris, either downed logs or root wads (Koehler 1990, Mowat et al. 2000, Squires and Laurion 2000). Stand structure appears to be more important than forest cover type (Mowat et al. 2000). Denning habitat in the southern Rockies is likely to occur in late-successional spruce-fir forests with substantial amounts of large woody debris, primarily on north aspects (Lynx Biology Team 2000). For denning habitat to be functional it must be in close proximity to large expanses of foraging habitat.

The Canada lynx has recently been listed as a federally threatened species by the USFWS. Recent reintroduction of lynx in Colorado has been relatively successful and lynx are forming home ranges in suitable habitats. A great majority of the BLM land covered by the FMP is not considered suitable lynx habitat. Very few areas contain the necessary habitat: high elevation conifer and aspen communities with mature Engelmann spruce, sub-alpine fir, Douglas fir, blue spruce and aspen. Public lands in the San Luis Valley typically lie adjacent to and down slope from both private and National Forest Lands. Lynx have evolved with an ecosystem influenced by fire. Snowshoe hare, a primary prey source, thrive in areas maintained by fires (Koehler and Aubrey 1994).

The mapping effort completed by the USFS and BLM indicate one linkage zone that includes BLM lands in the area north of the town of Villa Grove south of the summit of Poncha Pass. This area is intermixed with sagebrush, aspen and mixed conifer on both sides of Hwy 285 and is considered a migratory corridor between the Sangre De Cristo Wilderness and Cochetopa Hills Lynx Analysis Unit (LAU). Public lands along the North Pass road off Hwy 114 north west of Saguache are also considered part of the Cochetopa Hills Lynx migratory corridor. The Trickle Mountain Area of Critical Environmental Concern lies in this corridor, which is also adjacent to National Forest lands in this area and any prescribed methods of fuels reduction would be done

in concordance with the Rio Grande NF to maintain proper 30% LAU criteria (as per the LCAS 2nd edition 2000). Future combined projects would adhere to natural fire regimes that favor snowshoe hare habitat.

**Analysis of effects:**
Fire and vegetative treatments would benefit lynx in the long-term. The use of these tools to reduce hazardous fuels helps minimize the potential for large catastrophic fires and help maintain and improve the diversity of habitats important for lynx and lynx prey species. Suppression related impacts include the potential cutting of fire line and use of large equipment within lynx habitat. This could result in habitat fragmentation, loss of vegetative cover, and the displacement of individual lynx from established home ranges. In addition, this could aid in the movement/encroachment of competitive species such as coyote, mountain lion, and bobcat into lynx habitat, particularly in the winter. Vegetation treatments could result in short-term impacts related to loss of vegetation and time lags associated with regeneration of key plant species including aspen, lodgepole pine, Douglas-fir, and spruce.

To reduce impacts to lynx from wild land fire suppression activities, the following mitigation measures should be followed:

- Fire line should be constructed outside of important habitats such as denning areas, while attempting to protect these key habitats.
- Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.
- Minimize construction to temporary roads and machine fire lines to the extent possible during fire suppression activities.
- When managing wildland fire, minimize creation of permanent travel ways that could facilitate increased access by competitors and humans.
- All fire line constructed within lynx habitats should be obliterated and reclaimed in order to deter future human and competitive species use of these “roads/trails”.
- All vegetation treatments should be planned in a manner consistent with the goals and objectives outlined in the Canada Lynx Conservation Assessment and Strategy (2000).
- Planning of treatments should ensure that no more than 30% of lynx habitat within a LAU would be in unsuitable condition at any time. If the 30% threshold is already exceeded then no further reduction shall occur as a result of vegetation management.

**Determination of effects:**
The implementation of the FMP would result in some short-term impacts to lynx. Any increase in fire within potential Canada lynx habitat may result in some loss of forested habitat for this species. However, it would result in a potential improvement in available habitat for the primary prey species, snowshoe hare. All other BLM lands in the area are small tracts that lie adjacent to National Forest lands and do not serve as linkage corridors. There would be no permanent alteration or loss of habitat as a result of the FMP and any activities associated with this plan would enhance unsuitable Lynx habitat to possible suitable habitat. In addition to that, there would be little or no potential to impact lynx migration corridors from the Proposed Action. Natural fires have historically been very rare in the one travel corridor within this assessment area and any use of prescribed fire or mechanical fuels reduction would be in compliance with the current LCAS standards and addressed further in a site specific EA or BA/BE as future

projects occur. **Therefore, it is the determination that the implementation of the FMP would have a "may affect, not likely to adversely affect on the Canada lynx".**

## Bald Eagle (*Haliaeetus leucocephalus*)

**Affected habitat description and status within the planning area:**
Colorado populations of bald eagles typically nest in large cottonwood trees along rivers and reservoirs. Eagle densities reach their peak during the winter months when migrants arrive from the north. The bald eagle is a common winter (December through February) visitor to the Rio Grande Valley. One to two hundred can be found throughout the entire San Luis Valley each year during this time. A portion of the BLM Blanca Wetlands area is managed for bald eagle winter use and the newly acquired McIntyre/Simpson property has had documentation of up to 70 eagles roosting in Section 8 along the Conejos River. These birds could be expected to forage on public lands throughout the San Luis Valley. However, use by eagles in the northern portion of the SLV is so incidental that preferred or critical areas, such as roosting or feeding sites, have not been identified. In general, eagles use the cottonwood riparian areas along stream courses and around reservoirs during the winter months.

**Analysis of effects:**
Bald eagles are not likely to be directly impacted by any activity proposed in the FMP. Fire frequency during the December to April period is very low and it is unlikely to change as a result of the proposed action. Habitat type conversions, such as those that may occur in piñon-juniper or sagebrush communities, would not affect the usability of those sites for bald eagles. There would be no fuels reduction activities associated with this plan in riparian areas unless the project goals are to restore decadent stands of willow-cottonwood. The only roost areas for wintering bald eagles in the planning area occur along the major rivers such as the Rio Grande, Conejos River and Alamosa River. Wildfires along these watercourses are extremely rare. If bald eagle roost sites are threatened by fire, actions would be implemented to suppress the fire. Section 7 consultation may be required in these areas.

Day use roost trees are scattered throughout the planning area, and the loss of a few of these to fire annually would not have a detectible effect on this species. In the event of prescribed fires, or a possible wildfire, suppression activities would be managed to minimize effects on this species by avoiding known concentration areas (during the December 1 to April 30 period) with ground and aerial equipment and personnel. In the event that new bald eagle nests are established in the area, a one-half mile buffer zone around each nest would serve to exclude suppression equipment and activities during the November 15 to July 31 period. There would be no effect from suppression activities but tree nests would be vulnerable if fires started within the buffer zone.

**Determination of effects:**
The implementation of the FMP would have no measurable affects on numbers, distribution or reproduction of the species and there is no potential for short-term impacts. Treatments would not impact foraging areas or winter roost sites. From December 15 through April 30, no fire

suppression activities would occur within 0.5 mile of communal night roosts for bald eagles, and fire related aircraft activities would not occur below 500' AGL within one mile of communal roosts. In addition, no fire suppression activities would occur within 0.5 mile of bald eagle nests, and aircraft use would be above 500' AGL within the buffer zone. **Therefore, it is the determination that the implementation of the FMP would have a "may affect, not likely to adversely affect" on the bald eagle.**

## Southwestern Willow Flycatcher *(Empidonax traillii extimus)*

**Affected habitat description and status within the planning area:**
The southwestern willow flycatcher (E.t. *extimus*), SWWFL, is an endangered species currently known to breed at only about 75 sites in riparian areas throughout the southwest. The known breeding populations are estimated at between 300 and 500 pairs. The flycatcher nests only in dense riparian vegetation associated with streams, rivers, lakes, springs, and other watercourses and wetlands. The SWWFL is one of five subspecies of the willow flycatcher and are extremely difficult to identify from other willow flycatchers. They are small birds about 5 ¾ inches long with brownish-olive upper parts, whitish throats, pale olive breasts and yellowish bellies. Although the various subspecies appear similar in appearance, they are quite different in biology and habitat use. Historically, the southwestern willow flycatcher was associated with southwestern wetlands, particularly the cottonwood-willow riparian habitats in the southwestern United States-California, Nevada, Utah, Arizona, New Mexico, Texas, southwestern Colorado, and possibly Mexico. The San Luis Valley provides potential habitat for SWWFLs in a newly acquired property. This property in the southern San Luis Valley is in the early stages of development and one activity plan for this area would include local recommendations on management for the southwestern willow flycatcher. Birds in this area are considered to be SWWFLs due to recent genetics work and current information suggests that Colorado lies on the northern fringe of the range for SWWFLs.

**Analysis of effects:**
The Federal listing rule stated the primary causes for upwards of 90% habitat loses or degradation are caused by urban or agricultural development to include: water diversions and impoundment, stream canalization, livestock grazing, invasion of exotic tamarisk or salt cedar, off road vehicle use, other recreational uses and the hydrological changes resulting from these and other land uses. Nest parasitism from brown cowbirds (cowbirds laying their eggs in the nests of other bird species and in some cases even the removing of host species eggs) further exacerbates the problem.

Southwestern willow flycatchers occupy habitat that is not traditionally susceptible to wildfire. As presented in the FMP, the desired size ranges for fire and for differing vegetation communities appear compatible with the protection and continued rehabilitation goals for all SLV Field Office stream and aquatic resources as spelled out in BLM policies and agency mission goals. Every successful controlled fire, prescribed natural fire, or upland fuels treatment project that reduces the likelihood of catastrophic fire would likely benefit stream resources in future years. Acceptance of the FMP is therefore preferred because of the benefits to long-term forest and upland health. In addition, the FMP allows for further analysis, which would include

evaluation of mechanical treatments to help protect resources where as catastrophic wildfire is largely uncontrolled.

**Determinations of effects:**
The implementation of the FMP would have no adverse affect to southwestern willow flycatcher populations, breeding or foraging areas. Natural fires in the riparian habitats in San Luis Valley are extremely rare. All activity within or adjacent to riparian areas would address possible affects to SWWFLs when prescribed fire or mechanical treatments are used for decadent/degraded habitat improvement objectives. It is anticipated that no more than 400 - 600 acres of public land may be burned each year by BLM and several potential habitat sites for SWWFLs are also located in the same area where bald eagles occupy. The criteria that applies to eagles in reference to buffer zones would also apply to SWWFLs. To avoid impacts to nests or chicks prescribed burns would be done before April 20 or after August 15. As each area is defined by polygons and specific criteria that apply to not only T&E species but geographic areas as well, each project would be analyzed in detail in the following Environmental Analysis for the San Luis Valley. **Therefore, it is the determination that the implementation of the FMP "may affect, not likely to adversely affect" southwest willow flycatcher.**

## Mountain Plover (*Charadrius montanus*):

**Affected habitat description and status within the planning area:**
On May 3, 1993, the USFWS listed the mountain plover as a Candidate Species under the ESA. On February 16, 1999, a notice was published in the Federal Register proposing to list the mountain plover as a Threatened species. In summarizing reasons for the proposed listing, the USFWS stated:

> "Breeding Bird Survey trends analyzed for the period 1966 through 1996 document a continuous decline of 2.7 percent annually for this species, the highest of all endemic grassland species. Between 1966 and 1991, the continental population of the mountain plover declined an estimated 63 percent. The current total population is estimated to be between 8,000 and 10,000 individuals. Conversion of grassland habitat, agricultural practices, management of domestic livestock, and decline of native herbivores are factors that likely have contributed to the mountain plover's decline." (Federal Register 1999).

Mountain Plovers are designated as a globally imperiled species (G2/S2B) by the Colorado Natural Heritage Program (CNHP), a sensitive species by the U.S. Forest Service and the BLM, and as a Species of Special Concern by the Colorado Division of Wildlife.

It is generally believed that mountain plovers are rare in the San Luis Valley. According to the Colorado Breeding Bird Atlas, 1998, the breeding evidence shows confirmed breeding in two locations, one in the southwest corner of Costilla County and another in the southeast corner of Conejos County. Traditionally, these birds occupy stunted shrub lands of widely spaced dwarf rabbit brush, but in the San Luis Valley they utilize habitat with limey soils containing winter fat, prickly pear, blue gramma grass, rabbit brush, pingue, and some yucca in the rockier landscapes. Mountain Plovers generally have a high affinity for overgrazed areas with bare ground most

commonly associated with livestock corrals, camps and prairie dog towns.

It is unknown whether documentation of mountain plovers occurred in the San Luis Valley prior to the early eighties. A 1983 report confirmed three mountain plovers north of Capulin Colorado, of displaying territorial flight. This area has also been a breeding ground for mountain plovers. Plovers are seen regularly in this area each year but are considered unusual breeders in other isolated parts of the San Luis Valley. Mountain plovers were sighted on BLM public lands near this area during the summer season of 2000. Three separate sightings by BLM employees and community birders were confirmed during the 2000 field season. Breeding, territorial, feeding, nesting, and flight behaviors were all observed. The first sighting was on Colorado State Lands, and the next three observations were on BLM administered land. Other reports on BLM land in the SLV include an area on the north end of the Valley near the town of Saguache. In 1991 John Rawinski (soil scientist with the Rio Grande National Forest and birder extraordinaire) documented 3 adults in Findley Gulch in territorial flight display. John has been observing birds in the San Luis Valley consistently for 20 years. He has documented his observations and others in a summarized journal called "Birds of the Rio Grande National Forest and San Luis Valley Area". This journal is a valuable resource to have when tracking the history of bird populations in the SLV.

**Analysis of effects:**
Fire combined with lighter grazing achieves a vegetative structure similar to that produced by heavy grazing alone. In 1996 and 1997, the Pawnee National Grassland burned 640 acres prior to mountain plover arrival. These spring burns attracted plover, with 15-40 birds observed in each section burned prior to nesting. Higher nesting densities were recorded after previously recorded burns on the same sites. These densities were lower than densities reported from burns on the Comanche and Cimarron National Grasslands. In South Park, BLM burned 475 acres on April 18, 2001. Four plovers were observed in the burned area by that same afternoon. Twelve birds were seen in the burned area on the following day. Ten mountain plover nests were located in this burned pasture during the 2001 breeding season, and no fewer than two additional broods (from nests that were not found) were also observed. Of those nests found, 70% were successful in hatching at least one young (compared to 50% nest success for South Park in general in 2001). In 2000, prior to the burn, two nests were found in the same pasture, one of which hatched at least one young. The burn was used frequently in the evening for foraging. Up to ten adults were commonly observed foraging in loose flocks at dusk during active nesting. Distance sampling in this area in 2000 yielded 13 detections, whereas the same area (now burned) in 2001 yielded 32 detections. Currently there are no studies in the San Luis Valley on fire effects to mountain plover and their habitat but the studies mentioned above are predicted to be similar for the monitoring of this area upon completion of the SLV FMP.

**Determinations of effects:**
The implementation of the FMP would have no adverse affect to mountain plover populations, breeding or foraging areas. Natural fires in the grassland habitats in San Luis Valley are extremely rare. If prescribed fire is used in mountain plover habitat it would be for mountain plover habitat improvement objectives. It is anticipated that no more than 400 - 600 acres of public land may be burned each year by BLM. In the San Luis Valley, prescribed burns should

be done after snowmelt, but before April 1. Burns are more effective in areas larger than 100 acres. From the existing data from the South Park area it is obvious that prescribed burns would benefit mountain plovers. Wildfire, while infrequent in mountain plover habitat should be allowed to burn wherever possible except during the nesting period from April 1 thru July 15 . **Therefore, it is the determination that the implementation of the FMP would have a "may affect, not likely to adversely affect"on the mountain plover.**

## Gunnison Sage Grouse *(Centrocercus minimus)*

**Affected habitat description and status within the planning area*:***
The area used and potentially used by Gunnison sage grouse in the San Luis Valley is located on south Poncha Pass. This area is located in Saguache County directly south of the Chaffee County boundary. It is bounded on the east and west by the Rio Grande National Forest boundary and encompasses about 17,280 acres. About 11,520 acres are managed by the BLM, 640 acres by the Colorado State Land Board and 5,120 acres are privately owned. Less than 10,000 acres are presently used by sage grouse and the area that is used is on the east side of Highway 285 from Swidinski Creek south to the /LD Ranch headquarters. Most of the area is managed for private livestock grazing, wildlife, recreation and watershed values. The elevation varies from 8020 to 9020 and the vegetation is dominated by mountain big sagebrush (Artemisia tridentdata *vaseyana*), some black sagebrush (Artemisia *nova*), and gamble's oak (Quercus *gambelii*).

Sage grouse populations have decreased throughout their distribution in western North America (Connelly and Braun 1997, Braun 1998). These decreases have also been pronounced in Colorado (Braun 1995, 1998). In southwest Colorado and southeastern Utah, a new species of sage grouse, the Gunnison sage grouse (Cetrocercus minimus), has been described (Young et al, 2000) based on plumage, size (Hupp and Braun 1991), behavior (Young et al. 2000) and genetic differences (Kahn et al. 1999, Olyer-McCance et al. 1999). This small-bodied sage grouse historically occurred in at least 20 counties in southwestern Colorado as well as in Utah, New Mexico, and possibly Arizona. Presently it occurs in only two counties in southeastern Utah and six, possibly seven, counties in Colorado. Thus, there have been significant changes in its distribution and abundance.

The Gunnison sage grouse historically occupied suitable habitats in the San Luis Valley, Colorado based on early work of Rogers (1964). However, by the 1950's, all sage grouse were thought to have been extirpated in the San Luis Valley, especially the area south of Poncha Pass. This area was designated as possibly being suitable for reintroduction of sage grouse. In 1971 and 1972 the Colorado Division of Wildlife (CDOW) and the Bureau of Land Management (BLM) reintroduced Gunnison sage grouse at Poncha Pass. Records kept by Joe Cristo of the BLM indicated that in 1971 a total of 17 birds (12 males and 5 females) were transplanted from Gunnison to Poncha Pass. Records of the number and gender of birds transplanted in 1972 have not been found but the personal notes of one DOW employee indicate that up to 15 birds were transplanted in 1972 (C.E. Braun, pers. Commun.) An article about the transplant published in the Alamosa newspaper, The Valley Courier, dated 16 June 1971, states "a very small population of sage grouse at Poncha Pass may still exist". Unfortunately, due to lack of monitoring, it is not

known how successful the reintroduction was, but these birds have persisted to the present. Monitoring of the Poncha Pass population has been minimal and sporadic with lek surveys only first conducted in 1990.

In 1992, an effort to simplify hunting restrictions inadvertently opened the Poncha Pass area to sage grouse hunting. Personal communications with hunters and wing barrel data indicate that up to 30 sage grouse were harvested from the Poncha Pass population in 1992. An apparent decline in sage grouse numbers has been observed since 1992.

In April 1999, the CDOW and the BLM began a joint project to study the Gunnison sage grouse at Poncha Pass. This study was undertaken to estimate the number of Gunnison sage grouse inhabiting the area, provide insight into the habitats grouse use, and identify factors that may be limiting their population. Currently the sage grouse project is active and future transplants for 2003 are planned. The 2002 transplants were not a fruitful supplementation to the existing population because birds were not captured and released on Poncha Pass. The current estimation of Gunnison sage grouse is around 25 birds. Pepper Canterbury of the CDOW/BLM Sage Grouse Project, has been monitoring the existing population from the Gunnison area using radio telemetry and has reported that none of the birds apparently use the Rio Grande National Forest.

**Analysis of effects:**
Activities associated with prescribed burning and thinning treatments can directly affect the nesting, brood rearing and wintering through auditory or visual disturbance. This disturbance can disrupt activities such as breeding, feeding, and roosting. Smoke from prescribed fires during the breeding season can cause mortality of sage grouse (particularly young) by burning or by carbon monoxide poisoning. Adult and fledged young may be flushed from their nesting areas from prescribed burning activities. All of these activities, if they occur during the breeding season, may result in nest abandonment or reduced reproductive success.

This species evolved with fire and fire historically maintained the vegetative communities important for this species. Due to many years of fire suppression, habitats for this species have been reduced in quantity and quality. Many sagebrush stands are old and decadent with a poor herbaceous under story, and others have been invaded by tree species. The goals of managing sage grouse habitats are often focused on acquiring or maintaining an optimal balance of shrubs, forbs, and grasses at community and landscape levels. These goals are and should be analogous with restoring and or maintaining form, function, and process in sagebrush steppe habitats. When considering a sagebrush restoration plan or sage grouse habitat management plan, one must take into account landscape heterogeneity, site potential, site condition, and habitat needs of sage grouse during different segments of their life cycle: breeding, nesting, brood rearing, foraging, roosting, wintering etc.

