United States Department of the Interior

Bureau of Land Management
Nevada State Office
P.O. Box 12000 (1340 Financial Blvd.)
Reno, Nevada 89520-0006
http//www.nv.blm.gov/

In Reply Refer To:
1610/9210 (NV-930)

Dear Reader:

Enclosed is the *Proposed Elko and Wells Resource Management Plans Fire Management Amendment and Environmental Assessment* (EA). The Bureau of Land Management (BLM) proposes to amend the 1987 Elko RMP and the 1985 Wells RMP to incorporate current direction for responding to wildfires and using fire to achieve resource management objectives. The plan covers public lands in northeastern Nevada that are administered by the Elko Field Office. Public scoping for preparation of this document occurred beginning in May of 2001. In September of 2002, a draft document was circulated for public review and comment. Based on the EA, the document includes my determination that the proposed plan will not result in significant impacts to the human environment.

All parties currently on the distribution list for this planning action are being mailed copies of the document. It may also be viewed or downloaded from the Elko Field Office website at www.nv.blm.gov/elko. Additional copies may be obtained from: BLM, Elko Field Office, 3900 East Idaho Street, Elko, NV 89801, telephone 775-753-0200.

A notice of availability (NOA) for this document is being issued in the *Federal Register* and through regional media. Publication of the NOA will initiate a 30-day public protest period. Any person who participated in the planning process and has an interest that may be adversely affected may protest a proposed land use planning action to the Director of the BLM, in accordance with planning regulations at 43 CFR 1610.5. Current instructions for filing a protest are being provided with distribution of the document, and are also posted on the Elko Field Office website. A protest must be in writing and filed by December 10, 2003.

The Elko Field Manager would appreciate receipt of a copy of any protest filed. For additional information, please contact Joe Freeland, Fire Management Officer, at 775-753-0200. Thank you for your interest in fire management on public lands in northeastern Nevada.

Sincerely,

Robert V. Abbey
State Director, Nevada

Enclosure
As Stated Above

United States Department of the Interior Bureau of Land Management

FINDING OF NO SIGNIFICANT IMPACT

Elko/Wells Resource Management Plans Proposed Fire Management Amendment and Environmental Assessment BLM/EK/PL-O3/026-1610/9211

Based on the environmental assessment (EA) for the proposed fire management amendment to the Elko and Wells Resource Management Plans (BLM/EK/PL-03/026), I have determined that the proposed action, as described in the EA, will not significantly affect the quality of the human environment. Therefore, preparation of an Environmental Impact Statement (EIS) is not required prior to approval of the proposed plan.

This finding is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27) with regard to the context and the intensity of impacts, as discussed in the EA.

Context

The proposed plan focuses on the management of fire on 7.5 million acres of public lands that are intermixed with about 3.5 million acres of private lands in northeastern Nevada. The intensity and size of wildfires have increased compared to pre-settlement conditions, and wildfires pose a significant threat of risk to life, property, and resources. Vegetative communities have high fuels loads that are highly flammable, especially at the height of the fire season in July and August. The proposed plan prescribes a strategy for responding to fires and reducing hazardous fuel loads at a landscape level. It delineates communities at risk at the wildland/urban interface and throughout the district. Development of the proposed plan involved participation by persons, agencies and organizations with differing values. The proposed action addresses issues for fire management with an objective of improving the condition of public lands throughout the region.

Intensity

1) *Impacts that may be both beneficial and adverse*.
The analysis recognizes the beneficial role of fire in maintaining natural ecosystems, and problems to overcome adverse impacts associated with the increased frequency, size, and/or intensity of wildfire under current conditions. Strategies are proposed to avoid or reduce adverse impacts, to include increased invasion by weeds in native communities and loss of habitat diversity and forage. For many resources, the proposed action is expected to reduce adverse impacts due to reduction of hazardous fuels loads, resource-focused response strategies, and new procedural guidelines. The proposed increase in fuels treatment projects is expected to promote a healthy vegetative response to result in improved rangeland conditions and fire resiliency. Beneficial effects include improved rangeland, watershed and habitat conditions, including increased biodiversity and a return to more naturally functioning ecological systems over time.

2) *The degree to which the proposed action affects public health or safety.*
The proposed action incorporates current guidelines and procedures for fire management and the protection public health and safety, and the safety of wildland firefighters.

3) *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*
Fire management activities have no potential to affect characteristics of the only designated "area of critical environmental concern" (ACEC) in the planning area, the Salt Lake ACEC. The proposed plan incorporates applicable procedures for the protection/and management of historic and cultural resources and other ecologically critical areas in the planning area.

4) *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*
The effects of wildland fire and bummed area rehabilitation and hazardous fuels reduction projects, to include mechanical, chemical, biological and prescribed fire treatments, are well known and documented. To the degree such treatments are proposed to reduce adverse impacts and meet resource management objectives, effects not likely to be highly controversial.

5) *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*
All fire management actions are subject to applicable procedures to prevent undue environmental harm and risk. The effects of implementation of the proposed plan are subject to evaluation and monitoring to address any uncertainty.

6) *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*
Overall, the methods of vegetation treatment activities, including fuels reduction, are scientifically accepted methods to employ to avoid significant effects and meet resource management objectives of the plans that would be amended. As a standard procedure, all fire management actions would continue to be subject to monitoring and further analysis to ensure they do not establish a precedent for future actions and do not represent a decision in principle about a future consideration.

7) *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*
All resources are evaluated for cumulative impacts in the EA, and no significant impacts are identified. As a standard procedure, cumulative impacts would continue to be subject to further review as actions are proposed, and on an area-specific and case-by-case basis.

8) *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historic resources.*
The proposed plan incorporates standard operating procedures to protect significant cultural resources against adverse effects in response to the occurrence of a wildfire, as well as in planning rehabilitation of burned areas and hazardous fuel reduction projects.

9) *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA of 1973.*
Three threatened or endangered fish species occur in the planning area (Lahontan cutthroat trout, Independence Valley speckled dace and Clover Valley speckled dace), and no critical habitat has been designated for these species. As noted in the EA, BLM prepared a biological assessment that concludes the proposed action may affect, but is not likely to adversely affect, these species or their habitat.

10) *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*
The proposed plan has been developed and reviewed to ensure its consistency with current and interagency plans and requirements of Federal, State and local agencies, as well as tribes in the area. It is standard procedure for future fire management projects to undergo additional environmental review, and that any permits required for the protection of the environment be obtained.

Robert V. Abbey

Robert V. Abbey, State Director, Nevada

10-14-03

Date

Attachment:
Proposed Elko/Wells Resource Management Plans Fire Management Amendment and Environmental Assessment

PROPOSED
ELKO/WELLS RESOURCE MANAGEMENT PLANS
FIRE MANAGEMENT AMENDMENT
AND
ENVIRONMENTAL ASSESSMENT

BLM/EK/PL-2003/026-1610/9211

Prepared by
Department of the Interior
Bureau of Land Management
Elko Field Office

October 2003

This document outlines and analyzes the impacts of four alternatives for amending the 1987 Elko Resource Management Plan and 1985 Wells Resource Management Plan for fire management. It covers lands administered by the Bureau of Land Management, Elko Field Office, in northeastern Nevada. The planning area is in Elko County and portions of Eureka and Lander counties. The preferred plan, described as the proposed action, provides direction consistent with current policies of the 2001 "Review and Update of the Federal Wildland Fire Management Policy and Program Review." It provides for an integrated approach for responding to wildfires, rehabilitating burned areas, and reducing hazardous fuels loads. The proposed plan incorporates applicable procedures for the protection of resources, consistent with meeting objectives of the previously approved resource management plans.

For further information contact Joe Freeland, Fire Management Officer, Bureau of Land Management, 3900 East Idaho Street, Elko, Nevada 89801, telephone (775) 753-0200.

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Fire Management Amendment Environmental Assessment

CHAPTER 1 - PURPOSE AND NEED

The Federal Wildland Policy, developed in 1995 by nine different federal agencies, has recognized the need for fire management plans as the primary tool to manage fire. Neither the Elko nor the Wells Resource Management Plans (RMP) specifically addresses fire management. A Fire Management Plan (FMP), an operational document, was prepared in 1998. The 1998 FMP focuses primarily on the logistical aspects of responding to and suppressing a wildfire, and rehabilitation of the burned area immediately following the fire. The current RMPs and the 1998 FMP do not provide adequate direction consistent with current policies for fire management; therefore, a RMP Amendment is necessary.

The Fire Management Amendment will be referred to as the FMA for the remainder of this document. This Environmental Assessment (EA) has been prepared to analyze impacts of alternatives for the FMA. The EA was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4332) and the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seg.). This FMA will serve as a guide in the control of frequency, size, distribution and intensity of wildfires on lands managed by the Elko Field Office (District). The District encompasses both the Elko and Wells resource areas.

A. Purpose

Single focus policies, based solely on systematic fire suppression, have had an impact on the landscape causing fuel loads to increase. More integrated approaches, based on restoring fire-adapted ecosystems, reducing hazardous fuel loads, suppression, and rehabilitation after burns all play a vital role in an effective fire management strategy. An integrated approach will reduce the danger to fire fighters, improve the productivity of public lands, protect public and private property from devastating fire and, over the long term, reduce fire suppression costs. In most cases, fire will be suppressed immediately; however, the approach described in the Proposed Action provides a greater range of tools, focusing on general fire management, prevention, response and rehabilitation.

The FMA/EA for the District has been developed to provide direction and continuity in establishing operational procedures to guide all fire management activities, and will be a tool to guide the implementation of resource management objectives. The FMA will also provide the guidance necessary for the “Fire Management Plan” (FMP) prepared by the District’s fire management officer. This document outlines the operational framework and funding mechanisms necessary to implement the FMA.

The purpose of the FMA is to:

- Provide an integrated, balanced approach for fire management that addresses fire prevention, fire response and fire rehabilitation.
- Provide for the protection of life and property.
- Provide for the protection of habitat required by special status species.
- Provide for effective resource protection and enhancement.
- Reduce hazardous fuels.
- Accomplish resource objectives.

Alternatives for the FMA have been formulated to meet these purposes to varying degrees and are described in Chapter 2.

B. Need

Severe fire seasons have affected not only the number of acres burned, but also the number of firefighters mobilized, amount of tax dollars spent on emergency suppression and damage to private property. To address these conditions, the Federal Wildland Policy states that:

> "Federal agencies will develop Fire Management Plans for all areas subject to wildland fires. These plans will address all potential wildland fire occurrences and include a full range of fire management actions; use new knowledge and monitor results to revise fire management goals, objectives and actions; and be linked closely to land and resource management plans."

The Fire Policy's 1996 Implementation Action Plan Report clarified that:

> "Individual field units are responsible for Fire Management Plan development. They must involve their fire management partners and the public."

The need for this approach was again emphasized in the Review and Update of the 1995 Wildland Fire Management Policy in 2001. Much like the 1995 review, the 2001 review repeatedly emphasized the critical importance of "… the development and implementation of high-quality Fire Management Plans by all land managing agencies."

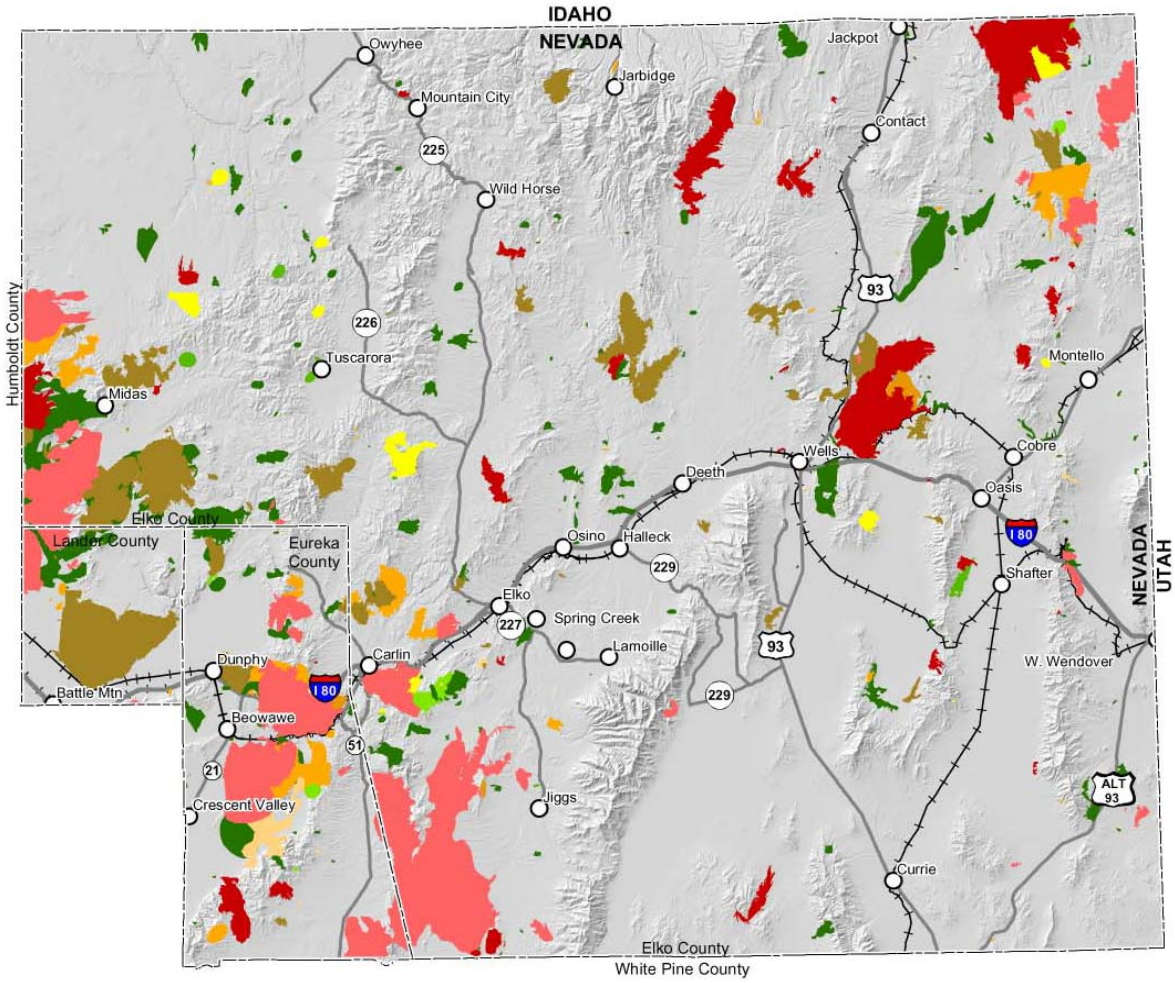
Since the current RMP's do not provide adequate direction for fire management; a RMP Amendment is necessary to complement these documents. This FMA and EA explore the various alternatives in which this policy can be carried out, consistent with agency direction, and analyzes the foreseeable impacts associated with an integrated fire management program. The FMA/EA compliments the management actions adopted in the Elko and Wells RMPs by providing the necessary guidance for effective fire management.

C. Fire History

An understanding of why, when and where fires typically occur in the District is essential when determining locations for fire management to reduce fire hazards, modify fuel loading or alter wildlife habitat. Areas recently burned by wildfire may not be suitable candidates for prescribed burns. Similarly, areas that have burned frequently throughout recorded history may be candidate sites for wildfire prevention practices, such as fuelbreaks, fire roads and limited prescribed burns.

The local area fire history can provide clues for identifying areas with the greatest risk for ignition, areas with potentially dangerous fuel loads, the expected rate of fire spread and its likely intensity. As shown in Table 1-1 and Figure 1-1, the District has experienced large fires over the last 5 years.

The most active year was 1999, when fires burned over 380,000 acres. Annual changes in fire occurrence can be explained by factors such as fuel loads, change in vegetation, and climatic conditions. Wildland fires occur on a year-round basis, but the accepted length of season is from May to September.



Year

1980 - 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1998 | 1999 | 2000 | 2001

Note: Fires may overlap each other. Only one year is visible.

EDAW

Fire History

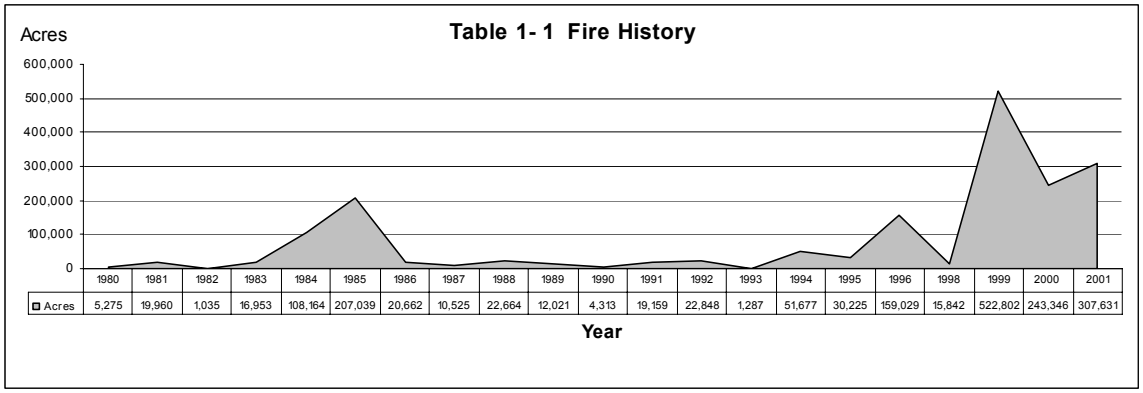
Figure 1 - 1

N 0 5 10 20 Miles

September 2002

The desired result of fire management activities is the establishment, or maintenance, of healthy ecosystems characterized by good distribution and successional stages of vegetation communities, such as would occur over time under a natural fire regime.

Cheatgrass encroachment on low elevation lands (below 6,500 feet) within District boundaries may cause the average acreage burned per year to increase, as continued expansion of this vegetation type increases the size and intensity of wildfire.



	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1998	1999	2000	2001
Acres	5,275	19,960	1,035	16,953	108,164	207,039	20,662	10,525	22,664	12,021	4,313	19,159	22,848	1,287	51,677	30,225	159,029	15,842	522,802	243,346	307,631

Note: Based on District GIS coverage for fire history. No data was available for 1997; does not include fires under 300 acres.

Lightening has been the principal ignition source of wildland fire in the District. Approximately 10 to 15 percent of wildfires are human caused, primarily due to railroad fire, isolated mining activity and recreational caused fires.

D. Issues

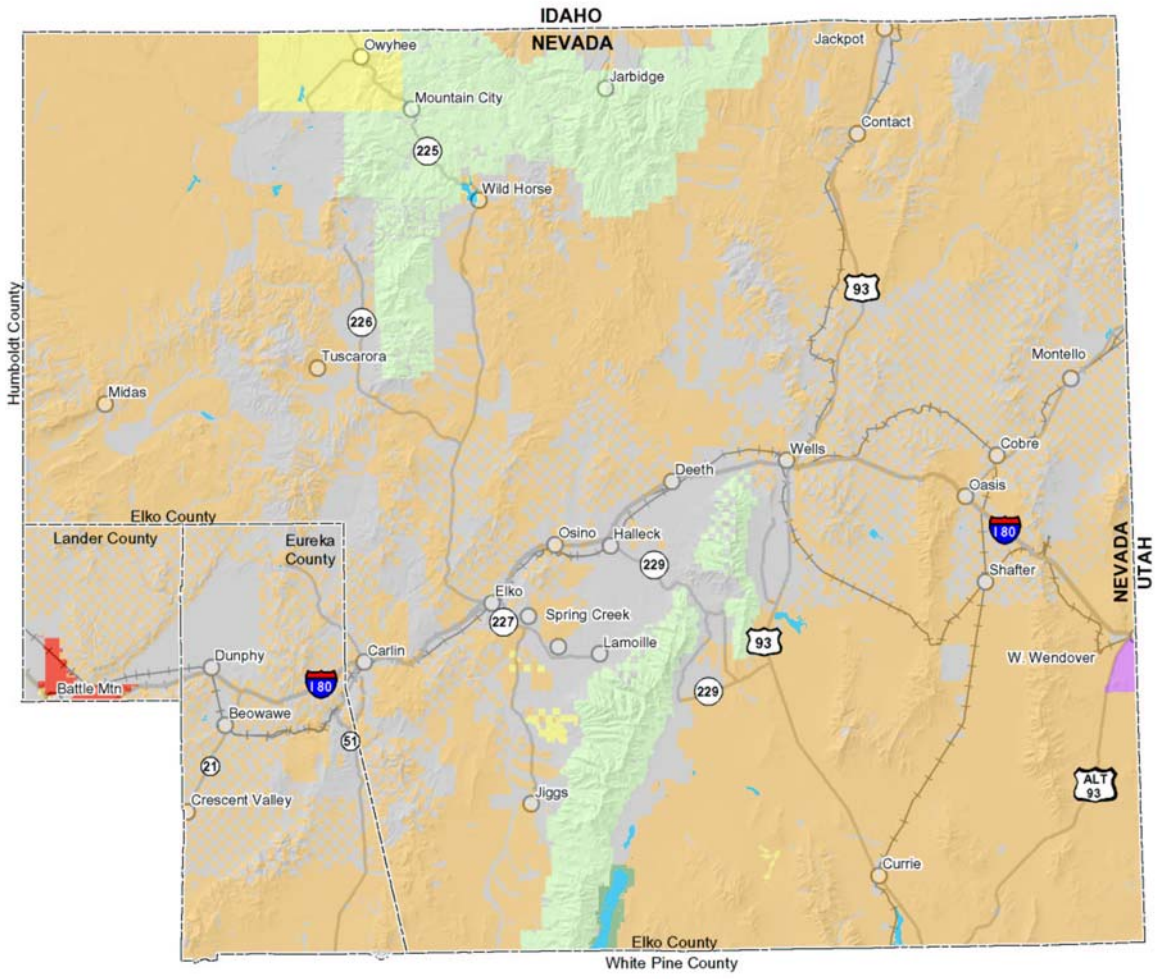
Issues regarding fire management were raised internally by BLM staff, identified by the BLM and other agencies during public meetings, or have been brought up by individuals or user groups by way of phone calls, e-mails and letters. Preliminary issues were published in the Federal Register under a Notice of Intent (NOI) and/or were the subject of public comment periods and multiple public meetings. A full list of issues and the NOI can be found in Appendix 1. Issues addressed by this FMA/EA include:

- Need for enhanced guidance for setting suppression strategies.
- Use of prescribed fire in high fuel load areas to reduce the potential for severe wildfire and to improve habitat.
- Protection and management of habitat for special status (threatened, endangered, candidate, sensitive) species, including sage grouse.
- Use of Emergency Stabilization and Rehabilitation (ESR) procedures, including fencing, grazing and seeding of nonnative plant species.
- Managing forest resources to address diverse agency and user concerns.
- Management of invasive, nonnative weeds.
- Preservation of critical big game habitat.
- Determining the economic effect of fire suppression on local communities.
- Use of local resources to manage fire.
- Consideration of grazing to manage fire.
- Communication, training and cooperation with local communities.
- Cultural resources operating procedures.

A number of additional issues were raised during the public scoping and are described in Appendix 1. The public involvement process is described further in Chapter 5.

E. Project Location

The focus of this FMA/EA is limited to public lands included in the Elko and Wells Resource Management Areas and administered by the Elko Field Office. As shown in Figure 1-2, the Elko District, also known as the Elko Field Office is located in northeastern Nevada. The District is located in Elko County and portions of two other counties – Eureka and Lander. Adjacent Nevada counties include White Pine, Eureka, Humboldt and Lander. The City of Elko is located in the center of this District. Interstate 80 bisects the project area.



2. Proposed Action and Alternatives

Fire Management Amendment Environmental Assessment

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

A. Alternatives

1. Development of Alternatives

Prior to explaining the Proposed Action and alternatives, it is important to understand the decision-making process for this FMA/EA. In September 2001, planning for the FMA/EA began with the beginning of the scoping process to identify any issues relating to fire management. Several other workshops were held with the BLM to determine agency goals and objectives. At the same time, work began on an accompanying document, a Biological Assessment (BA), to determine the impact of the proposed action on federally threatened and endangered species.

An additional workshop was conducted by the BLM in October of 2001. The objective of this meeting was to discuss refinements to standard operating procedures, changes to fire management categories, and adjustments to the 21 smaller fire management polygons based on new resource information, public comments, agency input and resource priorities. During this meeting, resource specialists consulted recent studies, analyses and GIS information, including sage grouse habitats, noxious weed inventories, recent fire history, cultural resources, wilderness study areas, vegetation, special status species' habitat, watersheds and land use information to help define the Proposed Action. Ongoing efforts, including the Statewide Sage Grouse Recovery Plan and Great Basin Restoration Initiative (GBRI), were also considered during the development of this plan. The majority of this information is described in this document. Additional information and maps can be obtained from the BLM Elko District Office.

Based on this foundation work began on the FMA/EA. The planning framework for the FMA/EA began with the guidance found in the Elko and Wells Resource Management Plans (1987). This was followed by the consideration of a number of environmental documents that formed the basis of the four components of each alternative:

- **General Fire Management** is guided by all documents.

- **Fire Prevention** is guided by the *Vegetation Treatment on BLM Lands in Thirteen Western States Environmental Impact Statement* (1991) and the *Elko/Wells District Vegetation Treatment by Fire Environmental Assessment (2000)*, which analyze the general impact of prescribed burning and manual fuels treatments on public lands.

- **Fire Suppression** is guided by the *Elko District Field Office Fire Management Plan (1998)* developed by the BLM Elko Fire Management Officer.

- **Fire Rehabilitation** is guided by the guidelines for rangeland health, *the Normal Fire Rehabilitation Plan Environmental Assessment (2000),* and the *Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook (2001)*.

It is important to understand that all components proposed in the FMA/EA are guided by existing documents. This document cannot address policies currently guided by other approved documents. Since most elements outlined in this FMA/EA are addressed by

other documents or subsequent EA's, only general information addressing the whole District is provided.

A Preliminary Draft FMA/EA was prepared based on this information. A second round of public meetings and an internal BLM workshop were held in May, 2002 to refine the Draft FMA/EA. The Draft FMA/EA was mailed to interested parties and comments incorporated into the Final FMA/EA.

2. Actions Common to All Alternatives

Many of the actions addressed in this document may require regulatory coordination, consultation and/or permitting. Completing environmental compliance requirements associated with some of the identified tasks may require extended processing time, additional documentation and commitments beyond the completion of this FMA/EA. These additional requirements would be met prior to implementation of the proposed management actions. All alternatives would follow Standard Operating Procedures (SOP's) described in each alternative, Appendix 2, or are found within other applicable BLM guiding documents. Such SOP's generally provide for the:

- Protection of human safety and health, and the safety of wildland firefighters;
- Protection of private property and natural/cultural resources, including preventing the destruction of known cultural properties from suppression actions;
- Protection of riparian areas from devastating wildland fire effect;
- Protection of important wildlife habitat from devastating wildland fire effects;
- Protection of threatened and endangered species habitat (where appropriate, and where the species does not rely on fire for part of its life cycle), as well as sensitive listed species and habitat;
- Protection of forage for livestock, wildlife, and horses in a sustainable manner that contributes to overall Rangeland Health.
- Protection of wilderness values, particularly that of "naturalness".

Other guidelines developed as part of the FMA/EA or found in other documents include:

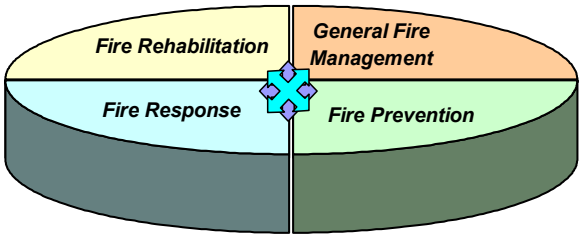
- Follow SOP's for rehabilitation found in the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook.
- Follow SOP's for prescribed burning found in the Vegetation Treatment by Fire Environmental Assessment.
- Follow the "Light-hand-on-the-land" tactics for use in wilderness study areas (WSA) found in the Interim Management Policy and Guidelines for Lands under Wilderness Review, Handbook H_8550_1, Manual Section 8560 and Handbook H_8560_1.
- Follow SOP's for rangeland health and guidelines for grazing management
- Follow SOP's for cultural resources found in Appendix 2.
- Follow SOP's for fire management near mining activities found in Appendix 2.
- Follow SOP's found in the Vegetation Treatment on BLM Lands in Thirteen Western States Environmental Impact Statement.
- Follow SOP's for species protection applying to all streams currently occupied by Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) or native range identified as having recovery potential identified by the Humboldt Distinct Population Segment (DPS) found in Appendix 2.

- Follow SOP's for species protection applying to riparian and/or wetland habitats currently occupied by Columbia spotted frog (*Rana Luteiventris*) found in Appendix 2.
- Follow SOP's for species protection applying to the Independence Valley Warm Springs and ponds which supply water to outflow channels and marsh habitats occupied by the Independence Valley speckled dace (*Rhinichthys osculus lethoporus*) found in Appendix 2.
- Follow the SOP's for species protection applying to spring/pond areas occupied by Clover Valley speckled dace (*Rhinichthys osculus oligoporus*) found in Appendix 2.
- Follow the guidance in the Management Guidelines for Sage Grouse and Sagebrush Ecosystems in Nevada.
- Follow the guidance found in the Great Basin Restoration Initiative (GBRI).