There has been debate on the benefits of fire to enhance sage grouse habitat. Four factors determine the negative or positive outcome of fire on sage grouse habitat: (1) site potential, (2) site condition, (3) limiting functional plant group(s), and (4) pattern and/or size of the burn. Fire is a useful tool to enhance native perennial forbs and grasses, particularly in areas where sagebrush in abundant, a good population of native herbs are present, and exotic species are

limited. This often applies to mountain big sagebrush communities where shrub cover can exceed 35% and perennial forbs can increase 2 to 3 fold following fire (Pyle and Crawford 1996, EOARC data file). Fire can also enhance the nutrient quality of forbs especially protein content (McDowell 2000). Sage grouse have been reported to be attracted to burn areas during summer because insect population and the length of growing season for forbs increases, which are important for raising chicks (Klebenow and Beall 1977, Martin 1990). Small burns with adjacent sagebrush have also been used as leks but fire should not be used where sagebrush cover is the limiting factor or where the under story lacks perennial forbs, grasses and introduced annuals are present. (Wrobleski 1999). Currently there is one identified lek in the Decker Creek area (Nehring and Braun 2000). Until further information and research is obtained via monitoring of current populations this lek site would remain in its present status and no future prescribed methods of fuels reduction would be permitted within this area until we have more information concerning this fragile population.

**Determination of effects:**
The implementation of the FMP would not result in negative impacts to Gunnison sage grouse. It is unlikely that fire suppression activities within the limited area of inhabitance on Poncha Pass would impact Gunnison sage grouse. This fragile area would be delineated as an area of special concern and categorized as a "B" polygon within the FMP. Upon approval of the FMP, this area would be further analyzed to determine what mitigation measures are applicable and or necessary. Natural fires are rare in sage grouse habitat, as proven by the fire history for the area. Additionally, fires that do occur are small and do not significantly damage habitat (Dobkin 1995). **Therefore, it is the determination that the implementation of the FMP would have a "may affect, not likely to adversely affect on the Gunnison sage grouse".**

## Yellow-Billed Cuckoo *(Coccyzus americanus):*

**Affected habitat description and status within the planning area*:***
This species habitat consists of riparian cottonwood-willow galleries. This species historically occurred in portions of western Colorado, although this species was likely never common, and no individuals have been recorded or confirmed to nest on public lands located within the planning area (Kingery 1998, Rawinski 2002).

Past surveys have produced no evidence of their presence on BLM lands in the San Luis Valley. The most current documentation cites an unconfirmed bird at the Great Sand Dunes National Monument in 1984, one other unconfirmed sighting occurred on private property in Del Norte, Colorado in 1994 (Rawinski 2002). In general, their Colorado status mimics the rest of the continent- in the West nearly extirpated and in the East a once common species that has become uncommon to rare. Although still widespread, cuckoos in other area of the country seem to be declining. Ehrlich et al. (1992) cited three primary reasons for the declines: loss of riparian woodlands, prey scarcity (especially the loss of sphinx moth caterpillars to pesticides), and, in the west, drought; plus direct pesticide stress on breeding, migration, and wintering grounds.

**Analysis of effects:**

Implementation of the FMP should have short-term, but no permanent impacts to this species. Vegetation treatments in riparian areas would be for habitat improvement goals for yellow-billed cuckoo and other riparian obligate species. Although no western yellow-billed cuckoos are known to nest on BLM lands within the planning area, suitable habitat may be present along small, scattered portions of the Rio Grande, Conejos and Alamosa Rivers as well as suitably vegetated tributaries. However, no habitat has been defined for this species within the planning area.

There is the possibility that vegetative treatments, and suppression actions could directly impact this species. The use of fire retardant, and noise from heavy equipment in proximity to occupied habitats (should occupation ever occur) could have short-term, direct impacts to nesting birds and could impact nesting success and productivity. Fire, associated suppression activities, and vegetative treatments should have little indirect effect to this species.

In order to minimize potential impacts, both direct and indirect, to this species, the following minimization measures should be followed:

- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life.

**Determination of effects**:
The minimization measure would reduce adverse impacts to potential yellow-billed cuckoo habitat. No birds are known to nest within the planning area on BLM lands. There is the possibility that direct disturbance could occur via smoke, noise, and human presence should nesting ever occur within the planning area. Therefore, it is the determination that the SLV FMP may have short-term impacts but would not promote this species toward federal listing. The short-term impacts would be the result of long-term goals for habitat improvement and the recovery of this species. **Therefore, it is the determination that the implementation of the FMP would have "no effect" on the yellow-billed cuckoo".**

## Peregrine Falcon (*Falco peregrinus*):

**Affected habitat description and status within the planning area:**
Peregrine falcon habitat includes nesting and hunting sites, as well as migration and wintering areas. Typical nesting sites are cliffs more than 200 feet high that overlook water and permit extensive views of the surrounding area. Prey abundance and diversity provided by these situations are major factors in eyrie selection. Peregrines may travel up to 17 miles from nesting cliffs to hunting areas. Preferred hunting habitats include cropland, meadows, river bottoms, marshes and lakes that provide an abundance of avian prey. Birds are occasionally reported in Colorado during the winter, but most peregrines migrate to Central and South America.

Peregrine falcons in the San Luis Valley are typically found in the roughest, most rugged, inaccessible areas that consist of large canyon complexes with extensive rock outcrops. These areas are typically used during the nesting season but peregrines can also be found soaring around wetlands in search of food. Examples of both of these habitats within the FMP are

Trickle Mountain, a BLM ACEC and Blanca Wetlands. These BLM areas, as well as many other USDA Forest Service lands, have confirmed peregrine sightings.

**Analysis of effects:**
Peregrine falcons occupy habitats that are not susceptible to fire and the proposed action would not likely result in habitat changes that would directly impact this species. The reduction of woody communities like pinyon-juniper may increase hunting opportunities for peregrine falcons, that are open country species. Fire suppression activities, especially helicopter activity over and adjacent to the eyries, could result in the loss of annual nest production if young birds are ejected from the eyrie as a result of being startled by the aircraft. This is especially true for aircraft that approach the eyrie from behind the cliff so that the birds have no visual cue that the aircraft is coming.

Fire camps and other activities located too close to the active eyries could also cause abandonment of eyries or loss of annual production. Seasonal constraints (no aircraft related activity from March 1 through September 1) on fire suppression activities within one-half mile of known nest complexes would prevent impacts on this species. Fire-related aircraft activity within 500' AGL (measured from the top of the cliff), in the nest complex areas (including the buffer zones) would be precluded. **Therefore, it is the determination that the implementation of the FMP would have "no effect" on peregrine falcon.**

## Mexican Spotted Owl *(Strix occidentalis lucida):*

**Affected habitat description and status within the planning area:**
Mexican spotted owls (MSOs) breed sporadically and do not nest every year (Ganey 1988). In favorable years most of the population will nest, whereas, in other years only a small portion of pairs will nest successfully (Fletcher and Hollis 1994); reasons for this pattern are unknown.

MSO reproductive chronology varies somewhat across its range. In Colorado, courtship apparently begins in March with pairs roosting together during the day and calling to each other at dusk. Eggs are laid in early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female (Ganey 1988). The northern spotted owl incubates for approximately 30 days (Forsman et al. 1984) and it is assumed that the MSO incubates for a similar period (Ganey 1988). During incubation and the first half of the brooding period, the female leaves the nest only to defecate, regurgitate pellets, or to receive prey from the male, who does all or most of the foraging (Forsman et al. 1984, Ganey 1988). The eggs usually hatch in early May with the nestling owls generally fledging four to five weeks after hatching, then dispersing in mid September to early October (Ganey 1988).

The MSO was listed as a threatened species on April 15, 1993. Two primary reasons were cited for listing: historical alteration of its habitat as a result of timber management practices, specifically the use of even-aged silviculture, and secondly the threat of these practices continuing. The danger of catastrophic wildfire was cited as a potential threat for additional habitat loss. Riparian areas were noted as an area of concern.

The MSO currently occupies a broad geographic area but does not occur uniformly throughout its range. Instead, the owl occurs in disjunct localities that correspond to isolated mountain systems and canyons. In the United States, 91 percent of the owls known to exist between 1990 and 1993 occurred on lands administered by the Forest Service.

The range of the MSO in the United States has been divided into six recovery units (RUs) as identified in the Recovery Plan (U.S.D.I. 1995, part II.B.). An additional five recovery units were designated in Mexico. The recovery units in the analysis area, listed in decreasing order of known number of owls, are: Upper Gila Mountain, Basin and Range-East, Basin and Range-West, Colorado Plateau, Southern Rocky Mountain-New Mexico, and Southern Rocky Mountain-Colorado. The boundaries for the above Recovery Units are described in the MSO Recovery Plan (USDI 1995).

The general distribution of MSO in the San Luis Valley is extremely sparse in occurrence. Historic data accounts for only one reported occurrence near the Alamosa River in the Conejos Peak Ranger District during the summer of 1989. Richard Reynolds, Forest Service Researcher and raptor biologist reported this sighting. Other documented records in Southern Colorado consist of small numbers of transient birds in the Wet Mountains of the Front Range and a larger portion on the southern massif of Pikes Peak. Other Historic documentation cites that the MSO is a possible irregular breeder in lower elevation canyons in the Sangre De Cristo and San Juan mountain ranges. One other historic record is from Trinchera Creek, Costilla County, 1912. range.

In March of 2001, the USFWS designated Critical Habitat for the MSO. The entire habitat for MSOs that occur on BLM lands in Colorado is within the Royal Gorge Field Office. While a large area has been designated (approximately 149,000 acres), the Recovery Plan makes it clear that only those areas that contain the primary constituent elements necessary to support MSOs need to be considered critical habitat. The San Luis Valley does possess habitat for MSO on the Rio Grande National Forest but not critical habitat. There is limited potential habitat on BLM lands and no projects associated with this plan are in canyon areas.

**Determination of effects:**
The implementation of the FMP would not result in negative impacts to MSO because of the lack of MSO habitat and no projects associated with this plan are in canyon areas where potential MSO habitat may occur. Fire suppression activities within the San Luis Valley would impact MSO because there are no known nest records on the Rio Grande National Forest or BLM public lands in the SLV. The RGNF and SLV BLM have restrictions in place where fire suppression activities involve MSO habitat. If future reconnaissance provides positive documentation of MOSs in the San Luis Valley, all provisions of the MSO recovery plan would be followed verbatim and incorporated into site specific EAs and or BA/BEs, in addition to the species needs, that would be addressed through site/project specific analysis. Natural fires are rare in MSO habitat as proven by the fire history of areas where MSOs exist, such as the neighboring Royal Gorge FO. Additionally fires that do occur are small and do not significantly damage habitat (Brekke 2001). **Therefore, it is the determination that the implementation of the FMP would have "no effect" on the Mexican spotted owl".**

## DETERMINATION OF EFFECTS FOR THE FMP:

Under the FMP, threatened and endangered species in the planning area would be positively impacted in the long term. There is a slight chance there may be short-term negative impacts because of the increased use of managed fires. However, the new fire management policy that allows managers to use some wildland fires to meet fire management and other resource objectives do not conflict with the guidelines in the ESA to protect these species. Rather, most of the listed species in the planning area evolved in an environment where fire was a component of the processes that helped create the habitat mixes required for their long term survival. Habitat changes resulting from the FMP would be compatible with the long-term health of all of the listed species in the planning area. Under the FMP local populations would be enhanced by the increased health of the plant communities and their ecological functions.

**Consistent with the provisions of the ESA (16 U.S.C. 1531 et. seq.), the San Luis Valley FMP should have "no effect" or "may affect, not likely to adversely affect" on threatened or endangered species and their habitat.**

Name of specialist: Brian K Garcia
Wildlife Biologist, Front Range Fuels Team
Monte Vista Front Range Detached Center Office; 8/21/02

### CRITICAL ELEMENT – BLM SENSITIVE SPECIES

**Affected Environment:**

**Black Tern**

Black terns preferred habitat consists of marsh complexes of at least 50 acres (20 ha; Brown and Dinsmore 1986). Colorado has few marshes that large although smaller marshes suffice. In addition to marshes the terns need open water and fields for feeding (Bergman et al. 1970). Black terns spend much time in the air winging over marshes, water and fields hawking for insects. Definite breeding in Colorado has only been documented in the San Luis Valley. These areas are the San Luis Lakes State Wildlife Area, San Luis Lakes State Park and Alamosa National Wildlife Refuge. Other confirmed sightings have occurred at Blanca Wetlands (BLM), Home Lake (DOW) in Monte Vista, and along South River Road near Alamosa. Although the San Luis Valley has many marshes, their small size and lack of sufficient open water nearby limit these terns to a few places. Due to this species close association with water, fire does not play a considerable role in maintaining habitats important to this species.

**Western Snowy Plover**

Snowy plover preferred habitat consists of dry salt flats, dredge spoils, ephemeral alkali playas and evaporation ponds. In southeastern Colorado they breed only in manmade habitats: reservoir edges. In the San Luis Valley the plovers formerly used alkali-covered playas near San Luis Lake but abandoned them when reservoir levels rose and covered them. The Closed Basin project has destroyed the essential alkali mudflats by keeping water at a level that leaves little

opportunity for shorebirds. The Blanca Wetlands Area is considered one of the most diversified shore bird habitat in the entire San Luis Valley and supports the only known snowy plover nesting population in the Valley. Due to this species close association with water, fire does not play a considerable role in maintaining habitats important to this species.

**Ferruginous Hawk**
Ferruginous hawk preferred habitat consists of vast expanses of ungrazed or lightly grazed grassland and shrubland with varied topography, including hills, ridges, and valleys (Ensign 1983). In Colorado, they are found primarily on the eastern plains, in the grassland and lowland riparian habitat types. Small numbers of these hawks nest in the San Luis Valley. Confirmed nest sites have been documented in RaJadero Canyon (1989) and County Road 5N west of Mosca (1990, 1991). Ferruginous hawks nest in isolated trees or small groves of trees and on other elevated sites such as rock outcrops, buttes, large shrubs, haystacks and low cliffs. In Colorado, nesting is initiated as early as mid March, and young fledge during late June and July. Although they do breed in Colorado, ferruginous hawks are more common during winter (November to March). Rabbits and hares are the most important prey items by biomass but prairie dogs and ground squirrels are the most numerically. Prescribed burning would increase habitat suitability in shrub-dominated areas but practices that increase exotic plant species number or dominance should be discouraged as well as the conversion of native grasslands to agricultural land.

**Northern Goshawk**
Northern goshawk preferred habitat consists of large conifer stands with relatively closed canopies. However, interspersed openings are also important for foraging. Several goshawks are located throughout the SLV. This species evolved with fire and it is likely that fire historically maintained important habitats components. Many years of fire suppression have left this species habitat susceptible to potentially large catastrophic fire events.

**Bats (Fringed Myotis, Yuma Myotis, Spotted Bat, Townsend's Big-eared Bat, Mexican Free-tailed BAT)**
Bats located within the planning area prefer natural caves and abandoned mines for winter, summer, day, and maternal roost sites. These species typically forage on a variety of insects and may use a variety of habitats including piñon-juniper woodlands, riparian areas, montane forests, and semi-desert shrub-lands. Fire does not directly effect and is not a component important to the maintenance of these species.

**Barrow's Goldeneye**
This species of duck is an uncommon resident within the planning area on BLM lands and is more commonly found in high elevation wooded lakes and beaver ponds in the forests of the northwestern U.S. Colorado is in the southern extreme of the range. Due to this species close association with water, fire does not play a considerable role in maintaining habitats important to this species.

**White-faced Ibis**
This species prefers large freshwater or brackish marshes and they feed in wet hay meadows and flooded agricultural croplands as well as in marshes and the shallow water of ponds lakes and reservoirs (Ryder and Manry 1994). As early as 1872, Ibises were found nesting in the San Luis valley (Sclater 1912), where in 1993 they still nested in at least 11 colonies. Ibises usually arrive in the Valley by mid April and nest in May, but dates vary from year to year. A " Boom or Bust" species, breeding populations vary considerably from year to year, depending on water levels in favored marshes (Ryder 1967). In 1949 at least 12 pairs nested at Russell Lakes (Ryder 1950); in 1965 only 10 pairs bred in the whole San Luis Valley (Ryder 1967). During the last series of breeding bird surveys an estimated 355 pairs nested on Alamosa NWR (Ron Garcia pers. Comm..), and over 470 pairs in the Valley in 1993 (Rilling and Falzone-Schrim 1993). Due to this species close association with water, fire does not play a considerable role in maintaining habitats important to this species.

**American White Pelican**
This species is fairly common in the San Luis Valley and within the BLM Blanca Wetlands. White pelicans forage up to 30 miles away from breeding sites (Evans and Knopf 1993) in marshes, lakes, and rivers but they are not a documented nester on Blanca Wetlands. In 1996 over 350 Pelicans were documented at the Monte Vista National Wildlife Refuge and also summered there as well. Due to this species close association with water, fire does not play a considerable role in maintaining habitats important to this species.

**Utah Milk Snake**
Little is known about the Utah milk snake, particularly within the planning area. This snake ranges from across Utah and portions of Wyoming into west central Colorado. Colorado's populations make up the eastern margin of range for this species. Utah milk snakes occupy various habitats but many records have been noted within and near floodplains. This species is of concern in Colorado because of the small number of records and restricted range. Threats to this species include development, outright killing, and illegal collection of individuals for commercial purposes. Fire is not thought to be a factor affecting this species.

**Northern Leopard Frog**
This species ranges across much of the northern United States and southern Canada and has been found within the planning area on public lands. This frog inhabits many aquatic and wetland habitats including springs, ponds, lakes, and wet meadows. Because of its close association with water, fire is not thought to be a factor regarding this species.

**Texas Horned Lizard**
The Texas horned lizard inhabits plains grassland, especially where there are large patches of bare soil. The lower limit of juniper growth often marks the upper limit of this lizard's habitat in canyons and at the foot of mesas. This species of horned lizard is not documented in the San Luis Valley but is found on the other side of the Sangre De Cristo range on the eastern slope of southern Colorado, near Trinidad. The Texas Horned Lizard is most commonly confused with the Short Horned Lizard that does exist in the Valley and has been documented from the valley floor to 11,000 feet. Texas Horned Lizard will not be addressed any further in this document.

## BLM SENSITIVE SPECIES - Environmental Consequences and Mitigation:

**Proposed Action:**
Several of the BLM Sensitive species noted above are not affected by the Proposed Action or Alternative A, and will not be discussed further. These include the white-faced ibis, Barrows goldeneye, bat species, Utah milk snake, Texas horned lizard, western snowy plover and black tern. Discussion will focus on those species with potential to be affected by the Proposed Action that will allow for more fire (C zones) and use of vegetative treatments. Under the Proposed Action, the majority of the BLM Sensitive species would be positively impacted in the long term. The majority of these species evolved with fire, helping to maintain habitats important to these species. Habitat changes resulting from the increased use of natural or prescribed fire and vegetative treatments would be compatible with the long term health of the land and would benefit species inhabiting these lands. The increased use of natural fire would help to restore fire's natural role in fire dependant ecosystems and would help to return vegetative communities to a more normal fire regime. The use of fire and vegetative treatments to reduce hazardous fuels would reduce the potential for larger catastrophic fire events.

The majority of BLM Sensitive species found within the planning area evolved with fire and fire historically played an important role in maintaining habitats important for most of these species. Therefore, potential impacts are not directly related to wildland fire, but to the discretionary action of suppressing wildland fires. It is the action of suppressing wildland fires and the methods employed to do so that could result in negative impacts. Other impacts could occur as a result of the implementation of vegetative treatment projects. However, all vegetation treatments would be designed to benefit BLM Sensitive species. Up-front mitigation to minimize potential impacts would be a part of any vegetative treatment project.

**Northern Goshawk**
This species should benefit from the implementation of the FMP. The reduction of hazardous fuels would help to minimize expansive losses of key habitat and would help to maintain and enhance habitats important to goshawks and their prey.

***Direct Effects:***
Direct effects from fire should be minimal. However, fire suppression activities could result in some impacts. These include construction of fire line. Vegetation treatments should benefit this species but could result in time lags associated with the regeneration of key vegetative species.

***Indirect Effects:***
Goshawks could be affected indirectly by human disturbance, noise, and smoke. This could result in some short-term impacts, particularly to nesting birds. (Future collaborative fuels reduction projects with the Rio Grande National Forest could involve areas where documented nesting occurs because there are confirmed nests on adjacent forest land but no confirmed nests on BLM managed lands). In the event of a confirmed nest site within the planning area the following minimization measures should be applied:

- In the event of a confirmed nest site within the planning area ,fire line construction should attempt to avoid the destruction of known concentrated nesting areas. Line may be constructed around known nest trees to protect them. All fire line should be obliterated and reclaimed to minimize human use of these "trails/roads".
- Linear openings (fire line, access routes and escape routes) associated with fire suppression should be obliterated and reclaimed in order to deter future human use.
- Vegetative treatments should be designed to maintain dense tree canopies in nesting habitats while improving under-story vegetation and maintaining foraging habitats. Large blocks of un-roaded habitat should be protected/reclaimed.
- Vegetation treatments should maintain a 1/4 mile buffer zone around known nest sites from February 1 to August 15.