3. BLM's Preferred Alternative (Proposed Action)

The remaining sections of this chapter outline four alternatives for fire management in the Elko District. The first alternative, representing the current level of fire protection is identified as the "no action" alternative (Section 2B). The second alternative is based on full suppression (Section 2C) and the third alternative on a limited suppression strategy (Section 2D). The BLM prefers the fourth alternative, hereinafter referenced as the "Proposed Action" (Section 2E), which is based on an integrated approach to accomplish the goals described in Chapter 1.

All alternatives are compared in the same way, by providing descriptions based on general fire management, prevention, response and rehabilitation. These categories provide a concise, informed method for evaluating the alternatives. The environmental analysis provided by this EA, and the agency and public coordination provided through the NEPA process were used to select the Proposed Action and the specific fire management actions.



This approach has provided a Proposed Action with the flexibility and tools necessary for effective fire management. Since it is impossible to estimate the size and intensity of future fires, this approach acknowledges that specificity related to the Proposed Action may change. This may include the amount of fire prevention, boundaries and designation of fire management categories and polygons, and the amount of rehabilitation necessary. In addition, the Proposed Action is based on a number of existing documents that provide its foundation and should continually reflect adjustments in these sources.

B. No Action Alternative

The No Action alternative was analyzed and considered. The No Action alternative is the continuation of current fire management. This alternative makes use of the objectives outlined in the 1998 Fire Management Plan. This plan focuses on responding to and suppressing wildland fire, and does not take full advantage of current strategies to improve the long-term management of fire described in the update of the 1995 Wildland

Fire Policy. Table 2B-1 describes a strategy based primarily on suppression without other complimenting fire management components.

Table 2B-1
Plan Alternatives

	No Action				Full Suppression				Limited Suppression				Proposed Action			
Activity Level	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**
High	■		■	■	■		■									
Medium													■	■	■	■
Low		■				■		■	■	■	■	■				

Note: This table represents near-term activity levels.

1. **General Fire Management. Follow general guidance in the current Fire Plan, and other existing guiding documents to protect and maximize the safety of fire operational personnel and the public and achieve resource management objectives.**

General fire management provides the framework and overall strategy for achieving resource objectives. The main consideration for fire management is to maximize the safety of fire operation personnel and the public and secondarily, to meet resource management objectives. The final consideration is achieving a longer-term strategy to manage fire in the District. Management objectives are achieved through general strategies represented by Fire Management Categories (FMC) (A through D). FMC's are further subdivided into smaller management units called polygons. The FMC's described below are fire management categories, not resource categories. Within each fire management category is a wide range of resource conditions that would be identified in subsequent activity plans or are described further in each polygon. FMC's include:

FMC A - Areas where wildland fire is not desired at all. Areas of maximum suppression activity. These include the urban interface, active mining operations, oil and gas fields, recreation sites, critical watersheds, and areas of significant noxious weed infestation. Fuels reduction activities are acceptable yet prescribed fire opportunities will be limited due to close proximity of structures and improvements.

FMC B - Areas where wildfire is likely to cause negative effects, but these effects could be mitigated or avoided through fuels management, prescribed fire or other strategies. These areas include a less strict acreage guideline than A and include vegetative treatments to reduce fuel loading as a management technique to a greater degree than A. Unplanned ignitions will be managed using the most appropriate and cost-effective

suppression response based on threats to life, safety, structures, developments and other resource values. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to human life exists. Mechanized equipment use will be consistent with the District's Guidelines. Unplanned ignitions will also be managed using current guidelines for sage grouse and sagebrush ecosystems.

FMC C - Areas where fire may be desirable to manage ecosystems, but where various factors place constraints on fire use for resource benefit. These areas may have larger acreage guidelines than B and can include increased use of fuels/vegetation manipulation. Unplanned ignitions will be managed using the most appropriate and cost-effective suppression response based on threats to life, safety, structures, developments, and other resource values. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists. Mechanized equipment use will be consistent with District Guidelines. Unplanned ignitions will also be managed using current guidelines for sage grouse and sagebrush ecosystems.

FMC D - Areas where fire is desired under various environmental conditions and there are few constraints associated with resources or social, economic or political considerations. These areas will receive the least level of suppression, some level of fire use for resource benefit and can include the extensive use of prescribed fire. Mechanized equipment use will be consistent with District Guidelines and the Interim Management Policy for Lands under Wilderness Review. For the Elko Field Office these areas would be limited to Wilderness Study Areas and the Cherry Creek Range.

Current FMC's and polygons have not been adjusted to include public and agency comments, recent fire history, new resource information and recent planning initiatives addressing species such as the sage grouse.

The percentage of area in each FMC as compared to other actions is described in Table 2B-2. The percentages within each category and relative to other alternatives illustrate a strategy based on suppression with some limited opportunities for flexibility.

Table 2B-2
Fire Management Category Composition

FMC	No Action % of Total	Full Suppression %of Total	Limited Suppression % of Total	Proposed Action % of Total
A	**5%**	5%	5%	6%
B	**69%**	95%	<1%	40%
C	**26%**	0	0%	52%
D	**0%**	0	95%	2%

FMC's are further subdivided into polygons, which provide management direction for specific areas. These polygons further refine the general strategy by area based on resource value, vegetative response, potential for invasive weeds and public safety. The

acreage by polygon is found in Table 2B-3 and is illustrated in Figure 2B-1. A detailed polygon description can be found in the current FMP.

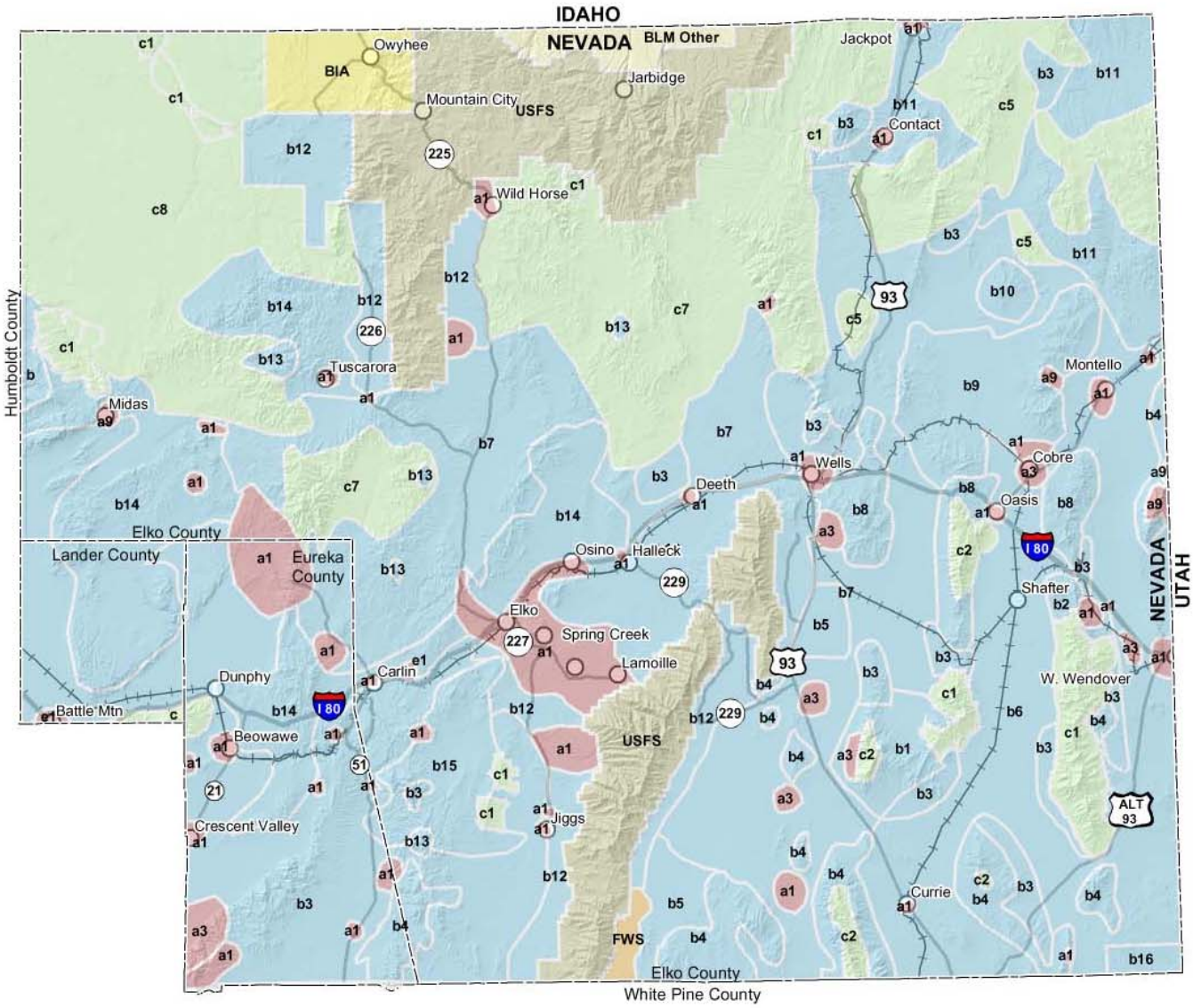
Table 2B-3
No Action Polygons

Category		Acres	Category		Acres
A-1/U1	Urban Interface/ Mining Areas/ Areas of Development	463,729	B-10	Gamble and 12 Mile	31,900
A-3	Cultural Sites, Historic and Protohistoric	81,140	B-11	Intermixed Woodlands, NE Corner	388,190
A-9	Municipal Watersheds	19,491	B-12	Areas of Primarily Private Land and Urban Interface	759,154
B –	General	28,109	B-13	Aspen Areas	32,311
B-1	Spruce Mountain	89,839	B-14	Tosawihi – Rock & Sheep Creeks, Tuscarora Mountains and I-80	941,486
B-2	Toano Range, South I-80	15,919	B-15	Dixie	181,484
B-3	District-wide Areas of Annual Vegetation Invasion	1,386,737	B-16	Badlands Allotment	25,809
B-4	Woodlands	379,061	C-1	General	20,743
B-5	Ruby Marshes, Frankin Lake and Snow Water Lake	110,236	C-1	Wilderness Study Areas	261,875
B-6	Low Sagebrush & Desert Shrub	1,048,427	C-2	Mixed Conifer	66,791
B-7	Big Sagebrush Areas with Low to Moderate Response Potential	1,669,637	C-5	Goose Creek Area	432,722
B-8	Wood Hills, Pequops and North end of Toanos	184,412	C-7	Double Mountain & O'Neil	1,076,255
B-9	North Pequops, Murdock and Toano Draws	278,316	C-8	Owyhee Desert	967,598

*Includes some areas of private lands. Numbers based on GIS or BLM recorded acreage.

2. Fire Prevention: Vegetative manipulation, fuels reduction, green strips, fuel breaks and thinning should be kept at their current levels

Fire prevention includes measures or actions that can be implemented to prevent or minimize a fire or to enhance the effectiveness of fire suppression activities. Fire prevention in the District has included an extensive system of fuelbreaks and greenstrips, and the reduction of fuel-loads through the use of prescribed fire and mechanical treatments. Efforts to rectify the fuel-loading hazard and use other fire prevention measures in the District have been successful, although limited in their extent.



Management Zones

- Area 'a' - Fire not desired - full suppression
- Area 'b' - Fire has negative effect - high suppression
- Area 'd' - Fire has beneficial effect - limited suppression
- Area 'c' - Fire has positive or negative effect - moderate suppression

Other Public Lands

- BLM (other)
- Bureau of Indian Affairs
- US Fish & Wildlife Service
- US Forest Service

Fire Management Zones

No Action Alternative

Figure 2B - 1

EDAW

N

0 5 10 20 Miles

September 2002

The Elko and Wells RMP's prescribe vegetative treatments to meet objectives for the management of livestock gazing and wildlife habitat. The 1998 FMP prescribes treatments to reduce hazardous fuels, where consistent with other resources objectives.

Fuelbreaks and greenstrips are strategically located wide blocks, or strips of land on which a cover of dense, heavy or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability as an aid to fire control. The District manages an extensive system of fuelbreaks.

Fuel reduction has focused on mechanical clearing/thinning and prescribed fire projects. The District had conducted an average of one prescribed fire project each year, with acreage totals ranging from 100 to 1,500 acres. Between the period of 1979 to 2001, 17 prescribed fires have been conducted totaling 13,000 acres. This is far below the amount identified in the 1998 FMP.

The previous fire plan identified up to 240,000 acres for fuel reduction activities, with 24,000 acres being targeted annually. Fuel reduction activities have included burning seedlings to restore productivity, vegetation enhancement in sagebrush communities, wildlife habitat treatments in pinyon-juniper, and burning in the mixed conifer to reduce fuel loadings and create uneven aged classes.

Past burns have been highly regulated, closely following all applicable regulations. A burn plan is also written by the BLM in order to ensure that proper conditions are met prior to the controlled burn. The burn prescription includes information on the location, objectives, fuel loading, scheduling, firing plan, weather and smoke management. The smoke management section addresses the desired and acceptable wind direction, venting height, visibility and the condition of permissive burn day requirements.

There are many beneficial objectives to be met by prescribed burning and mechanical and chemical treatments. One is the development of a patchy mosaic of vegetation age classes to reduce the change of a catastrophic fire. For example, fire removes dead material, or fuel accumulation, on the ground and at the base of plants. Smaller fires burn themselves out relatively quickly as fuels are depleted. The result is a mosaic of areas, with younger-age class vegetation consisting of lighter fuel loads and thinner layers of partly decayed organic matter. Subsequent fires through vegetation with a mosaic of age classes are typically smaller, patchier and of lower intensity. Conversely, fires occurring in large mono-aged plant communities with high fuel loading would have higher potential to be hotter and larger. The continuity of older, unburned and highly flammable plant communities increases with time, also increasing the risk of large fires.

A second benefit of a mosaic pattern of vegetation is reduced erosion. Although erosion is a natural process, it is considered destructive in most instances, involving resources such as topsoil, native habitat, water quality and property, especially when erosion is accelerated by human activity. Erosion by wind, water or gravity often increases following a fire, sometimes occurring for several years after burning. Despite the usual reduction in the amount of soil-holding ground cover following fire, fuel reduction treatments and erosion control are compatible. For example, smaller burn areas, cooler fires and less plant mortality associated with regular burning help retain the important root systems that provide structure to underlying soils. This minimizes soil loss, especially on steep slopes that can be vulnerable to erosion following fire.

A third benefit of fuel reduction treatments is the maintenance of ecological diversity by fostering multiple successional stages and age classes of vegetation. A mosaic of various age classes of vegetation types benefits many species of wildlife. Improved edge effects, water yields, nitrogen-fixing plant growth and post-fire successional plant species are all important wildlife benefits from fuel treatment techniques. For example, an increase in plant nutrient density, palatability and earlier green-up are usual occurrences following fire. Post-fire plants remain greener and are more palatable and nutritious for a longer time period, benefiting wildlife that uses the plants for forage. Habitat diversity is increased with patchy or irregular burns, especially in areas with only one or a few communities all in relatively the same structural condition. Increased diversity and resultant increases in edge effect makes more niches available for wildlife use.

The timing, intensity and frequency of fire can critically influence vegetation recovery and establishment, leading to potentially long-term changes in vegetation type and flammability. Many timing-related factors must be analyzed when determining when and where to use prescribed fire. Among the many factors are the season of a prescribed burn, determining approximately how many years have passed since the last fire in an area, presence or absence of endangered species or their habitat, pertinence of migratory bird regulations, and plant regeneration and seed germination requirements during and following fire. Many issues must be coordinated to ensure that prescribed fire meets regulations and benefits the plant and animal communities.

In this alternative, the amount of the vegetative treatment and fuels reduction would be kept at their current levels. Target acreage levels by alternative are described in Table 2B-4.

Table 2B-4
Annual Acres of Treatment

No Action Acres of Treatment	Full Suppression Acres of Treatment	Limited Suppression Acres of Treatment	Proposed Action Acres of Treatment
24,000	<4,000	<4,000	24,000 - 60,000

Currently, there is less emphasis on fire prevention resulting in lower target acreage than in the Proposed Action.

3. Fire Response – Fire suppression should be maximized in most areas. The strategy is based on the current FMP and other guiding documents.

Fire response describes fire suppression strategy. Fire response is based on a cooperative effort between the BLM, the Nevada Division of Forestry (NDF), U.S. Forest Service (USFS), the Bureau of Indian Affairs, the U.S. Fish and Wildlife Service and other agencies. The Elko Interagency Dispatch Center (EIDC) is staffed by the BLM, NDF and the USFS, and works as an "all risk" dispatch center. There are cooperative initial attack agreements with the NDF and the Battle Mountain, Winnemucca, Ely, Salt Lake and Upper Snake River Field Offices of the BLM to streamline initial attack and reduce duplication of effort.

A fire danger rating system assists the response strategy by identifying current fire danger conditions, which help the BLM and other agencies with planning. The system is currently based on the climatic conditions (i.e., wind speed and direction, fuel moisture content, humidity, temperature) for that time period.

Fire response strategy is also based on FMC's previously described, which represent general management strategies for the District. Within each fire management category is a wide range of resource considerations defined by smaller polygons. FMC's and polygons provide a strategy for fire response.

In addition to FMC's and polygons, standard operating procedures also guide incident commanders of the fire fighting crews when attacking fires. Standard operating procedures and existing federal, state and local regulations are critical management components that protect environmentally and culturally sensitive areas.

This alternative focuses primarily on full suppression of almost all fires and provides for only a limited amount of flexibility for fire management. For example, a fire under low fire intensity conditions in an area in which there would be a positive vegetative response would most likely be immediately suppressed even if the area was designated for future prescribed burning. Polygon acreage is described in Table 2B-3 and illustrated in Figure 2B-1. Detailed polygon descriptions can be found in the current FMP.

4. Fire Rehabilitation – Conduct fire rehabilitation activities to emulate historic or pre-fire ecosystem structure, functioning, diversity and/or to restore a healthy stable ecosystem.

The purpose of rehabilitation is to protect life and property, and to stabilize the site when the potential exists for substantial soils or resource damage. Another purpose for rehabilitation is to emulate historic or pre-fire ecosystem structure, functioning, diversity and dynamics consistent with approved land management plans; or if that is not feasible, to restore a healthy, stable ecosystem in which native species are well represented. Fire Rehabilitation is guided primarily by the *Interagency Burned Area Emergency Stabilization (ESR) Handbook*, 2001. The ESR Handbook provides operational guidance for the Department of the Interior for burned area emergency stabilization and rehabilitation activities, including grazing allotment closures standards. It provides a unified interpretation of the burned area emergency stabilization and rehabilitation policies objectives and standards. The ESR Handbook is supplemented by the *Burned Area Emergency Stabilization and Rehabilitation Technical Reference*. The Technical Reference contains information on the implementation of individual treatments.

The objectives of the ESR are:

- To prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical cultural and natural resources.

- To promptly stabilize and prevent further degradation to affected resources on lands within the fire perimeter as well as to downstream areas, and mitigate damages caused by fire suppression operations in accordance with approved land management plans and polices and all relevant Federal, State, and local laws and regulations.

- To repair or improve lands unlikely to recover naturally from severe wildland fire damage by emulating historic or pre-fire ecosystem structure, function, diversity, and dynamics according to approved land management plans.

- Restore or establish healthy, stable ecosystems, even if these ecosystems cannot fully emulate historic or pre-fire conditions specified in approved land management plans.

The ESR stresses need for the following:

Timeliness – Swift action should be taken to rehabilitate burned lands. ESR treatments must be implemented to the extent possible before additional damage occurs. Treatments should occur at a time when treatments will have the highest probability of success.

Threatened, Endangered and Sensitive Species – All fire rehabilitation plans should be reviewed to determine if T&E species or their habitat would be adversely affected by the implementation of rehabilitation treatments. The BLM will consult with the U.S. Fish and Wildlife Service on all actions that may affect a listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. The BLM policy on federally listed species, species proposed for listing, candidate species, sensitive species, and state-listed species is contained in Manual Section 6840.

Plan Coordination – All ESR activities will be conducted in a manner that is compatible with long-term goals and approved land management plans and in compliance with applicable laws and policies including; the National Environmental Policy Act; Endangered Species Act; Clean Water Act; Comprehensive Environmental Response and Liability Act; and the National Historic Preservation Act. Each plan prepared under the ESR guidance including; Normal Fire Rehabilitation Plans (NFRP), Emergency Stabilization and Rehabilitation Plans (ESRP) and Burned Area Emergency Rehabilitation Plans (BAER) will contain a site – specific Environmental Assessment (EA). These plans should be tiered with existing EIS's, this document and other land use plans.

Wilderness Study Areas – Manual Handbook H_8550_1 includes BLM policy and guidance for management of wilderness study areas (WSA's) and should be consulted. WSA's are managed so as not to impair the area's suitability for preservation as wilderness. Rehabilitation work will use the methods least damaging to the wilderness resource. Reseeding and planting under emergency conditions will utilize species native to the area and will minimize cross-country use of motorized equipment.

Recreation – Burned or seeded areas may be temporarily closed to the public by excluding vehicle, bicycle, horse, and foot use if unacceptable resource damage would occur, or if danger to the public is present due to fire damage or rehabilitation activities.

Visual Resources – Impact of rehabilitation practices on visual resources (see Visual Resource Inventory Manual Handbook H-8410-1) should be considered. A Visual Contrast Rating Worksheet (Form 8400-4) or a checklist is required for all rehabilitation projects (see Manual Handbook H-8431-1, Visual Resource Contrast Rating)

Treatment Specifications – All ESR treatments must comply with applicable BLM policy and standards (as specified in the Engineering Guide Specifications and Standard Drawing, and manual Section 9170). Treatments should be designed to be cost-effective and to meet rehabilitation objectives. In addition to ESR treatment specifications, the District should encourage seed mixes that meet the following criteria: preferably native species that will be the most successful in achieving rehabilitation objectives (with consideration given to seed cost and availability), species that will be fire resilient and/or resistant upon establishment, species that are the most adapted to local and ecological site conditions, and species that enhance wildlife habitat. In addition, public land managers should be encouraged to support local and commercial seed harvest for the purpose of fire rehabilitation.

Suppression Activity Damage – Damage to resources caused by fire suppression activities should be repaired:

- Replacement of soil and seeding vegetation fire control lines
- Construction of water bars on primary and secondary fire control lines
- Repair of structural improvements or facilities damaged by suppression activity.
- Repair of damage caused by operating the incident command base
- Repair/mitigate damage to cultural resources resulting from suppression activity.

Rangeland Health/Grazing Management – Exclusion of livestock is critical for the recovery of burned vegetation or the establishment and maintenance of new seedlings and use of these areas should not be permitted until the vegetation recovers or is established. Based on the ESR Handbook, both re-vegetated and, burned but not re-vegetated areas, will be closed to livestock grazing for at least two growing seasons following the season in which the wildfire occurred to promote recovery of burned perennial plants and/or facilitate the establishment of seeded species. Livestock permittees must be informed of the closure early during the plan preparation process, and livestock closures will be made a condition or term on the grazing license or permit through the issuance of grazing decision (43 CFR 4160).

Livestock closures for less than two growing seasons may be justified on a case-by-case basis based on sound resource data and experience. In some cases, the reduction of the closure period may be permitted if seedling establishment and native vegetation response are achieved as long as negative impacts on aspen, riparian resources and rangeland under rehabilitation are prevented. Livestock permittees desire the flexibility to make use of forage allocated through their grazing permits while meeting the needs of resources under rehabilitation. Livestock management following seedling establishment and/or burned area recovery should maintain both non-native and/or native species to meet land use, activity plan and Standards for Rangeland Health and Guidelines for Grazing Management objectives. In other cases, livestock closures longer than two growing seasons may be necessary in order to meet rangeland health standards.

Once a fire closure is in place, non-use by livestock (through the fire closure) needs to be balanced with use by big game species and wild horses during the period of the closure. The concern is that big game and/or wild horse numbers could result in the significant impact of grazing and browsing resources under rehabilitation. Protection of grazing and browsing resources under rehabilitation is in the best interest of public land

managers for the purpose of meeting future wildlife, wild horse and livestock habitat needs.

Other documents, such as the Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180.1), provide additional guidelines concerning post-fire rehabilitation. These documents include the District's Normal Fire Rehabilitation Plan EA to provide additional guidance for normal fires.

When emergency stabilization and rehabilitation actions are anticipated, an ESR team is assembled to conduct fire damage assessments and begin the development of a rehabilitation plan. The team will review resource management plans and relevant step-down plans, fire suppression operation plans, the Wildland Fire Situation Analysis and other resource information before preparing the plan and beginning rehabilitation activities. Rehabilitation actions include seedings and treatments, fencing additions and repair, road and crossing structure repair, watershed structures, weed inventory and treatments and monitoring. Between 1999-2001 rehabilitation treatments, such as seedings, were applied to over 300,000 acres.

Rehabilitation strategies do not vary among alternatives since activities are currently guided by existing documents and are dependent on other fire management components. However, the amount of acres in which treatment would be necessary will vary among alternatives.

C. Full Suppression Alternative – Full suppression of all wildland fire minimizing burned acreage under all circumstances.

The Full Suppression alternative was analyzed and considered. This action assumes wildfire is generally a negative impact on resources in the Elko District. Full suppression and the minimization of burned acreage would be the highest fire management priority. This alternative does not take full advantage of the strategies outlined in the Proposed Action. Table 2C-1 describes a strategy based primarily on full suppression without other complimenting fire management components.

Table 2C-1
Plan Alternatives

	No Action				Full Suppression				Limited Suppression				Proposed Action			
Activity Level	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**
High	■		■	■	■		■									
Medium													■	■	■	■
Low		■				■		■	■	■	■	■				

Note: This table represents near-term activity levels.

1. General Fire Management. Fire management resources and objectives will focus on full suppression irrespective of management objectives.

The Full Suppression alternative focuses on FMC A and B described in the No Action alternative. The increase in the amount of acreage found in FMC A and B reflects the strategy that is directed at full suppression in all circumstances with no opportunities to achieve other resource objectives. The percentage of area in each FMC as compared to other actions is described in Table 2C-2.

Table 2C-2
Fire Management Category Composition

FMC	No Action % of Total	Full Suppression %of Total	Limited Suppression % of Total	Proposed Action % of Total
A	**5%**	5%	5%	6%
B	**69%**	95%	<1%	40%
C	**26%**	0	0%	52%
D	**0%**	0	95%	2%

FMC's are further subdivided into polygons, which provide management direction for specific areas. These polygons further refine the general strategy by area based on resource value, vegetative response, potential for invasive weeds and public safety. The acreage by polygon is found in Table 2C-3 and illustrated in Figure 2C-1.