**Ferruginous Hawk**

This species should benefit from the implementation of the FMP. The reduction of hazardous fuels would help to minimize expansive losses of key habitat and would help to maintain and enhance habitats important to ferruginous hawks and their prey.

***Direct Effects:***

Direct effects from fire should be minimal. However, fire suppression activities could result in some impacts. These include construction of fire line. Vegetation treatments should benefit this species but could result in time lags associated with the regeneration of key vegetative species.

***Indirect Effects:***

Ferruginous hawks could be affected indirectly by human disturbance, noise, and smoke. This could result in some short-term impacts, particularly to nesting birds. (Future collaborative fuels reduction projects with the Rio Grande National Forest could involve areas where possible nesting occurs. Nesting could also occur on BLM managed lands but no confirmation has surfaced). In the event of a confirmed nest site within the planning area the following minimization measures should be applied:

- In the event of a confirmed nest site within the planning area fire, line construction should attempt to avoid the destruction of known concentrated nesting areas. Line may be constructed around known nest trees to protect them. All fire line should be obliterated and reclaimed to minimize human use of these "trails/roads".
- Linear openings (fire line, access routes and escape routes) associated with fire suppression should be obliterated and reclaimed in order to deter future human use.
- Vegetative treatments should be designed to maintain dense tree canopies in nesting habitats while improving under-story vegetation and maintaining foraging habitats. Large blocks of un-roaded habitat should be protected/reclaimed.
- Vegetation treatments should maintain a 1/4 mile buffer zone around known nest sites from February 1 to August 15.
- Conduct burning treatments during the non-nesting season to avoid impacts to hawks and their prey during the reproductive season. Generally avoid treatments between 1 March and 1 August.
- Enhance, protect, and create nest substrates through fencing of nest trees.

- If the proposed habitat project goal is to convert tree communities to grassland, a mosaic of stands of trees or a thin scattering of trees would be sustained to provide nest sites (Oloendorff 1993).

**Northern Leopard Frog**
Overall, effects to this species should be minimal. There is some habitat for this species on BLM lands located within the planning area.

***Direct Effects:***
Wildfires and related suppression actions can impact aquatic species including northern leopard frogs. In particular the use of fire retardant can result in immediate and direct impacts to frogs. Fire retardant when mixed with water and exposed to UV radiation, breaks down to form hydrogen cyanide (HCN), which is extremely toxic to aquatic life. In addition, ammonia (NH3), that is highly soluble, would result when retardant is placed into water. When ammonia dissolves in water a chemical equilibrium is maintained between ammonia, that is toxic, and ionized ammonia ($NH4^+$), that is less toxic. The chemical balance between these 2 forms of ammonia is determined by pH, temperature, and total ammonia concentration. In most streams, the pH is sufficiently low and $NH4^+$ predominates. However, in highly alkaline waters, NH3 concentrations increase and can reach toxic levels. Ammonia in the range of 0.2 to 2.0 mg/L can be lethal to fishes. The toxicity of retardant to aquatic life is generally due to these two components (free cyanide and ammonia) and may be enhanced within closed aquatic environments such as ponds, lakes, and reservoirs that harbor this species.

Other factors resulting from wildland fires include the potential for large, acute influxes of heated slag and ash that can have both immediate and direct impacts. This is due mainly to elevated water temperatures to lethal limits. Water quality is also impaired as changes in pH and phosphate can result when leached from ash. The best potential leopard frog habitat located on BLM lands within the planning area is located within the Blanca Wetlands. This "C" zone could allow wildland use fire that could potentially result in the above impacts.

***Indirect Effects:***
Long-term impacts can result due to increases in runoff and higher peak flows, until adequate vegetation stabilizes soils and retains water. Other suppression efforts could also result in some short-term impacts, including the construction of fire lines, that could increase erosion.

To reduce potential impacts, both direct and indirect, the following mitigation measures should be followed:

- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life.

**Peregrine Falcon**
Very little impact is anticipated to this species. The cliff habitat these birds prefer is not prone to fire and risks from suppression are minimal. This species should benefit in the long-term as habitats important for its prey species is maintained and enhanced. There is the potential that smoke and noise could result in short-term impacts particularly during the nesting season.

No specific mitigation would be required regarding fire suppression activities.

**Alternative A:**
Under this alternative, impacts in the short term would be similar to the Proposed Action. This is because all wildland fires would be suppressed leading to potential suppression related impacts. With the mitigation proposed under the Proposed Action, these impacts would be reduced.

Long-term impacts to BLM Sensitive species would be negative and cumulative resulting from the possibility of larger catastrophic wildland fires due to the build up of hazardous fuels. This could lead to losses of key habitats for these species and result in greater impacts.

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## CRITICAL ELEMENT - WILDLIFE, TERRESTRIAL

***(Includes wildlife information related to Standard 3)***

**Affected Environment:**
The SLV BLM administered lands provide habitat for an undetermined number of terrestrial wildlife species. Some species are yearlong residents, while others are migrant. Table 1 identifies the more common terrestrial wildlife species, or group of species, their occurrence, and the basic habitat types in which they are found. The description of the existing vegetation in the Vegetation section of this EA provides a good overview of most wildlife habitats that occur in the planning area. In addition, the T&E section of this EA more specifically discusses the Federally listed and BLM sensitive species in the planning area.

In large part, the emphasis for management of wildlife habitat has been determined by the social and economic values, and to some extent the prominence of resident wildlife species in the ecosystem. The Colorado Division of Wildlife (CDOW) is responsible for managing the resident wildlife population, while the BLM is responsible for managing wildlife habitats on public lands. Because the CDOW manages several species for sporting qualities, these species and their associated habitats have received management priority. While this EA will focus on the habitat for these species, it will more specifically address the wildlife species and habitats that are most likely to be affected by implementation of the fire plan.

**Mule Deer and Elk**
Mule deer and elk are present in the management area yearlong. Their summer range is located at the higher elevations. Mule deer and elk often share many of the same winter ranges, although the degree of competition is uncertain. The intensity of winter use varies widely from year to year and is controlled, in the short-term, by annual variation in the timing and amount of snowfall, and in the long-term, by fluctuations in population levels.

The CDOW manages mule deer and elk throughout the State on a herd unit basis. The area that encompasses the yearlong habitat of a discrete population is called the Data Analysis Unit (DAU). This larger DAU area is subdivided into sub-units called Game Management Units (GMU), that are based on geographical and biological needs of game herds. In some cases DAUs contain only one GMU. The CDOW primarily uses these sub-units to regulate harvest from the whole population. They develop a population model based on the harvest and observed population structure information to annually estimate population numbers for management purposes. Harvest regulations are based on these numbers.

Deer population levels in this area have fluctuated greatly since the turn of the century. At that time, relatively few mule deer were present because of unregulated hunting and habitat alterations. Severe overgrazing by livestock, extensive fires and clearing and timber cutting by settlers resulted in major changes to the landscape in the late 1800s and early 1900s. However, by the early 1950s deer numbers had increased. Deer flourished, and by the late 50s and early 60s, to control deer numbers, hunters were allowed to harvest multiple deer.

In the 1960s deer numbers once again began to decline and hunters were again limited to one per season. From the 40s to the 70s, large areas were treated to improve range conditions for livestock. Also, aggressive predator control was initiated, directed mostly at coyotes. As a result of these efforts, it is believed that during the early 1970s deer numbers rebounded, and by the early 80s deer were abundant again. Then, due to many factors, such as increased elk numbers, more subdivisions, abundant predators, increased road kill, deer numbers have again dropped to very low levels. There are efforts underway by the CDOW to try to determine the exact cause of this decline and what can be done about it.

Although the decline in the deer numbers is not well understood, it is indicative of poor fawn recruitment and is consistent with deer declines throughout the West. Many believe that the poor habitat conditions that have developed over the landscape, due in part to extensive fire control, are mostly to blame.

Elk numbers have also fluctuated but apparently not at the same magnitude as mule deer. Throughout most of this area, in the early part of the twentieth century elk were rare or nonexistent. Their small numbers were also thought to be due to unregulated hunting and habitat changes. In the early 1920s, elk were transplanted to several areas in Colorado. To allow the population to grow, strict no hunting regulations were initially instated and then limited hunting was allowed. Since then, elk numbers have gradually increased in most area, and now are considered by many to be too high.

At present, throughout the planning area, elk numbers are increasing and deer numbers are on the decline. The precise cause is not known, it is believed by many that the most likely cause is habitat change, again due in part to aggressive fire control over the past 50-75 years. In general, the quality of mule deer habitat is declining, while the quality of elk habitat is improving.

Across the San Luis Valley landscape, vegetative conditions have changed as a combined result of long-term fire suppression and improper livestock grazing practices in the early years. Fires

have been less frequent, and the size of burned areas has diminished. Without normal disturbances such as fire, vegetation in the area has moved toward late seral stages. In general, the vegetation is becoming older and more stable and the woody species density has increased while herbaceous forage abundance and availability has decreased. These vegetative changes shift toward favoring elk over mule deer.

Existing browse stands, supplying most of the winter forage for mule deer and a sizable amount for elk, show characteristics of a declining trend. This downward trend is a function of the move toward climax communities, especially in the piñon-juniper ecosystem. In the absence of fire the piñon-juniper forests are maturing to the point of out-competing the browse and shrub communities. The condition and trend of a winter range can be evaluated by measuring six factors, 1) composition, 2) density, 3) vigor, 4) availability, 5) under story, and 6) soil conditions. 1) Composition refers to the species of browse plants present, age structure, and their relative food values. The better ranges have a variety of preferred species. Nutritional requirements of big game animals are much better met by a mixture of species rather than by a single species. 2) Density is the percent of ground area covered by the live crown of browse plants. On ranges with low browse density, too little forage is produced. On ranges with extremely high browse densities, animals have difficulty penetrating the stand, making only the forage produced at the edges available. 3) Vigor is the relative state of health of the browse plants and browse stand, indicating its probable level of productivity. Vigor is used as an appraisal of the age and hedging class. The amount of hedging reflects the level of past use that has occurred to the plant. 4) Availability refers to the amount of usable forage in reach of the dependant animals. The forage produced that is beyond the reach of deer and elk is unusable. On ranges with a predominance of plants grown out of reach, production of winter forage is usually low. 5) Under story refers to the composition and abundance of the under story vegetation, important to big game animals, especially cool season forbs and grasses. The abundance of forbs and grasses during the period of late pregnancy for deer and elk (late winter/early spring) is critical to healthy fetal development and fawn survival during the first month of life. 6) Soil condition is the measure of the condition of the soil surface stability. Vegetation and soil are basic resources, and over the long term, satisfactory range conditions can be maintained only on stable soils, and stable soils are maintained only under adequate vegetative cover.

The various browse stands throughout the area will show different values for each of the above determinants. Quantified data are not available at this time to identify specific sites where problems exist. However, it is clear that fire suppression over the past 75-100 years has altered the natural fire patterns that once existed in the area. As a result, climax vegetative conditions exist over much of the planning area at a detriment to wildlife habitat. The implementation of this fire plan can go a long way toward reversing this downward trend.

**Bighorn Sheep**

The area managed by the SLV BLM at one time contained an abundant mountain bighorn sheep herd. Bighorn sheep can be found on BLM lands on both the south end (La Jara Canyon) as well as the north (Trickle Mountain ACEC). They use these areas for foraging, wintering, lambing and is also year-round habitat. In the 1970s, when the initial Trickle Mountain Habitat Plan was written, this bighorn population was one of the most productive in North America (over 300

individuals). This population was once the source for transplants. Since that time, a large die off and little lamb production has reduced the herd size to approximately 88 individuals in 1994 (pers. comm. with Chuck Wagner, CDOW). It is likely lungworm and pastuerella, diseases spread from contact with domestic sheep are responsible for the loss of bighorns. While population numbers have remained stable for the past few years, it is conceivable that sheep populations will some day began to decline again due to the loss of habitat by encroaching piñon-juniper woodlands into the mountain shrub habitat type. Historic photos from the local area show this to be the case in many canyon areas. Managed fire is an obvious tool to correct this problem as well as provide for high quality habitat. Such use of fire can help the bighorn sheep by reducing stress and improving their condition to resist disease.

**Turkey**

Turkeys nest and raise their broods primarily in the ponderosa pine/oak zone in the medium elevations. They winter on oak and piñon-juniper covered ridges where mast production is adequate and in low elevation riparian areas. Many turkeys in the area spend winter months on private ranch hayfields where livestock are being fed. They can efficiently take advantage of leftover grain and other seeds from the winter-feeding of livestock. They also use riparian areas heavily during early spring when plants start to green up and again in fall when water is scarce in the uplands. High quality nesting and brooding habitat will have numerous small to medium sized meadows, intersperse with thick stands of shrubs and trees. The trees and shrubs will be scattered along a fairly wide bottomed canyon containing live water as springs, seeps, or streams in proximity to upland stands of ponderosa pine or other conifers suitable for nesting cover. Early grasses and forbs green-up along the wet seedy areas are important for providing proper nutrition for the potential breeding birds and newly hatched broods. Improving turkey habitat will require management of the ponderosa pine habitat type. Historic turkey populations were abundant during the era of the first Spanish settlements but have since declined. One reason could be due to the lack of fire. Ponderosa pine seedlings have begun to invade the many small meadows and parks that turkeys need for foraging. Ongoing transplant efforts throughout the SLV have increased these populations. Prescribed under burning of ponderosa stands is very critical to preserve this ecosystem before stand replacing fires destroy huge areas of ponderosa forests.

**Neo-tropical Birds**

Neo-tropical birds are birds that winter in the tropics and nest in continental Unites States. These birds are present throughout the SLV planning area. However, in recent years, they have begun to decline in numbers. Neo-tropical birds are more likely to be found in riparian areas rather than in any other area. In fact, while less than 1% of the western United States contains riparian vegetation, more species of birds use riparian areas for breeding than any other habitat type in North America.

To understand the effects of fire on these bird species, it is important to have a basic understanding of how birds use different habitat components, and how those components may be affected by fire. Bird species distributions are most often determined by habitat type and associated vegetative characteristics, primarily density and structure.

Structure in vegetation can be expressed in a variety of forms, including the number of vegetative layers, patchiness, interspersion of successional stages, edge, and snags. The diversity of bird life that a vegetative type can support has been directly linked to the degree of vegetative layering. As the structure of the vegetation becomes more complex, opportunities for nest sites and food resources increase, allowing additional birds to inhabit the area. It has been suggested that vegetative structure provides proximal factors for habitat selection, which in turn, lead to ultimate factors such as food, nest sites, and protection from predators. Birds are particularly responsive to changes in the physical structure of habitats in which they nest and forage. The presence or absence of some particular vegetation strata can be important in determining the specific bird species composition. Generally, as the structural diversity of the habitat increases so does the number of species benefited, thus increasing the diversity of bird species.

For convenience, species may sometimes be grouped into functional ecological guilds based on shared ecological similarities (nesting location, foraging mode, etc.). However, they must not be viewed simply as interchangeable parts. Each species needs to be individually assessed for its response to management activities in forest ecosystems, with the understanding that geographic variation in these responses among different populations within the same species will occur.

The implementation of this fire plan would improve conditions for neotropical bird habitat. The patchiness of habitats that can be attained with prescribed natural fire and prescribed fire would be a benefit to these birds.

**Small Mammals**
Many species of small mammals are present in a variety of habitats throughout the SLV planning area. Little is known about the exact species that are present or their abundance. However, they are important members of this landscape and could play a significant role in the interactions that occur.

**Predators**
The most notable predator species that occur are coyote, cougar, and black bear. Relative to the general population of their species, there appears to be abundant numbers of all three species present. The health of these species is more dependent upon the abundance of their prey than upon the conditions of the physical features of their habitats. Thus, they are only impacted indirectly by the deteriorating health of the landscape.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Under the Proposed Action, terrestrial wildlife in the planning area would be positively impacted. Implementing the proposed Fire Management Plan would generally improve the way the ecosystem functions throughout the planning area. As the landscape improves, it would benefit most wildlife species by improving their habitats. Reintroducing fire as a natural disturbance pattern across the landscape would move the vegetation closer to its condition during pre-European settlement times. These disturbances to the vegetation would allow the ecosystem to function in the way it was designed to function. There would be a greater variety of

vegetative seral stages present, an improved mosaic, and a greater probability that recurrences of fires would cycle these vegetative states with some certainty across the landscape.

The end result of reintroducing fire would be a more complex and stable system. With increased habitat types present and available, a greater number of species would be expected. For example, mule deer and elk would greatly benefit from improved conditions on their winter ranges. As existing browse stands mature and give way to other vegetative types through succession, other areas would be disturbed and set back to a state that would support browse. Bighorn sheep would benefit to a great degree by clearing woody species from their habitat and increasing the sight distances that are so important to their security.

There is a slight chance this alternative may result in short-term negative impacts to wildlife because of the increased use of managed fires. However, mitigation measures have been built into the Fire Management Plan to offset these negative impacts. It categorizes the planning area into A, B, C, and D units and spells out the necessary burning constraints or constraints on fire suppression for each of these areas. Thus, the burning constraints for these areas outline the proper size and arrangement of the burned areas as well as the designated time frame for these burns. Mitigation would also include planning controlled burns and mechanical treatments to improve the mosaic of vegetative age classes to a point where fire can take on a more natural role without the risk of burning too large of an area at once.

**Alternative A:**
Under the No Action Alternative, the fire management practices currently in place would continue to have negative effects on wildlife and wildlife habitat. The vegetation would continue to mature, and there would be a continued loss of desired composition and structure. In general, the whole ecosystem would become more unstable and stagnant and would eventually cease to function the way it was designed to function. As these vegetation conditions change, there would also be an increased risk of large, catastrophic fires that would significantly, and perhaps permanently, change the capability of this landscape. Correspondingly, there would be an increasing rate of change in the wildlife species composition in this area. In turn, with the further reduction of mule deer and elk numbers and, thus, the opportunity for hunting, economic and social values would be affected. The result would be huge losses in revenue by local merchants, perhaps causing hardship on some smaller communities in this area.

Table 1

| Species (Common name) | Habitat type | Occurrence |
|---|---|---|
| mule deer | conifer_aspen, piñon_juniper, oak_mountain shrub, riparian, grasslands. | abundant, yearlong, most during winter. |
| elk | conifer_aspen, piñon _juniper, oak_mountain shrub, riparian, grasslands. | abundant, yearlong, most during winter. |
| pronghorn antelope | grasslands, riparian | common, yearlong. |
| Rocky Mountain bighorn sheep | rocky canyons, rim rock areas, mountain meadows, steep open mountain slopes. | common, yearlong. |
| cougar | all types | common, yearlong. |
| black bear | conifer forests, aspen, riparian, pinyon_juniper, mountain shrub. | common, yearlong |
| turkey | conifer_aspen, ponderosa, piñon _juniper, oak_mountain shrub. | uncommon yearlong |
| coyote | all types | abundant, yearlong |
| bobcat | all types | uncommon, yearlong |
| beaver | Riparian | common, yearlong |
| blue grouse | conifer, aspen, mountain shrub, riparian at higher elevations. | common, yearlong |
| cottontail rabbit | all types | common, yearlong |
| snowshoe hare | conifer_aspen, mountain shrub at higher elevations. | common, yearlong |
| porcupine | conifer, piñon juniper, riparian | common, yearlong |
| prairie dog | Grasslands | common, yearlong |
| waterfowl | wetlands, riparian, lakes & ponds | abundant, mostly warm season. |
| raptors | all types | common, yearlong |
| neo_tropical birds | all types, mostly riparian | common, warm season |
| small mammals | all types | common, yearlong |
| Abert's squirrels | Ponderosa | uncommon, yearlong |
| amphibians_herptiles | all types | common, yearlong |

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## CRITICAL ELEMENT - WILDLIFE, AQUATIC

**Affected Environment:**
The general nature of public lands managed by SLV field offices are somewhat fragmented with wide ranging landforms and elevations. This pattern yields variation in the physical features of geology, soils, valley types, and stream types resulting in differing vegetation communities surrounding a variety of aquatic environments. Streams range from steep rock lined canyons to flat meandering meadow environments and aquatic resources can be interspersed within any of the upland vegetation communities targeted.

Among other variables, valley morphology, soils, vegetation, and historic land management dictate stability and quality of aquatic environments and their ability to function through changes brought about from upland fires. Combinations of variables making up aquatic resources are unique in each zone as described in the FMP therefore disallow specific aquatic impact characterization to fire impacts. Naturally, however, each aquatic habitat reflects variation in hydrologic changes both seasonally and from climate cycles; change in hydrology is a key component with fire. By their very nature, floodplain, stream, riparian, and wetland habitats function with periodic changes in runoff inputs from upland areas.