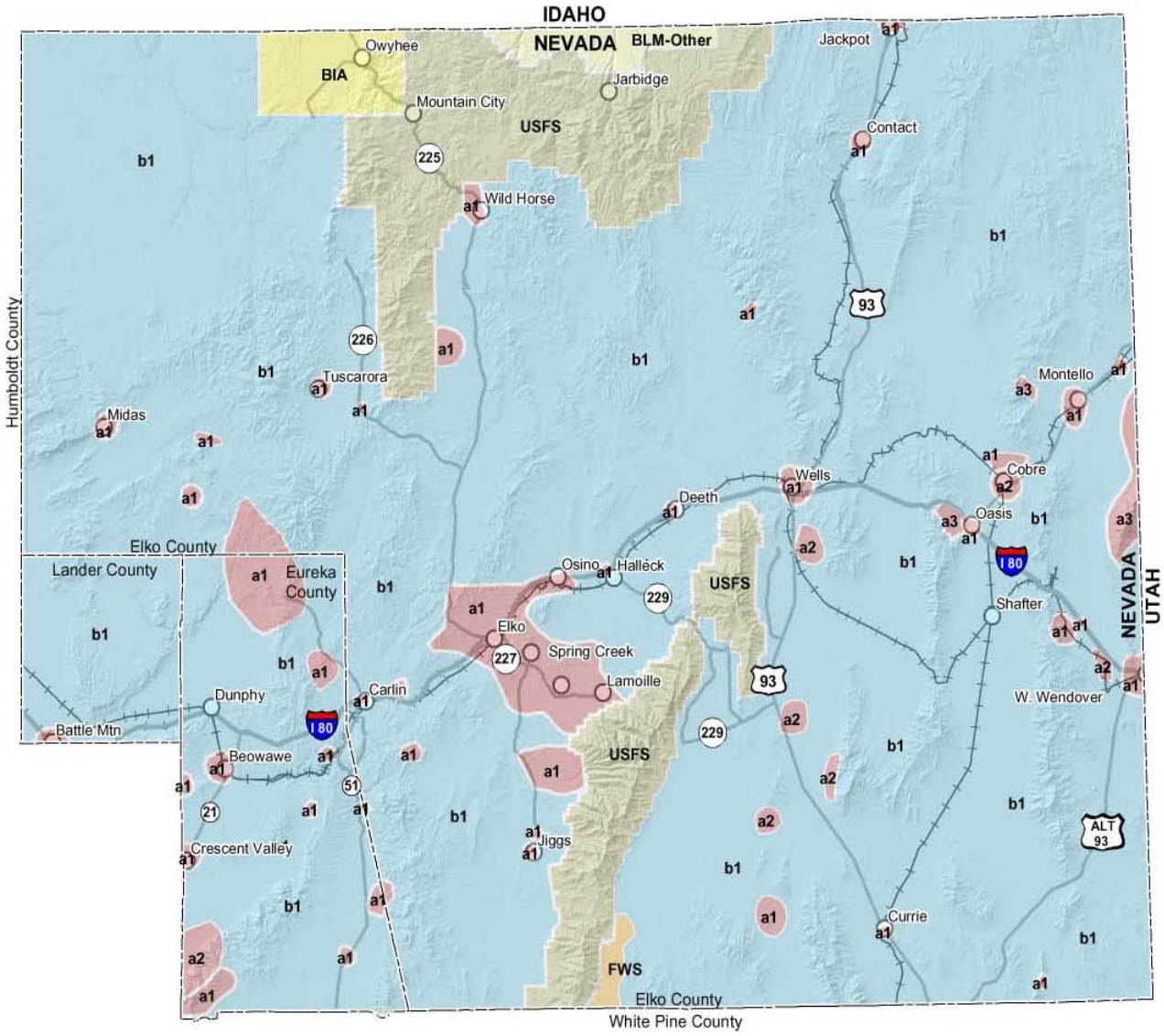
Table 2C-3
Full Suppression Polygons

Category	Acres	Category	Acres
A-1 Urban Interface/ Mining Areas/ Areas of Development	233,385	**A-3 Municipal Watersheds**	32,245
A-2 Cultural Sites, Historic and Protohistoric	68,094	**B-1 General Vegetation**	8,461,051

*Includes some areas of private lands. Numbers based on GIS or BLM recorded acreage.

2. Fire Prevention: Vegetative manipulation, fuels reduction, green strips, fuel breaks and thinning should be kept at or below their current levels

The alternative is similar to the fire prevention section described in the No Action alternative except for the targeted acreage for vegetative treatment. Without the guidance found in the proposed action, the amount of the vegetative treatment and fuels reduction techniques will be kept at or below their current levels. This alternative assumes that fire does not benefit the landscape, therefore discouraging the use fuel reduction techniques such as prescribed fire. Under this alternative, fuels in the area will continue to increase.



Management Zones

- Area 'a' - Fire not desired - full suppression
- Area 'b' - Fire has negative effect - high suppression

Other Public Lands

- BLM (other)
- Bureau of Indian Affairs
- US Fish & Wildlife Service
- US Forest Service

Fire Management Zones

Full Suppression Alternative

Figure 2C - 1

EDAW

N

0 5 10 20 Miles

September 2002

Target acreage levels by alternative are described in Table 2C-4.

Table 2C-4
Annual Acres of Treatment

No Action Acres of Treatment	Full Suppression Acres of Treatment	Limited Suppression Acres of Treatment	Proposed Action Acres of Treatment
24,000	<4,000	<4,000	24,000 - 60,000

3. Fire Response - Fire suppression should be maximized in all areas.

The fire response strategy's main consideration is to maximize the safety of fire operational personnel and the public and secondarily to achieve the resource goals for the area. The primary difference between this alternative and the Proposed Action alternative is that all fires would be suppressed in all conditions and locations irrespective of the resource benefit, fire intensity or resources available. This alternative would not benefit from the guidance of the proposed action and be based solely on full fire suppression with the assumption that fire would only have a negative impact on the landscape.

This alternative assumes the maximum use of resources to fully suppress all fires. Polygons for most areas were re-classed to a "B", providing little flexibility except for full suppression. For example, a fire in a steep mountainous area within Wilderness Study Area under low fire intensity conditions would be immediately suppressed irrespective of other priorities, resource objectives or resource cost. The long-term impact of this strategy would be an increase in fuel load and resources needed for fire suppression.

4. Fire Rehabilitation - Conduct fire rehabilitation activities to emulate historic or pre-fire ecosystem structure, functioning, diversity and/or to restore a healthy stable ecosystem.

Fire rehabilitation strategies remain the same as the No Action, however in the short-term fire rehabilitation should be minimized since most fires should be suppressed and less acreage will be burned. Long-term implications may result in an increase in rehabilitation activities as fuel loads and fire intensity increase. Based on the condition of existing rangelands and recent fire history, the need for rehab may be sooner than later under the full suppression alternative.

D. Limited Suppression Alternative - Wildfire is a positive influence on resources and fire management activities would be minimized.

The Limited Suppression alternative was analyzed and considered. This action assumes wildfire generally has a positive influence on resources in the Elko District and the minimization of fire management activities would be the highest fire management priority. This alternative does not take full advantage of the strategies outlined in the Proposed Action. Table 2D-1 describes a strategy based primarily on limited suppression without other complimenting fire management components.

Table 2D-1 Plan Alternatives																
	No Action				Full Suppression				Limited Suppression				Proposed Action			
Activity Level	General Fire Management	Fire Prevention	Fire Response	Fire Rehabilitation	General Fire Management	Fire Prevention	Fire Response	Fire Rehabilitation	General Fire Management	Fire Prevention	Fire Response	Fire Rehabilitation	General Fire Management	Fire Prevention	Fire Response	Fire Rehabilitation
High	■		■	■	■		■									
Medium													■	■	■	■
Low		■				■		■	■	■	■	■				

Note: This table represents near-term activity levels.

1. General Fire Management. Fire management resources and objectives will focus on limited suppression irrespective of management objectives and direction found in other guiding documents.

The general fire management category descriptions remain the same as the No Action. What changes is amount of acreage in each FMC. The decrease in the amount of acreage found in FMC A and B and the increase in FMC D reflect a strategy directed at limited suppression in all circumstances. This strategy provides only limited flexibility to achieve resource objectives. The percentage of area in each FMC as compared to other actions is described in Table 2D-2.

Table 2D-2 Fire Management Category Composition				
FMC	No Action % of Total	Full Suppression %of Total	Limited Suppression % of Total	Proposed Action % of Total
A	**5%**	5%	5%	6%
B	**69%**	95%	<1%	40%
C	**26%**	0	0%	52%
D	**0%**	0	95%	2%

FMC's are further subdivided into polygons, which provide management direction for specific areas. These polygons further refine the general strategy by area based on resource value, vegetative response, potential for invasive weeds and public safety. The acreage by polygon is found in Table 2D-3 and is illustrated in Figure 2D-1.

Table 2D-3 Limited Suppression Polygons			
Category	**Acres**	**Category**	**Acres**
A-1 Urban Interface/ Mining Areas/ Areas of Development	233,385	**A-3 Municipal Watersheds**	32,245
A-2 Cultural Sites, Historic and Protohistoric	68,094	**D-1 General Vegetation**	8,461,051

*Includes some areas of private lands. Numbers based on GIS or BLM recorded acreage.

2. Fire Prevention: Vegetative manipulation, fuels reduction, green strips, fuel breaks and thinning should be kept at or below their current levels

The alternative is similar to the fire prevention section described in the No Action except for the targeted acreage for vegetative treatment. Without the guidance of the proposed action, the amount of the vegetative treatment and fuels reduction techniques will be kept at or below their current levels. This alternative assumes that fire benefits the landscape and that natural fire would accomplish most fire prevention goals such as fuel reduction.

Target acreage levels by alternative are described in Table 2D-4.

Table 2D-4 Annual Acres of Treatment			
No Action Acres of Treatment	**Full Suppression Acres of Treatment**	**Limited Suppression Acres of Treatment**	**Proposed Action Acres of Treatment**
24,000	<4,000	<4,000	24,000 - 60,000

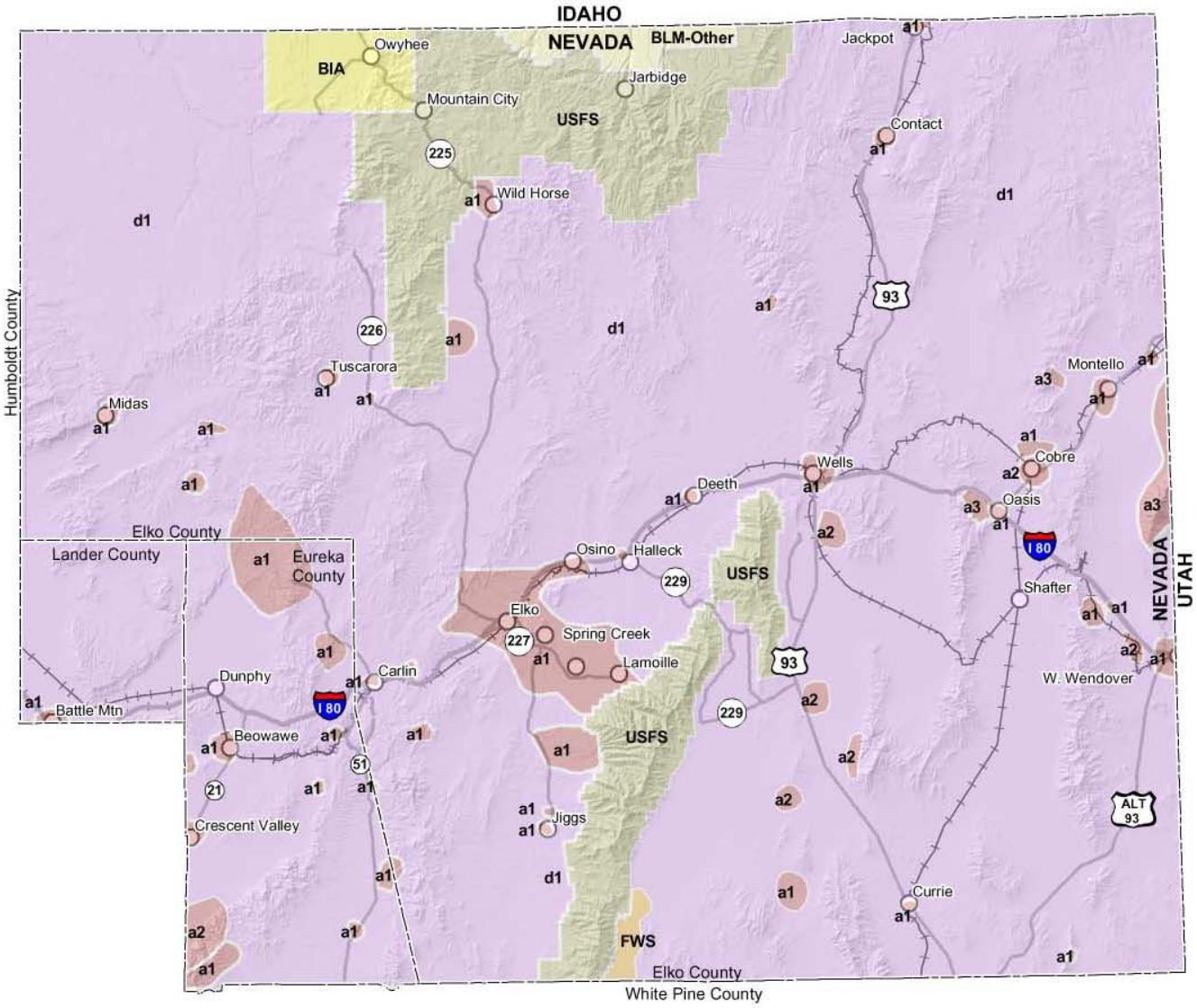
3. Fire Response - Fire suppression would be minimized in most areas.

The fire response strategy's main consideration is to maximize the safety of fire operational personnel and the public and secondarily to achieve the resource goals for the area. The primary difference between this alternative and the Proposed Action is that fire suppression would be minimized in most cases irrespective of the resource benefit, fire intensity or resources available. This alternative would not benefit from a response strategy focused on resource objectives. Instead, the alternative is based on limited fire suppression and the assumption that fire would have only a positive impact on the landscape.

This alternative assumes a limited use of resources to suppress fires. Polygons for most areas were reclassed to a "D" classification, providing little flexibility except for limited suppression. For example, a fire in an area that has a high composition of invasive plant

Elko / Wells Resource Management Plans

Fire Management Amendment and Environmental Assessment



Management Zones

- Area 'a' - Fire not desired - full suppression
- Area 'd' - Fire has beneficial effect - limited suppression

Other Public Lands

- BLM (other)
- Bureau of Indian Affairs
- US Fish & Wildlife Service
- US Forest Service

Fire Management Zones

Limited Suppression Alternative

Figure 2D - 1

EDAW

N

0 5 10 20 Miles

September 2002

species would not be immediately suppressed irrespective of the negative vegetative response, incompatibility with resource objectives and long-term resource cost.

4. **Fire Rehabilitation - Conduct fire rehabilitation activities to emulate historic or pre-fire ecosystem structure, functioning, diversity and/or to restore a healthy stable ecosystem.**

Fire rehabilitation strategies remain the same as the No Action, however, fire rehabilitation would be minimized since the assumption is that most fires will have a positive benefit to the landscape. Long-term implications may result in an increase in rehabilitation activities to restore areas that had a negative vegetative response to fire.

E. Proposed Action

The Elko District prefers this alternative as it provides for a balanced mix of appropriate strategies to achieve an integrated approach to fire management. The Proposed Action acknowledges that wildfire can have a positive or negative influence on resources in the District, depending on geographic location, fire size, desired vegetative goals, weather and existing fuel conditions.

This action builds on existing documents and makes use of new guidance, which recommends new integrated strategies to improve the long-term management of fire. By taking full advantage of the strategies outlined below, the BLM is following planning guidelines as mandated under FLPMA.

By using an integrated approach focusing on all elements of fire management, the size and severity of future fire may be reduced and critical resources protected. As shown in Table 2E-1, other alternatives stress one component over another. For example, the Full Suppression alternative focuses primarily on fire response and the immediate suppression of every fire, irrespective of climatic condition and fire location. In some cases, this reduces the flexibility and tools available for effective long-term fire management. However, the Proposed Action seeks to emphasize all components equally.

Table 2E-1
Plan Alternatives

	No Action				Full Suppression				Limited Suppression				Proposed Action			
Activity Level	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**	**General Fire Management**	**Fire Prevention**	**Fire Response**	**Fire Rehabilitation**
High	■		■	■	■		■									
Medium													■	■	■	■
Low		■				■		■	■	■	■	■				

Note: This table represents near-term activity levels.

The following section will discuss each component of the Proposed Action. The actions described in each component will be applicable to other components. For example, some actions described in the fire prevention component may be equally applicable to suppression activities.

Should the Proposed Action be implemented, site-specific project plans and associated NEPA documents may be developed for specific key actions. The project plans, including site-specific environmental analysis by an interdisciplinary team, will identify issues at the ecological or vegetative site level.

1. **General Fire Management: Follow general guidance of this FMA/EA and other guiding documents to protect and maximize the safety of fire operational personnel and the public, achieve resource management objectives and improve the long-term management of fire.**

General fire management provides a framework to achieve resource objectives and described the overall strategy for fire management. The strategy is based on the guidance from this FMA/EA. The main consideration for fire management is to maximize the safety of fire operational personnel and the public. Secondarily, to meet the management objectives outlined in the fire management categories. The final consideration is achieving a longer-term strategy to manage fire in the District. Resource specialists in the BLM have identified the management objectives after considering public and agency comment during the scoping period of this project. The fire management categories and polygons described in the following section address public concerns, resource objectives identified by the BLM and other agencies, local and statewide planning initiatives and allows for the flexibility necessary for effective fire management. The Fire Management Categories (FMC) (A through D) and their relative composition represent the BLM's general fire management framework and strategy for the Proposed Action.

The percentage of area in each FMC as compared to other actions is described in Table 2E-2 and illustrated in Figure 2E-1. The percentages within each category and relative to other alternatives illustrate a strategy based on an integrated and comprehensive approach to fire management. Under the guidance of the FMA, managers would have a greater range of options for appropriate responses to wildland fires. This is reflected by a distribution of acreage in all fire management categories. As shown by the composition of FMC A and B and the addition of a more restrictive FMC C, fire response is the highest priority in most areas. The amount of area in the most restrictive category, FMC A increases to reflect the protection of key resources found through the FMA/EA process.

FMC's are further subdivided into polygons, which provide resource management direction for specific areas. These polygons further refine the general strategy by area based on resource value, vegetative response, potential for invasive weeds and public safety. The polygon descriptions address public concerns, agency recommendations and recent resource planning initiatives. The acreage by polygon is found in Table 2E-3 followed by polygon descriptions, desired conditions and operational constraints.

Table 2E-2 Fire Management Category Composition				
FMC	**No Action % of Total**	**Full Suppression %of Total**	**Limited Suppression % of Total**	**Proposed Action % of Total**
A	**5%**	5%	5%	6%
B	**69%**	95%	<1%	40%
C	**26%**	0	0%	52%
D	**0%**	0	95%	2%

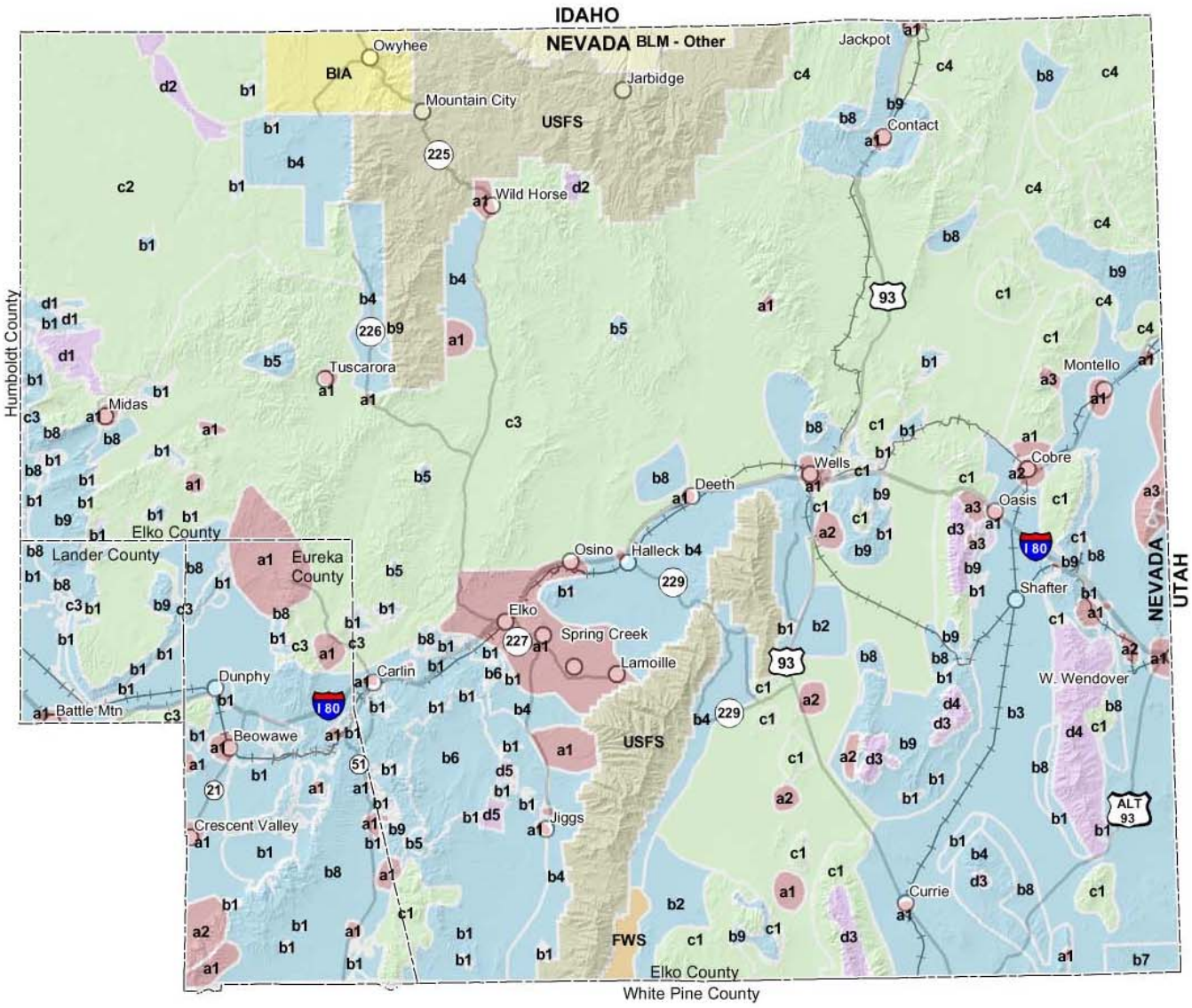
Table 2E-3 Proposed Action Polygons			
Category	**Acres**	**Category**	**Acres**
A-1 Urban Interface/ Mining Areas/ Areas of Development	497,725	**B-8 Early Seral Sagebrush Grasslands**	1,281,898
A-2 Cultural Sites, Historic and Protohistoric	79,654	**B-9 Crucial Deer Winter Range**	600,027
A-3 Municipal Watersheds	50,430	**C-1 Woodlands**	518,903
B-1 District-wide Areas of Exotic Vegetation Invasion	331,082	**C-2 Owyhee Desert**	821,097
B-2 Ruby Marshes, Franklin Lake and Snow Water Lake	110,236	**C-3 Sage /Mountain Brush/ Perennial Grass**	3,907,351
B-3 Low Sagebrush & Desert Shrub	1,023,813	**C-4 Intermixed Woodlands, NE Corner**	422,008
B-4 Areas of Primarily Private Land and Urban Interface	814,118	**D-1 Little Humboldt WSA**	42,213
B-5 Aspen Areas	30,905	**D-2 Owyhee Canyon WSA's (includes Owyhee Canyon, South Fork Owyhee, Rough Hills and Badlands WSA's)**	45,828
B-6 Dixie	113,346	**D-3 Mixed Conifer**	68,435
B-7 Badlands Allotment	25,809	**D-4 Goshute, South Pequop, and Bluebell WSA's**	166,525
		D-5 Cedar Ridge and Red Springs WSA's	17,856

*Includes some areas of private lands. Numbers based on GIS or BLM recorded acreage.

Polygons include:

A-1 Urban Interface / Mining Areas / Areas of Development

Current Condition: The primary vegetation type around these areas is sagebrush and perennial grasses with intrusions of cheatgrass and other annual vegetation. The management objective for these areas is to preserve and protect the developed features, life and property. This area also includes the rapidly growing urban interface around Elko and Spring Creek. Recreation sites may be developed or undeveloped, but are moderately to heavily used during the summer and fall months. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 3.



Management Zones

- Area 'a' - Fire not desired - full suppression
- Area 'b' - Fire has negative effect - high suppression
- Area 'd' - Fire has beneficial effect - limited suppression
- Area 'c' - Fire has positive or negative effect - moderate suppression

Other Public Lands

- BLM (other)
- Bureau of Indian Affairs
- US Fish & Wildlife Service
- US Forest Service

Fire Management Zones

Proposed Action

Figure 2E - 1

EDAW

N

0 5 10 20 Miles

September 2002

Future Desired Condition: Maintain or improve the native vegetation in the area. Use vegetation manipulation to create buffer areas around critical developed sites to provide for public safety.

Constraints**:** Construction of fire line within the recreation sites should be avoided. If necessary, the minimum line needed should be located outside of developed sites, areas of concentrated use or Special Recreation Management Areas. Efforts should be made to keep unplanned ignitions from reaching these areas. Power lines, communication sites and other critical sites within the mining and oil/gas sites need full protection. Problems associated with these areas include power lines and arcing and chemical and explosive storage areas. In and around streams identified as Lahontan cutthroat trout habitat (LCT), the stipulations for species protection identified in the biological assessment will be followed.

A-2 Cultural Sites - Historic, Prehistoric and Native American Heritage Resources

Current Condition: These areas are of high cultural concern due to their susceptibility to damage from wildfire or to damage from fire suppression activities. A wide variety of cultural resources are represented. Some of the polygons represent historic towns, mining districts, cabins, wickiups, game drives or other sites with organic or heat sensitive artifacts and features that can be damaged or destroyed by wildfire. Other areas have high site densities or rare site types and while these are not highly sensitive to fire, they can be severely impacted by fire suppression activities, especially construction of fire line with mechanized equipment. They occur within vegetation types ranging from low sagebrush to pinyon-juniper woodlands. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 2.

Future Desired Condition: Maintain integrity of these cultural resources.

Constraints: Generally, fire suppression activity is considerably more detrimental to cultural resources than fire itself. Constraints vary depending on the type of cultural resources present. Specific fire suppression information and digital map plots of the most sensitive cultural resource locations will be available to BLM fire management officials and maintained by the cultural resources staff. Use of mechanized fire line construction is usually prohibited within the archaeological/historical/Native American heritage resource boundaries except when human life or property is in danger. However, full suppression is often prescribed up to the point where the fire reaches the resource and suppression tactics other than mechanized fire line construction are allowable within most sites.

In some cases the polygons represent areas of high site density rather than individual sites. Within these, construction of mechanized fire line is discouraged in the areas having highest site density, but usually allowable if an archaeologist works with the bulldozer to avoid sites or lessen the impacts to sites. Currently there are just over 30 polygons designated as A2. Most are smaller than one hundred acres. A few contain thousands of acres.

The largest polygon is the Browns Bench toolstone area. Evidence of prehistoric toolstone procurement is found over a very large area. The archaeological manifestations range from widely spaced knapping stations to large continuous scatters

of obsidian debris. Generally, fire suppression activity is considerably more detrimental to these resources than fire itself. Suppression tactics other than mechanized fire line construction are preferred for this area. An archaeologist must be notified any time earth moving equipment is ordered for fire suppression. Bulldozers are not to be used unless accompanied by an archaeologist or if an archaeologist is not available, a District Archaeological Technician (DAT). The archaeologist/DAT is to route fire lines around archaeological resources whenever feasible. Should life or property be threatened, bulldozers or other earth-moving equipment may be used whether or not an archaeologist/DAT is available.

A-3 Municipal Watersheds and Wellhead Protection

Current Condition: These watersheds include springs that provide drinking water for several small communities, including Carlin, Montello, West Wendover, and Wendover, Utah. Also included are Wellhead Protection Areas around municipal water wells for numerous communities. Several Wellhead Protection Plans have been written, or are in the process of being written, including: Elko, Carlin, Wells, West Wendover, Jackpot, Spring Creek, Lamoille, and Crescent Valley. Most of the A-3 polygons associated with wellhead protection areas are located within A-1 polygons. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 2.

Future Desired Condition: Maintain vegetative cover of these sites to protect the quality of water for these municipal sources.

Constraints: Keep surface disturbance to a minimum around surface water sources, and within the established Wellhead Protection Zones for the wells. The wellhead protection area for municipal drinking water wells where no plan has been written will be a one-mile radius. Use of chemicals will be avoided in these polygons except where life or property is threatened.

B-1 District-wide Areas of Exotic Vegetation Invasion

Current Condition: Cheatgrass and other annual invasive species dominate these polygons. Isolated areas of sagebrush in early to mid seral condition and native perennial grasses are also present. This polygon is generally represented as Fire Regime 2 and in Fire Condition Class 2.

Future Desired Condition: Resource management objectives for these areas are to restrict the expansion of cheatgrass and other invasive vegetation into surrounding native plant communities and to increase the amount of perennial native vegetation available for livestock grazing, wildlife habitat and improvement.

Constraints**:** If archaeological sites are present, special mitigation may be required. Primary emphasis is on preventing the spread of fire into areas of native vegetation. Mechanized equipment often helps to increase the spread of these non-native species. The use of mechanized equipment would be evaluated against potential long-term resource damage. Typically, mechanized equipment would be used to protect areas of high resource concerns or values, such as critical watersheds or streams and intermixed private property.

B-2 Ruby Marshes, Franklin Lake and Snow Water Lake

Current Condition: For the most part, the primary vegetation types do not have fire as part of their ecology. Vegetation is dominated by greasewood, shadscale and white sagebrush. Some inclusions of black sagebrush and pinyon-juniper woodlands exist in the higher elevations east of the Ruby Marshes. Some lower elevation sagebrush conversions to crested wheatgrass also exist. Primary management objectives for this area are to preserve sensitive cultural resources and to maintain the native vegetation for wildlife and livestock forage. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 1.

Future Desired Condition: Maintain native vegetation diversity. Reduce/prevent annual and non-native vegetation invasion.

Constraints: The main damage to the cultural sites does not come from the fire itself but from suppression activities. Mechanized equipment should be avoided. An archaeologist should be on-site during suppression activities. Fire history in this area is minimal with an occasional small fire of less than one acre.