Other human settlement disturbances, e.g., irrigation, mine tailings, roads, land use etc., can disrupt stream/wetland functions beyond any range of disturbance under which a given aquatic system evolved. As a result, some public land aquatic resources are in a recovery stage or have changed their characteristics in order to reach stability matching the alterations. Aquatic environments on adjoining private lands are often even more modified, often not in a recovery phase. Heavily disturbed environments would reflect altered variables brought about by fires differently than stable well functioning areas. Cumulative impacts of fire can become more important in disturbed areas.

Because this plan is an umbrella document covering lands interspersed with substantial aquatic habitats, no attempt is made to quantify all the resources within jurisdiction of SLV Fire Plan. Furthermore, the patch network of public lands (about 27% being BLM in the SLV) yields aquatic habitats where often only a portion is on public land within the watershed. In those cases a public land fire impact to the larger watershed are reduced. Management of usually upstream National Forest lands also factors into individual actions on BLM. Non fire, fuels reduction treatments of upland vegetation are generally more restricted than fire and are usually planned in locations away from aquatic habitat, therefore site specific impacts to aquatic resources would be addressed through individual project NEPA. With active natural fires or escaped fires, fire managers should consult on specific parameters such a stream condition, soils, fire size, etc. to evaluate impact risk on a case by case scenario while managing fires or concerning post fire rehabilitation.

**Environmental Consequences and Mitigation:**

Direct impacts to aquatic habitats or aquatic wildlife because of fire is generally rare due to wetlands position on the landscape and moisture of the surrounding fuel during the period

identified as the "fire season" in the Fire Management Plan. Peak hazard period for heavily vegetated wetland areas typically is the dormant season. However during either time period, ignitions are limited and human caused fire would be suppressed. Theoretically, due to those factors, direct impact to public land aquatic wildlife is a minor issue. Additionally, a fire in a wetland zone typically does not burn hot enough to totally remove or kill all vegetation as can happen in an upland environment.

Significant long term, indirect, impacts due to fire could occur to aquatic habitat if the disturbance from fire grows larger than a reasonable "natural" size range thus greatly changing runoff or sediment delivery not likely found under natural fire regimes. Determination of a natural fire size range is difficult at best even with intense site specific investigation, e.g., fire scar analysis etc., but there is little doubt the that catastrophic fires possible under present day conditions would likely be an unnaturally larger size. Small fires bring about incrementally less change to runoff. Conversely, cumulative impacts of sediment from fire, in addition to other sediment sources, could be substantial as result of large fires, multiple fires, or in fires degraded watersheds. The major impact to aquatic resource from fire activity is likely to occur as a result of catastrophic fire as discussed in the fire plan. The potential acreage that could burn as a result of the fuels build up can result in greatly modified runoff parameters.

**Comparison of alternatives:**
Rationale for the Proposed Action to reintroduce fire into watershed management is clearly spelled out in the document. As presented, the desired size ranges for fire for differing vegetation communities appear compatible with protection and continued rehabilitation goals for SLV aquatic resources given in bureau policies and mission goals. A successful controlled fire, prescribed natural fire, or upland fuels treatment project that reduces the likelihood of catastrophic fire would benefit aquatic wildlife resources in future years in most instances. Adoption of the Proposed Action into local management is preferred over the No Action Alterative because of the long-term benefits to forest and upland health and the reduced risk of catastrophic fire. In addition, the Proposed Action calls for further environmental analysis adding additional resource protection.

Catastrophic fire can remove all or significant portions of aquatic wildlife populations down grade from a fire area. As outlined in the fire plan overview, the trend would be for increasing catastrophic fire risk in many areas. It is recommended that the fire plan proposed action be adopted over the no action alternative to begin to reverse this trend. Additional NEPA review would precede fuels treatment projects and aquatic wildlife populations would be protected.

**Mitigation:**
The mitigation statements made in the Floodplain section of this document to minimize adverse impacts to aquatic wildlife should also be reviewed.

It is recommended to continue use of GIS modeling for pre-fire evaluation and make predictions to assist in decision making on natural fire attack; the proper function condition database should be consulted when fighting fires; managed, or wildfire.

Every effort should be undertaken to not transport water supplies used to combat prescribed or natural fires from one basin to another preventing the spread biological agents such a Whirling Disease and other pathogens. Equipment that ends up directly in an aquatic environment should be disinfected before entering another watershed.

It is recommended that as the fire management plans are revised, current research and information is used and incorporated into the plan to adjust desired treatment acreage values for each community/elevation category so that fire size closely aligns with natural fire size ranges.

In escaped fire situation, that would appear to be at an elevated risk as more fires are not initially attached, mitigation of Best Management Practices (BMPs) may need to be deployed to combat runoff.

Name of Specialist: David Gilbert
Fisheries Biologist
Royal Gorge Field Office; 11/1/02

## CRITICAL ELEMENT - WASTES, HAZARDOUS OR SOLID

**Affected Environment:**
There are no known hazardous wastes in the area covered by the Proposed Action. However, illegal hazardous or solid waste dumps could be present in this area. Generally, solid wastes, in the form of illegal dumps, would not be adversely impacted nor would the burning of these dumps impact human health or the environment. There is a potential for a wildland fire to impact an illegal hazardous waste dump. Such an event could, depending on the material, cause harm to the environment, or fire fighters. These incidents can only be dealt with on a case-by-case basis. The Hazardous Materials Contingency Plan and awareness training for all employees should minimize potential harm to fire fighters or the public.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
As discussed above, wildland fires may burn illegal trash/hazardous waste dumps. Impacts would depend entirely on the nature of the material dumped and could result in harm to the environment and/or fire fighters. This would have to be dealt with on a case-by-case basis, in accordance with the Hazardous Materials Contingency Plan in order to minimize potential harm. Hazardous materials may also be introduced as a result of the fire fighting activities, in the form of equipment fuel and lubricants, and excess fuel used for saws and fire ignition. Improper disposal of excess fuel and lubricant could cause environmental harm and violate state and federal laws. Ensuring that soils contaminated by spilled fuels are either treated on-site, or disposed of properly could mitigate these potential negative impacts. Rehabilitation plans should consider contaminated soils.

**No Action:**
Consequences and mitigation measures would be the same as for the Proposed Action.

Name of specialist: Diann D. Gese
Geologist
Del Norte Field Office; 6/2/2003

## CRITICAL ELEMENT - WATER QUALITY, SURFACE AND GROUND

**Affected Environment:**
The Colorado Water Quality Control Act gives the authority to the Colorado Water Quality Control Commission to classify and assign numeric standards to state waters. State waters are classified for the present beneficial uses of water, or the beneficial uses that may be reasonably expected in the future. The classifications for beneficial uses include; aquatic life, recreation, agriculture and water supplies for various purposes.

The numeric standards are assigned to define the allowable concentrations of various parameters under the following categories: physical and biological, inorganic and metals. The numeric standards for water temperature, which could be affected by wildland fire, are applicable for the entire planning area. It states in part: "Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate and duration deemed deleterious to the resident aquatic life" (Colorado Department of Health and the Environment, 1999).

The Colorado Water Quality Control Commission has included a narrative statement in the Basic Standards for all surface waters that states, in part: "All waters (except in wetlands and/or except where authorized by approved permits, certifications or plans of operation) shall be free from substances attributable to human caused point or non-point source discharges in amounts, concentrations or combinations that:

1. Can settle to form bottom deposits detrimental to the beneficial uses.
2. Are harmful to the beneficial uses or toxic to humans, animals, plants or aquatic life.
3. Produce a predominance of aquatic life (CO Dept of Health and the Environment).

Both sediment and nutrient loading in surface waters could result in violations of the above standard.

Currently, there are three river segments that flow across BLM lands within the San Luis Valley that are on the state 303 (d) list. Kerber Creek flows through approximately one-half mile of BLM lands and is violating state standards for Cd, Cu, Mn, Ag, and Zn. The source of these constituents is from mining wastes in the privately owned Bonanza Mining District and cleanup is underway. The other two segments are located along the Alamosa River. The segment above Terrace Reservoir crosses approximately one-half mile of BLM lands and is violating pH, Al, Cu, and Fe concentration standards. The segment below Terrace Reservoir flows through

approximately one and one-half miles of BLM lands and is violating pH, Cu, Fe, Mn, and Zn standards. The Summitville CERCLA site upstream from the BLM lands affects water quality in the Alamosa River.

One river segment in the San Luis Valley is on the state monitoring and evaluation list for sediment. This segment is the Rio Grande River from Conejos County Road G to the state line. Several miles of river in this segment are managed by the BLM and is being actively managed to improve the riparian conditions and water quality.

Within the planning area, the sediment and nutrient yield from public lands is variable and depends on geology, soils, runoff patterns, topography, ground cover and land use.

**Environmental Consequences and Mitigation:**

Burning and non-fire vegetative treatments would have both long and short-term impacts to the surface water quality. A majority of these impacts would be from burning. Increases in sediment, nitrogen, phosphorus and cation production are likely in the first few years following burning. Temperatures of streams could be affected by the removal of overhead shading. With the exception of sediment, these increases would be minor and short lived as nutrients tend to get flushed out after the first precipitation event. Depending on the intensities of burns and weather patterns following the burns, sediment yields could increase dramatically due to increased overland flow and channel scour. In the long-term, the sediment yield would actually decrease from disturbance levels, and possibly pre-disturbance levels, due to increased ground cover. Impacts from the non-fire type treatments would have a variety of impacts to the water quality. Sediment production from mechanical treatments could increase in varying amounts depending on the type and time of year of treatment. Non-fire treatments would have a negligible impact on nutrient production.

**Proposed Action:**
Implementation of the proposed Fire Management Plan would result in short term increase to sediment and nutrient levels due to the increased ground disturbance within the planning area. These increases would be short lived, usually lasting only a couple of years until vegetation has a chance to reestablish. After reestablishment of vegetation, sediment and nutrient levels would be reduced. In the long term, fire and non-fire fuels management would limit fire size and intensity, leading to a more natural fire regime with more frequent but less intense fires occurring. Therefore, negative impacts to surface water quality would be minimized.

It is not anticipated that ground water quality would be impacted.

**No Action:**
The greatest impacts to water quality under this plan are from wildfire. Therefore, in the short term, full suppression of fires would have the least amount of impact. In the long term fuels would continue to build up leading to larger, more intense fires. This would have a long-term negative impact on surface water quality

Name of specialist: John Smeins
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Royal Gorge Field Office; 12/06/02

## CRITICAL ELEMENT - WILDERNESS, AREAS OF CRITICAL ENVIRONMENTAL CONCERN, AND WILD AND SCENIC RIVERS

**Affected Environment:**
**Wilderness:**
There are currently no designated wilderness areas within the San Luis Valley BLM administered public lands. There is one wilderness Study Area (WSA), San Luis Hills (10,240 acres). WSA designations serve as a temporary administrative designation on lands that have wilderness character and are being managed so as not to impair the area's suitability and the ability of Congress to declare the area as wilderness some time in the future.

These WSAs would be managed under the BLM's Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP), H-8550-1 until Congress acts. The IMP non-impairment mandate states: "During period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness...". Under both the Proposed Action and Alternative A (continuation of current management) the IMP guidance is included in the proposed action/fire management plan for all wildland fire activities within WSAs. IMP guidance provides protection for the following wilderness characteristics:

- Roadless
- Naturalness
- Affected primarily by the forces of nature
- Human impacts must be substantially unnoticeable.
- Outstanding opportunities for solitude and/or primitive and unconfined types of recreation
- Supplemental values

Fire is a natural component of many wilderness ecosystems that must be considered before recommending one fire management technique over another. Fire management procedures must rely on the most effective methods of suppression that are the least damaging to wilderness values, other resources and the environment.

**Areas of Critical Environmental Concern (ACEC):**
There are eleven Area's of Critical Environmental Concern; Blanca Wildlife Area (9,147 acres), Trickle Mountain (44,521 acres), Ra Jadero Canyon (3,632 acres), Rio Grande River Corridor (2,640 acres), Elephant Rocks (1,852 acres), Cumbres and Toltec Scenic Railroad Corridor (3,824 acres), Ford Creek, Sand Castle (3,595 acres), San Luis Hills, and Los Mogotes (33,456 acres).

**Wild and Scenic Rivers:**
There are currently no designated wild and scenic rivers within the San Luis Valley BLM administered public lands.

**Other Wilderness Concerns:**
The San Luis Valley area also contains lands that have been identified by citizens as areas that deserve wilderness protection. These lands are currently in legislation (Colorado Wilderness Act of 2003). Some of these areas overlap BLM's WSAs and ACEC designations. The public wilderness proposal areas within the San Luis Resource area are: San Luis Hills (approximately 28,713 acres), and the Rio Grande Corridor (approximately 3,000 acres).

**Environmental Consequences and Mitigation:**

**Proposed Action:**
The Proposed Action, with the resource area-wide recommendations should not negatively affect wilderness characteristics, naturalness, or other resource values. The Proposed Action, with the field offices wide recommendations should not negatively affect ACECs, and Public Wilderness Proposal Areas areas.

Under the Proposed Action the special area designations in C and D FMZs would be managed to return fire to a more natural role in the ecosystem to the extent possible under the Wildland Fire Implementation Plan procedures. Special areas in C and D FMZs would be managed by the appropriate management response that recognizes ecological and resource constraints. Because of the negative impacts from unplanned ignitions, fire suppression in B zones would be aggressive but utilized the suppression restrictions identified for these areas.

Short-term impacts (closures to public entry, reduced solitude, etc.) may occur due to wildland fire use in C and D FMZs. The Proposed Action would likely increase the number of acres burned each year. However the cumulative impact of the proposed action would be positive in the long term because it would return fire to these areas, restore a more natural mosaic of vegetation types, reduce fuel loading and lower the risks of larger catastrophic wildland fires which could destroy wilderness characteristics over large areas.

**Alternative A:**
The impacts to WSAs under Alternative A would not be considerably different from the Proposed Action because the areas would still be managed in accordance with IMP guidelines. However impacts from fire suppression activities could be greater within ACECs and Public Wilderness Proposal Areas that currently do not have protective suppression restrictions and recommendations to ensure protection of special values.

Continued suppression of all wildland fires would likely increase the risk of a large catastrophic wildland fire that could prominently and atypically alter the character of these areas and result in the loss of important resources and supplemental values.

Name of Specialist: Mark Marshall
Recreation Planner
Monte Vista Front Range Detached Center Office

## CRITICAL ELEMENT - ENVIRONMENTAL JUSTICE

**Affected Environment:** Within the project area, Conejos, Costilla, and Saguache Counties are identified as low-income areas; while all or portions of these same counties are identified as minority population areas. It is anticipated that the Proposed Action and No Action Alternative would not have a disproportionately high and adverse human health or environmental effect on minority or low-income populations.

**Environmental Consequences and Mitigation:**

**Proposed Action and No Action**
No effect.

Name of specialist: Pete Zwaneveld
Planning and Environmental Coordinator
Royal Gorge Field Office

## CRITICAL ELEMENT - INVASIVE, NON-NATIVE SPECIES

**Affected Environment:**
The variety and elevation differences within the field offices produces a wide range of plant communities and, along with it, a variety of noxious non-native weeds. The current weed inventory is in progress and not complete. Most species are concentrated along roads, railroads, riparian areas and in past firewood sales and wildland fire areas. Lesser amounts can be found in areas of soil disturbances such as gravel pits, stock ponds, and various rights-of -way.

Species that are most abundant include, Russian knapweed (*Acroptilon repens*), Canada thistle (*Cirsium arvense*), houndstongue (*Cynoglossum officinale L.*) iron weed (*Lipedium Latifolium*), hoary cress ( *Cardaria draba*), henbane (*Hyoscyamus niger*),Field bindweed (*Convolvulus arvensis*)

Noxious weeds may affect the environment by altering soil properties; depleting soil nutrient;, altering the composition of native plant communities; altering movement and use by animals and by reducing their abundance; and by altering the historic disturbance cycles, including fire and grazing. On a watershed level, heavy infestations of weeds can alter seasonal water flows, reduce infiltration, and increase run off. Noxious weeds can detract from recreation sites and lower property values, and they can increase the costs and lower the returns of commercial operations.

**Environmental Consequences and Mitigation:**
Suppressing wildland fire would reduce the opportunity for weeds to invade by reducing the number of acres disturbed by fire in FMZs A and B but may increase the opportunity to introduce and spread weeds due to human activity.

In fire management zones C and D the increase in area burned may aid in the establishment of noxious weeds in proportion to the area burned. The possibility of introduction of weeds from fire suppression actions is still present. The burning of some weeds followed by an herbicide treatment can be an effective weed management tool in certain situations.

The decision to take less aggressive suppression action should take into account the weed situation to determine if fire can be a mitigating action or a negative environmental consequence.

Other mitigation should include the avoidance of weed patches when practical and possible with equipment, camp facilities, parking or staging areas. When noxious weeds are present, fire lines and burned areas should be seeded using certified weed free seed suitable to the soils and climate. The cleaning of equipment and vehicles is an important mitigating measure in preventing the introduction and spread of noxious weeds. When fire vehicles come from areas of the country that have weeds not present in our area the possibility of introducing that weed or weeds in an un-infested area is likely when the vehicle has not had the mud and dirt removed. Finally, education is an important part of mitigating the impacts of weeds. Fire personnel need to be aware of the importance of managing weed populations and must be able to identify weeds so they can avoid them when possible, or at least be briefed concerning the presence of certain weeds they may encounter.

**No Action:**
The consequences of current management are similar to the consequences for the actions described for FMZ A and B of the Proposed Action. Mitigating measures for this alternative are the same as the Proposed Action and would be applicable for any level of suppression action, or prescribed burn.

Name of specialist: Mike Cassell
Natural Resource Specialist
LaJara Field Office

## CRITICAL ELEMENTS - SOILS

**Affected Environment:**
The soils of the BLM lands affected by the fire plan are those formed in volcanic materials that occur on gentle to steep mountain slopes. On the slopes having Douglas-fir, Seitz soil is a common and widespread soil. This soil is very deep, has a clayey-skeletal subsoil, and has a very stony loam surface. On the slopes having pinyon and juniper, shallow soils like Celeste, Tolman and Bushvalley are the predominant soils. (see Soil Surveys of Saguache County, Rio Grande etc). Low shrubs and grasslands where fire has minimal effects dominate other soils.

**Environmental Consequences and Mitigation:**

The Standards for Public Land Health and Guidelines, 1996, describe the requirements necessary to protect soil health. Soils are the foundations on which ecosystems depend and protection measures are vital to ecosystem sustainability. The Standards are considered part of the San Luis Resource Land Management Plan.

*Standard 1:* Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic process. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor and minimizes surface runoff. The indicators of this Standard are rills, gullies, sheet erosion, pedestaling, ground cover, and plant diversity and vigor. Fire and fuel management may affect a number of these soil characteristics and are therefore discussed in the sections below.

*Effects on Soils from Wildfire and Prescribed Fire:* There are two types of fire that should be evaluated for this analysis. The first is wildfire and the second is prescribed fire. A third type is Wildland Fire use, where natural ignitions are allowed to burn as a tool for fuels management. Wildland fire can have effects to soils characteristic of both wildfire and prescribed fire. It is important to evaluate wildfire since under the no-action alternative, wildfires are expected over time to occur. The following discussion will focus on *forested* ecosystems, since fire effects on native grassland soils are relatively minor.

Wildfires, whether ignited by people or natural forces like lightening, can cause impacts to soils by removing surface cover and duff layers, changing nutrient relationships, and by creating hydrophobic (water-repellant) conditions that may persist for up to 5 years. The exposed mineral soil is then subject to runoff and erosion that can reduce long-term soil productivity and cause downslope sedimentation and impacts.

The forested ecosystems of the San Luis Valley can burn under intense wildfires, as evidenced by the Million Fire near the town of South Fork, Colorado. This hot wildfire burned in the summer of 2002, reduced surface organic cover and increased erosion rates. More than half of the 9,000 acre fire had moderate to high hydrophobic conditions (BAER Report [Burned Area Emergency Rehabilitation Report], 2002, Rio Grande National Forest). The fire burned primarily in the mixed conifer zone (montane zone), typical of many of the BLM forested lands.

It is estimated that re-establishment of soil cover may take from 5 to 15 years to develop.

Prescribed fire effects to soils are generally more benign than wildfire. There are a number of examples in the montane zone where prescribed fires have been successfully implemented with few to no effects to soils. Prescribed fires tend to be cool fires, patchy in burn pattern, and often leave a portion of duff present after the burn. Therefore, little erosion occurs. Temperatures rarely get hot enough to cause hydrophobicity. There is ample coarse woody debris after the burn to meet resource needs. Only when woody debris is piled and burned, have there been problems with soil scorching and erosion.

There is a net loss of nutrients that occurs during any fire. In wildfire, the loss is greater than those lost during prescribed fire. In any fire, a portion of the nutrients are returned to the soil surface, where they may erode if erosion forces are sufficient, or they may enter the soil and be available for plant use and uptake. These plant-available nutrients are one of the reasons that vigorous green-up of grasses and forbs occurs after fires.

Coarse woody debris (woody material greater than 3 inch diameter) is ignited in a wildfire but often will remain after prescribed fires. Coarse woody debris promotes nutrient cycling and helps maintain decomposition processes that are beneficial to the ecosystem (Graham et al, 1994). In wildfires, the loss of organic surface materials is much more pronounced than in prescribed fire. Reports have indicated that, in spite of organic reductions from prescribed fire, no significant long-term decreases in total organic matter to the forest floor system have occurred (Pritchett, 1979).

Wildland Fire use allows natural-ignition fires to burn through ecosystems to manage fuels. While they are generally burned within certain environmental and climatic limits, the impacts to soils would likely be a combination of effects similar to wildfire in some areas and as a prescribed fire in others.

*Effects on Soils from Mechanical or Chemical Treatments:* The mechanical treatments include roller chopping, hydro-axe, hand piling, cutting, thinning, pruning, chipping, lopping or chaining. In roller chopping, a bulldozer will push small trees and shrubs down and then run over them with a heavy bladed cylinder that chops the woody material into small pieces of 6 to 8 inches in length. This results in a shift of organic materials to the soil surface, more surface protection for soils, and partial incorporation of organic materials into the soils. A hydro-axe consists of a large cutting blade mounted on a front-end loader tractor. With hydro-axe, the results are similar but materials are not incorporated into mineral layers as is the case with roller chopping.

The benefits of these techniques are that nutrients are returned to the soil. There is better retention of soil moisture with increasing surface cover if materials are left unburned. Soil erosion is reduced or maintained from “no-action” levels in unburned systems. The main concern is that all mechanical treatments need to be done when soils are relatively dry or frozen so that soil compaction is kept to a minimum and infiltration is maintained.

Mechanical piling of woody materials and subsequent burning should be discouraged. Such practices concentrate nutrients, which are subsequently volatilized. Often the soil where slash is piled becomes scorched due to prolonged hot fire.

**Effects of Fires on Soils**

| Treatment Type | Effect on Surface Organic Matter | Effect on Erosion Potential | Effect on Nutrient Distribution or Cycling | Effect on Infiltration and Runoff |
|---|---|---|---|---|
| No Action Forested Conditions | Organic Layers present | Little to No erosion | Biological oxidation of nutrients | Little to no runoff. Infiltration is normal for soil type |
| Wildfire Scenario | Large Amounts Reduced | High Potential | Large Amounts Removed. Some available on soil surface | Reduced Infiltration and Increased Runoff |
| Wildland Fire Proposed Action | Small to large amounts reduced | Low to High Potential | Small to large amounts removed | Low to high water repellency |
| Prescribed Fire- Proposed Action | Small Amounts Reduced | Low to Moderate potential | Small Amounts Removed. Some available for Plants | None to Slight reduction in Infiltration. Slight increase in runoff. |
| Mechanical Treatment (rollerchop or hydro-axe) Proposed Action | Will Increase Surface Cover | Little to No Erosion | Depends on degree of removal or redistribution* | Depends on techniques used. Some potential for compaction and reduced infiltration, increased runoff* |
| * Effects depend on specific treatments being proposed | | | | |

**Estimated Probabilities for Runoff, Erosion and Sediment Delivery for Proposed Treatments and No Action:**

The Seitz soil, having Douglas-fir, ponderosa pine, white fir and aspen, is widespread and typical across many of the San Luis Valley field offices montane lands. Seitz soil is analyzed as representative for areas where many of these treatments could occur. The Water Erosion Prediction Program (WEPP) can be used to show relative probabilities of erosion, runoff and sediment delivery for the proposed treatments. The WEPP model is the state-of-the-art erosion model.

| Treatment | Assumptions | Probability there is Runoff First Year After Occurrence | Probability there is Erosion First Year After Occurrence | Probability there is Sediment Delivery First Year After Occurrence |
|---|---|---|---|---|
| No Action Forest Cover | Forest Canopy, 15 to 25 percent slope, 15 inch annual rainfall, Very stony loam surface, 100 percent cover | 0% | 0% | 0% |
| No Action-Wildfire Scenario | High Severity Fire, 15 to 25 percent slope, 15 inch annual rainfall, Very stony loam surface, 45% cover | 97% | 90% | 87% |
| Mechanical and Manual Treatments | Forest biomass is re-distributed to the soil surface. Results are similar to no action or improved | 0% | 0% | 0% |
| Prescribed Fire | Low Severity Fire, 15 to 25 percent slope, 85 percent ground cover,15 inch annual rainfall, Very stony loam surface | 47% | 30% | 33% |

The WEPP model shows a number of effects on soils. A full forest canopy and ground cover has no erosion probability. Similarly, when fuels are mechanically chipped, chopped, or hydro-axed and redeposited across the treatment area, there is an increase in ground cover that is beneficial at preventing erosion and promoting soil moisture retention.

Wildfires and to a lesser extent, Wildland Fire, can have hotly-burned areas where the probability for erosion, runoff, and sediment delivery is high. If a Wildland Fire is allowed to let-burn, the Fire Plan has mitigation that requires a post-fire assessment and rehabilitation plan be developed for long-term restoration. This action would ensure that highly erosive, hotly burned soils would be surveyed and assessed for protective treatments. This includes mitigation for any suppression impacts to soils from fire lines, handlines, and other effects.

Prescribed fire effects on soils can vary by the severity of the burn. Based on some expected conditions, there is less than a 50% chance of experiencing erosion, runoff, and sediment delivery from these sites in the first year. The first year is most critical since in the second year vegetation recovery of grasses and leaf litter often restore the site to a protected status.

**Environmental Effects Proposed Action:**
The Proposed Action plans to use prescribed fire, wildland fire, mechanical and manual treatments to reduce fuel levels. While some runoff, erosion and sediment delivery could occur from prescribed fire, these risks are lower than those created by wildfire scenarios.

Mechanical treatments have the beneficial effect of adding surface organic materials to the soil, further reducing any existing erosion. There is no or only minor loss of site nutrients depending on type of treatment used. Mechanical operations should be carried out only when soils are dry, frozen or snow-covered to reduce the potential for soil compaction.

**Environmental Effects No Action:**
The probabilities of soil erosion, runoff and sediment delivery are zero if vegetation is allowed to continue to grow and accumulate litter and coarse woody materials. Infiltration occurs at the inherent rate for the soil types.

However, at some point, a wildfire could occur on these sites, and the probability of erosion, runoff and sediment delivery would be high.

**Mitigation Measures to Reduce Impacts to Soils:**
The following mitigation measures are necessary to meet soils standard #1.

- Operate heavy equipment for land treatments only when soil moisture is below the plastic limit or protected by snow and/or 2 inches of frozen soil.
- Manage the land impacts by keeping the sum of eroded, compacted or severely burned land to no more than 15 percent of the activity area.
- Conduct prescribed fire when soil, humus, and large fuels are moist.
- Scatter fuels whenever practical. Avoid mechanically piled concentrations or windrowing of organic matter that could cause nutrient deficits over the activity area. Hand piling is acceptable.
- On forested sites, manage projects so that coarse woody debris is maintained (when materials are available) to no less than the following levels: 3 to 5 tons/acre Aspen; 5 to 10 tons per acre Douglas-fir; 4 to 9 tons per acre for ponderosa pine.
- Use native seeds when reclaiming a burned area when technically feasible. Use Certified Weed-free seed in all instances. Use weed-free certified straw as a mulch, when such practice is prescribed.

Name of Specialist: John Rawinski
Soil Scientist
Rio Grande National Forest

## CRITICAL ELEMENTS - VEGETATION

**Affected Environment:**
The public lands within the planning area consist of twelve major plant communities: riparian, grassland, saltbush, sagebrush, pinyon-juniper woodlands, Gambel oak/mountain shrub, aspen, winterfat, greasewood, half-shrub, annual, and conifer. The grassland, pinyon/juniper and the half shrub communities make up 80% of the area. These areas have different fire histories and fire responses.

**Grassland**
The grasslands occupy well-drained soils below the pinyon/juniper community. Much of this type has been replaced and dominated by several types of low shrubs including rabbitbrush and broom snakeweed. The areas still dominated by grasses the species include blue grama, Indian ricegrass, needle and thread, squirreltail, western wheatgrass, three awn, ring muhly at lower elevations and Arizona fescue and mountain muhly at higher elevations.

Grassland fuels, generally fine fuels, burn readily. However, compact arrangement of stems in the "tufts" of bunchgrasses makes this portion of the plant difficult to ignite. Once ignited, they can smolder for long periods of time if enough material has accumulated. Plant density is a critical factor in grassland's ability to propagate fire. Heat output is relatively low, so fairly continuous fuels are necessary for fire to spread.

**Meadow (Riparian)**
Riparian communities (requiring free water or moist conditions) exist along intermittent and perennial streams, around ponds and springs, and in seeps and bogs. Riparian species vary depending on elevation, substrate and stream channel characteristics. Lanceleaf cottonwood (*Populus acuminata*), narrowleaf cottonwood (*Populus angustifolia*), coyote willow (*Salix exigua*), occupies lower elevations, while narrowleaf cottonwood (*Populus angustifolia*), water birch (*Betula occidentalis*), and alder (*Alnus incana*) are more characteristic of higher elevations. Wood's rose (*Rosa woodsii*), and numerous species of willows (*Salix spp*), sedges (**Carex spp**) and rushes (*Juncus spp*) are common throughout the elevational range.

Fire starts are not common in riparian areas due to their low topographic position and wildland fires rarely spread into riparian areas because the amount of moisture generally present in the vegetation suppresses fire spread. However, under dry conditions, riparian areas can burn severely because of the accumulation of fuels. Precipitation events that occur soon after fire may result in erosion and channel alteration.

Little information is available on the effects of fire or lack of fire on riparian systems. There is no evidence to indicate that fire is necessary to maintain riparian vegetation.

**Sagebrush**
The big sagebrush type generally occurs in both the extreme south and north ends of the valley, the San Luis hills and scattered sites usually below the pinyon/juniper woodlands.

Big sagebrush commonly occurs with green rabbitbrush, Sandberg bluegrass, western wheatgrass, and bottlebrush squirreltail, rubber rabbitbrush, needle-and-thread grass.
Big sagebrush steppe communities historically had low fuel loadings and are characterized by 15 to 70-year interval, patchy wildland fires that produced a mosaic of burned and unburned lands. Fire regimes have been altered in many sagebrush communities due to livestock grazing and fire suppression. Pinyon-juniper trees are invading many sagebrush communities in the planning area. As the trees mature, the combined effects of shading, root competition and phenolic compounds in the trees cause the sagebrush and associated herbaceous understory species to decline. As the pinyon-juniper communities approach a climax seral stage, understory grasses, forbs and shrubs may become very sparse.

Before fire suppression and heavy livestock grazing began, fire was an important factor maintaining boundaries between pinyon and juniper associations and nearby grass or shrub communities.

Big sagebrush does not usually survive fire and the shrubs do not resprout after fire. Sagebrush re-invades a site primarily by off-site seed or seed from plants that survive in unburned patches. Sagebrush would be mostly absent for 5 to 15 years. The rate of recovery depends on the size and season of the fire, the availability of seed, post fire precipitation and competition from other plants.

**Greasewood Flats**
Greasewood occurs on areas with poor drainage and high concentrations of salt. Small amounts of saltbush and rabbitbrush sometimes intermingled with greasewood. Understory vegetation is sparse, but when present is mostly saltgrass.

Greasewood sprouts readily in response to fire, but is thought to burn infrequently because of the lack of fuels and fuel continuity in most stands. Because of the sparse ground cover and position low in the landscape away from much lightning activity, this vegetation type is unlikely to burn. Fire in this community was probably quite infrequent historically.

**Saltbush**
The Fourwinged saltbush type generally occurs in scattered patches with winterfat and half-shrub communities at lower elevations. Fourwing saltbush is fire-tolerant and sprouts vigorously after fire and typically recovers fully within 2 or 3 years after a burn. Because of its unusually low volatilization rate, fourwing saltbush has been described as "fire resistant" (Fire effects Website)

**Winterfat**
The winterfat community typically occurs at lower elevations on high pH soils. Understory grasses include blue grama and western wheatgrass. Because of the lack of fine fuels in this community, fire is rare in this type. If fire does occur winterfat is intolerant to high fire severity and may be killed.

**Annuals**
The annual types are scattered throughout the area in small patches. Predominant species in this type are Russian thistle, nodding buckwheat and stickseed. Fire is not common in this community because of its location on the landscape but if fire does occur it can be a major factor in spreading this community into adjacent fire intolerant types.

**Half-Shrub**
This type represents the largest vegetation type in the planning area. It is found throughout the entire area in all but the highest elevations. The dominant species are rabbitbrush, broomed snakeweed, and Pinque. The predominant grasses include blue grama and ring muhly. Because of the sparse vegetation and the large areas of bare ground, fire is does not play a significant role in this plant community. Drought conditions coupled with high winds can create conditions where fire will carry through this type.

**Pinyon-Juniper Woodlands**
Pinyon-juniper woodlands most commonly occur between 8,000 feet and 10,000 feet, where annual precipitation ranges from 10 to 18 inches. These woodlands are located on dry, rocky hillsides, canyons and foothills below the mountain shrub type. Pinyon-juniper communities are found on a range of soil textures, but most often on gravelly loams and gravelly clay loams. Within the pinyon/juniper woodland, pinyon composition increases with increasing elevation or on the moister, northern aspects.

The major overstory species are Colorado pinyon pine and Rocky Mountain juniper. Deciduous shrubs such as, true mountain mahogany, big sagebrush, and Gambel oak occur within higher elevation stands, on cooler aspects, or in earlier seral stages. Primary associated grasses and forbs include: muttongrass, Indian ricegrass, bottlebrush, and squirreltail. Pinyons and junipers compete more efficiently for soil moisture than do herbaceous or shrubby understory plants; therefore, over time, pinyon-juniper trees are more likely to increase in canopy cover and dominance, while understory plants decrease. Pinyon-juniper woodlands are a climax community.

Fire return intervals vary widely based on local lightning frequency, tree density, and understory characteristics. Ground fires usually kill only trees under three or four feet in height, whereas crown fires, the type that typically occur in mature stands with sparse understories, kill all age classes. Fire intervals for ground fires are estimated at 10 to 30 years. The fire return interval for high-intensity, crown fires ranges from 75 to 300 years.

Across the West, pinyon-juniper woodlands have expanded their historical range since European settlement, especially into sagebrush and grassland communities below areas of traditional pinyon/juniper. Fire suppression, climatic change and overgrazing have been identified as the primary causes of juniper invasion. In the absence of fire or other disturbances, trees eventually dominate the site and crowd out herbaceous and shrub species.

**Gambel Oak/Mountain Shrub**
The mountain shrub type exists in slightly wetter precipitation zones or on northern aspects at elevations ranging from 8,000 to 9,500 feet. The major overstory species are mountain mahogany, skunkbush sumac, and Ribes spp., while understories often contain snowberry, grasses, sedges, vetches and other forbs. This vegetation type frequently occurs on steep slopes, where it forms a shrub thicket. On some sites, pinyon/juniper can invade with prolonged absence of fire. Gambel oakbrush is found in the northern half of the valley, on gentle to steep slopes, forming pure stands from 7,600 to 9500 ft in elevation. On flatter areas with deeper soils, Gambel oakbrush can form a small tree, leaving the understory open and dominated by herbaceous species. Mountain shrub habitats provide food and shelter for many wildlife species. Fires can be large and intense in dry years because of the heavier ground cover and steeper slopes where it occurs. Under less dry conditions, fires may burn the litter and ground fuels without consuming the larger shrubs. Gambel oak is very fire tolerant and usually sprouts vigorously after burning, increasing the density of previously open stands and merging scattered stands into continuous thickets (Brown, 1958). Tree forms may survive low severity fire. Mountain mahogany and snowberry are top-killed by fire, but generally sprout vigorously following fire.

**Broadleaf (Aspen)**
Quaking aspen occurs in mesic areas at elevations ranging from 8,000 to 10,500 feet. Fuels are usually moister in quaking aspen stands and quaking aspen stands often act as natural fuelbreaks. When fires do occur, they tend to burn with low intensity through the understory. Fire will kill the aboveground portion of the plant but the well-protected roots will be stimulated to send up suckers. A moderate to severe fire can rejuvenate a deteriorating stand.

There has been a great reduction of fire rejuvenation of quaking aspen in the West since about 1900. Extensive young stands of quaking aspen are uncommon in the West. Conifers now dominate many older seral quaking aspen stands. In an aspen climax site, a mixed age stand can be self-perpetuating without fire. In areas where aspen is in a seral stage in the evolution of conifer stands, fire that kills the conifers and stimulates aspen root growth is necessary for aspen to maintain site dominance.

**Conifer**
Mixed-conifer forests form the matrix in the higher elevations above the pinyon/juniper. Common trees in this system are white fir, blue spruce, Douglas-fir, and ponderosa pine. White fir is dominant on moist, north-facing slopes, while ponderosa pine and Douglas-fir dominate warmer and drier sites. White fir will eventually dominate if the fire-free interval is sufficiently long to allow trees to grow to a fire-resistant size. Ponderosa pine and Douglas-fir are more fire tolerant, while blue spruce is fire intolerant. Historical ground-fire return-intervals in the mixed conifer forests were likely between 7 to 22 years. In cool, moist white fir forests in New Mexico, naturally occurring fires are mostly light, erratic, and infrequent. Frequently occurring fires are generally of low intensity because of the short time span between fires resulted in low accumulations of dead and down fuels. High-intensity, stand-replacing fires are uncommon. Before fire suppression in mixed conifer forests, ponderosa pine and Douglas-fir, often

dominated the overstory. White fir density has greatly increased in mixed conifer forests, resulting from fire suppression since the turn of the century. Today, the heavy accumulations of fuels and abundant young white fir (which often form "dog-hair" thickets) greatly increase the chances for high-intensity, stand-replacing crown fires[8].

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**Environmental Consequences and Mitigation:**

**Proposed Action:**

Under the Proposed Action, vegetation in the planning area would be positively impacted by the potential increase in the use of natural and prescribed fire and vegetation treatments. The proposed FMP is intended to restore, or replicate as closely as possible, the natural disturbance effects that fire once had on the vegetation.

The impact of fire on the vegetation varies depending on the individual plant species present as well as the composition of the plant communities. Each plant species has a fairly predictable response to fire and each plant community has a definable fire regime under what are termed "natural conditions". However, the "natural" historical conditions exist in few areas today. The influences of man's activities have altered the vegetative communities across the landscape. Livestock grazing, water developments, road construction, recreation, 100 years of fire suppression, and the introduction of exotic plant species have all affected the composition of the vegetative communities and their response to fire.

In some communities, these activities have created conditions in which many plant communities have very high fuel loading. Natural fires in these areas may create hotter, more intense conditions than normal, that may sterilize the soil and set the plant community back to an early seral stage for a long period of time. Other areas have less understory than they used to and natural fires can no longer carry through these communities.

Although fire is an important regenerative force on the landscape, restoration of fire to its "natural fire regime" would not create the same effects that were produced historically. The current altered conditions need to be taken into account when considering the use of fire or any vegetative treatment across the landscape. The SLV FMP contains mitigating measures designed to avoid or minimize negative impacts associated with fire and fire suppression activities. The Fire Zone Categories of A, B, C, and D identify areas where fire would have a negative impact and should be excluded as well as areas where fire would be largely beneficial, would create few resource concerns, and should be encouraged. The Fire Plan is intended to be flexible, allowing for changes in management zones, objectives, and constraints in response to monitoring data and information regarding the number of acres treated each year, and the cumulative acres treated in each landscape.

In general, in vegetation types that have adapted to fire, vegetation would benefit from the removal of decadent, old age classes, allowing younger, more vigorous age classes to increase

[8] Source (Southern Rocky Mountains. An Ecoregional Assessment and Conservation Blueprint, TNC).

across the landscape. Other vegetation types that are fire resistant but are now being invaded by woody species (e.g., sagebrush-grasslands invaded by pinyon and juniper trees), would benefit from the removal of the invading species and the creation of more area suitable for their growth. Vegetation types that are not fire resistant (e.g., pinyon-juniper woodland and coniferous forest) would be reduced in area extent across the landscape. The cover of these vegetation types would more closely reflect the natural range of variation in their abundance. Vegetation types that typically do not burn, such as the salt-desert shrub or barren areas, should not be significantly impacted.

The cumulative effect of implementing the FMP, in conjunction with other management activities, should result in a vegetation mosaic across the landscape and would reduce the likelihood of large-scale insect and disease epidemics, the probability of catastrophic fires, and the vegetation destruction that these entail.

The FMP is designed to achieve the conditions for healthy plant communities described in Colorado Land Health Standard #3. For example, plant communities would be present in mixed age classes sufficient to sustain recruitment and mortality fluctuations and landscapes would be composed of several plant communities that are in a variety of successional stages and patterns. In addition, the mitigating measures on fire and fire suppression tactics identified in the Plan would help reduce the spread of noxious weeds and invasive exotics, and reintroduce native species where seedbanks have become depleted as a result of past management practices.