B-3 Low Sagebrush and Desert Shrub

Current Condition: These areas are dominated by plant communities that do not have fire as part of their natural ecology. Vegetation types are dominated by desert shrub and low sage communities with varying degrees of perennial grasses and forb composition. Management objectives in these areas are to maintain the native community, to provide for livestock and wildlife forage. Some of the areas are important for winter antelope habitat. This polygon is generally represented as Fire Regime 1 and in Fire Condition Class 1.

Future Desired Condition: Prevent annual vegetation or non-native plant incursion into this vegetation type resulting from disturbance of the existing community. Maintain native vegetation composition.

Constraints: Low vegetation response potential, limited precipitation and fragile soils mean that mechanized equipment will scar the land and make rehabilitation expensive. Engine usage should be the preferred alternative since most of the fires occur next to roads.

B-4 Areas of Primarily Private Lands

Current Condition: The vegetation type of these polygons is primarily sagebrush and perennial grasses. Large acreages have been converted to crested wheatgrass seedings. The native vegetative response ranges from low to good. Due to low to moderate precipitation and current range conditions, previous wildfires have resulted in the invasion of annual vegetation. This demonstrates the potential for significant annual and non-native species invasion within portions of this polygon. The management objectives within these areas are to maintain and improve native vegetation conditions, maintain some crucial big game habitat, provide forage for livestock and protect private property. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 3.

Future Desired Condition: Maintenance.

Constraints: The high proportion of private lands in these areas requires a significant suppression response, but the travel distances involved increase response time to the outlying areas. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists.

B-5 Aspen Areas

Current Condition: The primary vegetation in these areas is aspen with a mix of conifers and cottonwood. Desired management is the maintenance and restoration of the aspen stands. This polygon is generally represented as Fire Regime 6 and in Fire Condition Class 2.

Future Desired Condition: Maintain healthy aspen stands with appropriate stand age class diversity. Maintain and improve riparian integrity.

Constraints: Disturbance by mechanized equipment deeper than one to two inches may damage aspen clones and should be avoided. Use of mechanized equipment will be consistent with Field Office Guidelines. Vehicle access is fairly limited. Aerial delivery of resources may be the most effective method. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists.

B-6 Dixie

Current Condition: The primary vegetation type in this area is sagebrush and perennial grasses with intrusions of cheatgrass at the lower elevations and Utah juniper and pinyon pine at the higher elevations. The management objectives for this area are to maintain and improve native vegetation conditions, limit the spread of cheatgrass, protect critical watersheds, provide wildlife and livestock forage and provide woodland products from the higher elevations. This polygon is generally represented as Fire Regime 1 and in Fire Condition Class 3.

A watershed management plan was written and approved in 1988 for Dixie Creek. Erosional damage in the watershed has been the result of heavy grazing and fires followed by large and frequent peak flows. The plan recommends designating the Dixie Creek watershed as a fire rehabilitation priority area. One of the objectives of the plan is to reduce the sediment yield into the South Fork of the Humboldt River by 50% by 2008. Conversion of vegetation from perennial grasses to annual grasses has increased the fire cycle and thus increased runoff and sediment yield following fire.

Future Desired Condition: Maintain sagebrush/perennial grass diversity. Reduce and prevent further encroachment of annual and non -native vegetation in the area. This area is targeted as a fire restoration priority area.

Constraints: The low to moderate response potential of this area means that any mechanized equipment will leave long-lasting scars. Where streams, riparian areas, or

watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists. Use of mechanized equipment will be consistent with Field Office Guidelines. Unplanned ignitions will be managed using current management guidelines for sage grouse and sagebrush ecosystems.

B-7 Badlands Allotment

Current Condition: The primary vegetation type is old growth juniper with associated sagebrush and perennial grasses. Desert shrub communities also exist along the valley floor and lower alluvial areas. The management objective for this area is to protect the prehistoric structures associated with basalt quarries. This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 1.

Desired Future Condition: Maintain existing vegetative diversity.

Constraints: Due to the density and sensitivity of cultural sites in this area, every effort will be made to have an archeologist on site to mitigate damage from mechanized equipment. However, if an archeologist is not available the resource advisor or Field Manager's Representative will make the determination on appropriate mechanized equipment use. This determination will be made based on current fuel, climatic, safety, and other conditions.

B-8 Early Seral Sagebrush Grasslands

Current Condition: The primary vegetation type in this area is sagebrush and perennial grasses in lower elevations and Utah juniper and pinyon pine at the higher elevations. However, because of frequent fire history and other vegetative disturbances in these areas, intrusions of annual invasive species and noxious weeds exist but do not dominate the area. Because of the current early seral conditions and low response potentials within these areas, future fire occurrences could potentially increase the amount of undesirable and invasive species in these areas to the extent that they could dominate the site. The management objectives for this area are to maintain and improve native vegetation conditions, limit the spread of annual invasive species and noxious weeds, protect critical watersheds, provide wildlife and livestock forage and provide woodland products from higher elevations. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 3.

Future Desired Condition: Maintain and/or improve sagebrush/perennial grass diversity. Prevent further encroachment of annual and non-native vegetation in the area.

Constraints: Primary emphasis is on preventing the spread of fire. However, the low to moderate response potential of this area means that any mechanized equipment will leave long-lasting scars. The use of mechanized equipment would be evaluated against potential long-term resource damage. Typically, mechanized equipment would be used to protect areas of high resource concerns or values, such as critical watersheds, threatened or endangered species habitat, and intermixed private property.

B-9 Crucial Mule Deer Winter Range

Current Condition – The vegetation types in these crucial deer winter range areas vary from sagebrush and perennial grasses at lower elevations in western portions of the field office to pinyon pine, Utah juniper, bitterbrush and mountain mahogany with associated perennial grasses and sagebrush in eastern regions. Vegetation types and current conditions vary depending upon elevation and fire history. Many of the mule deer winter ranges in western Elko County, including some of these crucial deer winter ranges, have been impacted by wildfire in the past several years. Rehabilitation efforts have been implemented in many areas. However, due to varying degrees of aspect and elevation, range site potentials, and pre-fire ecological conditions, the shrub component on these western ranges is limited in many areas. Because of the severe impacts that wildfires have had on mule deer winter ranges in western Elko County the past several years, protection of seeded areas and the remaining intact portions of these crucial winter ranges from further fire impacts is critical. Because of current early seral conditions in some of these areas, future fire occurrences could potentially increase the amount of undesirable and invasive species, particularly within western regions of the county. The management objectives for these areas are to maintain and improve vegetative conditions, protect critical watersheds, provide wildlife and livestock forage and provide woodland products in pinyon/juniper areas. This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 1.

Future Desired Condition – Improve shrub cover and densities in western regions affected by fire in recent years. Maintain big game habitat and woodland integrity at higher elevations. Maintain sagebrush/perennial grass diversity at lower elevations. Prevent annual non-native plant encroachment.

Constraints – Primary emphasis is on preventing the spread of fire. In some areas, long distances for vehicular travel areas make aerial delivery of resources an effective option. Lower elevations may have low to moderate response potential whereby use of mechanical equipment will leave long-lasting scars. Therefore, the use of mechanized equipment would be evaluated against potential long-term resource damage. Typically, mechanized equipment would be used to protect areas of high resource concerns or values, such as critical watersheds or streams, critical big game habitats, and intermixed private property.

Use of mechanized equipment will be limited in areas with high cultural values. An archaeologist will be consulted when mechanized equipment is used in these areas and will be consistent with Elko Field Office guidelines.

Where streams, riparian areas, or watershed exist that provide habitat for Federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to human life exists.

Unplanned ignitions will also be managed using current management guidelines for sage grouse and sagebrush ecosystems.

C-1 Woodlands

Current Condition: The primary vegetation type in these polygons is woody vegetation dominated by Utah juniper, pinyon pine, bitterbrush and mountain mahogany with associated perennial grasses and shrubs. Management objectives are for woodland products and big game habitat. This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 1.

Future Desired Condition: Maintain woodlands.

Constraints: Every effort will be made to have an archeologist on site to mitigate damage from mechanized equipment. However, if an archeologist is not available the resource advisor or Field Manager's Representative will make the determination on appropriate mechanized equipment use. This determination will be made based on current fuel, climatic, safety, and other conditions.

C-2 Owyhee Desert

Current Condition: The primary vegetation in this polygon is sagebrush with perennial grasses. Due to the current ecological conditions this is a potentially high vegetative response area with most of the area receiving 8 to 14+ inches of precipitation per year. The management objectives are to maintain fire as part of the natural ecological process and to achieve desired plant communities for grazing and wildlife management. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 1.

Future Desired Condition: Maintain native vegetation diversity and prevent the encroachment of annual and non-native plant species.

Constraints: Some private lands, which will require different suppression strategies, are located within this large polygon. Mechanized equipment use must be evaluated against the potential for long-term resource damage. Mechanized equipment use will be consistent with Elko Field Office Guidelines. Unplanned ignitions will be managed using current guidelines for sage grouse and sagebrush ecosystems.

C-3 Sage/Mountain Brush / Perennial Grass

Current Condition: Big sagebrush and perennial grasses dominate the vegetation in these areas. Lower elevation sites contain intrusions of cheatgrass. Bitterbrush and inclusions of mountain mahogany and aspen occur at higher elevations. The response potentials following fire is variable depending upon elevation and current ecological conditions. Lower precipitation areas (i.e. 8-10"/year precipitation zones below 6,000 ft. elevation) generally have lower response potentials and will need rehabilitation following fire events to restore the native community and ground cover. Areas above 6,000 ft. elevation (i.e. 10"+ /year precipitation zones) have higher response potentials due to increased available moisture and current ecological conditions. Prescribed fire to achieve site-specific resource management goals, whether planned or unplanned ignitions, should be limited in areas with low response potentials. Prescribed fire may be utilized more extensively as a management tool to achieve multiple use objectives at higher elevations where increased response potentials exist. Management objectives for these areas include the protection and maintenance of crucial big game habitat, protection of extensive cultural resources, protection of crucial watersheds, achieving

desired plant communities for grazing and wildlife management, and limiting cheatgrass colonization into native vegetation. This polygon is generally represented as Fire Regime 1 and in Fire Condition Class 2.

Future Desired Condition: Maintain and/or improve age class diversity of sagebrush. Maintain and/or improve the diversity of sagebrush and perennial grasses and forbs. Prevent further encroachment of annual and non-native plant species. Improve and/or maintain riparian areas to achieve proper functioning condition and other site specific multiple use objectives.

Constraints: Mechanized equipment will leave short-term scars on the land and may without proper plant response or successful rehabilitation result in annual species spread or long-term scars in low to moderate response potential areas, thus increasing rehabilitation costs. The use of mechanized equipment would be evaluated against potential long-term resource damage. Typically, mechanized equipment would be used to protect areas of high resource concerns or values, such as critical watersheds or streams and intermixed private property. Use of mechanized equipment will be limited in areas with high cultural resource values. An archaeologist will be consulted when mechanized equipment is used in these areas and will be consistent with Field Office Guidelines. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists. Use of mechanized equipment will be consistent with Field Office Guidelines. Unplanned ignitions will be managed using current management guidelines for sage grouse and sagebrush ecosystems.

C-4 Intermixed Woodlands, NE Corner

Current Condition: The vegetation in this area is characterized by pinyon-juniper woodlands at the higher elevations and native perennial grasses and sagebrush at lower elevations. The management objectives for this area include maintaining crucial big game habitat, maintaining the woodlands, providing livestock forage and protecting critical watersheds. Plant communities within this area have a high response potential following wildfire due to higher precipitation and current ecological conditions. There are various significant cultural sites in this polygon requiring mitigation during wildfire suppression. This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 2.

Future Desired Condition: Maintain big game habitat and woodland integrity at higher elevations. Maintain sagebrush/perennial grass diversity at lower elevations by preventing juniper encroachment. Prevent annual non-native plant encroachment.

Constraints: Long distances for vehicular travel make aerial delivery of resources an effective option. Mechanized equipment will leave short-term scars on the land and may without proper plant response or successful rehabilitation result in annual species spread or long-term scars in low to moderate response potential areas, thus increasing rehabilitation costs. The use of mechanized equipment would be evaluated against potential long-term resource damage. Typically, mechanized equipment would be used to protect areas of high resource concerns or values, such as critical watersheds or streams and intermixed private property. Use of mechanized equipment will be limited in areas with high cultural resource values. An archaeologist will be consulted when

mechanized equipment is used in these areas and will be consistent with Field Office Guidelines. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures for species protection, except when a threat to life exists. Use of mechanized equipment will be consistent with Field Office Guidelines. Unplanned ignitions will be managed using current management guidelines for sage grouse and sagebrush ecosystems.

D-1 Little Humboldt Wilderness Study Area (WSA)

Current Condition: The vegetation types in these areas vary from sagebrush and perennial grasses to pinyon-juniper woodlands to mixed conifer woodlands. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review. This polygon is generally represented as Fire Regime 1 and in Fire Condition Class 2.

Future Desired Condition: Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - According to the 1995 Interim Management Policy for Lands Under Wilderness Review, suppression efforts associated with wildfire are considered an emergency. The WSA may be impaired when the wildfire poses an immediate threat to life or real property. Only the Field Manager, Associate Field Manager, or Acting Field Manager can authorize motorized transport off of inventoried* vehicle routes for situations where life and property are threatened, but not immediately. Dozer use will not be allowed within a WSA unless there is an immediate threat to life or real property. In all cases, use of vehicle and mechanized equipment must be considered in the context of not impairing the suitability of the WSA for wilderness designation. All vehicular traffic will be restricted to the routes identified during the initial inventory. A Resource Advisor will be ordered for all fires within, or threatening a WSA. Present suppression methods may be used, including use of power tools, aircraft, and motorized fire-fighting equipment while strictly adhering to MIST and "light hand on the land" techniques. Rehabilitate any impacts created by suppression activities prior to releasing fire crews and equipment following fire containment.

*Inventoried vehicle routes are those that were identified during the original wilderness intensive inventory from 1979-1981. Maps of these inventoried routes are provided in READ kits, with local fire personnel maps, and at Elko Interagency Dispatch Center.

D-2 Owyhee Canyon WSA

Current Condition: The vegetation types in these areas vary from sagebrush and perennial grasses to riparian areas. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review. This polygon includes; South Fork Owyhee WSA, Rough Hills WSA, Owyhee Canyon WSA, and Badlands WSA. This polygon is generally represented as Fire Regime 3 and in Fire Condition Class 1.

Future Desired Condition: Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - According to the 1995 Interim Management Policy for Lands Under Wilderness Review, suppression efforts associated with wildfire are considered an emergency. The WSA may be impaired when the wildfire poses an immediate threat to life or real property. Only the Field Manager, Associate Field Manager, or Acting Field Manager can authorize motorized transport off of inventoried* vehicle routes for situations where life and property are threatened, but not immediately. Dozer use will not be allowed within a WSA unless there is an immediate threat to life or real property. In all cases, use of vehicle and mechanized equipment must be considered in the context of not impairing the suitability of the WSA for wilderness designation. All vehicular traffic will be restricted to the routes identified during the initial inventory. A Resource Advisor will be ordered for all fires within or threatening a WSA that may escape initial attack. Present suppression methods may be used, including use of power tools, aircraft, and motorized fire-fighting equipment while strictly adhering to MIST and "light hand on the land" techniques. Rehabilitate any impacts created by suppression activities prior to releasing fire crews and equipment following fire containment. Several critical streams and watersheds are within the WSA's' boundaries, including the South Fork Little Humboldt River.

*Inventoried vehicle routes are those that were identified during the original wilderness intensive inventory from 1979-1981. Maps of these inventoried routes are provided in READ kits, with local fire personnel maps, and at Elko Interagency Dispatch Center.

D-3 Mixed Conifer

Current Condition: These are high elevation areas with the predominant vegetation type being white fir, limber pine, bristlecone pine and spruce. These stands isolated on the tops of the higher elevation mountain ranges in the eastern part of the district. Because of the lack of disturbance most of these stands are becoming even aged stands and are dominated by dead standing and down trees. There is a heavy fuel load associated with these areas, making them more susceptible to a large stand replacing fire. Desired management for this area is to restore the health of the forest community. Some areas are also crucial big game habitat (Cherry Creek Mountains). This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 1.

Future Desired Condition: Healthy mosaic of uneven aged conifer stands with reduced fuel loadings.

Constraints: Limited access into these areas makes aerial delivery of resources the most effective tool. Critical watershed in this polygon is upper Taylor Creek in the Cherry Creek Mountains.

D-4 Goshute, South Pequop, and Bluebell WSA's

Current Condition: The vegetation types in these areas vary from sagebrush and perennial grasses to pinyon-juniper woodlands to mixed conifer woodlands. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review. This polygon is generally represented as Fire Regime 5 and in Fire Condition Class 2.

Future Desired Condition: Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - According to the 1995 Interim Management Policy for Lands Under Wilderness Review, suppression efforts associated with wildfire are considered an emergency. The WSA may be impaired when the wildfire poses an immediate threat to life or real property. Only the Field Manager, Associate Field Manager, or Acting Field Manager can authorize motorized transport off of inventoried* vehicle routes for situations where life and property are threatened, but not immediately. Dozer use will not be allowed within a WSA unless there is an immediate threat to life or real property. In all cases, use of vehicle and mechanized equipment must be considered in the context of not impairing the suitability of the WSA for wilderness designation. All vehicular traffic will be restricted to the routes identified during the initial inventory. A Resource Advisor will be ordered for all fires within, or threatening a WSA. Present suppression methods may be used, including use of power tools, aircraft, and motorized fire-fighting equipment while strictly adhering to MIST and "light hand on the land" techniques. Rehabilitate any impacts created by suppression activities prior to releasing fire crews and equipment following fire containment.

*Inventoried vehicle routes are those that were identified during the original wilderness intensive inventory from 1979-1981. Maps of these inventoried routes are provided in READ kits, with local fire personnel maps, and at Elko Interagency Dispatch Center.

D-5 Cedar Ridge and Red Springs WSA's

Current Condition: The vegetation types in these areas vary from sagebrush and perennial grasses to juniper woodlands. Much of these areas have considerable amounts of cheatgrass. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review. This polygon is generally represented as Fire Regime 2 and in Fire Condition Class 3.

Future Desired Condition: Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - According to the 1995 Interim Management Policy for Lands Under Wilderness Review, suppression efforts associated with wildfire are considered an emergency. The WSA may be impaired when the wildfire poses an immediate threat to life or real property. Only the Field Manager, Associate Field Manager, or Acting Field Manager can authorize motorized transport off of inventoried* vehicle routes for situations where life and property are threatened, but not immediately. Dozer use will not be allowed within a WSA unless there is an immediate threat to life or real property. In all cases, use of vehicle and mechanized equipment must be considered in the context of not impairing the suitability of the WSA for wilderness designation. All vehicular traffic will be restricted to the routes identified during the initial inventory. A Resource Advisor will be ordered for all fires within, or threatening a WSA. Present suppression methods may be used, including use of power tools, aircraft, and motorized fire-fighting equipment while strictly adhering to MIST and "light hand on the land" techniques. Rehabilitate any impacts created by suppression activities prior to releasing fire crews and equipment following fire containment.

*Inventoried vehicle routes are those that were identified during the original wilderness intensive inventory from 1979-1981. Maps of these inventoried routes are provided in READ kits, with local fire personnel maps, and at Elko Interagency Dispatch Center.

2. Fire Prevention: Vegetative manipulation, fuels reduction, green strips, fuel breaks and thinning should be maximized through the use of prescribed burning, mechanical, chemical and biological (including grazing) treatments to reduce wildfire fuel hazards.

This alternative acknowledges the benefits of vegetative manipulation and fuels reduction. Single focus policies based solely on full fire suppression have had an impact on the landscape causing fuel loads and suppression costs to increase with no notable improvement in the attainment of resource objectives. In areas where fires have not occurred for many years, fuel loading can increase the intensity of fire causing atypical burn results. Timing, intensity, and frequency of fire can critically influence vegetation recovery, leading to potentially long-term changes in vegetation and flammability. Because wildlife succession typically follows vegetation succession, some wildlife species are often negatively affected when intense fire causes a vegetation type conversion.

Maximizing the use of fuel management techniques is one key tool in an integrated strategy for long-term fire management. Using this integrated approach may reduce the danger to fire fighters, improve the productivity of public lands, protect public and private property from devastating fire, and over the long term may reduce fire suppression costs. Fuels management techniques would also be used to increase livestock forage production, protect the urban interface and other cultural resources. The proposed acreage would vary by year dependent on project planning, funding and staffing levels. Target acreage levels by alternative are described in Table 2E-4.

Table 2E-4
Annual Acres of Treatment

No Action Acres of Treatment	Full Suppression Acres of Treatment	Limited Suppression Acres of Treatment	Proposed Action Acres of Treatment
24,000	<4,000	<4,000	24,000 - 60,000

Fire prevention measures include:

Fuel Load Reduction

Large amounts of standing dead and live biomass represent a high fuel load and a greater risk of larger fires. A high fuel load would burn more rapidly or at a hotter temperature.

Reduction of the fuel load can be achieved through prescribe fire, mechanical (chaining, brush aerator, dixie harrow) methods, chemical treatments (herbicides such as tebuthiron) and biological treatments (grazing). These options should give consideration not only to fire management objectives, but also the resource goals of the area. Table 2E-5 describes preferred option by polygon type.

Prescribed burning is one of the primary methods of reducing fuel loads. Prescribed burns are the planned and controlled burning of an area and could include managing some naturally occurring wildland fires to achieve resource management objectives. Ignitions, including natural occurring would only occur or be managed within prescription parameters set within individual burn plans. Prescribed fires could be conducted during the period from spring to winter except for the mixed conifer. Prescribed fires would primarily be conducted in the mixed conifer stands during mid-July to mid-September when these fuels are dry enough to burn.

The design and planning processes of a prescribed burn would begin with a survey of the proposed prescribed fire site. If the desired management objectives can be met by prescribed fire, the project area boundaries and the individual burn units would be mapped. The appropriate NEPA documentation and the Prescribed Burn Plan would be developed for the specific site. After the adequate technical review, the Burn Plan would be submitted to the State of Nevada Bureau of Air Quality for approval and issuance of a burn permit. The burn would be conducted dependent on weather conditions and availability of resources. Managed naturally occurring ignitions in wildland fire use areas would require a plan completed for the specific area prior to allowing the ignitions to burn. More information is contained in the District's Prescribed Burning Environmental Assessment.

Fire Access Roads

Fire access roads are roads strategically located throughout a fire-prone area to provide vehicular access by fire fighting and emergency crews. A key to attacking wildfires is minimizing the response time, or the amount of time it takes the fire fighters to arrive at the scene of the fire. Fire and access roads that are readily accessible and passable greatly enhance fire suppression capabilities. Roads may also stop or slow the spread of lower intensity fires and can be used as points to burn out from or to begin cutting containment lines from.

Fuelbreaks and Greenstrips

A fuelbreak/greenstrip is a strategically located wide block, or strip of land on which a cover of dense, heavy, or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability as an aid to fire control. Fuelbreaks also have an access road through the middle of them, which provides fire suppression access. A fuelbreak, has a low-growing ground cover to protect the soil against erosion and prevent the spread of low-intensity fire as it burns. Fuelbreaks also provide areas for starting backfires for suppression burn out activities. Fuelbreaks also provide a safety area for fire fighters to attack wildfires from. Placing fire-resistant greenstrips along the borders of annual rangelands can also protect the adjacent native rangelands from being consumed by future wildfire that originate within these annual rangelands. This helps prevent the spread of high frequency wildfire in areas of invasive vegetation into other areas that would have a low vegetative response in these conditions. Fuel reduction methods described above would be used to create these greenstrips. Specific actions by polygon type are described in Table 2E-5.

Table 2E-5 - Fire Prevention Activities	
Category	**Action**
A-1 Urban Interface/ Mining Areas/ Areas of Development	Use planned ignitions and other vegetation management tools to reduce fuel loadings. Most of the mining areas (Carlin Trend) and urban interface are within Nevada Division of Forestry protection zones. Work with NDF and the mining companies to do hazard fuel reduction (either mechanical or planned ignitions) around critical sites. Area also has great potential for green stripping projects to create buffers around critical areas. The small towns in greatest risk from wildfire are Midas and Tuscarora and are priority for green stripping or other fuels modification treatments.
A-2 Cultural Sites, Historic and Protohistoric	None at this time.
A-3 Municipal Watersheds	Green stripping and prescribed burns around municipal watersheds to reduce fuel loads are recommended. The watersheds above the springs for Wendover, Utah and West Wendover are wooded and may need to be thinned to reduce the risk of a hot fire. Chemical treatments options should be avoided in this polygon.
B-1 District-wide Areas of Exotic Vegetation Invasion	Prescribed fire is to be used in a selective manner in these areas, usually in conjunction with mechanical or chemical treatments designed to convert these areas to perennial vegetation. Planned ignitions can be used in a limited way to accomplish specific management objectives within areas of native vegetation. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.
B-2 Ruby Marshes, Franklin Lake and Snow Water Lake	Prescribed fire can be considered as a management tool in portions of this area. Use prescribed fire in sagebrush and woodlands to accomplish specific management objectives. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.
B-3 Low Sagebrush & Desert Shrub	Prescribed fire should be a very minor component in these areas and then only to achieve site specific resource objectives within the context of the larger area.
B-4 Areas of Primarily Private Land and Urban Interface	Prescribed fire should be used to reduce fuel loadings in the urban interface and, to a limited extent, to improve the native vegetation. Actively work with NDF to accomplish fuels reduction through prescribed fire and mechanical means to lessen wildfire threat to developed areas. Work with private landowners and NDF to do collaborative prescribed fires where public lands abut private lands and opportunities exist to cross-jurisdictional boundaries to improve vegetative conditions.
B-5 Aspen Areas	Prescribed fire may be necessary to rejuvenate decadent stands that lack reproduction. However, post-fire protection is needed due to the sprouts' palatability to livestock and wildlife. Use planned ignitions to regenerate decadent stands in conjunction with appropriate post-fire grazing management.
B-6 Dixie	Prescribed fire use should be limited in this area to achieving site-specific management objectives. Planned ignitions will be limited in this area and will be curtailed if unplanned ignitions meet management objectives. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments. Due to existing conditions, biological fuels reduction options should be avoided in this polygon. The preservation of riparian areas in these areas should be a priority.
B-7 Badlands Allotment	None at this time.
B-8 Early Seral Sagebrush Grasslands	Prescribed fire use should be limited in this area to achieving site-specific management objectives. An evaluation of historical unplanned ignitions and their impacts will be considered when developing prescribed fire goals for this polygon. Planned ignitions will be limited in this area and will be curtailed if unplanned ignitions meet management objectives. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.
B-9 Crucial Deer Winter Range	Prescribed fire use should be limited in western regions of the county to achieving site-specific management objectives. Prescribed fire in eastern regions of the county can be used to meet resource objectives while maintaining big game habitat and woodland integrity. Prescribed fire goals will be evaluated against the history of unplanned ignitions and associated resource impacts. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Chainings and seedings within this polygon may be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

Table 2E-5 - Fire Prevention Activities	
Category	**Action**
C-1 Woodlands	Mechanical vegetation treatments are preferred to change the vegetation age structure and composition. Prescribed fire should be used in a limited role to accomplish multiple use management goals and objectives while maintaining woodland resource values. When mechanical treatments cannot meet wildlife habitat management goals, use prescribed fire (both planned and unplanned ignitions) to create openings of 10 to 50 acres.
C-2 Owyhee Desert	Make extensive use of planned ignitions to accomplish management objectives. Curtail planned ignitions if unplanned ignitions accomplish management objectives. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered as part of the decadal burn targets since they are maintenance of existing developments.
C-3 Sage/Mountain Brush/Perennial Grass	Prescribed fire via planned or unplanned ignitions may be used to accomplish site specific management objectives. Prescribed fire management goals will be evaluated against unplanned wildfire history and resource impacts. Planned and/or unplanned prescribed fire ignitions would be curtailed if resource objectives are met by unplanned wildfire events. Chainings and seedings within this polygon may be maintained through the use of planned ignitions. These ignitions would not be considered part of the decadal burn targets since they would be maintenance of existing developments.
C-4 Intermixed Woodlands, NE Corner	Prescribed fire can be used to meet resource objectives while maintaining the big game habitat and woodland integrity. The Wells RMP identified approximately 6,500 acres of prescribed burning in this area to achieve resource objectives. In heavily forested areas mechanical vegetation treatments may be preferable. Use mechanical treatments in areas of heavy forest cover. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.
D-1 Little Humboldt WSA	Use planned and unplanned ignitions to reintroduce fire into the ecology of the areas. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.
D-2 Owyhee Canyon WSA's. Includes Owyhee Canyon, South Fork Owyhee, Rough Hills and Badlands WSA's.	Use planned and unplanned ignitions to reintroduce fire into the ecology of the areas. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.
D-3 Mixed Conifer	Prescribed fire should play a large part in this process. Because of the fuels build-up in these areas, a series of low-intensity prescribed fires should be done to reduce fuel loadings, open up mineral soil for seedling germination, and increase nutrient recycling and create a mosaic of uneven aged pockets within the stand while avoiding total destruction of the stand as a whole. Prescribed fire can be used in conjunction with thinning projects to reduce the number of stems per acre. Planned ignitions will be used in these areas to meet the management objective of maintaining a healthy stand. Planned ignitions will be low-intensity surface fires with allowable torching of pockets of heavy fuels and will be planned in cycles (five years prior to reentry) to gradually reduce fuel loadings and create a mosaic of different aged stands. The entire polygon will be put into a planned ignition plan. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet the decadal acreage target.
D-4 Goshute, South Pequop, and Bluebell WSA's	Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.
D-5 Cedar Ridge and Red Springs WSA's	Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.