**No Action:**
The Continuation of Current Management Alternative, involving continuation of the present fire management strategy of suppressing all wildland fires, would negatively impact many vegetation types in the planning area. Continued suppression of all wildland fires would result in an increase in older, more decadent vegetation. Age class diversity and vegetative vigor would decline, seedbanks would become depleted and hazardous fuel loads would accumulate. This would increase the potential for larger, hotter fires that may sterilize the soil and promote the increase of invasive, nonnative species.

Under this alternative, pinyon-juniper woodlands would continue to spread and age, leading to increased fuel loading, and a reduction in understory vegetation. The woodland stands would become more vulnerable to infestations or disease and to catastrophic fires. The sagebrush vegetation type would continue to age, resulting in a decline in plant vigor and production, a reduction in herbaceous species, and invasion by trees. Old age class would dominate the mountain shrub vegetation, low vigor shrubs with fewer herbaceous species. Seral aspen stands would eventually be converted to coniferous tree types with loss of understory productivity and aspen sprouting potential.

The dominance of conifers in the higher elevations would increase, leading to increased likelihood of catastrophic stand-replacing fires. The increased likelihood of large, catastrophic fires increases the chance that riparian communities would burn, which may result in the loss of

old cottonwood stands. No impacts from continued fire suppression are anticipated in the salt-desert shrub vegetation.

Name of specialist: Mike Cassell
Natural resource Specialist
LaJara Field Office

## NON-CRITICAL ELEMENT - TRANSPORTATION

**Affected Environment:**
All areas within the San Luis Valley are designated as Open, Closed or Limited to motorized vehicle use. There are several county, state and federal roads and highways that cross BLM lands. BLM lands are often crossed to gain access to Forest Service lands or private land for private, recreational and commercial purposes. Many areas, especially those designated as Open to motorized vehicles and those Limited to Existing Routes, have a proliferation of user created routes.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Temporary closure of roads and trails would impact the public by restricting their use of, or crossing of, public land. Impacts of fire suppression, such as hazard trees, obliteration of trails, impacts to road surfaces, may also impact transportation. However, most of these impacts would be mitigated in the rehabilitation of wildland fire suppression impacts.

Impacts could also occur as a result of fire personnel driving cross-country or off of designated routes. These areas would likely be used by the public and become well established over time. Mitigation for this is to require that fire personnel follow the current travel management regulations, unless authorization from a BLM Resource Advisor or manager is given. If new routes are created, they must be closed and rehabilitated in accordance with the rehabilitation plan.

**No Action:**
Impacts and mitigation are the same as in the Proposed Action.

Name of Specialist: Mark Marshall
Recreation Planner
Monte Vista Front Range Detached Center Office

## NON-CRITICAL ELEMENT - GEOLOGY AND MINERALS

**Affected Environment:**
Mineral development within the plan area includes three active mineral materials pits, five common use areas, and two active mines on unpatented lode mining claims. There are no permanent facilities at any of these mining-related operations. Mining-related equipment is used and sometimes stored in the three active mineral material pits and two active lode mines.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
There would be no negative impacts to geology from the Proposed Action. A and B FMZs would have little change in impact from the existing situation since wildland fire suppression would be aggressively suppressed as is now the case. All three active mineral material pits and one active lode mine are within B FMZ. One lode mine, the King Turquoise Mine, is within C FMZ. However, since this mine has been active since the late 1800's, there is very little fuel on the mine site. Also, since the Proposed Action calls for human health and safety considerations for fire suppression/use within C FMZs, there should be very little to no impact to this operation under the Proposed Action.

**No Action:**
There would be no impacts to minerals or geology since all fire including wildfires would continue to be suppressed.

Name of specialist: Diann D. Gese
Geologist
Del Norte Field Office; 10/23/2002

## NON-CRITICAL ELEMENT - HYDROLOGY AND WATER RIGHTS

**Affected Environment:**
The total watershed area of the San Luis Valley is about 5 million acres. Within this area, there are approximately 516,000 acres of BLM land or about 10% of the total. These lands are not important from a water production standpoint. Average annual runoff from BLM lands has been estimated at 35,000 acre/feet (Gifford et. al., 1975) or about .85 inches. This contrasts with water yields of over 30 inches at higher elevations.

Drainages originating on BLM lands are either ephemeral or intermittent; most are ephemeral. Runoff is usually the result of intense summer thunderstorms. In heavy snow years, however, spring snowmelt can produce significant runoff. Flow in these channels is reduced by heavy transmission losses, primarily by percolation into the groundwater system. Surface runoff from these drainages rarely reaches perennial streams.

Many of the water sources (spring, seeps, water developments, and wells) on public land within the planning area have adjudicated water rights for beneficial uses, which include livestock, wildlife, recreation, and/or fire suppression.

**Environmental Consequences and Mitigation:**

By consuming both vegetation and ground litter, fire reduces or eliminates cover that would normally intercept and absorb precipitation before it hits the soil surface. As a result, burned sites have lower soil-water infiltration rates, which, in turn, result in increased surface runoff, peak flows, and total discharge, along with, decreased plant-available moisture in the soil. These impacts usually moderate with time after a fire, as vegetation becomes reestablished on the site.

Increases in runoff from fire can stress the stability of the receiving streams and the associated aquatic biota by increasing the total discharge and peak flows of runoff, and possibly altering the timing of flow. For example, at the higher elevations, fire-induced changes to the forest canopy can result in alterations to the development of the snowpack and increase spring snowmelt rates. The potential impacts to receiving streams would vary depending on site factors such as the type and condition of the soil, the vegetation type, the shape and orientation of the watershed, and the general topography. The seasonal timing, size, duration, and intensity of the fire would also determine the magnitude of these impacts.

Wildland fire can also injure downstream water rights by impairing water quality (see water quality impacts) to a degree that the water is not suitable for the adjudicated beneficial uses. Accelerated sediment yields could reduce the capacity of water storage facilities, and negatively affect aquatic biota in stream reaches that have instream flow water rights to protect these values. Water depletion of streams and/or ponds for fire suppression efforts could also cause injury to aquatic biota.

**Proposed Action:**
The impact to the hydrologic characteristics of the management area would very from minor to considerable, depending on the size and location of the disturbance. Small, localized fires would have minor effects on the hydrology of the area. Under the right conditions, larger burn areas could have dramatic effects to the hydrology of the area. Implementing the Proposed Action should result in fewer large, intense wildland fires, which should reduce the long-term negative impacts to the hydrology of the planning area.

**No Action:**
Under this alternative, the impacts to the hydrologic regime would be variable. Small, localized fires would have little impact, while large, intense fires would have considerable impact. If the current practice of suppressing all fires continues, fuels would build up to levels that would

produce more very large, intense fires. This could lead to some dramatic hydrologic changes within the planning area. Increased occurrence of large, intense wildland fires would also increase the risk of damage to water right facilities downstream.

Name of specialist: John Smeins
Hydrologist
Royal Gorge Field Office; 12/06/02

## NON-CRITICAL ELEMENT - LAND STATUS, REALTY AUTHORIZATIONS, AND ACCESS

**Affected Environment:**
Numerous land use authorizations have been issued throughout the San Luis Valley (SLV) on BLM administered public lands. These authorizations include: special use permits; and rights-of-ways for roads, transmission and distribution lines, oil and gas pipelines, water pipelines and irrigation systems, and communication site facilities.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Under the Proposed Action, land status and realty authorizations in the SLV would be little impacted. Overall, there would be an increase in acres burned per year. However, mitigation measures have been built into the Fire Management Plan to offset any potential negative impacts. Some form of fire suppression activity would be provided for all surface facilities and structures under land use authorizations. Facilities, such as communication sites and select substations and compression stations, would be managed under category B constraints, providing for full suppression of any wildland fire. The location of these types of facilities and the owner or owners and their phone numbers should be identified in the fire plan and on the fire maps so that the fire planning staff and the initial attack personnel are aware of their presence. The BLM would cooperate with users to maintain these sites through annual monitoring and hazard fuel reductions projects.

For all other surface facilities and structures under land use authorizations, the appropriate fire suppression activity would be decided on a case-by-case basis. Such determinations may include simply notifying the authorization holder and/or actual full suppression activities. Fire retardant would not to be used on facilities and structures, as a general rule, in order to protect their appearance and function. However, BLM would not be held liable for any damage to facilities and structures as a result of fire.

**No Action:**
The impacts for the No Action Alternative would be significantly similar to those of the proposed alternative. Under this alternative, there would be no significant impact. Access

would remain status quo. During times when fires are burning, some temporary access closures may be implemented for public safety.

Name of specialist: Bill Miller
Realty Specialist
Monte Vista Front Range Detached Center Office

## NON-CRITICAL ELEMENT - RANGE MANAGEMENT

**Affected Environment:**
Approximately 92 percent of public lands managed by the BLM within the San Luis Valley are incorporated into grazing allotments and are managed for livestock grazing. The area is divided into 148 grazing allotments with individual livestock users and over 99 percent of the operations are family operated ranches. The variety and elevation differences within the resource area produce a wide range of plant communities. See the "Affected Environment, Vegetation Section" of this EA. Allotments that are intensively managed have specific vegetative objectives established by an Allotment Management Plan or allotment evaluations.

Past fire suppression and grazing has resulted in a large percentage of mid to late seral stages for each different plant community. Generally this has resulted in a reduction in vegetative diversity and livestock forage.

Monitoring would be an important component of this process. Monitoring would help determine if fire management is leading us towards our vegetative objectives including desired species composition and diversity and the avoidance of undesirable vegetation. The monitoring of these components may result in changing the fire management category for that area or future management. A periodic review of current vegetative conditions on a local and landscape level is important to this process.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Under the Proposed Action, prescribe fire would serve as a useful tool for rangeland management in B, C and D FMZs. In Fire Management Zone (FMZ) "A", no prescribed fires would occur in these areas making this fire management zone the least likely to have impacts on range management. While fire is the preferred method, mechanical fuel treatments can also increase the diversity of plant community types and the diversity of seral stages within plant community types. Mechanical treatments generally target the non-palatable wildlife woody browse. The use of mechanical equipment that scatters the slash is preferred over other methods. This would help to eliminate the cumulative impacts that are described below under the No Action alternative.

In FMZ B, C, and D, prescribed fire could be used as a tool for rangeland management. The area may need to have no or limited grazing for a period of time before the burn so fine fuels that carry the fire can be increased. Temporary use restrictions following prescribed fire treatments would vary depending on climatic events, size of the area burned, and the operator's flexibility in his/her operation. However, range management and grazing permittees should benefit in the long term from increased forage production and accessibility for livestock.

Under the Proposed Action, land managers can use wildland fires for resource benefit in C and D FMZs. Having both wildland fire use in C and D FMZs, and prescribed fires available for vegetative management, managers would have more flexibility in reaching vegetation goals that benefit livestock management.

Grazing allotments, or portions of grazing allotments, could experience short-term negative impacts from wildland fire use in C and D FMZs. Permittees potentially may experience short-term, temporary use restrictions in areas where wildland fires are permitted to burn. However, the cumulative impact of the proposed action would be positive for range management in the long-term because it would likely increase increased forage productivity.

**Mitigation Measures:**

1. In zones B, C, and D where prescribed fire is used, measures should be taken to notify the range permittee in advance of his scheduled grazing use that a prescribed fire is being proposed and that his planned grazing may be affected.

2. If prescribed fires directly impact range improvements, then steps should be taken to compensate the grazing permittee for the damage caused to these range improvements. If at all possible, steps should be taken beforehand to protect these improvements from prescribed fire damage.

3. Prescribed fire use should be conducted during the non-grazing season if possible.

**No Action:**

Continuation of current policy limits the ability to reduce the fuel hazard on the public lands with all wildfires being aggressively suppressed and no vegetation treatments being prescribed. Under this alternative, cumulative impacts could result from vegetation accumulating to a point that if a wildfire is ignited it burns with such intensity that the vegetation is denuded and the land left unable to revive itself over the short term. A burn such as this could leave the livestock permittee with no place to graze his livestock which may possibly cause to him to sell a portion of his herd or go entirely out of the livestock business if he is not successful in finding alternative forage elsewhere. These intensive hot fires are also much more likely to destroy range improvements at the extreme temperatures that they exhibit.

Name of specialists: Melissa Shawcroft
Rangeland Management Specialist
La Jara Field Office

Mark Swinney
Resource Advisor
Monte Vista Front Range Detached Center Office

## NON-CRITICAL ELEMENT - RECREATION

**Affected Environment:**
Recreation use of public lands in the San Luis Valley can be significant but variable according to season and location. Numerous activities occur on public lands in the valley, including but not limited to driving for pleasure/sight seeing, rock climbing, hiking, horseback riding, and mountain biking.

The BLM manages for two types of recreation opportunities on public lands. The vast majority of public lands in the planning area are managed for dispersed recreation opportunities, where recreationists have a freedom of recreational choice with a minimum of regulatory constraints. There are few recreation facilities or supervisory efforts on these lands, with the exceptions of some trailhead, informational and/or directional signs, and picnic tables at popular use sites such as off-highway vehicle areas, dispersed camping areas, hunting areas, swimming holes, fishing access sites, etc.

There are four Special Recreation Management Areas or SRMAs, where the BLM makes recreational opportunities a strong emphasis. The Blanca SRMA (9,147 acres) is managed to enhance opportunities for fishing, viewing wildlife, waterfowl hunting, upland game hunting, and other day-use recreation. The Rio Grande River Corridor (4,595 acres along a 29 mile stretch of the river administered by BLM) provides for intensive management of recreation to enhance float boating, fishing, and other recreational opportunities. The Penitente Canyon SRMA (5,306 acres) is managed for intensive, non-motorized recreational activities such as mountain biking, climbing, horseback riding, and hiking. The Zapata Falls SRMA ( 4,580 acres) is managed for intense recreational use similar to the Penitente Canyon SRMA.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Under the Proposed Action, recreation in the planning area would be little impacted. Overall, there would be an increase in acres burned per year. However, mitigation measures have been built into the Fire Management Plan to offset any potential negative impacts. All of the facilities within the dispersed site facilities and the SRMAs are identified as category B areas. Therefore, they would be subject to the same fire management actions as in the past. All wildland fires would be immediately suppressed, and as a general rule, fire retardant would not be used on the structures in order to protect their appearance and function.

Managing the remaining dispersed recreation use areas as category C and/or D areas would not drastically change recreation opportunities in the short term. Managers can decide to manage wildfires to meet resource objectives while still providing maximum protection for all of the facilities within the dispersed site facilities and the SRMAs. In addition, they can decide to suppress wildland fires that would threaten the life and/or property of recreationists. Conversely, they can impose temporary restrictions for public safety in areas where a wildland fire is burning.

Because the public lands are being managed for multiple uses, both private and commercial users may experience some short-term negative impacts from fire such as temporary use restrictions or short-term degradation of natural resources. For example, there is a possibility that fires during high use periods such as holidays, the river season, or hunting season may displace both private and commercial users. As a result, there may be some economic impacts to commercial outfitters who may be forced to cancel trips or relocate. Some of these impacts may be mitigated by notifying the potentially affected outfitters and public of prescribed burn schedules and suppression/ mitigation plans through the media and/or personal contacts.

This alternative would slightly increase short-term impacts to recreation because of the increased use of managed fires. However, this alternative would provide the greatest management flexibility in using fire to achieve resource objectives, and it would achieve the desired landscape objectives in the shortest time period. Therefore, the cumulative impact of this new management approach would be positive in the long term because it would reduce fuel loads and lower the risks of large, catastrophic fires which could destroy recreation opportunities over large areas. By reducing the risk of uncontrolled wildfires, this alternative would also increase the personal safety of fire fighters and the public.

**Mitigation Measures:**

1. If possible, it is highly recommended that fuels reduction activities take place during those times of the year when the valley experiences the least number of visitors. These times, generally speaking, are from January 1 to April 31.

2. For safety reasons, areas should be closed to visitor use when fire management activities are occurring, and workers and associated equipment are in the area. Wildfire closure locations should be appropriately signed and enforced. If fuels reduction activities are taking place, these locations should be signed with a) justifications for the closure, b) closure dates, and 3) suggestions as to where visitors can go in the vicinity and how to access these areas.

**No Action:**

The impacts for the No Action alternative would be similar to those of the Proposed Action because all areas would be protected from wildland fires under current policy. Under this alternative, there would be little impact.

However, it is important to note that under this alternative both private and commercial users may still experience short-term negative impacts from fire. During times of high fire danger, or when fires are burning, some temporary closures may be implemented for public safety. It is quite possible that uncontrolled wildfires during high use periods such as holidays, the river season, or hunting season may displace both private and commercial users and result in economic impacts to commercial outfitters who may be forced to cancel trips or relocate. Here again, some of these impacts may be mitigated by notifying the potentially affected outfitters and public of prescribed burn schedules and suppression/ mitigation plans through the media and/or personal contacts.

While recreation opportunities would remain status quo in the short term, over the long term, they may diminish. The management practice of suppressing all wildfires increases the risk of larger, intense or catastrophic wildfires, that could alter the naturalness of these areas and result in irretrievable loss of some or all of these areas popular recreation sites. Permanent or temporary loss of some sites would likely result in the relocation of the users to another area which, in turn, may result in conflicts with other users of that area.

Name of specialist: Mark Marshall
Recreation Planner
Monte Vista Detached Front Range Center Office

## NON-CRITICAL ELEMENT - VISUAL RESOURCES

**Affected Environment:**
The San Luis Valley, from high mountains and pine trees to sagebrush flats and stands of pinyon-juniper, is noted for scenic beauty. Wildfires and or fuels reduction efforts in the valley have the potential to create short and long term impacts to visual resources in the valley.

Visual resources in the SLV have been evaluated according to visual resource management (VRM) criteria in BLM Manual 8400. Table 2-28 in the San Luis Resource Management Plan (1991) shows the acreages for the four visual resource management classes found in the SLV. Map 3-13 identified areas within the planning area that have important visual resources and provide data relating to their respective Scenic Qualities and VRM Class.

The highest value scenic resources are the Sangre de Cristo Mountains on the east, and the San Juans on the west. Blanca chaining in the Sangre de Cristo Mountains is classified as a class V area. Areas in this classification have had the natural character of the landscape disturbed to an extent that rehabilitation is needed to restore it to one of the three other classifications.

The majority of impacts to Visual Resources under any alternative related to fire would be confined to smoke production during the fire and the charred appearance of the lands after the fire.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Under the Proposed Action, visual resources in the planning area would be little impacted. Overall, there would be an increase in acres burned per year. However, mitigation measures have been built into the Fire Management Plan to offset any potential negative impacts. Smoke production, and its consequent degradation of visibility and air quality, are regulated by established state standards. These standards are included in the "go/no go" checklist to determine the appropriate response strategy for wildland fires, and they are a necessary

component of any EA for prescribed fires. Wildland fires that cannot be managed to meet these standards would be suppressed.

This alternative would slightly increase short-term impacts to scenic values because of the increased use of managed fires. However, this alternative would provide the greatest management flexibility in using fire to achieve resource objectives, and it would achieve the desired landscape objectives in the shortest time period. Therefore, the cumulative impact of this new management approach would be positive in the long term because it would reduce fuel loads and lower the risks of large, catastrophic fires which could alter the naturalness of areas and result in irretrievable loss of some of the visual resources in the planning area. By reducing the risk of uncontrolled wildfires, this alternative would also increase the personal safety of fire fighters and the public.

**Mitigation:**

1. Fuels reduction activities should create a mosaic pattern.
2. Any remnants of fuel reduction activities such as slash piles, merchantable wood decks, vehicle tracks should be removed and rehabilitated as soon as possible.

**No Action:**

The impacts for the No Action Alternative would not be significantly different for those of the Proposed Action. Under this alternative short-term impacts would occur, however, there would be little impact. Under this alternative, impacts on visual resources from smoke production would be regulated in accordance with state standards for air quality. The only potential long term impact would be from the increased risk of large, catastrophic fires which could result in more severe impacts to visual resources and air quality.

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## NON-CRITICAL ELEMENT - ECONOMICS

**Affected Environment:**

A growing concern of the Federal Wildland Fire Policy and shared by Members of Congress, agency administrators, and the public is the cost of fighting large wildland fires. Some critics believe expenditures are excessive and that the crisis nature of wildfire has led to imprudent use of personnel, equipment, and supplies. Others believe that firefighting practices are not as effective as some natural forces in bringing wildland fires under control and that fire suppression efforts should take better advantage of weather, terrain, fuel, and other natural conditions.

Wildland fires do create both short and long-term economic impacts. Where human populations are higher and large amounts of wildland-urban interface exists, as in the planning area, wildland fire impacts and suppression costs can be economically costly.

**Environmental Consequences and Mitigation:**

Site-specific information on the economics of wildland fire and vegetation management strategies for the region is lacking. Attempting to derive economic measures for evaluating management strategies is beleaguered by inadequate data and the question of what values to include in the analysis. Because of the uncertainties, no quantitative economic analysis is made in this document. The following information is provided for the reader.

The economic impacts of catastrophic wildland fires require careful calculation of all associated costs, losses, and gains. Butry, David T., D. E. Mercer, J. P. Prestemon, J M. Pye, and T P. Holmes (2002) noted we know of no organization in the United States that systematically and empirically quantifies economic suppression impacts of wildfires. The Federal Wildland Fire Policy affirms the current information on fire program benefits and costs are neither reliable nor consistent, and present program analysis methodologies are inadequate and inconsistent among Federal agencies. One dilemma is the question of what values should be included in such an analysis of diverse Federal wildlands. The National Interagency Fire Center (2000) reported that the federal portion of wildfire suppression expenditures averaged $500 million per year for the period 1994-99. Such totals, however, shed no light on suppression expenditures for one fire or set of fires to enable optimal suppression impacts and prevention policies.

Assessing the cost-effectiveness of fuel treatments also presents many challenges. These challenges are accentuated when the fuel treatment under consideration is prescribed fire, especially when proposed fires would be applied over a large geographic area such as a watershed. Prescribed fire may be the most cost-effective fuel treatment for an area, especially in areas managed for ecosystem sustainability or restoration of natural patterns and processes (Omi, P.N., and D. B. Rideout, 1998).

Specific quantitative analysis on the economic benefits of fuels treatments and management strategies is lacking. Most attempts to derive economic measures for evaluating fuel management benefits have been plagued by poor data (Omi 1982). Specifying the costs and losses from a fire, that by its very nature does not occur, is particularly difficult (Sapsis, 2002). Cost analysis are usually based on information provided by estimating the costs of suppressing wildland fires verses prescribed treatments under similar conditions on similar plots of land.

While prescribed fire treatments generally are lower in cost than other fuel treatments, i.e., mechanical thinning, fire also is more variable in its effects. This variability in treatment effect is especially evident in the spatial mosaic created by large-scale fire application. On the other hand, mechanical methods may not be suitable where land management objectives call for restoring or imitating natural patterns and processes over the landscape (Omi, P.N., and D. B. Rideout, 1998).

Conducting prescribed fires typically costs about $30 per acre but can range from $5 to $70 per acre depending on the size of the fire, the type of material burned, and the proximity to buildings. In contrast, suppressing wildland fires, including catastrophic wildfires, typically costs about $700 per acre but can range from $500 to$1,600 per acre, depending on the level of effort

required (EPA, 1999).
Ingalsbee (2000) noted that the costs of reactive fire suppression are much higher compared to the costs of proactive prescribed burning. In 1998 on National Park Service lands, it cost approximately $2,100 per hectare for wildfire suppression compared to only $200 per hectare for prescribed burning.

**Proposed Action:**
Even with the all the uncertainties, proactive vegetation management is presumed (qualitatively) to lower costs to taxpayers over the long term. Suppressing large or catastrophic wildland fires puts firefighters at risk and imposes significant costs for mobilizing firefighters and fire suppression equipment, including fire engines, aircraft, and associated fuels and supplies.

**No Action:**
No potential long-term economic benefits possibly gained by managing to reduce the threat of large and catastrophic wildland fire.

Name of specialist: Brian Hopkins
Planning and Environmental Coordinator
Glenwood Springs Field Office

## NON-CRITICAL ELEMENT - SOCIAL

**Non-Critical – Social**

**Purpose**
A social assessment is done to identify the social consequences of a planned action before the action is taken. Comparisons are made between the conditions if no action is taken and those resulting from the changes the action will produce.

Social consequences are changes the project will cause in the ways people live, work, recreate, and interact with each other in the social and economic systems of the affected communities.

The assessment also suggests mitigation of potentially undesirable consequences.

**Action Elements with Potential Social Consequences**
The San Luis Valley Fire and Fuels Management Plan defines how wildland fire and vegetation treatments will be managed to reduce wildfire threats and enhance fire-related resource qualities on public lands managed by the Bureau of Land Management in the San Luis Valley area.

The FMP divides the valley landscape into four different kinds of fire management zones. Fire and vegetation will be managed differently in the different kinds of FMZ. The plan will permit fire management to be tailored to the conditions of each FMZ. Presently, fires on BLM lands are all suppressed immediately using the resources necessary to control them before the start of the next burning period. Changes will mean that:

- The costs, losses, and benefits of managing the particular fire will be considered. In different places and under different conditions,
  - Fires may be actively suppressed in the shortest time possible,
  - Suppressed using strategies that minimize costs consistent with the fire's effects on values at risk, or,
  - When conditions are right, managed within a predetermined area so that the fire spreads as it would naturally, restoring fire as an ecological process and enhancing resource values.
- Fires can be prioritized for action based on their potential to cause losses, generate benefits, and the costs involved.
- Areas can be prioritized for prescribed fire, mechanical vegetation management, or other treatments to mitigate the wildfire threat and restore desirable wildland conditions.

The geographic limits of each FMZ will be defined by changes in topography and vegetation that will cause significant changes in fire behavior. Ridge tops, edges of wet areas, barren areas or areas of sparse vegetation are examples of features that might define the boundaries of an FMZ. Many FMZ will be fragmented into different jurisdictions and ownerships; many will include private as well as public lands. Although jurisdiction and ownership boundaries have strong cultural and legal importance, they are meaningless to fire behavior. Fire and fuels are best managed across the landscapes in which fire would burn naturally independent of ownership and jurisdiction. As a result,

- The Bureau of Land Management will collaborate with managers and landowners to produce appropriate fire management plans and operations in FMZ where the BLM shares jurisdiction and ownerships with others. This will involve more interaction between BLM fire managers and neighbors, local governments, and other federal and state agency representatives.
- BLM managers already have frequent interaction with stakeholders when actions are planned on public lands managed by the agency. Now, however, the nature of the interaction will be different. Instead of consulting with stakeholders about actions to be taken on public lands, the BLM managers will collaborate in joint actions involving lands managed by other state and local governments and private landowners. This seemingly small qualitative difference has serious consequences for how public involvement is practiced.
- BLM managers will continue to consult with stakeholders to plan fire management on FMZ where BLM is the sole land manager.

Under the FMP, hazardous fuels treatment priorities will concentrate where they can best protect wildland urban interface values. More prescribed fire and mechanical treatments will take place near concentrations of homes. Smoke and other fire effects and aesthetic changes to the landscape will impact more people and the impact will be more direct for large numbers.

- The results of fire management practices will conflict with important values held by some and support those held by others. It is unlikely that most people are in a position

to make good judgments of potential fire management impacts on their values at present because very few have sufficient experience with fire to do so.

- The landscapes that people have come to know will change as a result of fire and fuels management practices. The character of those landscapes influenced decisions people made to locate where they did. The value of real estate in the interface is influenced by the nature of the landscape including that on public lands.
- Smoke, noise, and traffic will increase in the vicinity of fuels management and prescribed fires for short periods of time. During those periods, the safety, convenience, and quality of life of near-by residents may be affected. During prescribed fires, anxiety about escaped fire may be important in some areas.
- Fire and vegetation management effects will influence the types of wildlife supported by the habitat, its accessibility, and its variety.
- Fire and vegetation management effects will influence the quantity and quality of surface and ground water in the vicinity of the projects and downstream.
- Prescribed and fire-use fire will influence air quality both in the vicinity of the fires and down wind. Short term and long term impacts are likely to be different. For example, more burning means more frequent, short exposure to smoke but may mean that populations will seldom be exposed to long lasting, heavy smoke impacts sometimes associated with large, intense wildfires. Prescribed and fire-use fire smoke is more manageable than is wildfire smoke.

The FMP calls for a substantial increase in removal or treatment of wildland vegetation. That will generate a steam of biomass that might present either waste that involves disposal difficulties or resources that might be used by local industry. To the degree that other federal, state, and local agencies; private landowners, and others work together to manage fire, the amount of biomass generated will be large.

- Either disposal or industrial use of the biomass will require the development or expansion of some sectors of the local economy. That is true even if the biomass is left on the wildlands.
- Social, economic, and health impacts will differ among the various alternatives for biomass disposal.

**The Social System of the San Luis Valley (Affected Environment)**

The social impact of the FMP depends on how the plan will alter the pattern of the existing social system's interaction with the environment and how those changes will influence interactions within the system. To estimate those impacts it is necessary to know something about the nature of the social system of the San Luis Valley. The following is summarized from the study, "Southwest Colorado and the San Luis Valley: a Comparative Social and Economic Analysis" prepared in 1999 by Michael Preston of the Office of Community Services, Fort Lewis College, Durango, Colorado. The study was prepared to assist the US Forest Service decide how to organize the San Juan and Rio Grande National Forests.

The culture of the San Luis Valley has its roots in the Spanish conquistadors. The Hispanic culture dominates the Valley, especially in the southern regions. About half of the population is Hispanic. Anglo cultures primarily associated with high-value agriculture and associated

industries share the Valley with the more deeply rooted Hispanics. Cultural and economic affinity is with Northern New Mexico more than with Denver and the Front Range to the north.

A small but growing cultural segment is made up of amenity immigrants. These new comers concentrate in the wildland urban interface neighborhoods surrounding the valley floor and sometimes adjacent to public lands managed by the BLM. Crestone has attracted an artist community and concentration of residents with special environmental and spiritual values. Other interface neighborhoods are populated with relatively recent arrivals without deep roots in the Valley culture.

These new residents and tourists are typically drawn to areas "rich in nature and culture." (Moss, 1993 – cited by Preston) Moss identified two forces driving amenity migrants:

- "Higher valuation of the natural environment and cultural differentiation; and
- Greater attention to leisure, learning, and spirituality."

Non-salary and wage income is a growing source of new dollars to the Valley economy. Much of that is made up of pensions, interest and dividends and related sources some of which are associated with the amenity migrant population. Tourism makes up only about 10 percent of direct earnings. Real estate, construction, and maintenance – some of which is driven by the growth of the amenity sector makes up somewhat less. Although both tourism and amenity-based residential land uses are growing in importance in the Valley, Southwest Colorado provides serious competition for those people. It is not likely that amenity immigrants will dominate the San Luis Valley economy and culture the way that they do in the Southwest any time soon.

Tourism is likely to increase with the expansion of the Great Sand Dunes National Monument, new wildlife refuges, and Nature Conservancy preserves. Some of those tourists are likely to discover the desirable features of the Valley and that may increase the amenity-based sector of the economy somewhat.

A long established agricultural industry dominates both the economy and culture of the Valley. Traditional and more subsistence-oriented agriculture dominates in the southern part of the Valley while more high-value cash crop agriculture dominates further north. Agriculture accounts for two of every five new dollars into the Valley economy. More enters through manufacturing and services based on agriculture.

Agriculture provides a heritage and foundation for strong cultural and social cohesion in the Valley.

Poverty and low income are a persistent characteristic of some segments of the Valley population. Income growth has been slow as has population growth. Personal income growth was about 3 percent even in the 1990's.

**Potential Social Consequences**

1. Least-Cost Suppression, Fire-use fire, and Prescribed Fire.

- This will reduce fire suppression costs.
    i. Effects will not necessarily be noticed locally unless pointed out through the fire information process.
    ii. Reduced government expenditure is important to some segments of the public and cost-effectiveness is generally a desirable government goal.
- **No Action Alternative**
    i. Fire costs to government will increase as fuels accumulate and future fires become more difficult to suppress.
- Fires will burn longer and consume more fuel generating more smoke over a longer period. Ultimately, the amount of smoke generated will be no larger because the fuels burned will eventually burn in future fires. The greater accumulations of fuels resulting from longer periods between burns may actually result in more intense fires generating more smoke – but that will be at some future time and therefore less of a threat in the perceptions of current residents of the Valley.
    i. At some level smoke will be a health threat.
    ii. At lower levels, smoke may be perceived as a bother by some segments of the public. It may reduce the length of stay of some tourists with negative impacts on local economies. The impact on visibility at the national monument is potentially important.
- Suggested mitigation.
    i. A fire and smoke education program directed to the community through groups and organizations as well as the media. Needs to be a two-way conversation rather than an instructional-type campaign.
    ii. Work with local health professionals so that they can advise patients and clients on dealing with smoke where it may be a problem.
    iii. Provide lead time in announcements of burns so that people can take precautions as needed.
    iv. Be aware of events that may be impacted by smoke and coordinate with them.
- **No Action Alternative**
    i. Fuels will accumulate and the trend towards more intense and destructive fires will continue. Smoke from wildfires under those conditions is likely to be at least as disruptive as was seen in the Million Fire of 2002.
    ii. Smoke is more manageable in prescribed fires. Fuels consumed in prescribed fires are not available to produce smoke in future wildfires so that even if the same site burns in the future, smoke production is likely to be less than under the no action alternative. There will be no control of smoke drift direction or timing under the no action alternative.
- Fire-use and prescribed fires will generate greater benefits than will wildfires and will be associated with less damage to resources or threats to interface values. However, it is unlikely that local residents and other stakeholders will recognize those benefits without an active fire education program that explains the roles of fire in the vegetation type involved.

- **No Action Alternative**
    i. The benefits resulting from restoring fire as an ecological process will not be experienced. In some cases, that will lead to ecosystem instability and the potential for major environmental changes that may result in serious negative consequences for values associated with wildlands.

2. During approximately two years following wildfire disasters such as the Million Fire, those among the public who experienced trauma associated with property loss or perceived threat to their homes, families, and lives may experience symptoms similar to post-traumatic stress disorder when fire and smoke remind them of the disaster. The consequences of revived trauma can be serious psychologically and can produce important social and economic consequences.
    - Suggested Mitigation
        i. The effects can be reduced through communications with affected populations to address concerns and help reduce the levels of anxiety. It may be useful to engage community and family psychologists to consult on the content and strategy of such communications. In light of the Million Fire disaster, the agency might want to consider fire management practices in the vicinity of the Million Fire especially carefully for the next year or two.
        ii. During interface fires information officers should organize community information designed to help people process the threat in ways that reduce the chances of future problems. This may be the responsibility of the American Red Cross and County Mental Health but the fire agencies may need to initiate preparations for such actions. Losses resulting from social and economic disruption resulting from extreme emotional trauma in disasters are as real as losses experienced when a business burns down or timber and range are destroyed.
3. Collaboration with Neighboring Landowners and Managers
    - Fire management across landscapes will involve public land managers in more working meetings with neighbors as joint mitigation efforts are planned. The result is likely to be better integration of fire managers into local social systems. The exchange of ideas, information, and goals can lead to shared visions of desired future landscape conditions. That will lead to easier planning and agreements more quickly reached. Working together on fire mitigation can lead to greater collaboration on projects and policies in other land management areas.
    - During collaboration, participants converge on mutually desirable ends that seldom are precisely those that any participate imagined at the outset. Collaboration is not another name for persuading *them* to go along with *our* ideas. It is a mutual process of creating understanding and goals. Satisfaction with such outcomes tends to be high among most participants and commitment to meeting goals is strong. Projects arrived at through collaborative processes succeed more often and are maintained longer.
    - **No Action Alternative**

i. It is unlikely that many landscape scale mitigation projects across ownerships and jurisdictions will result without a collaborative approach.

4. Changes to the Visual Landscape
    - Over time, the FMP will result in a wildland landscape similar to the one that existed prior to European settlement of the Valley. The ponderosa landscape will be more open and occupied by larger trees. This "park-like" landscape has been found to be highly desirable by environmental psychology researchers. The pinyon juniper woodlands will be characterized by more openings and visual diversity. That too has been found to be a desirable landscape. Similar effects will be seen in the lodgepole where now continuous stands are broken up and meadows are enlarged. Aspen stands are an important element of the landscape aesthetics of the wildlands surrounding the Valley. Under the FMP, aspen will increase in vigor and diversity in the age of stands. Aspen is likely to be restored where conifers have suppressed it. Spruce-fir-aspen forests will not look much different than they do now except that there will be more areas in the earlier stages of succession providing some increase in visual diversity.
    - However, the immediate results of burns and some kinds of mechanical treatment may be undesirable, especially close to neighborhoods or in the foreground of views along transportation corridors. Standing blackened and bare stems may be undesirable to look at even at some distance.
    - Suggested Mitigation
        i. When planning burns and mechanical treatments, visual resource management guidelines should be included in the process. In particularly sensitive areas, a landscape architect should be part of the planning and consultation process.
        ii. Continued attention to engaging stakeholders in planning will help identify potential conflicts with values and potential solutions.
5. Wildlife
    - Over time, implementation of the FMP will result in improved habitat for native wildlife species. Among these will be large mammals and birds that are of interest to wildland urban interface residents, hunters, and tourists. More of these animals will be encountered increasing the recreational value of many of the treated wildlands.
    - Where wildlife have been a problem such as where elk use agricultural lands, the improved wildland habitat will likely reduce wildlife pressure on agriculture
6. Biomass and employment
    - Increased vegetation management in the wildlands of the San Luis Valley will provide opportunities for the establishment and growth of new businesses. Several small businesses have developed in neighboring Southwest Colorado to support hazardous fuels mitigation on both public and private lands. Similar industrial development is possible with appropriate support and encouragement in the San Luis Valley although businesses are likely to rely more on mitigation on public lands because interface development is much greater in Southwest Colorado.

- Conditions appear to exist that will support biomass energy generation. The Valley has geothermal resources that might be used in co-generation plants burning wildland biomass and agricultural waste to generate electricity. Other industrial processes can convert biomass and agricultural waste to alcohol or even hydrogen fuels. Existing agricultural industrial infrastructure will help support an energy sector. Feasibility studies should be commissioned to evaluate alternatives.
- Development of small businesses and industries supported by biomass generation will increase employment opportunities in an area that experiences significant underemployment and low incomes. Implementation of the FMP has the potential to help address a chronic social problem in the Valley.
- Consumption of biomass in power generation plants or in the production of alternative fuels such as alcohol will help reduce potentially negative effects of smoke from wildfires, prescribed fires, and fire-use fires. Although it is necessary often to use fire in order to sustain fire adapted ecosystems and to produce other wildland values such as certain wildlife, removal of much of the accumulated biomass before burning will reduce the smoke generated while still allowing fire benefits to the land.

7. Real estate values
   - The dollar values attached to wildland urban interface residential and resort properties derive in large part from the qualities of the surrounding landscape. Appropriate vegetation management through mechanical means and prescribed fire can enhance desirable qualities of the landscape setting and thus increase property values. Inappropriate management might mar the landscape, potentially reducing values of neighboring real estate.
   - Intense wildfires will alter the character of the landscape dramatically. The effects last for decades. Typically the results of intense wildfires are negative to real estate values on lands that are near or overlook the burn. To the extent that the FMP reduces the potential for intense fires that radically modify the character of the wildlands in the vicinity of wildland urban interface development, real estate values will be protected.
   - Similarly, the landscape in the view shed of scenic highways and roads can be protected by reducing the potential for intense wildfire and enhanced through proper vegetation management.
8. Traditional Forest Uses
   - The Hispanic culture of the Valley is long established. Access to and use of the forest is part of that culture. Care should be taken that management actions do not negatively impact those uses. All cultures do not work equally well through the usual NEPA processes. Special, culturally appropriate methods need to be employed for public engagement in fire planning.
   - Native American interests may be significant in the Valley and surrounding wildlands although few Native Americans live in the Valley any more. These have not been identified as yet. Special efforts need to be made to attract input and engagement from Native American stakeholders.
   - <u>Suggested Mitigation</u>

i. Anthropologists at the USFS Rocky Mountain Experiment Station lab in Albuquerque, NM are working with both Hispanic and Native American communities. The Hispanic community of the Valley orient to the cultures of northern New Mexico. It is wise to work with those anthropologists when planning fire management in the wildlands surrounding the Valley in order to effectively engage those stakeholders.

**Summary**

The FMP will generally produce positive social impacts. Chief among these are reduced costs to government and potential increases in local employment for a chronically underemployed portions of the population. Protection of wildland urban interface values and enhancement of ecological sustainability will improve both the quality of life for residents and real estate values.

More frequent exposure to smoke is a possible result of changes in the fire management program. On the other hand, intense, long-lasting exposures such as resulted from the Million Fire will be made less likely. Some populations are sensitive to smoke and will need special attention and advice, probably through their medical advisers.

Amenity values of the landscape will be increased. However, unless visual resource management guidelines are followed, fire and vegetation management actions could cause local negative impacts. The advice of landscape architects and involvement of potentially affected interests can mitigate this potential problem.

Exposure to highly stressful events such as the Million Fire leaves people vulnerable to future strong negative emotions that can have serious social and economic consequences. Post-traumatic stress disorder may follow exposure to wildfire disasters. Prescribed fires, fire use fires, and wildfires that occur within a few years of the disaster may trigger strong negative emotions. Use of fire and anything but aggressive suppression should be carefully considered with the advice of psychologists knowledgeable about PTSD in the vicinity of the Million Fire this year and next.