3. Fire Response – Fire response should be maximized in most areas and still provide the flexibility and range of options available to managers to appropriately respond to wildland fires and meet long-term management objectives.

Fire response based on the single principle of full suppression of all fires rather than on an integrated strategy for long-term fire management has resulted in a strain on fire management resources with no notable improvement in the attainment of resource objectives. Based on the FMA guidance, the Proposed Action focuses primarily on suppression of most all fires, but allows for some flexibility necessary for effective fire management. This flexibility is illustrated by a greater balance in acreage assigned to each FMC. For example, fires in mountainous areas within Wilderness Study Areas under low fire intensity conditions may not be immediately suppressed if the area was designated for future prescribed burning with an approved burn plan in place. This integrated approach may reduce the danger to fire fighters, improve the productivity of public lands, protect public and private property from devastating fire, and over the long term, may reduce fire response costs.

Polygons strategies are based on resource value, vegetative response, and potential for invasive weeds and public safety. Strategies described in the polygons provide a full range of fire response strategies ranging from aerial monitoring to low-impact confinement to full-scale containment and control strategies. Specific actions by polygons are described in Table 2E-6 and illustrated in Figure 2E-1.

Table 2E-6 - Fire Response Strategies

Category	Action
A-1 Urban Interface/ Mining Areas/ Areas of Development	Hold unplanned ignitions to minimal acreage within this polygon. Fire history is minimal because of their size, however, many can be easily threatened by wildfire. In particular, the towns of Midas, Tuscarora, and Spring Creek have been threatened in the past.
A-2 Cultural Sites, Historic and Protohistoric	Generally all fires will be kept to the minimum possible acreage based on firefighter safety and restrictions on mechanized equipment usage
A-3 Municipal Watersheds	All fires will be kept to minimum possible acreage based on firefighter safety.
B-1 District-wide Areas of Exotic Vegetation Invasion	Hold unplanned ignitions to 300 acres at least 90 percent of the time. The Battle Mountain Field Office has their adjacent areas in a "B" category. They will prevent the spread of fire in their "B" polygon into this polygon. Large acreage fast- burning fires that often exceed 20,000 acres dominate fire history in these areas. They are dependent on the amount of winter/spring precipitation and the resultant amount of invasive vegetation growth. These fires expand the annual vegetation areas by burning into native vegetation, which allows the exotics to colonize the burned areas in the year after the fire.
B-2 Ruby Marshes, Franklin Lake and Snow Water Lake	Hold unplanned ignitions to 2,000 or less at least 90 percent of the time. Use MIST in desert shrub areas. At low fire activity levels (Manning Class 1 and 2) monitor unplanned ignitions in desert shrub if this will cause less resource damage than suppression. At higher fire activity levels (Manning Class 3 or higher) suppress all unplanned ignitions using MIST. Fire history for these areas show an average of 0.6 fires per year burning 0.2 acres.

Table 2E-6 - Fire Response Strategies	
Category	**Action**
B-3 Low Sagebrush & Desert Shrub	Hold unplanned ignitions to 100 acres at least 90 percent of the time. All human caused fires will be fully suppressed using minimal impact suppression techniques (MIST). At low fire activity levels, natural ignitions may be monitored if this will cause less ecological impact than suppression. All fires will be fully suppressed using MIST. Ely Field Office has an acreage target for unplanned ignitions of 50 acres for adjacent areas (Steptoe Valley) in the same vegetative community. Elko Field Office will suppress all fires within two (2) miles of the boundary to the higher Ely standard. Fire history in these areas show an average of 6.5 fires per year burning 513 acres.
B-4 Areas of Primarily Private Land and Urban Interface	Hold unplanned ignitions to 300 acres at least 90 percent of the time. Use planned ignitions to accomplish management objectives with the cooperation of adjacent landowners. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments. This direction only applies to BLM lands within this polygon. All private lands will receive suppression effort as per Nevada Division of Forestry and Nevada Revised Statutes policy and law. These areas are within Nevada Division of Forestry protection zones. Fire history in this area for the BLM shows a low to moderate number of wildfires with most being small (0-10 acres). There is a high fire occurrence on the private lands within this polygon, with large 5,000+ acre fires common. This vegetation type is conducive to large, wind-driven fires of 5,000 to 15,000 acres. Fire history for this area (BLM records only) show an average of 3.5 fires per year burning 769 acres.
B-5 Aspen Areas	Hold unplanned ignitions to 100 acres at least 90 percent of the time. These areas have no history of ignitions. Normally fires start in other adjacent vegetation types (primarily sagebrush). If a wildfire is large enough it will burn through the stand if low fuel moisture conditions exist with sufficient fuel loads to carry the fire. If the wildfire burns into the stand when it is green or moist, the fire will dramatically change behavior and often stop. Fire history for these areas show an average of 0.2 fires per year burning 0.3 acres.
B-6 Dixie	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. This is a high fire occurrence area with the higher elevation fires mostly small (0-10 acres) in size. The lower elevations are prone to large fires with most being from 100 to 500 acres with occasional 5,000+ acre fires. This vegetation type is conducive to large wind-driven fires of 5,000 to 15,000 acres. Fire history for this area shows an average of 9.5 fires per year burning 1016 acres.
B-7 Badlands Allotment	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Minimize mechanized equipment impacts during suppression activities. There is no recorded fire history for this area.
B-8 Early Seral Sagebrush Grasslands	Hold unplanned ignitions to 300 acres at least 90 percent of the time. Those portions of this polygon in the southwest portion of the district occur in a high fire occurrence area with higher elevation fires mostly small (0-10 acres in size). The lower elevations are prone to large fires with most being from 100-500 acres with occasional 5,000+ acre fires. This vegetation type is conducive to large wind-driven fires of 5,000-15,000 acres.
B-9 Crucial Deer Winter Range	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Fire history indicates that portions of this area in western Elko County occur in a high fire occurrence area with lower elevation fires prone to large fire events with most being from 100-500 acres with occasional 5,000+ acre fires. The vegetation types and conditions in these lower elevation areas are conducive to large wind-driven fires of 5,000-15,000 acres. Fire history for higher elevations areas, particularly in eastern Elko County, indicates a high occurrence with about 75 percent of the fires being 0-10 acres in size and 25 percent burning between 100 and 5,000+ acres. The vegetative types in these higher elevations are conducive to wind-driven and plume-dominated fires ranging from 5,000-15,000 acres.
C-1 Woodlands	Hold unplanned ignitions to 300 acres at least 90 percent of the time. The Battle Mountain and Ely Field Offices adjacent pinyon-juniper areas are in "C" polygons with much higher acreage totals (ranging from 1,000 to 5,000 acres) to hold unplanned ignitions to. The Elko District will be responsible for suppression costs of fires occurring within two miles of the District boundary that will cross boundaries. Fire history in these polygons is that of isolated small (0-10 acres) fires. The vegetation type is conducive to large wind-driven or plume-dominated fires that can burn 500 to 5,000 acres in one to two burning periods. Fire history for these areas show an average of 4.5 fires per year burning 175 acres.
C-2 Owyhee Desert	Hold unplanned ignitions to 2,000 acres or less 90 percent of the time. Because of its isolated location, fire history in this area is incomplete. Documented fire activity shows a low to moderate number of fires with most being from 100 to 5,000+ acres. It is probable that many of the smaller fires burn out before they are reported. Both planned and unplanned ignitions can be managed to maintain fire as part of the natural ecology and to achieve management objectives. Fire history for this area shows an average of 3.9 fires per year burning 2,711 acres.

Table 2E-6 - Fire Response Strategies	
Category	**Action**
C-3 Sage/Mountain Brush/Perennial Grass	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Limit use of mechanized equipment and retardant in critical watersheds and high cultural value areas to minimize damage. Fire history in these areas is moderate with most fires being less than 500 acres. However, this vegetation type is conducive to large wind-driven fires of 5,000+ acres, as experienced during the past three years. From 1950 to 2001, nearly 1.9 million areas of this vegetation type have been affected by wildfire.
C-4 Intermixed Woodlands, NE Corner	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Fire history indicates that this is a high occurrence area with about 75 percent of the fires being 0-10 acres in size and 25 percent burning between 100 and 5,000+ acres. This vegetative type is conducive to wind-driven and plume-dominated fires ranging of 5,000 to 15,000 acres. Fire history for this area shows an average of 6.7 fires per year burning 2409 acres.
D-1 Little Humboldt WSA	**When 50% or more of this WSA has experienced wildfire in a ten-year period:** Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Planned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives. Use MIST tactics for suppression of the fire. Fire Use is not an option in this scenario. **When Less than 50% of the WSA has experienced wildfire in a ten-year period:** Fire use may be considered at Fire Intensity Level 1 (FIL), MIST Suppression will be used at FIL 2-5. Hold unplanned ignitions to 1,000 acres 90% of the time.
D-2 Owyhee Canyon WSA's. Includes Owyhee Canyon, South Fork Owyhee, Rough Hills and Badlands WSA's.	Hold unplanned ignitions to 500 acres or less at least 90 percent of the time. Planned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives. Use MIST tactics for suppression of the fire. Fire use may be considered at Fire Intensity Level 1-2 (FIL), MIST Suppression will be used at FIL 3-5.
D-3 Mixed Conifer	At FIL 1-2, combination of Fire Use and Suppression hold unplanned ignitions to 100 acres at least 90 percent of the time. At FIL 3-5 use Fire Suppression to hold unplanned ignitions to 50 acres 90% of the time. Fire history in these areas is that of occasional very small (0-1 acre) fires. The present stand composition would make any large wildfire (unplanned ignition) a lethal, stand replacement fire. Ely and Elko Field Offices will coordinate fire activity on the Cherry Creek Mountains. The districts will do a joint WFSA if a wildfire may cross-jurisdictional boundaries. The Districts will also coordinate prescribed fire activities to cross district boundaries whenever appropriate
D-4 Goshute, South Pequop, and Bluebell WSA's	Hold unplanned ignitions to 2,000 acres or less at least 90 percent of the time. The fire histories in these areas range from low to high with most being small (0-10 acres). Occasional large (10,000+ acres) fires have occurred in some areas. Both planned and unplanned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives. Fire history for these areas show an average of 3.2 fires per year burning 66 acres.
D-5 Cedar Ridge and Red Springs WSA's	Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Planned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives.

4. Fire Rehabilitation - Conduct fire rehabilitation activities to emulate historic or pre-fire ecosystem structure, functioning, diversity and/or to restore a healthy stable ecosystem.

Fire rehabilitation strategies remain the same as the No Action, however it is expected that in the long-term, an integrated approach might reduce the size and intensity of fires and therefore reduce the amount of acreage in which rehabilitation is necessary. The guidance in the FMA/EA acknowledges the benefits of fire rehabilitation. Using an integrated approach that addresses rehabilitation in combination with suppression and prevention may reduce the danger to fire fighters, improve the productivity of public lands, protect public and private property from devastating fire, and over the long term, may reduce fire suppression costs.

F. Comparison of Alternatives

Table 2F-1 summarizes the estimated area of wildfire impact, area expected to be rehabilitated, and acreage for target treatment per year for each alternative. Table 2F-2 summarizes and compares the potential environmental consequences associated with each alternative. The results of the impact analysis and definitions/explanations of impact levels are provided in Chapter 4.

Table 2F–1
Alternative Comparison

	No Action	Full Suppression	Limited Suppression	Proposed Action
Wildfire Acreage Expected (per year avg)	65,000	**0-5 year:** 62,000 to 65,000 **5-10 year:** 72,000 to 78,000 **10-20 year:** 78,000 to 91,000	**0-5 year:** 65,000 to 130,000 **5-10 year:** 130,000 to 163,000 **10-20 year:** 163,000 to 195,000	**0-5 year**: 52,000 to 58,000 **5-10 year:** 49,000 to 52,000 **10-20 year:** 26,000 to 49,000
Rehabilitation Acreage Expected (per year avg)	19,000	**0-5 year:** 18,000 to 19,000 **5-10 year:** 21,000 to 23,000 **10-20 year:** 23,000 to 27,000	**0-5 year:** 1,000 to 2,000 **5-10 year:** 2,000 to 2,400 **10-20 year:** 2,400 to 3,000	**0-5 year:** 15,000 to 17,000 **5-10 year:** 14,000 to 15,000 **10-20 year:** 8,000 to 14,000
Target Treatment Acreage (per year)	24,000	Less than 4,000	Less than 4,000	24,000 to 60,000

Estimate is based on the past 22 fire seasons in the District. Some variables that present a challenge to this exercise are; unknown future weather, funding support for fuels treatment initiatives in the long term, funding support for continued suppression at this level, and the amount of vegetation treatment necessary to affect a substantial reduction in large fire growth over the entire planning unit. To further develop this set of outcomes some assumptions were needed for consistency:

1. Future weather elements such as precipitation, and multiple ignition days can not be anticipated with any degree of accuracy. The past 22 years of data will be used.
2. Past occurrence will be used to reflect future potential for number of starts.
3. Weather, natural barriers, or changes in fuel composition catch fifty percent of all fires in the planning unit.
4. Past suppression efforts have been at least 95% effective. At least 95% of all fires have been suppressed with less than 200 acres impacted in less than 24 hours.
5. 29% of total burned acreage has received rehabilitation/stabilization effort. This figure will be used to project future potential rehabilitation needs.
6. Treatment of fuels has not been a substantial element of the Elko program in the past. Fuels treatment targets are based on Sagebrush Ecosystem planning that is ongoing as well as other initiatives such as allotment evaluations and habitat management plans. The treatment targets in the Limited Suppression or Full Suppression Alternatives were intentionally set low, less than 4,000 acres per year to illustrate that suppression alone is not the significant variable in large fire growth.
7. Rehabilitation would only be necessary for 29% of the 'A' polygon under the Limited Suppression Alternative due to the assumption that under this alternative fire is desirable under most conditions.

Source: BLM Elko Field Office, 2002

Table 2F-2 Summary of Impacts				
Element	**No Action**	**Full Suppression**	**Limited Suppression**	**Proposed Action**
Air Quality	Increase in smoke emissions due to potential increase in number and severity of fires due to fuel loads.	Increase in smoke emissions due to potential increase in number and severity of fires due to fuel loads.	Increase in smoke emissions due to potential immediate increase in number and severity of fires.	Reduction of smoke emissions due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Native American Consultation/Religious Concerns	Increase impact to areas due to potential increase in number and severity of fires due to fuel loads.	An increase in damage to sites may occur due to potential for larger fires and fire suppression activities.	An increase in damage to sites may occur due to potential immediate increase in number and severity of fires.	Reduction of impacts due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Cultural Resources	Increase impact to areas due to potential increase in number and severity of fires due to fuel loads.	An increase in damage to sites may occur due to potential for larger fires and fire suppression activities.	Unmanaged fires burning under dry and hot conditions would potentially have a high impact to cultural resources.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Paleontology	Increase impact to areas due to potential increase in number and severity of fires due to fuel loads.	An increase in damage to sites may occur due to potential for larger fires and fire suppression activities.	Unmanaged fires burning under dry and hot conditions would potentially have an impact to these resources.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Lands	Increase impact to private lands due to potential increase in number and severity of fires due to fuel loads.	Greater fuel loads would create conditions for high intensity fires with potential to cause damage to surrounding private lands.	Fire risk to private lands would increase due to conditions favoring more severe uncontrolled fires on adjacent public lands.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Water Resources	Severe fires over a potentially larger area due to increasing fuel loads could lead to harmful inputs to water resources from erosion of burned areas.	Severe fires over a potentially larger area due to increasing fuel loads could lead to harmful inputs to water resources from erosion of burned areas.	Severe uncontrolled fires could burn sensitive areas that could lead to harmful inputs to water resources from erosion of burned areas.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Wild and Scenic Rivers	Severe fires over a potentially larger area due to increasing fuel loads could lead to harmful impacts to these resources.	Severe fires over a potentially larger area due to increasing fuel loads could lead to harmful impacts to these resources.	Unmanaged fires burning under dry and hot conditions would potentially have an impact to these resources.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Wilderness	The potential for stand-replacing fires would be increased due to increasing fuel loads.	The potential for stand-replacing fires would be increased due to increasing fuel loads.	Unmanaged fires under certain conditions could increase the potential for stand-replacing fires.	Polygons with targeted management recommendations would help to maintain plant diversity and health of fire-dependent ecosystems in these areas.
Areas of Critical Environmental Concern	Fire does not play a critical role in the natural ecology of the ACEC in the area	Fire does not play a critical role in the natural ecology of the ACEC in the area and the	Fire does not play a critical role in the natural ecology of the ACEC in the area and the proposed action	Fire does not play a critical role in the natural ecology of the ACEC in the area and the proposed action would not result in any impacts.

Table 2F-2 Summary of Impacts				
Element	**No Action**	**Full Suppression**	**Limited Suppression**	**Proposed Action**
	and the proposed action would not result in any impacts.	proposed action would not result in any impacts.	would not result in any impacts.	
Recreation	A reduction in an areas recreational value may occur and public safety may be threatened if the size and frequency of fires continue to increase near public areas.	A reduction in an areas recreational value may occur and public safety may be threatened if the size and frequency of fires continue to increase near public areas due to increasing fuel loads.	Unmanaged fires burning under dry and hot conditions would potentially have an impact to recreation related resources.	A benefit would occur for recreation due to a reduction of fuel loads, resource focused response strategies and new procedural guidelines.
Visual Resources	Short term visual impacts will continue as fire size and intensity increase.	Short term visual impacts will continue as fire size and intensity increase.	Visual impacts will increase as areas with a negative vegetative response are burned.	Long-term increase in habitat quality would result in an improved visual quality.
Wildlife	An impact to wildlife areas would occur if the size and frequency of fires continue to increase.	Greater fuel loads would eventually lead to high intensity fires, reducing habitat structure and limiting the success of restoration.	Large area fires burning sensitive wildlife areas and areas with a negative vegetative response would decrease habitat for wildlife.	Wildlife and habitat improvement would occur through creation of plant community mosaics, fire prevention focusing on habitat development and the preservation of key wildlife areas.
Special Status Species	An impact to special status species would occur if the size and frequency of fires continue to increase.	An impact to special status species would occur if the size and frequency of fires continue to increase due to higher fuel loads.	Large area fires burning sensitive wildlife areas and areas with a negative vegetative response would decrease habitat for special status species.	Sensitive wildlife and habitat improvement would occur through creation of plant community mosaics, fire prevention focusing on habitat development and the preservation of key wildlife areas. Additional operating procedures reduce potential impact to special status species.
Migratory Birds	Plant community structure and restoration success, both important for migratory birds, would be reduced as fire intensity and severity continue to increase.	Greater fuel loads would eventually lead to high intensity fires, reducing habitat for migratory birds.	Large area fires burning sensitive wildlife areas and areas with a negative vegetative response would decrease habitat for migratory birds.	Habitat improvement for migratory birds would occur through creation of plant community mosaics and rehabilitation focusing on habitat development.
Soils	An impact to soils would occur if the size and frequency of fires continue to increase.	An impact to soils would occur if the size and frequency of fires continue to increase due to higher fuel loads.	An impact to soils would occur if fires are unmanaged and the size and frequency of fires continue to increase.	Reduction of impact due to reduction of fuel loads, resource focused response strategies and new procedural guidelines
Wetlands and Riparian Zones	An impact to wetlands and riparian areas would occur if the size and frequency of fires continue to increase.	An impact to wetlands and riparian areas would occur if the size and frequency of fires continue to increase due to increasing fuel loads.	Low levels of fire management would severely impact current objectives for wetland and riparian zones.	Coupled with appropriate grazing strategies, SOP's, prescribed burning under this alternative would promote healthier and more diverse natural communities in these zones.

Table 2F-2 Summary of Impacts				
Element	**No Action**	**Full Suppression**	**Limited Suppression**	**Proposed Action**
Vegetation	An impact to vegetation would occur if the size and frequency of fires continue to increase.	Under this alternative conversion to annual species, such as cheatgrass, would be promoted to a greater degree if fuel loads continue to increase causing larger more frequent fires.	Fire suppression would be limited and not account for vegetative response resulting in greater areas being converted to annual communities.	Management strategies are targeted to promote a healthy vegetative response, fuel loads would be decrease and habitats would be improved by increasing fuels prevention projects.
Noxious/ Invasive Weeds	This alternative would lead to high intensity fires inhibiting native plant communities and allowing invasion of noxious weeds.	This alternative would lead to high intensity fires inhibiting native plant communities and allowing invasion of noxious weeds.	Fire suppression would be limited and not account for vegetative response resulting in greater areas of invasive and noxious weeds.	Management strategies are targeted to promote a healthy vegetative response, fuel loads would be decrease and habitats would be improved by increasing fuels prevention projects.
Wild Horses	Displacement of wild horses may occur if habitat is degraded by increasing amounts of wildfire.	Displacement of wild horses may occur if habitat is degraded by increasing amounts of wildfire.	Unmanaged fire could result in further displacement of wild horses and associate habitat.	This alternative would enhance habitat for wild horses by increasing forage and maintaining areas for cover.
Rangeland / Grazing Management	This alternative would lead to high intensity fires inhibiting native plant communities and the promotion of less desirable species.	This alternative would lead to high intensity fires inhibiting native plant communities and the promotion of less desirable species.	Fire suppression would be limited and not account for vegetative response resulting in greater areas of invasive and noxious weeds.	Management strategies are targeted to promote a healthy vegetative response, fuel loads would be decrease and habitats would be improved by increasing fuels prevention projects.
Socioeconomic Conditions	Loss and conversion of habitat would decrease wildlife habitat, range condition, and opportunities for recreational activities.	Loss and conversion of habitat would decrease wildlife habitat, range condition, and opportunities for recreational activities.	Loss and conversion of habitat would decrease wildlife habitat, range condition, and opportunities for recreational activities.	Management strategies are targeted to promote a healthy vegetative response, fuel loads would be decrease and habitats would be improved by increasing fuels prevention projects. This should improve areas for recreation.

3. Affected Environment

Fire Management Amendment Environmental Assessment

CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter presents a description of the project study area's environmental conditions that could be affected by general fire management strategies. The focus of this FMA/EA is limited to public lands in the BLM Elko District (District) located in northeastern Nevada. The 7.5 million-acre District consists of vegetation types ranging from desert shrub to mixed conifer. Many of the plant communities evolved under a regime of intermittent fire and are adapted in some way to fire. The present fire regimes are different from the historical regimes due to fuel and successional changes caused by post-settlement activities, biotic succession caused by fire exclusion, invasion of exotic species and fragmented biotic communities. Defining the affected environment is difficult because fire is a natural part of the ecosystem of the area.

The following critical elements of the human environment are not present or are not affected by the proposed action or alternatives in this FMA/EA:

- Environmental Justice
- Farm Lands (prime or unique)
- Floodplains
- Wastes (hazardous or solid)
- Geology/Minerals

The following information is based on a number of resources provided by the consultant and BLM specialists, and information provided through the *Vegetation Treatment by Fire Environmental Assessment*, *2000* and other documents described in Chapter 5.0.

A. Air Quality

Air quality within the interior west was not pristine prior to European settlement in the late 1800's, especially with regards to smoke. Many historical accounts refer to the presence of smoke and burned areas within the Great Basin. Levels of smoke declined as fire was excluded from the land, particularly after the initiation of organized fire suppression.

National Ambient Air Quality Standards (NAAQS) have been established for six criteria pollutants: sulfur dioxide (SO2), particulate matter (PM10 and 2.5), carbon monoxide (CO), ozone (O3), nitrogen oxides (NOx) and lead (Pb). Nitrogen and sulfur oxides can cause adverse effects on visibility, plant life and water quality. The majority of these pollutants are primarily associated with urbanization and industrialization rather than with fire management activities, and are not dealt with further in this analysis.

The criteria pollutants of primary concern with wildfires and wildland fires are ozone, particulate matter (PM10 and PM2.5) and carbon monoxide (CO). Carbon monoxide is a localized "fire line" pollutant with little impact on air resources away from the burn site because of its rapid dilution in the atmosphere. Ozone is a photochemical pollutant, formed on sunny days from the chemical reaction of nitrogen dioxide and hydrocarbon emissions. Ozone chemistry is poorly understood, but it is known to be present in the smoke plumes downwind of large fires. Organic emissions from vegetation are also known to capture ozone, so the rangelands and forestlands are both a source and sink for ozone. Because of generally favorable plume height as well as the generally

reduced size and short duration of prescribed burns, there normally is not a significant human or ecological health concern. The PM10 and PM2.5 do not seriously affect rangeland and forest vegetation types, but can impact the human respiratory system. Since wildland fire historically was a natural occurrence within the range and forest vegetation types described, these ecosystems have some natural adaptation to the effects of fire.

Areas are classified as having either attainment or non-attainment status, or they are unclassified for meeting air quality standards. Unclassified areas are generally treated as attainment areas. The airsheds in Nevada are only classified according to federal standards.

The general conformity provisions of the Clean Air Act (Section 176(c)) prohibit Federal agencies from taking any action within a non-attainment area that causes or contributes to a new violation of NAAQS, increases the frequency or severity of an existing violation, or delays the timely attainment of a standard. They apply only to Federal actions within non-attainment areas. There are no non-attainment areas within the Elko District. Therefore, the conformity regulations do not apply to the management actions proposed in this document.

All of the BLM-administered lands and private lands within the Elko District are classified as PSD (Prevention of Significant Deterioration of Air Quality-Sections 160-169) Class II. The Jarbidge Wilderness Area in northern Elko County is classified as a PSD Class I with little or no degradation allowed.

Wildland fires can impact the air resource by degrading ambient air quality and impairing visibility. The wildland fire regime is currently much different than it was historically because of increased fuel loadings, development of ladder fuels and increases in stand density. The forest vegetation has changed from being primarily a non-lethal or mixed fire regime to lethal (stand replacement) fires (Quigley and Haynes, 1996). The rangeland fuels have also changed with increased fuel loadings of shrubs and invasion of woody species into grass/shrublands. Brown and Bradshaw (1994) found that emissions from modern fires have increased because fuel consumption (fuel per unit area burned) rates have increased. One of the goals of fire prevention is to reduce the amount of fuel present and reduce the potential for future lethal fires. Using prescribed fire in sagebrush/grass vegetation communities could have a similar effect by increasing the percentage of grasses and reducing the heavier sagebrush fuels. While prescribed fire can result in temporary negative impacts on air quality, acute impacts to air quality from wildfire can be reduced in the long term (Schaaf, 1996). Ottmar et al. (1996) estimate that the amount of PM10 emissions from prescribed fire in shrub communities is approximately 71 percent of the emissions from wildfire within the same vegetation type. In forest communities, the estimate is 74 percent (ibid).

B. Native American Consultation/Religious Concerns

In accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the Federal Land Policy and Management Act (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L. 101-601) and Executive Order 13007, the BLM must provide the affected Tribes and Bands the opportunity to comment and consult on proposed BLM land management actions. The BLM must also make efforts to identify locations having traditional cultural or religious values to Native Americans and insure that land management actions do not unduly or unnecessarily burden the pursuit of traditional religion or life ways by inadvertently damaging important locations or hinder access to them.

The Western Shoshone and possibly other tribes of the Western Great Basin traditionally occupied the lands within the Elko District. Historically, the people hunted and gathered, built temporary shelters and participated in the various social gatherings, activities, and ceremonies that define a culture. The Western Shoshone found and continue to find strength or spirituality in all living things upon the land including the land itself. Therefore, it is believed that the area in question contains locations of religious importance or concern.

However, the release of religious activity and site information within the Elko District is extremely guarded and efforts to solicit information have been moderately successful. Records or past documentation of religious activities and religious areas of concern within the Elko District are quite minimal. Therefore, it is strongly suggested that the BLM maintain an open line of communication and ongoing consultation (for this particular action) with the local tribes and bands in order to acquire an updated and accurate location of culturally important areas.

The Shoshone have had close ties with the land. The earth is believed to be imbued with supernatural power and a major religious goal is the acquisition and use of power. Not only the earth, but all animals, plants and inanimate objects are believed to contain varying degrees of power. This is why traditional Shoshone pray or give an offering when gathering natural resources, and why many view virtually any invasive use of the public domain as being detrimental to their belief system and traditions.

While all objects potentially possess power, concentrations of power are found in certain areas and have special significance to the Shoshone people. Such locations may be used for healing, praying or ceremonies. Other locations, such as those where medicinal plants, basket weaving materials, or food resources are gathered may also be crucial to maintaining Shoshone traditions.