Name of Specialist: Ron Hodgson
Economic and Social Specialist
Colorado State Office

## NON-CRITICAL ELEMENTS - FORESTRY

**Affected Environment:**

The BLM public lands in the San Luis Valley have a total of 15% forest cover for a total of 76,033 acres. This overall total contains 27,044 acres of commercial forest land and 48,489 acres of pinon juniper woodlands. Of these totals there are 5769 acres of commercial forest land available for management and 10,688 acres of woodlands that are suitable for production of commercial forest products after withdrawn acres were subtracted. These figures are according to the San Luis Valley Resource Management Plan (RMP) Final Environmental Impact

Statement pages 2-27 and 2-32. The commercial forest land supports ponderosa pine, Douglas-fir, white fir, and Engelmann spruce. The largest percentage is found in the ponderosa pine and Douglas-fir types. Aspen has not been an important commercial species in the past. In recent years an average of 40-50 vegetative sales permits have been issued annually. The timber sale program has been slowed in recent years due to lack of staff and insufficient budget. See the "Affected Environment " forestry section of the RMP, pp 2-27 through 2- 32. The RMP identifies a sustained harvest of 288 thousand board feet annually. This harvest has not been met in recent years due to lack of staff and inadequate budget to prepare any sale.

All of the forest stands seem to be quite fire resistant since most of them are sparse stands or are in scattered small sparse stands that have not burned in many years. However, the drought conditions of the last several years have made all of the stands more susceptible to wildlife.

The Crestone and Zapata residential areas are within pinyon stands and have BLM pinyon stands adjacent to them. The local residents are quite concerned about the wildfire potential especially with the current drought conditions and the large wildfires that have occurred in Colorado and other western states in the last few years.

The South Fork area has woodland and commercial forest stands surrounding it and is susceptible to potential wildfires due to this fact. The town did experience a serious wildfire of almost 10,000 acres in June, 2002 that was man caused and, no doubt, made worse by the current drought conditions.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Most of the commercial forest land falls within FMZs "B and C". The Proposed Action in these FMZs would provide protection for existing timbered lands that are valuable for watershed, commercial timber, and critical wildlife winter range. Negative impacts are largely mitigated in the Fire Management Plan and/or would be mitigated in prescribed fire plans.

Overall, the proposed action should improve the general health of the forest by improving age class distribution and reducing fuel loading. The reduced fuel loading would reduce the probability of wildfire and the probability of insect and disease epidemics in all FMZs. Vegetation treatments could also provide forest products when thinning and harvesting of trees are used to reduce fuel-loading objectives.

Pinyon juniper woodlands are generally within the "B" FMZ. There is little opportunity for prescribed fire use since the densest stands are adjacent to the developed areas of Crestone, Zapata, and South Fork. The local residents of these towns would not want a prescribed fire near their dwellings. A vegetation treatment would be a better treatment for these inhabited areas. With a vegetation treatment method it could be possible to have a fuelwood harvest project on these areas and other uninhabited pinyon juniper stands also

**No Action:** Aggressive fire management as currently practiced is not likely to impact forestry practices in the short term. A wildland fire may become large in size in spite of suppression efforts. If the buildup of fuels continues, the risk of catastrophic wildfires would also continue to increase.

Name of specialist: Bill Miller
Realty Specialist
Monte Vista Detached Front Range Center Office

## NON-CRITICAL ELEMENT – FIRE

**Affected Environment:**

Fire History: Current scientific literature has shown the benefits of vegetative treatments in reducing the potential for catastrophic wildfires. Although wildfires have occurred in every month of the year, the fire season normally starts May 1 and continues until October 30 with most fires occurring between June 1 and September 5 each year. Lightning accounts for most starts and for the majority of acres burned. Statistics have been kept on wildfire occurrence since 1964. However, the Rio Grande NF had "unofficially" provided initial attack on BLM lands within the San Luis Valley for many years and did not officially receive that responsibility until an MOU and agreement was signed in 1991. Due to some mis-communication and reporting process shortfalls from the Forest, it is questionable whether **all** of the BLM fires within the Valley have been accounted for between 1991 and 2000.

The following chart characterizes the trend of wildfires within the San Luis Valley. The fires reflected below include only those fires reported on lands administered by the SLV BLM Field Offices.

| *YEAR* | *BLM FIRES* | *TOTAL BLM ACRES* |
|---|---|---|
| 1982 | 0 | |
| 1983 | 0 | |
| 1984 | 0 | |
| 1985 | 2 | .2 |
| 1986 | 0 | |
| 1987 | 0 | |
| 1988 | 0 | |
| 1989 | 0 | |
| 1990 | 0 | |
| 1991 | 0 | |
| 1992 | 0 | |
| 1993 | 1 | 0.5 |
| 1994 | 2 | 3.2 |
| 1995 | 1 | 86 |
| 1996 | 2 | 5.1 |
| 1997 | 4 | 130.3 |
| 1998 | 3 | 166.1 |
| 1999 | 1 | 0.1 |
| 2000 | 3 | 326.7 |
| 2001 | 5 | 9.3 |
| 2002 | 7 | 10.1 |
| **TOTALS** | **31** | **737.6** |
| 20 YEAR AVERAGE | 1.6 fires per year | 36.9 acres per year |

It appears from the data that the number of fires per year is increasing. A possibility is that the increase is due to establishment/confirmation of the reporting process between the Forest and BLM. Also, there may be better reporting as a result of highway signing and a dedicated "report fires" telephone number rather than an actual increase in number of fires per year. Historical fire activity in the SLV is typically limited to class "A" fires of .25 acre or less and controlled within a single burning period. One or two fires per year that result in extended attack typically last for one or two days. Escaped fires that require a Type 3 or Type 2 organization occur on average, once every five years or so. In the predominant fuel types, piñon/juniper woodland with little herbaceous understory and piñon/juniper with a minor ponderosa pine component, suppression operations might average 3 to 4 days in duration. The occurrence of sustained canopy carried piñon/juniper fires is rare and generally requires very high winds.

**Environmental Consequences and Mitigation:**

**Proposed Action:**
Protection of life, property, and resources is a management priority. Implementing a fuels management program which enables BLM land managers to utilize the option of managing naturally occurring wildland fires for resource benefit would enhance their ability to meet these priorities.

When managing these wildfires for resource benefit under particular situations and in specific geographical areas (FMZs C and D), there would be less exposure of firefighters to the risks and hazards associated with direct suppression efforts.

In the long term, the health and sustainability of the resource would be enhanced as fire is allowed to perform its natural function in the ecosystem. There would be some areas where fuel build-up due to fire suppression or other historical management practices would indicate the need for other methods of fuel reduction (i.e., mechanical) before fire can be re-introduced into the ecosystem.

Public health, safety, and property protection would be indirectly enhanced over time. As the fuel build-up is reduced through various methods, including wildland fire use for resource benefit, the areas in which a catastrophic crown fire could initiate and spread would be reduced significantly. Fuel reduction efforts would not eliminate all potential risks and hazards, but would greatly reduce them.

**No Action:**
Under the current fire management policy the BLM land managers do not have access to all of the "tools" or methods available to address their priority for protection of life, property, and resources. They are required to aggressively initial attack all wildland fires without considering any resource benefits that may be recognized by allowing a naturally occurring fire to perform its function in the ecosystem. Firefighters may be exposed to risks and hazards during the suppression efforts that are "disproportionate" to the values at risk. The fuel build-up would continue and the potential for a catastrophic crown fire to initiate and spread, threatening public health, safety, and property, would increase.

Name of specialist: Lary Floyd
San Luis Valley Fire Management Officer (USFS & BLM)
Saguache Field Office

## Cumulative Impact Summary

Under the proposed action, long term cumulative impacts to vegetation would be beneficial, as overall forest health will be improved, movement toward improved fire regime and condition class will be achieved, and reduction of fuels to reduce the risk of catastrophic wild fire would result. All resources would benefit in the long term. Refer to individual resource sections for further discussion on short-term, long-term, and cumulative impacts identified within this document.

## PUBLIC PARTICIPATION

A Notice of Intent to amend the RMP was published in the Federal Register on May 8, 2002 (Volume 67, Number 89, Page 30959).

Publication of the Notice initiated a 45 day public review of the proposed issues to be addressed and the planning criteria. The Del Norte, La Jara, and Saguache Field Managers sent a letter, dated May 10, 2002, to 156 interested parties requesting comments and listing dates and locations of the scheduled public workshops. A news release was sent to SLV newspapers as well as The Pueblo Chieftain and Denver Post. Local radio stations were given a copy of the news release.

Public workshops were held in:

| | |
|---|---|
| Saguache | June 10, 2002 from 3:00 p.m. until 8:00 p.m.; at the Saguache Community Center; 525 7th Street; Saguache, Colorado |
| Alamosa | June 13, 2002 from 3:00 p.m. until 8:00 p.m.; in rooms 308 and 309; College Center Building; Adams State College; Alamosa, Colorado |

A preliminary map and information was available at the workshops. The intent of the workshops was to seek ideas/comments/suggestions that would help create a draft FMP.

The Del Norte, La Jara, and Saguache Field Offices asked for comments on the draft Fire and Fuels Management Plan (FMP) as well as this EA via a formal comment period that ran from May 11, 2002 through June 24, 2002. Comments were accepted and coordination with outside agencies continued through-April 2002.

## LIST OF PREPARERS AND REVIEWERS

**Monte Vista Front Range Detached Center Office**
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Bill Miller – Realty Specialist

**La Jara Field Office**
Mike Cassell – Floodplains, Riparian Zones, Alluvial Valleys, Noxious Weeds and Vegetation
William Joslin – Fire Management Officer
Mellisa Shawcroft – Rangelands (Alamosa, Rio Grande, Costilla, and Conejos Counties)
Jill Lucero - Biologist

**Del Norte Field Office**
Diann Gese – Geology, Minerals, National Energy Plan, and Hazardous/Solid Waste
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**Saguache Field Office**
Lary Floyd – Fire Management Officer
Sid Hall – Fire Management Officer
Steve Sanchez – Natural Resources Specialist

**Royal Gorge Field Office**
Dave Gilbert – Fisheries Biologist
John Smiens* – Hydrology, Water Rights, Water Quality, & Soils
Dave Toelle – Fire Ecologist
Bob Wiegand* – Planning and Environmental Coordinator, & Land Health Standards
Pete Zwaneveld – Planning and Environmental Coordinator, Environmental Justice

**Kremmling Field Office**
Bill Wyatt* – Archeology and Tribal Consultation

**Glenwood Springs Field Office**
Brian Hopkins – Economics

**BLM Colorado State Office**
Ron Hodgson – Social
Marcus Schmidt – Climate and Air Quality

**Rio Grande National Forest**
Christie Achenbach – Public Affairs Officer
Mike Blakeman – Mitigation and Education Specialist
John Rawinski – Soils
Vince Spero – Archeology and Tribal Consultation

* Front Range Fuels Team member

**IN CONSULTATION WITH:**

Colorado State Forest Service
Alamosa County
Conejos County
Costilla County
Rio Grande County
Saguache County
The Nature Conservancy
Local Volunteer Fire Departments
Colorado Division of Wildlife
US Forest Service
US Fish and Wildlife Service
Colorado Air Pollution Control Division

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# APPENDIX A

USFWS Concurrence Letter for San Luis Valley Fire and Fuels Management Plan Biological Assessment

**United States Department of the Interior**
FISH AND WILDLIFE SERVICE
Ecological Services 764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
**ES/CO:BLM**
**MS 65412** GJ

**October 1, 2002**

**Memorandum**

T0: Field Office Manager, Bureau of Land Management, Saguache Field Office, Saguache, Colorado
From: Western Field Supervisor, Fish and Wildlife Service, Ecological Services; Grand Junction, Colorado

Subject: Comments on the San Luis Valley Fire Management Plan Biological Assessment

We have received your September 4, 2002, correspondence requesting comments on the San Luis Valley Fire Management Plan Biological Assessment. After reviewing your biological assessment and discussing the plan on numerous occasions with your Wildlife Biologist (Brian Garcia), the Service concurs with your determinations of effects for federally listed species. The Service bases our concurrence on the following criteria for listed species within the area affected by the San Luis Valley Fire Management Plan (FMP). Although candidate species do not receive protection under the Endangered Species Act, we appreciate the considerations taken by the Bureau of Land Management for possible impacts. Additionally, we wish to make you aware if a candidate or proposed species becomes listed prior to the completion of the FMP, the BLM should reinitiate consultation with the Service.

**Whooping crane *(Gras americana)*** Determination: *No effect*

In August 2002, the U.S. Fish and Wildlife Service no longer required effect analysis except for those specified counties in eastern Colorado. The FMP does not include any of these counties.

**Black-footed ferret *(Mustela nigripes)*** Determination: *No effect*

The last confirmed siting of black-footed ferrets in the San Luis Valley was in 1974. In 1988, a survey of prairie dog towns was conducted to evaluate the potential reintroduction of black-footed ferrets (Pat ton 1988). The results of this survey concluded that there were insufficient populations of prairie dogs to support black- footed ferrets.

**Mexican spotted owl *(Strix occidentalis lucida)*** Determination: No effect

The FMP does not include projects in or around Mexican spotted owl habitat. The only reported occurrence was in the adjacent Conejos Peak Forest District, which is not within the action area of the FMP.

**Canada lynx *(Lynx canadensis)***
Deteffilination: *May affect, not likely to adversely affect*

The Service has determined that the FMP is in agreement with the *Lynx Conservation Assessment and Strategy* guidelines. A standard of the guidelines is that the percentage of unsuitable habitat in a Lynx Analysis Unit (LAU) should not be greater than 30 percent. If during the course of implementing the FMP, the BLM should exceed this standard, the BLM should stop all vegetation treatment projects and reinitiate consultation. Since the BLM shares jurisdiction with the Rio Grande National Forest for the Cochetopa Hills LAU, the BLM should remain in contact with the Forest Service to prevent the possibility of either agency exceeding the 30 percent habitat unsuitability threshold.

**Bald eagle *(Haliaeetus leucocephalus)***
Determination: *May affect, not likely to adversely affect*

Bald eagles are present in the San Louis Valley (December to April) which is not considered the wildland fire season (May-September). To avoid adversely affecting bald eagles, the FMP has included minimization efforts for fire suppression activities within one half mile of any roost sites. If fire suppression activities are within this Y2 mile buffer, the BLM would initiate emergency consultation. The FMP project goals within riparian areas are for the restoration of decadent or degraded willow-cottonwood stands and would avoid identified eagle roost trees.

**Southwestern willow flycatcher *(Empidonax traillii extimus)*** *Determination: May affect, not likely to adversely affect*
The Service has identified the loss of the cottonwood-willow riparian habitat as the leading cause for the decline of the southwestern willow flycatcher. A recovery goal for this species is the restoration of riparian areas. The FMP projects within riparian areas are targeted to improve degraded and/or decadent habitat that is considered unsuitable for southwestern willow flycatcher. Since the goal of the FMP within riparian areas is for habitat improvement, the Service believes that the FMP would assist in the recovery of this species. We would like to take this opportunity to reiterate the criteria that are important in preventing any adverse effects to the southwestern willow flycatcher .

Since nesting activity for this species occurs between April 20 and August 15, the timing of projects associated with the FMP would avoid the possibility of adverse effects to the southwestern

willow flycatcher or suitable habitat. Confiffi1ed nest sites would be buffered with a ½ mile no activity zone as proposed in the FMP.

Prior to any FMP projects in riparian areas, the BLM would evaluate the possibility of suitable southwestern willow flycatcher habitat. If the area is considered suitable habitat for nesting, the BLM should not implement projects that would reduce the area to an unsuitable condition without conducting southwestern willow flycatcher surveys. This situation may occur if the habitat is in decline, but is still suitable for nesting.

**Mountain plover *(Charadrius montanus)***
Determination: *May affect, not likely to adversely affect.*

Overgrazing and interrupted fire regimes are primary factors in the decline of mountain plover habitat (Knopf and Rupert 1995). It has been documented that mountain plovers respond in a positive manner to prescribed fire treatments by providing suitable breeding and winter habitat (USFWS 2002). However, it is important that vegetation treatments (mechanical or fire) should not occur during the nesting and fledgling season (April1 to July 15). The FMP does consider this potential effect and has designed their plan to exclude any vegetation treatment projects around this time period (before April1 or after July 15). This time constraint would prevent any possible adverse effects to nests or fledglings. When prescribed fire is used adjacent to mountain plover habitat, the BLM should consider possible effects from smoke and helicopter/aircraft activity .

**Federal Candidate Species Considered by the San Luis Valley Fire Management Plan**

As mentioned in the opening paragraph, candidate species do not receive Federal protection under the Endangered Species Act. Candidate species that could possibly be affected by the FMP include, yellow-billed cuckoo *(Coccyzus americanus)* and Gunnison sage-grouse *(Centrocercus minimus)*. The Service concurs that the FMP *is not likely to jeopardize the continued existence of these species*. If either candidate becomes listed prior to the completion of the FMP, the BLM should reinitiate consultation with the Service for possible effects to the yellow-billed cuckoo or the Gunnison sage-grouse.

The Service has identified the loss of suitable habitat as the primary cause for the decline of yellow-billed cuckoo. West of the continental divide, broadleaf riparian areas are the primary habitat for this species. Invasive plants and degradation from overgrazing and logging have reduced the amount of suitable habitat. In riparian areas, the FMP has targeted habitat restoration as the only purpose for conducting vegetation treatments. Although the yellow-billed cuckoo has only been documented on a few occasions in the San Luis Valley, the FMP would promote the recovery of this species.

We would like to bring to your attention the potential impact that prescribed fire can have to sage-grouse habitat. Fire has been identified as a primary threat to sage grouse habitat (PACWPL 2002). In general, wildland fires in sage grouse habitat should be suppressed and prescribed fires avoided. If prescribed fire is going to be used as a management tool, the utmost caution should be taken. Connelly et al. (2002) have recommended management guidelines for the various components of sage grouse habitat including the avoidance of large prescribed fires that remove contiguous areas of sagebrush. Before conducting any vegetation treatments within Gunnison sage-grouse habitat, the BLM should consult with the Colorado Division of Wildlife to be sure that their activities are conducive with the goals of the CDOW for the recovery of the Gunnison sage-grouse.

If the Service can be of further assistance, please contact John Kleopfer at the letterhead address or (970) 245-3920, extension 39.

pc: FWS/ES, Lakewood

JKleopfer: SLVFireMgmntPlanMem.wpd: 100102

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# APPENDIX B

## San Luis Valley Climate Data From Alamosa, CO.

### SLV CLIMATE DATA FOR ALAMOSA, CO

The SLV is characterized by warm to hot on the valley floor and cooler in the mountains during summer months. Winters are colder on the valley floor than the mountain slopes due to cold air drainage from the mountains. Precipitation can occur in the mountains throughout the year. Winter snow pack supplies much of the water for the SLV throughout the year. Summer showers and or thunderstorms provide additional moisture for the area. Communities surrounding Alamosa will have similar temperatures.

### Normal Temperatures for 1971-2000[9]

| Month | Temperature Normals (deg. F) | | | Precipitation Normals (inches) | Snowfall (inches) | Mean # of days with | |
|---|---|---|---|---|---|---|---|
| | Hi | Low | Average | | | Thunderstorms | Fog[a] |
| January | 33.1 | -3.7 | 14.7 | 0.25 | 4.5 | 0.0 | 3.9 |
| February | 40.2 | 4.7 | 22.5 | 0.21 | 4.6 | 0.2 | 2.3 |
| March | 49.6 | 15.8 | 32.7 | 0.46 | 7.0 | 0.2 | 1.6 |
| April | 58.7 | 22.8 | 40.8 | 0.54 | 4.0 | 1.3 | 1.0 |
| May | 68.3 | 32.4 | 50.4 | 0.70 | 1.8 | 6.4 | 0.8 |
| June | 78.4 | 40.4 | 59.4 | 0.59 | 0.0 | 5.8 | 0.4 |
| July | 81.7 | 46.4 | 64.1 | 0.94 | 0.0 | 11.7 | 0.7 |
| August | 78.9 | 45.2 | 62.1 | 1.19 | 0.0 | 12.4 | 1.0 |
| September | 72.5 | 36.5 | 54.5 | 0.89 | 0.3 | 5.1 | 1.4 |
| October | 61.7 | 23.9 | 42.8 | 0.67 | 3.6 | 1.0 | 0.9 |
| November | 45.7 | 11.1 | 28.4 | 0.48 | 4.5 | 0.1 | 2.2 |
| December | 34.8 | -0.7 | 17.1 | 0.33 | 7.1 | 0.0 | 4.1 |
| **ANNUAL** | **58.6** | **22.9** | **40.8** | **7.25** | **37.4** | **44.2** | **20.3** |

[9] National Weather Service, Pueblo, CO. (http://www.crh.noaa.gov/pub/cli/alamosa.html)

[a] Heavy fog means visibility equal to or less than ¼ mile.