The Elko District encompasses an area that lies within the traditional territory of the Western Shoshone. Eight Native American tribes, bands or organizations are being consulted/notified by the BLM regarding the FMA/EA. Information pertaining to the location and significance of traditional cultural properties and sacred areas is usually considered confidential and not shared with outsiders. Consequently, only limited information is available for analysis. Of the known locations, two appear to be the most significant. One is along the Willow Creek drainage and the other is at Rock Creek. The Willow Creek drainage, including the Midas, Tuscarora and Ivanhoe areas has been identified by the Shoshone as a source of power (Rusco and Raven, 1992). Within the

larger Willow Creek area, three specific localities have been identified. Tosawihi Quarry is the best documented. Tosawihi is considered important because of the presence of two power spots, because it is the source of white chert that is regarded by some to convey power or to aid in doctoring, and because it is a focal point of ethnic identity for the Tosawihi Shoshone. Little is known of the other two localities. Both are power sources. One, consisting of two springs, is located in the Tuscarora Mountains. The other is a located near Midas.

A sacred location along Rock Creek continues to be used for ceremony and healing, drawing Shoshone and others from a wide area (Harney, 1995). Other locations reported to have special meaning to some Shoshone include a locality or localities in the Pequop Mountains, and two former Sun Dance locations along the Humboldt River. The eligibility determinations are being made for the Rock Creek and Tosawihi sites, and are presently at the State Historic Preservation Office (SHPO) for evaluation.

In accordance with Federal legislation and executive orders, Federal agencies must consider the impacts their actions may have on Native American traditions and religious practices. Consequently, the BLM must take steps to identify locations having traditional cultural or religious values to Native Americans, and to ensure that its actions do not unduly or unnecessarily burden the pursuit of traditional religion or traditional lifeways.

C. Cultural Resources

The Elko District is rich in cultural resources. Approximately 10 percent of the District has been inventoried, resulting in the recordation of 12,000 archaeological and historic sites. Prehistoric use spanned the last 12,000 years. The people occupying the area were hunter-gatherers who practiced a mobile lifestyle. Camp sites were usually small and inhabited relatively briefly. Winter camps tended to be larger and occupied for longer duration than fair-season camps. The first inhabitants of the region are thought to have arrived at the end of the Pleistocene Epoch. Populations were very low and resource exploitation was centered on the lowlands, particularly the marshes that developed as pluvial lakes dried. As time passed, population increased and uplands as well as the lowlands were fully utilized. Population appears to have peaked in the Late Archaic Period, 700-1300 years ago. The archaeological evidence of prehistoric use range from a location where someone lost a single artifact to places where there are large collections of artifacts, and archaeological features. Among the site types are: isolated artifacts, pot drops, toolstone quarries, rock art sites, camp sites, villages, ritual locations, seed processing locations, game observation posts, tool manufacturing locations, hunting blinds, wild game traps and butchering locations.

The Elko District also contains abundant evidence of the historic era. The Humboldt River served as a primary corridor for the exploration and settlement of the west. Elko County was one of the first parts of Nevada explored by Euro-Americans. The first recorded penetration of the area was by the Hudson Bay Fur Company in 1826 (Patterson et al. 1969:72). Traces of both the main California Emigrant Trail and the infamous Hastings Cutoff (used by the Donner Party) cross the District, as do the first transcontinental railroad, the first transcontinental telephone line and the second transcontinental highway. Innumerable other historic resources are present including the remains of mining camps, railroads, railroad towns, ranches, farms, homesteads, cow and sheep camps, Native American villages, wagon roads, utility lines, aspen art, and horse traps.

D. Paleontology

The types of fossils found in a particular region depend on the age of the rocks that are currently eroding at the surface. Numerous fossil records in various geological formations are found throughout the District. Brachiopod fossils are found from the Upper Permian Gerster Formation and ammonoid fossils from the Lower Triassic Thaynes Formation. Additionally, many well preserved winged seeds and needles from conifer trees, plus fossil insects can be found from the Lower Oligocene Chicken Creek Formation in Elko County. Fossilized leaves can be found in northeastern Nevada where some 42 species of 40-million-year-old plants have been identified from the Upper Eocene Dead Horse Tuff. Paleontological resources in the Humboldt Formation include vertebrate, invertebrate, and plant fossils (Bilbey and Firby, 1997). Tuffaceous sediments interbedded with ignimbrite, vitric ash tuff and lava are mostly found in the Indian Well Formation where reports of early Miocene vertebrates were found in fine gravel lenses.

E. Lands

The Elko District covers the area encompassed by Township 26 North to Township 31 North by Range 48 East to Range 70 East and Township 32 North to Township 47 North by Range 44 East to Range 70 East, Mount Diablo Base and Meridian (Figure 1-1). The Elko District consists of 7.5 million acres of public lands administered by the BLM. Adjacent lands not administered by the District or part of the FMA/EA constitute another 1.3 million acres of public land and 3.5 million acres of private land.

Land Ownership		
Agency	**Acres**	**Percentage**
BLM*	7,508,974	61.02%
BOR	25,957	0.21%
DOD	15,157	0.12%
Native American	158,771	1.29%
USFS	1,070,556	8.70%
USFWS	5,674	0.05%
Other Public Lands	26,288	0.21%
Total Public	**8,811,378**	**71.60%**
Total Private	**3,494,797**	**28.40%**
Total	**12,306,174**	**100.00%**

* Addressed by FMA/EA

Authorized land uses occurring on the public lands consist of ranching (based on allotment guidelines) powerlines, gas pipelines, oil and gas wells with associated pipelines and storage tanks, and mining operations with associated buildings and structures. Additional information about land use activities can be found in Section R. Throughout the Elko District, these uses are located on a mixture of public and private lands.

The following communities are located on private land: Elko, Carlin, Battle Mountain, Wells, Wendover, Jackpot, Tuscarora, Midas, Crescent Valley, Beowawe, South Fork, Contact, Lee and Jiggs. These communities are also located adjacent to public lands where small tracts of public lands are often intermingled with large tracts of private lands. These communities range in size from a few people or dwellings to an urban area of 25,000 people. The FMA/EA primarily addresses public lands, however the alternatives presented in Chapter 2.0 provide guidance aimed at the protection of people and property in these areas.

F. Water Resources

Average annual precipitation for this area ranges from 6 inches in the lower elevations to 30 inches in the mountains, and it falls mostly as winter snows and late spring rains. Very little precipitation falls in the summer months, but thunderstorm events often result in intense, short-duration rainfall. January temperatures range from an average minimum temperature of 13°F to an average maximum temperature of 34°F. July temperatures typically average from 60°F (minimum) to 90°F (maximum). The Elko District is located within four hydrographic basins (Snake River, Humboldt River, Central Region and Great Salt Lake) in the northeastern corner of Nevada. Runoff and infiltration vary with slope, amount of vegetative cover, and soil or rock cover. Fire, whether natural or prescribed, directly affects the vegetative cover, thus affecting runoff and infiltration. Peak runoff typically occurs during April, May and June.

The major rivers of this area include the Humboldt flowing through the southwest portion of the District, the Owyhee and Bruneau in the northwest, and Salmon Falls Creek in the northeast.

Water availability varies greatly in the northeastern part of Nevada. Some mountainous areas have abundant water in springs, streams and ponds, with many man-made reservoirs downstream to store water for various uses. The landscape is mostly characterized by intermittent and ephemeral drainages. Surface water is used for irrigation, stockwater, wildlife, recreation, domestic and municipal use, as well as in-stream flows to support fisheries and riparian habitat. The water supply can be extremely scarce in other areas due to soil impermeability, low precipitation and evapotranspiration from seasonal playas. Water quality on designated rivers and streams normally meets the Nevada State standards within the Elko District. However several rivers and streams are listed in the 2000 EPA 305(b) report (which includes the 1998 EPA 303(d) list) for having impaired water including the Humboldt River, Owyhee River, Shoshone Creek and Salmon Falls Creek. Most of the streams and all of the springs within the District boundaries do not have any numeric water quality standards, and the state does not test these non-classified waters.

Several municipal watersheds, including Carlin, Wendover and Montello, have been identified in the FMA/EA as needing protection from fire. Wellhead protection areas for several small communities such as Jackpot, Midas and Crescent have also been identified as needing preservation. These watersheds include springs that provide drinking water for these communities.

G. Wild and Scenic Rivers

There are two rivers with Wild and Scenic River status in the Elko District. The South Fork Owyhee River designated as wild (23.6 miles) and scenic (1.0 mile), and a segment (2.2 miles) of Fourmile Creek found eligible for wild river status under the Wild and Scenic Rivers Act of 1968 (P.L. 90-542). The eligible river corridor extends for one-half mile on either side of the river. These river segments are within the South Fork Owyhee River and Owyhee Canyon Wilderness Study Areas. Management of this eligible Wild and Scenic River is guided by the Interim Management Policy for Lands Under Wilderness Review.

H. Wilderness

There are ten Wilderness Study Areas (WSA) in the Elko District. These WSA's were identified through an inventory process in the late 1970's. Those lands that were found to contain wilderness values were named as Wilderness Study Areas through the Resource Management Plan (RMP) and EIS processes. WSA management is guided by the 1995 edition of the BLM Manual Handbook H-8550-1, Interim Management Policy for Lands Under Wilderness Review (IMP).

Wilderness Study Areas	Acreage
Bluebell	55,665
Goshute Peak	69,770
South Pequop	41,090
Cedar Ridge	10,009
Red Spring	7,847
South Fork Owyhee River	7,842
Owyhee Canyon	21,875
Little Humboldt River	42,213
Rough Hills	6,685
Bad Lands	9,426
Total for Elko District	**272,422**

I. Areas of Critical Environmental Concern (ACEC)

Public Law 94-579, more commonly known as the Federal Land Policy and Management Act of 1976 (FLPMA) gives the BLM authority for management of areas having special (wildlife) values or to protect against natural hazards (Sections 102(a)(8), 201(a) 202(c)(3)). The Wells Resource Management Plan (RMP) and the resulting Record of Decision (ROD) designated 6,200 acres south of Wendover, NV as the Salt Lake Area of Environmental Concern (ACEC). This area was identified as a historical peregrine falcon use area, which supported a population of nesting falcons as late as 1960. The area is significant because of the history of use and is unique in that it is one of only five historical sites identified in Nevada. The management objective is to preserve the integrity of the Salt Lake ACEC for peregrine falcon reintroduction. The area is characteristic of a desert shrub community which is dominated by winterfat, shadscale, Nuttall's saltbush, together with Indian ricegrass and a variety of other perennial grasses. The topographic relief is characterized by numerous rock abutments and outcroppings that rise 100 to 300 feet to form cliffs. These rock faces generally run

north-south and provide mostly east facing exposures. These exposures overlook a marsh area known as Blue Lake which straddles the Nevada-Utah state line.

In 1986, the Salt Lake ACEC management plan was approved which outlined management objectives, planned actions, and special management requirements necessary to protect and maintain the existing habitat in its present condition. The plan allows for compatible uses to occur in the area which do not destroy or impair falcon eyries or other suitable habitat or disturb peregrine falcons while they are breeding, nesting, feeding or using the area. All land management actions proposed within the ACEC are carefully evaluated to ensure conformance with the management objectives and special management requirements identified for this area.

J. Recreation

The public lands within the Elko District provide opportunities for a wide variety of dispersed recreational activities, including fishing, sightseeing, hunting, camping, white water rafting, photography, rock-hounding and off-highway vehicle use. The majority of the recreational use (over 95%) that occurs in the District is dispersed. There are six Special Recreation Management Areas, four developed campground/recreation sites and many other undeveloped sites.

K. Visual Resources

The Visual Resource Management (VRM) system guides the inventory and management of visual resources on BLM lands. The inventory process consists of a scenic quality evaluation, a visual sensitivity level analysis and a delineation of distance zones. Based on these factors, BLM-administered lands were placed into four visual resource management classes. Visual resource management objectives are established for each class as described below.

Class I Objective: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective: The VRM class II objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III Objective: The objective of this VRM class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the landscape.

Class IV Objective: The VRM class IV objective is to provide for management objectives which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management

activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM, 1986).

The visual contrast rating process is used to analyze potential visual impacts of proposed projects and activities on public land, and thereby assess compliance with the VRM class objectives for that area. Through this process, the form, line, color and texture of the landform, vegetation and structures are compared ("contrasted") with their appearance following the implementation of a proposed project or management action.

The majority of the District has been designated as Class IV. The remaining lands are either Class II or Class III. There are no designated Class I areas in the Elko District; however wilderness study areas may be managed as Class I VRM areas (BLM, 1986).

L. Wildlife

With the tremendous variation of terrestrial habitats in the Elko District, there is a comparable diversity of wildlife species, which include big game, small game and nongame species. There are approximately 70 species of mammals, 273 species of birds, and 28 species of reptiles and amphibians. The complete species list can be found in Appendix 5 and 6).

Several locally representative species of wildlife are used to illustrate the affected environment in relation to an integrated approach to fire management. The integrated approach includes methods such as prescribed burning (to reduce fuel loads in preventing severe fires), fire suppression (use of fire retardants and foams), fire rehabilitation and fire management. The following species were taken from the BLM Vegetation Treatment by Fire EA (2000) as representative species occupying the various habitat types found on the District: pronghorn (*Antilocarpa americana*), elk (*Cervis elaphus*), mule deer (*Odocoileus hemionus*), Great Basin pocket mouse (*Perognathus parvus*) and red tail hawk (*Buteo jamaicensis*). Sage grouse (*Centrocercus urophasianus*) is discussed under Special Status Species (Item No. M) as the representative sensitive species in the Elko District. This section also contains a brief discussion of the listed species that can potentially be affected by fire and the fire management options. Each of these species-affected environments is described below.

Fire activities can improve the habitat for pronghorn. Kindschy et al. (1978), McCarty (1982) and Yoakum (1982) have recommended prescribed burning to improve pronghorn habitat. With a preference for forbs and strong requirements for open cover, pronghorns are favorably influenced by the increase in herbaceous material and the reduction of shrubs after fire (Higgins et al. 1989). Fire has been known to recover long abandoned antelope range in both Nevada and California. Pronghorn require a mosaic of very open spaces and taller, denser shrub areas. As described in the Vegetation Fire Treatment EA, the primary management recommendation is to limit burns in antelope habitat to 1,000 acres, with a mosaic pattern to provide cover for fawning (with 5 to 10 percent shrub cover) (Fire Effects Information System - FEIS). Pronghorn are not likely to be directly affected by fire suppression activities, such as the application of chemical fire retardant. The exception may be in forage availability where fire retardant, like a fertilizer or fire response strategies, may encourage growth of weedy invasive species at the expense of vegetative species preferred by ungulates. Rehabilitation efforts following

a fire would benefit pronghorn browsing if native grass and forb species were not likely to recover on their own.

Prescribed fire is used routinely to create or enhance elk habitat in many Western states (FEIS). Fire can be used to rejuvenate aspen stands, encourage early spring green-up of grasslands by reducing litter, slow or prevent conifer dominance in important foraging areas, increase palatability of foods, reduce the height of browse species, and stimulate regeneration through sprouting or heat scarification of seed (Jourdonnais and Bedunah 1990, Weaver 1987, Leege 1979).

Mule deer habitat can also be improved by the use of fire. Fires that create a mosaic of burned and unburned areas are the most beneficial. Both deer and elk tend to prefer foraging in burned areas compared to unburned areas because of the difference in forage selection. This preference may indicate an increase in plant nutrients, which usually occurs following fire (Asherin 1973, Hobbs and Spowart 1984, Severson, 1987). Mule deer consume leaves, stems and shoots of woody plants most often during summer and fall, while grasses and forbs compose the bulk of spring diets. A mosaic pattern in shrub and pinyon-juniper woodlands creates openings to attract mule deer to the forage, but also provides enough shelter for thermal cover and protection for fawning (FEIS).

The use of fire fighting chemicals and rehabilitation measures following fires would be similar in effect to both mule deer and elk as described above for pronghorn; that is, it would both promote and control introductions of invasive weedy species. Other means of fire prevention, such as mechanical removal of fuels, may benefit these ungulates by providing a mosaic of open foraging areas and cover, provided reseeding efforts are limited to native species.

Despite some of the benefits of fire to ungulates as described above, fire history and past fire management practices has influenced the current condition of mule deer habitat and other big game species. Since 1980, nearly 1.8 million acres of wildlife habitat has been impacted by wildfire. This has significantly affected mule deer habitat in the District, altering large areas of critical winter range from mountain shrub, sagebrush-grasslands, and pinyon-juniper habitats to annual and/or perennial grasslands. Black sagebrush is critical winter deer forage in Nevada. In areas where sagebrush is the only cover, its complete removal can be detrimental to mule deer populations (USDA 1973). Within the Nevada Division of Wildlife's Management Unit 060 over 90 percent of the mule deer winter range supporting 70 percent of the wintering population, has been adversely impacted by wildfires in the last 30 years (Ken Gray, NDOW, personal communication, 2002). Winter range areas that once consisted of shrub-perennial grass mosaics are now dominated by cheatgrass and other annual species. Although mule deer will readily consume cheatgrass when it is available, forage production varies greatly each year, making it an inconsistent and unpredictable food source. In addition, cheatgrass is not available as a food source during extended periods of deep snow cover, at which time browse becomes the only food source. Continuation of sagebrush losses in important winter habitat ranges could impact big game population sizes.

Mule deer are not the only wildlife species affected by this change in vegetation composition in the past few decades. Significant acres of sagebrush habitat important for sage grouse and other sagebrush obligates, have also been lost to wildfire. More than 325,000 acres within the District are currently dominated by annual species such as cheatgrass, Russian thistle, and mustard. Competition from cheatgrass and other annuals has effectively closed the plant community in these areas. Repeated fires have reduced sagebrush overstory to the point where seed dispersal from viable sagebrush stands has become virtually nonexistent. Efforts have been ongoing to reclaim these areas and reestablish shrubs, as well as, perennial grasses and forbs. However, these efforts are very expensive and reestablishment of such communities takes time. Rehabilitation efforts become hampered by the extreme fire potential and shortened fire cycle that continues the extensive shrub loss and cheatgrass invasion. With the increase in large scale fires, the invasion of cheatgrass, and the subsequent increase in fire frequency in these areas, the shrub-perennial habitat important for sagebrush obligates has little opportunity to regenerate. Add on other environmental and human-caused factors (i.e., brush control followed by non-native seeding, invasion of pinyon/juniper woodlands into shrub communities, conversion of sagebrush to agriculture, certain livestock management practices, and habitat fragmentation) and the result is a growing loss of sagebrush habitat and a decline in sage grouse.

Fire has little direct effect on fossorial mammals in their burrows (Hedlund and Rickard, 1981). Since Great Basin pocket mice are mostly active at night and tend to aestivate during the hot, dry periods when wildfire usually occurs, the mouse is probably not directly affected by fire. They do tend to converge on recent burns, probably due to the presence of easily available seed and dead insects. Favorable precipitation after a fire can greatly increase the populations of pocket mice, probably due to the increased seed production of grass and forb species. These increases tend to be short lived, though, with populations returning to normal within a year of the fire (FEIS). Fire fighting chemicals tested on two different rodents did not affect either species survival rate or population size (Vyas and Hill, 1994, Vyas et al. 1996).

The red-tailed hawk can be negatively affected by fire if the fire burns nest trees that are occupied, or reduces the number of unoccupied nest trees in an area where they are scarce. However, fire can leave behind snag trees that are used as perch sites, thus resulting in improved hunting opportunities for the hawks. Recently burned areas are also frequented by red-tailed hawks due to increased prey visibility. Regular prescribed burning has been noted to increase the habitat and populations of the hawk's prey. Prescribed fire should be in a mosaic pattern to maximize the edge effect and vegetative diversity for increased benefit to hawks (FEIS). Fire retardant use would not likely affect raptor species, such as the red-tailed hawk, unless application occurred during the nesting season. Fire rehabilitation measures could benefit raptor species over time by increasing nesting habitat and habitat for prey species.

Many reptiles and amphibians live in mesic habitats, which are likely to burn less often and less severely than upland sites. A review conducted by Russell et al. (1999) resulted in few reports of fire-caused injury to herpetofauna. In desert and semidesert habitats, patchy fire spread may protect amphibians and reptiles from fire-caused injury or mortality (Smith ed., 2000). Likewise, fire suppression efforts are not likely to affect these species. In rare cases, toxicity from chemical retardant may occur if these species are directly impacted by the treatment, although there are no known studies on toxicological effects of fire chemicals on reptile or amphibian species.

M. Special Status Species

There are 55 state and federal special status plants and animals likely to occur on public lands in the Elko District (Appendix 3). Habitats such as terrestrial, wetland, riparian, streams, lakes and reservoirs can provide important habitat for all of these species. The BLM gives sensitive species special consideration to ensure that their populations do not decline to the point where listing as threatened or endangered becomes necessary.

Riparian habitat provides important landscape features for five listed or candidate species that occur in the Elko District. The District contains 1,138 miles of public perennial streams and 3,900 acres of riparian habitat (52% of the public riparian habitat in Nevada). There are nearly 100 miles of public streams in 19 different grazing allotments in the Elko District which contain populations of Lahontan cutthroat trout (LCT), a Federally listed threatened species. There are nearly 70 known or historic stream or pond sites on public lands in the Elko District which provide habitat for the Columbia spotted frog, a Federally listed Candidate species. The bald eagle, a Federally listed threatened species, is a common winter resident (November-March) throughout the district in forested riparian areas. The Independence Valley speckled dace and Clover Valley speckled dace, two federally endangered species, also occur in riparian/wetland areas within the District. Minimizing the effects of fire within riparian zones through the application of Standard Operating Procedures, will protect important sensitive species habitats.

Sage grouse, a Nevada and BLM sensitive species, found in terrestrial habitats, particularly sagebrush-grasslands and meadows, has been affected by fire over the past two decades. Depending on pre-fire habitat quality and the type of fire, sage grouse can either be positively or negatively affected by fire. Sage grouse use different age classes and stand structures for lekking, brooding, nesting and wintering grounds. Generally, sage grouse prefer relatively open sagebrush communities. Neither extensive stands of dense sagebrush nor extensive open areas are favored by sage grouse. Fire that creates a mosaic of different age class and structure of sagebrush benefits sage grouse. Patches of newly burned areas interspersed with patches of sagebrush provide increased forb production while providing nesting and brood cover. Younger age class sagebrush established after a fire provides more nutritious and palatable browse than older sagebrush. Sage grouse have established lekking areas on new burns in areas where open cover was previously lacking. A fire within a sage grouse area can be beneficial if it does not burn key winter habitat or large tracts of land. A patchy sagebrush habitat, which includes forage and cover areas, should be the management objective. Recommendations have been made to burn or treat sagebrush by other appropriate techniques in sage grouse habitat on a rotational basis to provide the diversity that is needed for the sage grouse populations (FEIS). Fire response plans need to protect critical seasonal habitats. The use of fire fighting chemicals in sage grouse habitat would likely be beneficial in the long run, in order to protect remaining intact suitable sage grouse habitat. Fire rehabilitation can prevent habitat loss and restore open sagebrush habitat for potential sage grouse occupation. Efforts to prevent cheatgrass invasion following fires would be essential to sage grouse habitat rehabilitation. Meeting these objectives with an integrated fire management approach, which includes site-specific analyses, can prevent listing of this species. Management for sage grouse habitat will also preserve other sensitive sagebrush species. A list of Standard Operating Procedures (SOP's) for sage grouse, derived from the *Management Guidelines for Sage Grouse and Sagebrush Ecosystems in Nevada, 2000*, are found in Appendix 2.

Any action that may affect federally-listed species is subject to consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. The following federally listed or candidate species have been addressed in the Biological Assessment (BA) (BLM, 2003) for the FMA/EA: bald eagle (*Haliaeetus leucocephalus*), Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), Clover Valley speckled dace (*Rhinichthys osculus oligoporus*), Independence Valley speckled dace (*Rhinichthys osculus lethoporus*) and Columbia spotted frog (*Rana luteiventris*). This BA is available upon request at the Elko Field Office and is incorporated by reference.

N. Migratory Birds

On January 11, 2001 President Clinton signed the Migratory Bird Executive Order . This executive order outlines the responsibilities of Federal agencies to protect migratory birds. The United States has recognized their ecological and economic value to this country and other countries by ratifying international, bilateral conventions for the conservation of migratory birds. These migratory bird conventions impose substantive obligations on the United States for conservation of migratory birds and their habitats. The United States has implemented these migratory bird conventions through the Migratory Bird Treaty Act. President Clinton's Migratory Bird Executive Order directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act. and promote conservation of migratory bird populations.

A list of the migratory birds affected by the President's executive order is contained in 43 CFR 10.13. References can be found to species in the periodic report "A Migratory Non-game Birds of Management Concern in the United States", priority migratory bird species as documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 CFR 17.11. A list of migratory bird species that are obligate to the various ecotypes that exist in the Elko Field Office is contained in Appendix 5.

O. Soils

Soils in the Elko District were mapped by the Natural Resource Conservation Service as part of eight different Order III Soil Surveys. Soils are quite variable and are influenced by geology, topography and climate. Specific soil interpretations for qualities such as productivity and potential for revegetation following wildland fire are found by soil map unit in the soil surveys, and are not discussed in this document.

Soils occurring on bolson and semi-bolson floors at lower elevations are deep and young. These soils are poorly drained and are occasionally flooded. They occur on nearly level to gently sloping areas and are characterized by some saline-alkali accumulations. These soils are usually difficult to revegetate because of the high salt content.

Soils occurring in floodplains are deep, have a high organic matter content and may be poorly drained. They are usually young soils with little profile development. They are subject to frequent flooding and generally have a slight wind and water erosion hazard when the vegetation has been removed. These are some of the most productive soils in the District. Sagebrush-perennial grasses and possibly crested wheatgrass seedings would occur on these soils.

Soils that occur on terraces and piedmont slopes are common throughout the District and frequently have sagebrush vegetation. Slopes are quite variable, as well as texture. Soils on tops of fans and terraces tend to be older soils and have silica or lime cemented hardpans, or clay subsoils. These hardpans limit the amount of available moisture, as well as restrict infiltration and root penetration. Wind erosion hazard is slight and water erosion hazard is slight to moderate when the vegetation is removed. Sagebrush-perennial grasses and crested wheatgrass seedings are most likely to occur on these soils.

Soils occurring on mountains and hills may be shallow to deep over bedrock, with or without rock fragments. Textures are variable. Water erosion hazard depends on slope, texture and the amount of rock fragments throughout the soil, and can be moderate to severe. Wind erosion hazard is slight. Mountain soils may have aspen, mixed conifer, mountain brush and pinyon-juniper growing on them.

Soils in the Owyhee Desert are located on the Columbia Plateau. These soils developed over basalt flows in mixed alluvium and are influenced by loess and ash. These soils are generally shallow over a hardpan or bedrock and have a high surface cobble and/or stone content. Lime or silica cemented hardpans are common on these soils. Wind and water erosion hazards are generally slight. Sagebrush-perennial grass and crested wheatgrass seeding vegetation types occur on these soils.

Cryptogamic crusts are commonly found on the soils in the Elko District. They are frequently referred to as microbiotic crusts. Cryptogamic, or biological soil crusts have highest occurrences on shallow and calcareous soils, and are common in several sagebrush communities, including Basin Big Sage, Wyoming sage, mountain sage, black sage , and low sage. They rarely occur in saline or frequently flooded soils (BLM/USGS Technical Reference 1730-2)

They are composed of various living organisms and their byproducts. In the Great Basin, Microcoleus vaginatus, a cyanobacteria (blue-green algae) composes the vast majority of the crust (Johnson, 1997). Lichens of the *Colleria* spp. and moss of the genera *Totula* spp. are also common (ibid.). These crusts serve many functions, including nitrogen fixation, soil stability, changes in infiltration (both increased and decreased) and improved plant health for certain plant species.

Fire can cause a decline in cryptogamic crusts. This impact can be severe in high intensity fires, such as those associated with mountain shrub communities. Low intensity fires, such as found in grass/sagebrush communities, would not remove all the crust structure. The cyanobacteria recovers from disturbance most rapidly, attaining undisturbed densities within 1 to 5 years, because the higher pH favors its establishment (Debano, et al., 1998). Algal cells of many species can survive the most severe disturbances (ibid.) Where bacterial populations are reduced immediately post-fire, they typically increase dramatically after the first post-fire rainfall (Clark,1994). There is little research on the lichens that form the cryptogramic crusts. Lichens are one of the slowest crust components to recover and may take decades to reestablish significant cover. The time for full crust recovery after a fire depends on fire intensity levels. The response time can be improved by limiting the size of the fire and increasing the mosaic pattern of the burn, so that there is a nearby source of inoculum.

The amount of duff consumed by fire is highly dependent on duff moisture content. Duff with moisture content of 120 percent or greater basically will not burn. At moisture contents of 30 to 120 percent, the amount of duff consumed depends on the consumption rate of the associated surface fuels. Duff with a moisture content of less than 30 percent will burn spontaneously. (Peterson, 1999)

Approximately 8 percent of the heat generated by fire is transferred to the mineral soil. The amount of heat transfer relates directly to the duration of all phases of combustion. The temperatures reached by the soils are also dependent on the amount of duff and organic matter insulating the soil, and on the size and length of burn time of the surface fuels that contact the soil (Peterson, 1999). In grass-dominated vegetation types, the usual maximum heating of the soil is 125°C in 15 minutes. In brush vegetation, the maximum temperature is 200°C in 30 minutes. In timber duff, the highest temperature of 400°C is reached after 16 hours during the smoldering and glowing phase of the fire. Most of this temperature heating is within the top 2 centimeters of the soil.

The temperature-induced fire effects on soil include chemical and physical changes occurring in organic matter and soil nutrients. At 150°C, rapid pyrolysis occurs. At 300-390°C, the loss of up to 75 percent of soil nitrogen can occur and the soil pH increases. Long duration heating of 400-500°C causes ashing of organic matter. At still higher temperatures, structural changes in the soil occur (Hartford and Frandsen, 1992).

Hydrophobicity is the result of the distillation of organic compounds that causes soils to develop resistance to wetting. Hydrophobicity also occurs naturally in the absence of fire. The danger of hydrophobicity is greatest for fires occurring in chaparral shrub communities and forested areas. Hydrophobicity may also occur in sagebrush communities. This is generally extremely limited in scope and only occurs where shrubs and basal litter are consumed in a long duration fire. This effect causes increased runoff. Hydrophobicity primarily occurs in coarse-textured granitic soils most frequently following fires that heat the soil to 176-204°C. Granitic soils are very limited within the District. The two main areas are approximately 46,000 acres in the Granite Range and approximately 6,000 acres in the Dolly Varden Mountains (Coates, 1987). Fine-textured soils with a moderate amount of soil moisture are not susceptible to this phenomenon when the soil temperature remains below 176°C. When the soil is heated above 288° C, these hydrophobic compounds are destroyed (Clark, 1994).

The removal of vegetative cover subjects the soil to direct raindrop impact, which increases runoff and water erosion. The amount of water erosion will be highly dependent on slope steepness as well as soil texture and severity of the storm event. Avoiding steep slopes can minimize water erosion impact, especially where erodible soils are present. Timing a prescribed fire when large storm events are not likely to occur will also help. In the long term, this impact should be positive if post-fire vegetation has denser soil surface and subsoil root masses.

P. Wetland and Riparian Zones

There are approximately 30,000 acres of wetlands and riparian zones within the Elko District. These zones are at times inundated by water, and normally have saturated or seasonably saturated soil conditions within 10 feet of surface water. The width of the areas vary from a few feet along small streams, ponds and within spring meadows, to several hundred feet along major rivers, lake shores and within large meadow basins.

Many of the riparian areas do not have a surface flow, but are maintained by the high soil moisture. The presence of moisture and abundant nutrients makes the wetlands and riparian areas the most vegetatively diverse communities within the Elko District. Stream bank stability and cover are important for stream shading, which contributes to lower (below 70°F.) water temperatures that are critical for fisheries. These zones are valuable for wildlife and aquatic habitat. Wildland fire has and does occur in riparian zones. Riparian zones may act as fire breaks or green strips due to the high soil moisture content and the mesic vegetation. When fire does burn in the riparian zone, the impacts are less severe due to the available soil moisture.

Typical wetland and riparian vegetation species includes cottonwood (*Populus spp*.), Pacific willow (*Salix lasiandra*), sandbar willow (*Salix exigua*), chokecherry (*Prunus virginiana*), Wood's rose (*Rosa woodsii*), sedge (*Carex spp*.), American threesquare (*Scirpus americanus*), Baltic rush (*Juncus balticus*), bent grass (*Agrostis stolonifera*) and Kentucky bluegrass (*Poa pratensis*). All of these species are at least moderately fire tolerant.

Some cottonwood species respond more vigorously to fire then other cottonwood species. A study conducted in southern Alberta, Canada found that when fire occurred prior to bud flushing cottonwoods responded by vigorous sprouting particularly in the first summer and by fall 75% of the burned trees had produced coppice sprouts, new shoots from remnant stumps (Gom and Brood 1999). *Populus angustifolia* and *P. balsamifera* produced more sprouts than *P. deltoides* and *P. fremontii* (Gom and Brood 1999).

Willows in all stages of vigor resprout from the root crown or stem base following fire. Their numerous wind dispersed seeds are also important in revegetating areas post-fire. Severe fires that burn off most of the organic layer of the soil and leave roots and stem bases exposed eliminate basal sprouting by killing dormant buds.

Chokecherry is well adapted to disturbance by fire. It is easily top-killed but resprouts vigorously from buds on root crowns and rhizomes. Seed dispersed by mammals and birds, and pre-existing buried seed on-site can be significant sources of post-fire vegetative regeneration. Post-fire recovery is relatively rapid, with plant numbers and cover densities enhanced for several years. Most rhizomes are buried at least one inch below the surface, suggesting that it can tolerate a severe fire with significant soil heating in the upper inch of soil. If the plant is phenologically active, significant damage can occur, although fire rarely occurs at this time of the growing season. Studies in Utah show that twice as many shoots were found on a fire site than on a nearby unburned site, and that the increased densities were maintained for approximately 18 years until the plants regained pre-fire densities.

Wood's rose is typically top-killed by a fire. The plant regenerates by sprouting from the root crowns and underground rhizomes and survives low to moderate intensity fires. In some studies, Wood's rose doubled in abundance by the second post-fire year. After high intensity fires, the plant recovered to near pre-burn densities by the second post-fire year.

Sedges reproduce by both rhizomes and seed. Most sedges show a good resistance to low to moderate intensity fires as long as the organic layer of the soil is left mostly intact. Residual seeds often exist in areas that have become dominated by other plants and readily sprout after the vegetation is burned. Fire does not change sedge composition

when it is the dominant or co-dominant species. Seasonality of fire does not appear to matter as long as sufficient moisture is in the organic soil layer to reduce its burning.

American threesquare's rhizomes are buried up to six inches in the soil; thus, they are well protected from the soil heating caused by the fire. Field studies have shown that seeds that have been subject to fire on the moist soil surface or buried up to one inch have slightly higher germination rates than seeds not subjected to fire. Generally only the above-ground parts of the plant are removed by fire.

Baltic rush survives fire by sprouting from its extensive rhizome system. Fires in riparian/wetland areas often only top-kill the plants, leaving the rhizomes in moist soil unharmed.

Bent grass has a moderate tolerance to fire, however, there is no specific information available in the literature on the fire ecology of this species. A similar species, ticklegrass (*Agrostis scabra*), has been shown to colonize bare mineral soil after a fire. This species is considered to be an increaser species with stolons that are probably killed after a moderately severe fire. The seeds of this species are stored in the soils for short durations.

Kentucky bluegrass's response to fire depends on the season of the burn, fire frequency and post-fire precipitation and soil moisture. This grass is a cool season perennial and burning in the spring when it is actively growing damages it. Repeated spring burns can greatly reduce its density and biomass production. Kentucky bluegrass growing on more mesic sites is more affected than the grass growing in moist swales and riparian areas. Burning when the grass is dormant does not affect it. In the west, Kentucky bluegrass is often more abundant on recently burned sites than on similar unburned sites, especially in the sagebrush/grassland communities (FEIS).

Q. Vegetation

The affected vegetative communities include the following:

Annual Grassland Communities - There are few native grasses in Nevada that are annuals. Most of Nevada's grasses live for many years (perennial) developing bunched or clumped growth forms. Most annual grasslands in Nevada are dominated by cheatgrass (*Bromus tectorum*), and other non-native weeds.

Cheatgrass is a detrimental non-native invasive species in the District, particularly in relation to fire, wildlife habitat, and grazing. It was brought from Eurasia to North America in the 1890s and it quickly spread through arid areas. When cheatgrass invades an area, the amount of nitrogen in the soil available to plants decreases dramatically, with potential to choke native desert plants (Evans 1999). The nitrogen tied up in plant litter becomes a volatile fuel. Cheatgrass not only changes the fire frequency of a site, but also the fire volatility, intensity and the extent that an area is likely to burn in the future. It invades areas where native plants are weakened. Such weakening can occur under the effects of sustained overgrazing by livestock, especially sheep, or from episodic drought, or because of a broad change of land use regimen. Species that are commonly displaced by cheatgrass include big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), bluebunch wheatgrass (*Agropyron spicatum* = *Pseudorogneria spicata*), crested wheatgrass (*Agropyron cristatum*), western

wheatgrass (*Agropyron smithii* = *Pascopyrum smithii*), Sandberg bluegrass (*Poa sandbergii* = *Poa secunda*), needle-and-thread grass (*Stipa comata* = *Hesperostipa comata*), and Thurber's needlegrass (*Stipa thurberiana*). Although fire is a natural part of the sagebrush grassland ecosystem, those fires usually occurred at intervals between 60-100 years (Whisenant 1989). Cheatgrass infested areas burn at a much greater frequency, every 3-5 years (Whisenant 1989). At this frequency, native shrubs and perennial grasses cannot recover and after a few wildfire cycles a cheatgrass monoculture develops. This monoculture further increases the frequency of fires and its ability to return and expand in dominance in the area. There are approximately 325,000 acres of cheatgrass dominated sites within the District.

Cheatgrass is also considered especially detrimental, because, despite its early growth and virulent color, it cannot be used as feed for livestock because it dries out quickly, with its surface annual-grass roots. When the sharp-pointed bearded florets mature, they can cause injury to animals that graze on them.

Perennial Grassland Communities - Most native grasses in Nevada are bunch grasses. Some non-native species are also bunch grasses, such as crested wheatgrass. Some perennial grasslands have been created by livestock forage projects which were designed to remove the shrub component of the sagebrush-grassland community and establish introduced perennial wheatgrass species. In addition, fire occurrences in the last 10 years have resulted in many acres of shrub-grasslands being converted to a vegetative community currently dominated by perennial grasses and forbs. There are nearly 1.3 million acres in the Elko District that are currently dominated by perennial grasses with less than 15 percent shrub composition. Over time, shrubs will naturally re-establish and begin to dominate the vegetative composition of these areas.

Sagebrush Communities – The sagebrush/perennial grassland is the most extensive community in the area, covering approximately 4,500,000 acres. This type occurs from clay pan valley bottoms, to well drained deep soils in valley bottoms, to alluvial fans, and up to ridgetops on all exposures. Slopes range from 2 to 75 percent, but 4 to 25 percent is the most typical. Elevations range from 4,000 to 9,000 feet. The accepted ranges of fire occurrence within the sagebrush vegetation types (Miller, 1998) are as follows:

Wyoming big sagebrush (*Artemisia tridentata spp. wyomingensis*) - From 25 to 100 years. Where shrubs were small in stature and grass sparse due to low site productivity and precipitation, the frequency was closer to 100 years. This sagebrush type occupies approximately 40 percent (1.8 million acres) of the sagebrush-dominated areas.

Basin big sagebrush (*Artemisia tridentata spp. tridentata*) - From 30 to 70 years during the pre-settlement period, with dry sites burning at greater than 50 year intervals. This sagebrush type occupies approximately 20 percent (900,000 acres) of the sagebrush-dominated areas.

Mountain big sagebrush (*Artemisia tridentata spp. vaseyana*) - From 11 to 40 years, the sites closest to Nevada (in southwest Idaho) with western juniper ecotones had an estimated fire return interval of 11 years. This sagebrush type occupies approximately 25 percent (1.1 million acres) of the sagebrush-dominated areas.

Black sagebrush (*Artemisia nova*) - Estimated fire return intervals of 100 to 200 years. This sagebrush type occurs on approximately 15 percent (700,000 acres) of the sagebrush-dominated areas.

Associated with the sagebrush communities are various perennial grass species. Among the most important are: Thurber needlegrass (*Stipa thurberiana*), Idaho Fescue (Festuca Idahoensis) bluebunch wheatgrass (*Pseudorogneria spicata*), Indian ricegrass (*Oryzopsis hymenoides*), Great Basin wildrye (*Elymus cinereus*), bottlebrush squirreltail (*Elymus elymoides*), Sandberg bluegrass (*Poa secunda*) and pine bluegrass (*Poa scrabrella*). Important forb species include arrowleaf balsamroot (*Balsamorhiza sagittata*) and taper hawksbeard (*Crepis acuminata*). Potential vegetative composition is about 50 percent grasses, 15 percent forbs and 35 percent shrubs.
Site productivity affects the burning patterns of the big sagebrush species. Highly productive sites have greater plant density and more biomass, which provides the fuels to carry the fire. Among the three subspecies of sagebrush, mountain sagebrush is the most flammable, Wyoming big sagebrush is the least flammable, and basin big sagebrush is of intermediate flammability. All three species are easily killed by fire and reestablish themselves through on-site seed caches and off-site seed sources (FEIS).

The black sagebrush communities extend from low arid foothills and ranges to high mountain ridges. The perennial grasses associated with these communities are Idaho fescue (*Festuca idahoensis*), Webber ricegrass (*Oryzopsis webberi*), bottlebrush squirreltail, Cusick bluegrass (*Poa cusickii*), Sandberg bluegrass and pine bluegrass. Potential vegetative composition is about 50 percent grasses, 15 percent forbs, and 35 percent shrubs.

Typically, the sparse vegetation of most black sagebrush communities normally precludes the occurrence of fire, except in exceptional years. Black sagebrush stands, where they form a major part of the community, are a valuable wildlife winter forage species and should not be burned on a large scale basis.

The grasses associated with these communities are generally fire resistant. Bluebunch wheatgrass is a coarse-leafed plant without a lot of fuel buildup around the base, so there are no prolonged high temperatures during fire events and most basal buds survive. Following fire, tiller production usually increases and biomass increases. Regrowth after a burn shows increased mineral content and lower fiber concentrations than untreated foliage. Great Basin wildrye is generally favored by disturbance and has shown increased foliage production and higher densities after fires in the Elko District. The plant resprouts from buds at the root crown and from new seedlings established from residual plants. This grass is a poor competitor and is suppressed by other species. Bottlebrush squirreltail is one of the most resistant bunchgrasses. It often increases in abundance after a fire. Shoot biomass and density and the number of reproductive shoots may increase dramatically after a fire. Bluegrass species are normally unharmed by fire. Their rapid maturation in the spring reduces fire damage because they are dormant during most of the burning season. Bluegrass cover generally increases after a fire. Indian ricegrass normally is only slightly damaged by fire. Early spring burning generally increases the canopy cover and density of this grass with it easily reseeding from adjacent plants. Idaho fescue can survive low to moderate intensity fires if the basal buds are not damaged. Spring burning has the least effect on this grass. In some areas with more favorable growing conditions, it resembles bluebunch wheatgrass in its ability to withstand fire. In poor sites it is easily damaged.

Idaho fescue that burned in the Lone Mountain fire of 1994 on the Elko District recovered to its pre-fire density and biomass within two years following the fire. The needle-and-thread and needle grasses are the grasses that are most easily damaged by fire. This is due in large part to the dense fine fuels and culms around the bases of the plants. Large plants are the most susceptible due to the greater buildup of fuels. Midsummer fires are the most damaging. For all of the grasses, it appears that post-growing season fires have the most beneficial effects (FEIS).

The forbs found within this community are generally unaffected by fire or are favored by fire. This is due in part to their growth forms and because most forbs are colonizing species.

Pinyon-Juniper – This type occurs in mountainous regions. Closed and open stands of pinyon-juniper cover approximately 1,100,000 acres within the District. Slopes range from 30 to 50 percent, but slope gradients of 30 percent are most typical. Elevations are 5,500 to 9,000 feet. The pinyon, juniper and mahogany types may be roughly divided into three altitudinal belts. On low, dry fans, juniper occurs in nearly pure stands. Pinyon and mahogany occur at the higher elevations where the annual precipitation is greater, while in between is a transition zone where the three species mix. The pinyon pine, Utah juniper and inclusions of curlleaf mountain mahogany (*Cercocarpus ledifolius*) forest types are distinct ecosystems that are managed and perpetuated for the production of multiple resource values. These values include wildlife habitat (numerous species attracted to pine nuts), recreation, and watershed protection. Harvest of wood products produced in pinyon/juniper woodlands for personal use and for use in numerous small business operations is another value. Important forest products include firewood, Christmas trees, posts, pine nuts and wildings.

These plant communities are characterized by Pinyon pine (*Pinus monophylla*) and/or Utah juniper (*Juniperus osteosperma*). On the Elko District most of the woodland sites are dominated by Utah juniper. The understory consists primarily of bluebunch wheatgrass and black sagebrush. Other important species associated with these sites include Thurber needlegrass, Sandberg bluegrass, Great Basin wildrye and needle-and-thread grass (*Stipa comata*). Juniper and pinyon trees are prevalent enough to dominate these areas, however antelope bitterbrush (*Purshia tridentata*) and curleaf mountain mahogany can be located within the understory. Potential vegetative composition is about 40 percent grasses, 15 percent forbs, and 45 percent shrubs.

The fire frequency in the pre-settlement period on pinyon-juniper and mahogany varied considerably. Highly productive sites with continuous grass cover probably had a fire frequency of approximately 10 years, and limited pinyon-juniper to rocky outcrops and sites without grass. Fire maintained a savanna plant community of grass with occasional trees. On moderately productive sites, it is estimated that there were frequent surface fires ranging from 10 to 30 years, with crown fires occurring every 200-300 years. Fires on low productivity sites with discontinuous grass cover probably were small, patchy and infrequent (Miller, 1998). In the Great Basin woodlands, the best candidate locations for prescribed fire are areas where juniper is invading the sagebrush-grassland communities. Communities in early to middle stages of succession typically can be treated to control their expansion by various methods, including fire (Miller and Tausch 2001). These sites usually have a shrub and tree cover ranging from 45 to 60 percent. These sites can be burned with low intensity spring burns to eliminate the encroaching small (up to 4 feet high) tree overstory.

Aspen – Many areas in the mountains have small stands of aspen (*Populus tremuloides*), and it is estimated that approximately 17,000 acres of aspen are found on the District. The understory consists of forbs such as aster (*Aster spp*.), lupine (*Lupinus spp*.), fireweed (*Epolobium spp*.) and geranium (*Geranium spp*.), but is often dominated by snowberry (*Symphocarpus spp*.). Some common grasses that may be present are smooth brome (*Bromus marginatus*), slender wheatgrass (*Agropyron trachycaulum*) and blue wildrye (*Elymus glaucu*).

Aspen is usually top-killed by fire and regenerates by root suckers. Fire frequency is determined by aging the stand to see when it originated. In the intermountain west, aspens mature and start declining at 80 to 100 years. As the aspens mature, they become susceptible to insects and disease. Stands may be lost when conifers invade and shade out the aspen. In sagebrush areas, the stands may break up and convert to shrub-dominated vegetation (Miller, 1998). Aspen can thrive after fire by suckering (FEIS) and rejuvenate the stand and eliminate encroaching vegetation. When grazing is reduced or eliminated by construction of exclosures, Aspen rejuvenation by suckering is enhanced (Kay and Bartos 2000). Aspen is highly competitive on burned sites. Even when there is little detectable aspen on a site, it may dominate after a fire. Given adequate rest from grazing following fire, the recovery is good and the potential exists for increasing the total acreage of aspen within an area.

The primary grasses in the aspen community easily regenerate after a fire, either through their rhizomes or through seeds. Smooth brome is negatively affected by early spring burns. The seed bed after a fire is particularly conducive to the establishment of blue wildrye. After approximately four growing seasons, blue wildrye is suppressed by smooth brome, which outcompetes it (FEIS).

The forbs within this community are all fire resistant, with fireweed and lupine being aggressive colonizers after a fire, either though sprouting or seeds. Asters are moderately resistant due to their rhizomes, and the population increases rapidly after a fire due to mass flowering and seed production in the first two post-fire years (FEIS).

Mixed Conifer – The mixed conifer community occupies approximately 47,000 acres on the District. Tree species include limber (*Pinus flexilis*) and whitebark (*Pinus albicaulis*) pines, white fir (*Abies concolor*), subalpine fir (*Abies lasiocarpa*), Englemann spruce (*Picea englemannii*) and, at the highest elevations, bristlecone pine (*Pinus longaeva*).

All age classes of the various conifer species are represented within the District, with the majority being mature (100 to 300 years old). These forests are found from 5,000 to over 10,000 feet in elevation, where precipitation is the greatest. However, they will extend downslope to lower elevations (in areas such as drainages or north slopes) when moisture is adequate. Quigley and Haynes (1996) show that the type of fire regime within this vegetation type in the Jarbidge area of Northeast Nevada (the closest area with similar forested types to the Elko District) has changed from non-lethal to lethal over the past 50 years. This is probably due to the buildup of fuels and the conversion of parts of this forest from pine-dominated open stands to a closed-stand forest with a higher concentration of fir and spruce trees with more stems per acre. Of concern is that the "islands in the sky" areas of mixed conifer in the Elko District are remnant stands of a previously larger vegetation type. A stand replacement fire occurring in these remnant

stands may totally change the vegetative community, losing a potentially valuable resource.

Limber pine is susceptible to fire when it is young. The older trees have bark up to 2 inches thick, which acts as insulation and protects the trees from stem scorch. The terminal buds are somewhat protected from heat associated with crown scorch by tight needle clusters. The vulnerability of limber pine to fire is somewhat mitigated by the open structure of the stand and the sparse understory. The fuel loadings are generally light, leading to low intensity understory fires. Studies in Montana show a fire frequency of 50 to 200 years. It is suggested that limber pine growing in open stands may be maintained by periodic surface fires, which reduce the undergrowth (FEIS).

Whitebark pine is a moderately fire resistant species, and is benefited by both creeping ground or surface fires and severe stand replacement fires. Its susceptibility to fire is offset by the open structure of its stands and the sparse understory within this habitat type. Whitebark pine is favored by severe stand-replacing fires, especially in moist sites where succession to more shade tolerant species (such as white fir) is apt to occur. Fire scar studies have shown a relatively infrequent 50 to 300-year fire frequency. With the lengthening of the fire return intervals, older stands are more susceptible to bark beetle infestations, which aid to advance succession to shade tolerant species. The regeneration of whitebark pine in small openings is probably due to surface fires. Whitebark pine's perpetuation in moist sites, where succession to shade tolerant species is rapid, is probably due to severe fires. The occurrence of whitebark pine in association with Englemann spruce in subalpine basins and north slopes is probably the result of fire (FEIS).

White fir (in the Elko area often genetically mixed with subalpine fir) is a shade tolerant species that thrives with the lack of fire. It rapidly invades pine sites in the absence of fire. Sapling and pole-sized trees are very fire-sensitive because of their thin bark and low hanging branches, which easily ignite from surface fires. As the bark thickens they achieve more fire resistance. Small patches of mature white fir survive fire and provide a seed source to recolonize the site. In the Sierra Nevada Mountains (the closest studied site with similar environmental conditions), the fire frequency was from 6 to 20 years. This fire frequency kept the fire intensity low, as there was little fuel build-up. This regime kept the forests in open pine and Douglas fir-dominated stands. Today's heavy fuel accumulations and thick "dog hair" stands greatly increase the chances for high intensity stand replacement fires.

Englemann spruce is very sensitive to fire and is generally killed by even a low intensity fire. Post-fire establishment of seedlings is through seed dispersal from remaining mature trees. Pockets of Englemann spruce stands that escape burning are generally in moist sites where fire spread is limited. In subalpine sites, the spruce escape fire because of the discontinuous fuels, moist environment, and the broken and rocky terrain. Englemann spruce probably has a fire frequency of 150 years or more. Many of the Englemann spruce stands are even aged, suggesting that they developed after a fire (FEIS). In the Cherry Creek Mountains on the Elko District, Englemann spruce trees were observed to have healed fire scars on healthy mature trees from low intensity surface fires. This suggests that low intensity surface fires have occurred in this forest type, as well as the usual stand replacement fires.

Subalpine fir (in the Elko area often genetically mixed with white fir) is very sensitive to fire and generally has a high mortality from even low intensity fires. Subalpine sites are moist, with the lower, warmer sites experiencing shorter fire return interval with a lower intensity. Areas with fire return frequencies of 20 years or less keep the areas dominated by seral conifers. Sites at higher and cooler elevations are subject to stand replacement fires occurring from 90 to 350 years (FEIS).

Bristlecone pine generally occurs in habitats where fire-carrying fuels are basically non-existent. Fires with enough intensity to result in crown fires rarely occur in the grass dominated understory. Surface fires in these areas are low intensity, slow burning and very infrequent (FEIS).

A species that may have been present but now is probably missing from this community is the inland Douglas fir (*Pseudotsuga menziesii var. glauca*). The lack of inland Douglas fir may be due to successional change to more shade tolerant species. Also, its highly desirable wood characteristics may have led to it being overharvested. The last known stands of Douglas fir were harvested in the 1970's from the Ruby Mountains. Douglas fir has existed in this area and still may be found in an occasional isolated area. Douglas fir is among the most fire tolerant tree species in the Great Basin, with the larger trees having thick bark that serves as insulation. Low intensity surface fires tend to reduce fuel levels and keep Douglas fir stands open. On sites where Douglas fir is a seral species (such as subalpine sites and/or north facing slopes), seedling establishment tends to be better after a fire. Large, high intensity fires tend to reduce seedling establishment and favor Englemann spruce and subalpine fir (FEIS).

Observations have been made of multiple, small, low-intensity surface fires ranging from 10 to 60 years ago in mixed conifer areas within the Elko District (Goshutes, Pequops, Cherry Creek and Spruce mountains). This is in addition to larger block fire scars (up to 40-60 acres) that were of the stand replacement category.

Mountain Brush – This type occurs on upland terraces and in mountain valleys and slopes of all aspects. Areas of this community occur throughout the District, often in association with mountain big sagebrush. Slopes range from 4 to 50 percent, but are mostly about 30 percent. Elevations are 6,000 to 9,000 feet. The primary species present are serviceberry (*Almelanchier utahensis*), antelope bitterbrush, curlleaf mountain mahogany, oceanspray (*Holodiscus discolor*) and snowberry (*Symphoricarpos spp.*).

Serviceberry is damaged by wildland fire, but is a vigorous resprouter after a wildland fire. It can also remain in a suppressed state in a closed stand of conifers for a long time, and canopy removal by fire will stimulate sprouting (FEIS).

Bitterbrush is often killed by fire. It either regenerates by sprouting after a fire, or from on-site rodent seed caches and off-site seed sources. The erect form found in this part of the Great Basin is less likely to sprout than low lying forms found in other areas. Spring fires are less damaging to bitterbrush than either summer or fall burning. Even though bitterbrush is often killed by fire, it occurs in communities with a high fire frequency. Fire may be necessary to maintain populations of bitterbrush by providing bare mineral soil and reducing vegetative competition. Bitterbrush stands in juniper are sensitive to fire, but the long-term survival appears to depend on fire-generated seral

conditions (FEIS). Bitterbrush in a prescribed fire in the Stormy area of Elko District has been observed to sprout after a September prescribed fire.

Curlleaf mountain mahogany is usually killed by fire. Seedlings do establish after a fire, primarily from off-site seed and sometimes by resprouting. Studies in western and central Nevada on the Shoshone Range (the closest studied area to the Elko District) indicate that fire was infrequent in old growth stands, probably due to the lack of surface fuels and also growing on extremely rocky "fire proof" sites. Burning is generally only recommended in sites that have been invaded by conifers, so that competition is reduced and mineral soil is made available for seedling establishment (FEIS).

Oceanspray is well adapted to fire. It is a vigorous resprouter and is generally resistant to fire mortality. Post-burn recovery is usually rapid, depending on the amount of mineral soil exposed. Fall burning appears to have a more positive effect on this plant than burning at other times of the year (FEIS).

Snowberry is moderately resistant to fire and resprouting has been documented in Nevada. Spring burning in Idaho, in mountain big sagebrush and Idaho fescue on sites similar to those found within the Elko District, has shown increased coverage of snowberry. Studies within pinyon-juniper woodlands show a significantly higher occurrence of snowberry than on adjacent mature woodlands (FEIS).

The grasses in this plant community are characterized by Idaho fescue, bluebunch wheatgrass and mountain brome (*Bromus marainatus*), with mountain big sagebrush being an important species associated with this site. Brush species dominate the area. Potential vegetative composition is about 55 percent grasses, 15 percent forbs and 30 percent shrubs.

Crested Wheatgrass Seedings – Crested wheatgrass was introduced into the United States from native cold, dry plains of Siberia and Russia in an attempt to obtain a pasture and hay grass well suited to the severe growing conditions of the semiarid Great Plains and the foothill and lower elevations of mountain ranges in the West. Approximately 390,000 acres within the District have been seeded to crested wheatgrass (*Agropyron cristatum* and *Agropyron desertorum*), a non-native species used in post-fire rehabilitation. Fire on these sites removes the encroaching sagebrush vegetation and maintains the seedings as intact grassland, with excellent recovery potential following the fire. Crested wheatgrass is resistant to fire because it maintains high moisture content through most of the summer wildland fire season. Recovery after fire is usually rapid. Crested wheatgrass is a long-lived perennial bunchgrass that is tolerant of fire when dormant. The plant has coarse stems and leaves that burn quickly with little heat transfer to the basal buds. This grass has the capacity for rapid new tiller formation, preventing the depletion of stored nutrients. It also allocates plant resources to new tiller development and curtailing root system growth. Post fire response is considered to be rapid. Some studies have indicated that late summer burning favors this grass (FEIS).

R. Noxious Weeds

A noxious weed inventory has been completed on approximately 5 million acres of public lands within the Elko District as of August, 1998. Preliminary findings from this inventory suggest that most noxious weeds occur on disturbed areas frequently used by livestock,

wildlife and humans. Examples of disturbed areas include roadsides and rights-of-way along primary and secondary roads, gravel pits, salt licks, recreation sites, spring sources, water sources and trails. The 38 species of Nevada Noxious Weeds are listed in the Programmatic Environmental Assessment of Integrated Weed Management on Bureau of Land Management Lands. If a disturbed area that is infested and dominated with noxious weeds is burned, the noxious weeds will rapidly reestablish, out-competing the remnant native vegetation. If the area has a good seed source of native desirable species, chances are the native desirable species will return and out-compete the noxious weeds.

S. Wild Horses

Wild horses and burros are protected under the Wild Free Roaming Horse and Burro Act of 1971. The objectives of FLPMA and the RMPs are to keep populations at a level that would achieve and maintain a thriving natural ecological balance on the public lands.

Wild horses are protected in 8 herd management areas (HMA) and/or herd areas (HA) in the Elko District. The HA/HMA's encompass approximately 22 different grazing allotments and are dispersed throughout the entire District. Wild horses typically inhabit the mountains during the summer months, and can be found on the valley floors during the winter. Their habitat ranges from the pinyon-juniper woodlands to the desert shrub/salt brush vegetation communities. The Wells RMP was amended for wild horses in 1993 and a proposed amendment for the Elko RMP was issued in July 2003.

Wild Horse Herd Management Areas

Wild Horse Herd	Acres
Antelope Valley	463,540
Goshute	250,800
Spruce-Pequop	138,000
Maverick-Medicine	285,960
Rock Creek (proposed)	126,753
Little Humboldt (proposed)	17,151
Owyhee	339,104
Diamond Hills North	70,479

T. Rangeland / Grazing Management

Livestock grazing (cattle, sheep and horses) is a primary use of BLM lands in the area. Livestock use levels are administered through the issuance of leases and permits. Nevada BLM achieves desired objectives for livestock grazing management through allotment evaluation and a multiple use decision process. They prescribe the manner and extent to which livestock grazing is conducted and managed to meet multiple use, sustained yield, economic, and other goals and objectives. Seasonal use from March to October is generally permitted whereby cattle use the valley bottoms and fans, and eventually move to the tops of the mountain ranges where they stay until fall. During winter, they are confined to the valleys and bench lands. This pattern varies with the availability of water, the need to implement grazing systems to meet objectives for riparian and stream habitats, the steepness of slope, weather, and forage supply and distribution. The majority of cattle use is from April to October. Sheep use is made both in trailing through the area and on seasonal ranges within the area. The Utah livestock

operators make the majority of sheep use on the Utah border between November and March. Domestic horses are licensed in a few allotments through the area.

Within the Elko BLM Field Office, the total permitted use in Animal Unit Months (AUMs) allocated to domestic livestock is currently 737,983. The total permitted use is allocated between 235 grazing allotments grazed by 181 livestock permittees. The average AUM for sagebrush-perennial grass communities is approximately 0.12 per acre. The AUM for pinyon-juniper and mixed conifer forests is approximately 0.06 per acre.

U. Socioeconomic Conditions

The Elko BLM District consists of all of Elko County and a small portion of Lander and Eureka Counties in Nevada. Elko County is by far the largest of the three counties in terms of population size. In 2000, Elko County had 45,291 residents, while Lander and Eureka Counties had just 5,794 and 1,651 residents, respectively (2000 U.S. Census).

An examination of employment trends in Elko County reveals that the County's employment base is heavily concentrated in the services sector. In 2000, the service sector represented 49 percent of the County's total employment base and 40 percent of all of the County's wages ($190,875,000, Bureau of Labor Statistics). Although smaller, the retail trade sector was also an important contributor to the County's employment base. The sector represented 17 percent of the County's employment in 2000 and 10 percent of the County's wages ($49,111,000, Bureau of Labor Statistics). The smallest sectors in Elko County's employment base included the finance, insurance and real estate (FIRE) sector; agriculture, forestry, and fishing sector; and the manufacturing sector. Each of these sectors represented less than 3 percent of the County's employment base, and in total, the three sectors accounted for just 5 percent of the County's total wages ($24,781,000, Bureau of Labor Statistics).

4. Environmental Consequences

Fire Management Amendment Environmental Assessment

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

This section is an analysis of the environmental consequences of the project alternatives, including the anticipated cumulative and residual impacts. The analyses presented herein are landscape level, large-scale analyses of the four alternative approaches to fire management as described in Chapter 2, and the effect that managing fire under those alternatives would have on the 7.5 million acres of public lands within the Elko District. Environmental consequences may also be addressed in subsequent site specific EA's or are described in other guiding documents outlined in Chapter 2.

A determination of the environmental consequences is difficult because fire is a natural part of the ecosystem. Accurate projections of number of acres impacted by wildfire or related activities within the District's 7.5 million acres of public land are also difficult due to the number of variables present. In order to assist in the evaluation of environmental consequences, a general estimate of impacted area for each alternative over time has been provided in Table 2F-1. Additionally, Table 2F-2 summarizes anticipated impacts related to each environmental element considered.

The emphasis on suppressing fires over the past century has altered natural fire cycles. This has resulted in unnatural fuel loads in vast areas. The buildup of fuels in turn has increased the risk and extent of fire, and the cost of extinguishing fires. Due to the extent that the native landscape has been altered and the need to protect land uses and ensure human health and safety, the return of natural fire cycles cannot be expected. As shown in Table 2F-1, both the Limited and Full Suppression alternatives run the risk of increasing the size and severity of wildfire. However, because the Proposed Action is an integrated approach to fire prevention, response (suppression) and rehabilitation, it is anticipated that long-term management of fire can be improved, resulting in positive effects on the issues addressed in this section. In addition to the guidance outlined in this document, site-specific analyses of activity plans for specific fire prevention, response and rehabilitation efforts would occur in compliance with NEPA. All future actions would also need to comply with existing SOPs, which would minimize the potential effects on the issues analyzed below.

The environmental consequences, including the cumulative impacts presented below, are based on the following assumptions:

1. The population growth of the area will remain relatively constant.
2. The climate will remain constant.
3. The timeframes examined in the cumulative impacts sections are limited to a 20 to 40-year ecological time frame.
4. Land ownership and land use patterns will remain relatively constant.
5. Funding would remain the same or increase.

A. Air Quality

1. No Action Alternative

The low level of prescribed burning or managed fire use in the Elko District would lead to further accumulation of fuels, increasing the number and extent of severe fires, particularly during July and August. In general, air pollution from large wildfire is greater

than smaller prescribed fire. This would lead to increased air quality problems during these months, as the total smoke emissions in the District would increase.

Cumulative Impacts – The amount of smoke produced by wildfire exceeds that of prescribed fire on a per-acre basis. This could lead to greater degradation of air quality during the limited active fire season (July-September). The resulting long-term cumulative impact could be that of increasing total smoke emissions, which would impact sensitive receptors to a greater extent.

2. Full Suppression Alternative

The emphasis on suppression under the Full Suppression alternative would increase the accumulation of fuels, thereby further increasing the number and extent of severe fires as compared to the Proposed Action alternative. This would further increase the air quality problems in the District, particularly during July and August when the risk of fire is greatest. The potential for degradation of air quality due to smoke would exist at the burn site for a greater period of time. The total smoke emissions would also increase under the Full Suppression alternative.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

3. Limited Suppression Alternative

Initially, the extent of wildfires would increase due to the minimized fire suppression efforts. This would lead to an immediate increase in the annual total smoke emissions for the District. The benefit to sensitive receptors from fire suppression actions would also be diminished under this alternative.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

4. Proposed Action

Initially, air quality degradation within the area of a prescribed fire or where wildland fire is managed could occur. In the brush and grass vegetation types, however, smoke would dissipate rapidly and should be gone by the next day. In the pinyon-juniper and mixed conifer types, there would be some residual smoke for several days after the fire. One of the goals of fire prevention is to reduce the amount of fuel present and reduce the potential for future lethal fires. Using prescribed fire in sagebrush/grass vegetation communities could have a similar effect by increasing the percentage of grasses and reducing the heavier sagebrush fuels. Prescribed burning generates approximately 70 to 75 percent of the PM10 emissions per acre that a wildfire does. Fire intensity and season will influence resulting air quality conditions of any prescribed burn or wildlife. While prescribed fire would result in temporary negative impacts on air quality, acute impacts to air quality from wildfire should decrease under the Proposed Action.

The Nevada Division of Environmental Protection oversees a permit application and approval procedure for fire use that is designed to minimize air quality impacts. The process is required of all land managers involved in the use of fire. The permits that are issued describe the smoke management and emission reduction techniques to be used.

While permits are issued well in advance of burns, approval is not granted until the day before the burn in order to ensure that meteorological and air quality conditions are satisfactory for the burn. Under the Proposed Action, the BLM would continue to apply for and obtain burn permits prior to igniting any prescribed fire or using wildland fire in an area. The consideration and evaluation of alternatives to burning (e.g., other fuel reduction methods, including mechanical and chemical methods) that could meet the management objectives for the site would also be reviewed as part of the permit process.

Unforeseen weather changes may cause smoke to impact sensitive receptors. Sensitive receptors, i.e., urban and rural population centers, schools, recreational and scenic view areas, and the Jarbidge Wilderness area in northern Elko County (the only Class I area in Nevada), are not expected to be negatively affected from fire due to the requirements set forth in the burn permits and monitoring that would occur during fire use. For large fires that are expected to last more than one day, air quality monitoring (including the use of real-time particulate matter monitors or other measures as required by the Nevada Division of Environmental Protection) would ensure that sensitive receptors are not adversely affected by the burn.

Because wildfire is a natural part of the vegetation communities within the Great Basin, the effects of smoke on air quality from natural fire can be considered a part of pre-existing air quality conditions, while air quality impacts from prescribed burns are minimized through a permit application process. An integrated approach to fire management would reduce heavy fuel loads and create a mosaic of fuels; both of these effects would lessen the occurrence and extent of severe fire. Over a period of 20 to 40 years, this would reduce total smoke emissions throughout the District.

Cumulative Impacts –Some research shows a long-term decrease in emissions if prescribed fire or wildland fire is used. It is not possible to accurately predict the cumulative impacts at this analysis level, and any prediction of cumulative impacts at a site-specific level would not be reliable. Public and private lands are experiencing an increase in prescribed burning. The increase in prescribed fire acreage may lead to higher smoke impacts on sensitive receptors. The cumulative impact of multiple prescribed burning projects should be assessed at the site-level before projects are undertaken. The beneficial effects of reduced fuel loads, a vegetative mosaic, and the resulting decrease in fire size are expected to minimize the potential for smoke impacts on sensitive receptors.

B. Native American Consultation/Religious Concerns

Various tribes and bands of the Western Shoshone have stated that federal projects and land actions can have widespread effects to their culture and religion as they consider the landscape as sacred and as a provider.

Due to the fact that there is limited knowledge of religious or important cultural sites in the area, there exists the possibility of land management practices to adversely affect traditional life ways and the integrity of Native American religious sites or sites of cultural importance.

As stated in Chapter 3, consultation will remain ongoing for this particular action due to the sensitivity and sacred nature of Native American religious activities, ceremonies, and

religious site locations. Traditional practitioners are often reluctant to release sacred or religious information until there exists a direct and immediate threat to an area of cultural significance. Therefore, efforts must still be made in improving the communication and working relationship between the BLM and tribal governments and communities in order to successfully solicit comments and gather information concerning areas of religious, traditional, or cultural importance.

1. No Action Alternative

Due to the emphasis on fire suppression, the initial risk from fire to areas of traditional or religious importance would be reduced. However, with the increased fuel load that is expected under the No Action alternative would lead to larger, severe fires. Such fires are difficult to suppress; therefore, the risk to sites of cultural and religious value to Native Americans would increase.

Cumulative Impacts – The buildup of fuels would lead to more intense fires, which would impact religious sites on a larger scale than present.

2. Full Suppression Alternative

The impacts noted for the No Action alternative would apply to the Full Suppression alternative. However, due to the greater emphasis placed on fire suppression, the risk to sites of cultural and religious value to Native Americans would be greater.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

3. Limited Suppression Alternative

The low emphasis placed on fire prevention and suppression under the Limited Suppression alternative would lead to the greatest impacts to sites of cultural and religious value to Native Americans. The damage to artifacts, burning of important plant species or changes to the religious ambience of a site would be highest under this low management method. Although the effects from grading, bulldozing and other suppression methods would decrease, the occurrence of wildfire and its effects on native plant communities and the resources associated with native habitats would increase.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

4. Proposed Action

Methods of fire prevention, response or rehabilitation that may be used under the Proposed Action would adhere to SOPs (Appendix 2), FMC and polygon guidance (refer to Chapter 2), and direction provided by guiding documents regarding areas of Native American significance. In some cases, such as prescribed burning, an activity report would be prepared that would address the management objectives and site-specific concerns. In addition, public and agency input would be obtained, required surveys would be conducted, and federal laws and regulations regarding historic properties and archaeological resources would be upheld, including preparation of documentation as

required under NEPA and NHPA when applicable. Therefore, for the known areas of traditional or religious significance within the District, the potential for impacts to these sites is expected to be low.

However, if unknown sites are present in an area where fire management activities are conducted or fires occur, there may be negative impacts to the resource. This could include damage to artifacts, burning important plant species, or changing the religious ambience of the site. Because prescribed burns and the management of unplanned ignitions would only occur if the fuel loads, moisture content, wind speed and other factors were appropriate for the site, the risk of unplanned fire in areas important to Native Americans would be low. Additionally, strategically placed green stripping may aid in the protection of resources of concern to Native Americans.

Cumulative Impacts – Some of the known traditional cultural properties and sacred areas occur along or near riparian systems. The management objectives for wetlands and riparian zones would cumulatively benefit cultural properties in such areas. No other cumulative impacts are expected.

C. Cultural Resources

1. No Action Alternative

A lesser emphasis on fire prevention activities then the Proposed Action would allow fuels to accumulate leading to larger and hotter fires. Because most damage to cultural resources occurs from higher intensity fires, the effect on these resources under the No Action alternative would be expected to be greater. Due to the minimal efforts placed on preventing fire, a greater need for fire suppression measures would also be expected. The potential for direct impacts from bulldozing, vehicle tracks and disturbance from suppression equipment, which could potentially include damaging or destroying cultural resource sites thus reducing their integrity and research value, would increase under this alternative.

Cumulative Impacts – The cumulative impacts could include loss and damage of undocumented and documented sites as wildfire acres and severity increase.

2. Full Suppression Alternative

Under the Full Suppression alternative, there would be the greatest buildup of fuels. Due to the minimal efforts placed on fire prevention and a focus on Full Suppression of all fires, impacts would be expected to exceed that of the No Action alternative. Therefore, the potential for direct impacts from bulldozing, vehicle tracks and disturbance from suppression equipment would be greatest under this alternative.

Cumulative Impacts – The chances of a severe wildfire would increase beyond that noted for the No Action Alternative, increasing the occurrence of hotter fires. This could lead to greater loss and damage of undocumented and documented sites as wildfire acres and severity increase.

3. Limited Suppression Alternative

Under the Limited Suppression alternative, there is not expected to be a continued fuel buildup. With minimal effort on fire prevention and suppression, unmanaged fires burning under dry and hot conditions would be expected. The potential for impacts to cultural resources would be high.

Cumulative Impacts – The occurrence of hot fires would be similar to that expected under the No Action and Full Suppression alternatives. Therefore, the cumulative impacts could include the loss and damage of undocumented and documented sites as wildfire acres and severity increase.

4. Proposed Action

The effects of fire on cultural resources are highly variable. Many factors, including the types of cultural resources, fire history, vegetation types, fire intensity, duration of high heat, soil types, topography, suppression/containment methods used, etc. must be considered. Some impacts are direct others are indirect. Among the direct impacts are those caused to sites containing perishable items. Buildings, other structures, features and artifacts made of organic materials such as wood, shell, bone, antler, horn, plant fiber, hide and cloth are highly susceptible to fire and can be destroyed or severely damaged by both wild and prescribed fires.

Flaked stone tools are less susceptible to fire effects, but still can be altered or even destroyed by range and forest fires. Impacts include smudging, cracking, breaking, spalling, shattering and oxidizing. The intensity and duration of the heat is the most important factor. The minimum temperature needed to cause changes to flaked stone artifacts depends on the chemical and physical characteristics of the rock. Laboratory experiments indicate that some crystalline structure of silica-rich stone can be altered or the stone broken at temperatures above 370°C (Hanes 1994:VIII-2). Others require temperatures in excess of 500°C. Post-fire field observations in several areas including the Elko District confirm damage to chert artifacts from high intensity burning. The percentage of fire-damaged flaked stone artifacts observed in the Elko District is low. Many of the observed burned sites contained no damaged artifacts. Others contain a few damaged artifacts, usually in locations where fuel was heavy and the heat very high.

Larger stone artifacts and rocks appear to be relatively unaffected by all but the most intense fires. Smudging occurs, but breakage is uncommon. One concern that has been raised is the possibility that burned native rocks would be indistinguishable from rocks used for cooking and heating by prehistoric people (Conner et al. 1989). Field observations in the Elko District indicate that range fires seldom fracture stones found on the ground surface. When breakage does occur it is usually confined to removing a spall or spalls from an exposed edge. Non-human heat-spalled rocks are seldom found on flat ground, instead they are found on slopes where the intensity of the heat at the ground surface is greatly increased due to the flame edge moving up a steep angle of repose. Extensive fracturing, as found with cooking/heating stones, has not been observed, except among welded tuff obsidian cobbles and one porous rhyolitic rock type, both found in O'Neil Basin.

Pottery may be seriously affected by fire by affecting their chemical composition, changing their colors, and altering or removing their decorative paints. Substantial

changes occur at temperatures of 495°C and above (Hanes 1994:VIII-3). Rock art sites are susceptible to damage by fire. Painted elements (pictographs) can be soot blackened, scorched or completely burned away, while pecked elements (petroglyphs) on friable stone such as sandstone and limestone can exfoliate. Rock art is often located on vertical faces of boulders or cliff faces where heat intensity is greater that found near the ground surface. Another resource found in cliffs and caves is wood rat middens, the accumulated plant remains and other debris cemented by wood rat urine that are used for paleoenvironmental studies. One midden in the Elko District dates to 50,000 years B.P. Wood rat middens can be essential for reconstructing past environments and are very susceptible to burning.

Fire impacts can also affect the ability of archaeologists to date prehistoric sites. This includes contamination of radiocarbon samples with modern ash and charcoal and physically or chemically altering datable materials. Thermoluminescence dating of pottery and rock requires measuring the minute amounts of light accumulated in the matrix of rocks and pottery due to the decay of radioactive material since the material was last heated. Exposure to high heat, such as a wildland fire, will reduce or eliminate the light and provide dates that are inaccurate. Obsidian hydration is a dating technique that measures the amount of moisture absorbed by obsidian artifacts. The moisture accumulates at a steady rate and forms a microscopic band on the surface of the artifact. By measuring the thickness of the band, the age of the artifact can be estimated. Exposure to high heat can alter or destroy the hydration band. Archaeomagnetic dating measures the orientation of electrons in clay of prehistoric hearths. The electrons in unheated clay align with the North Pole but are frozen in place by heating. Dates are obtained by comparing the orientation data with tables showing the location of the North Pole as it has shifted over time. If hearths are exposed to temperatures exceeding 524°C the electrons will realign with the current magnetic field erasing the record of its prehistoric use (Hanes 1994:VIII-4).

Wildfire caused either by natural causes or by native peoples has been a major element in development of the ecosystems in the western United States. Before intensive suppression began in the mid 1900s in northeast Nevada, wildfires were common. Estimates place the interval between fires for any given area in the sagebrush vegetation communities of between 11 to 100 years, and for pinyon-juniper an interval of 10-30 years with severe crown fires every 200-300 years. No studies have been made to quantify the fire history of this area or to determine the impacts to cultural resources, but there is evidence to support the concept of repeated wildfires in northeast Nevada. It is not uncommon to find thin lines of charcoal exposed in arroyo cuts, marking episodes of prehistoric burning. Often more than one episode is visible in the exposure. In the pinyon-juniper forests and current brush lands, ancient burned-out stumps can sometimes be found among mature stands of trees or sagebrush. Thermal damage to artifacts in archaeological sites often equates to prior burning of those cultural properties. Artifacts exhibiting crazing or pot lid scars, although not abundant, are routinely encountered in archaeological sites. Intentional heat treatment may account for some of this damage, but wildland fire is probably the more common cause.

Because fire was a major component of the ecosystem, few cultural resources over 150 years of age would have escaped burning. Most sites would have burned multiple times. However, with the increase in fuel loads resulting from fire suppression activities in recent times, the occurrence of severe wildfires has increased and the most damage to cultural resources occurs from higher intensity fires. The longer high heat is in contact

with artifacts and features, the greater the damage. Fire prevention methods, including prescribed fire, reduce fuel loads and minimize the likelihood of wildfires and the extent of those that occur. Prescribed fires generally burn under conditions that result in cooler fires. The reduction in the size of wildfires and the temperature at which fire would burn would minimize the potential for effects on cultural resources.

Often, the factor with the greatest potential for major impact is the fire team and the equipment used to implement the burn project or to suppress wildfires. Fire retardant chemicals may contaminate artifacts and features. Ground-disturbing activities, such as grading, bulldozing, fire line construction, vehicle use, mechanical brush clearing and hand line construction can damage or destroy cultural resources. Ordinarily, with the most common exception being the presence of perishable materials and structures, it is less damaging to allow fire burn over a site rather than use equipment within it.

Indirect fire effects and fire suppression effects include increased erosion of sites, and the potential for site destruction and illegal artifact removal by artifact collectors and fire crews due to the enhanced visibility of cultural resources.

Methods of fire prevention, response or rehabilitation that may be used under the Proposed Action would adhere to SOPs, FMC, and direction provided from other guiding documents regarding cultural resources. In some cases, such as prescribed burning, an activity report would be prepared that would address management objectives and site-specific concerns, public and agency input would be obtained, surveys as required would be conducted, and federal laws and regulations regarding historic properties and archaeological resources would be upheld, including preparation of documentation as required under NEPA and the National Historic Preservation Act. Measures would also be implemented to increase protection of cultural resources after they have been exposed by fire. The Proposed Action FMCs and polygon descriptions (A2) outlined in Chapter 2 provide additional direction aimed at the protection of sensitive resources identified on the Cultural Fire Alert Map. In light of the measures that would be implemented, as well as the reduction of fire size and intensity, that would be expected, the net effect of the Proposed Action would be a decrease in impacts to cultural resources.

Cumulative Impacts – As part of the proposed activity surveys for cultural resources may be required. Because of this, there would be a greater amount of inventory done within the Elko District, increasing the knowledge base of types and locations of cultural resources. To protect known cultural resources that may be adversely affected by any fire, herbicides may be used to reduce fuel loads. The use of chemical treatments, where such methods would avoid destruction of the cultural resource, may lead to effects to sensitive wildlife depending on the habitat at the site. Furthermore, herbicide use may be a concern to Native Americans using traditional plant gathering areas. These cumulative impacts would be minimized by the preparation of pre-activity reports, which would address site-specific issues of concern for the site.

D. Paleontology

1. No Action Alternative

Increased fire intensity due to limited reduction in fuels with the No Action alternative may increase the chances of high intensity fires that could potentially impact important fossils.

Cumulative Impacts - No cumulative impacts are expected for a No Action alternative.

2. Full Suppression Alternative

The Full Suppression alternative would not likely impact paleontology resources.

Cumulative Impacts - No cumulative impacts are expected for a Full Suppression alternative.

3. Limited Suppression Alternative

Increased fire intensity due to limited reduction in fuels and limited fire suppression may increase the chances of high intensity fires that could potentially impact important fossils.

Cumulative Impacts - No cumulative impacts are expected for this alternative.

4. Proposed Action

The effects of fire on paleontological resources are generally considered to be minimal. Some factors, such as, vegetation types, fire intensity, and duration of high heat may affect some fossils close to the surface. Impacts would not likely be significant. Generally fire increases opportunity for paleontologists to discover new fossils.

Cumulative Impacts - No cumulative impacts are expected for the Proposed Action.

E. Lands

1. No Action Alternative

There would be fewer options for the BLM to work cooperatively on fire prevention projects with private landowners to reduce fuel hazards or to improve vegetative conditions. Continued fuel buildup could lead to more severe fires, which would escape initial attack and threaten private lands, rights-of-way and other land uses.

Cumulative Impacts – The risk to private lands from larger fires would likely increase due to the heavy fuel buildup on and adjacent to public lands.

2. Full Suppression Alternative

Similar to the No Action alternative, the Full Suppression alternative would allow few options for the BLM to cooperatively work on fire prevention projects with private landowners to reduce fuel hazards or to improve vegetative conditions. Due to the

emphasis on suppression of fires, the fuel buildup is expected to exceed that of other alternatives, which would lead to the most severe fires with an increased risk to private lands, rights-of-way and other land uses. Severe fires would increase the impact on land uses, including the potential closure time of various allotments. Without a more targeted approach to fire management, large and more severe fires would have an effect on erosion and increase the establishment of invasive weed species.

Cumulative Impacts – The risk to private lands from uncontrolled fire would likely occur sooner due to the heavy fuel buildup on and adjacent to public lands from the emphasis of Full Suppression of all fires. The negative effect on private lands following wildfire could be compounded if adjacent public lands experience erosion impacts due to complex rehabilitation efforts.

3. Limited Suppression Alternative

Similar to the Full Suppression alternative, the Limited Suppression alternative would allow few options for the BLM to cooperatively work on fire prevention and post-fire rehabilitation projects with private landowners to reduce fuel hazards, improve vegetative conditions, or increase the likelihood of post-burn vegetative recovery. With minimal effort placed on the suppression of fires at the urban interface, there would be an immediate increased risk to private lands, rights-of-way and other land uses.

Cumulative Impacts – The risk to private lands from the escape of fire would occur sooner than under other alternatives due to unsuppressed fires. With minimal effort placed on fire management throughout the District, the threat to private lands, rights-of-way and other land uses would increase each year.

4. Proposed Action

Heavy fuel accumulations on public lands would be targeted and reduced (using prescribed fire) in accordance with the management objectives appropriate for the site. The ongoing managed reduction in fuel loads throughout public lands, habitat benefits from these activities, and appropriate use of rehabilitation measures would in turn reduce the possibility of wildfire negatively impacting private lands. Opportunities would be increased for private landowners and the BLM to cooperate on fire prevention projects that would benefit the vegetation and uses on adjoining lands. The area of urban interface is growing throughout the District. The protection of the urban interface through the use of fire prevention methods to reduce fuel hazards, and through appropriate post-fire rehabilitation measures would be beneficial to the communities involved. The authorized land uses within the Elko Field Office would not be affected.

The Proposed Action FMC's and polygon descriptions outlined in Chapter 2 provide additional direction aimed at the protection of resources. The polygons described the appropriate response to fire in different areas, protecting life and property and maximizing resource values.

Cumulative Impacts – Cumulative impacts are anticipated to include greater public and private sector interaction on projects to reduce fire hazards at the urban interface and increase productiveness of adjoining lands.

F. Water Resources

1. No Action Alternative

Continued buildup of fuels could lead to hotter and more extensive fires, causing greater loss of vegetation and a decreased likelihood for the recovery of vegetation appropriate for the site. This could lead to greater peak and total stream discharges, a possible increase in stream temperatures, and an increase in nutrient and sediment loading.

Very high peak flows and associated mud or debris flows following a short duration high intensity storm event will increase in frequency as fires increase. High runoff events are a result of loss of vegetative cover, reduced surface litter, and hydrophobic soils. This has been observed during the past few years in the Maggie, Mile Marker, Sadler (Bruffy Canyon), Argenta, Rain, and Division fires. Generally the greatest runoff has occurred on steep wooded watersheds. Data collected from Dry Canyon, an ephemeral drainage in the Sadler Fire, showed a peak flow of approximately 2,000 cfs following an isolated high intensity rain.

A negative effect from large fires on water quality would also occur. Ash that reaches streams will raise the pH of the water. Suspended sediment, turbidity, nitrogen, potassium, calcium, magnesium, and phosphorus all may increase in streams following wildfire as well as the alteration of the timing and intensity of peak flows. Other water quality impacts include an increase in metals, such as manganese, iron, and aluminum.

Negative impacts would be the greatest following severe fires, especially in steep watersheds. The beneficial effects of an increase in herbaceous cover, of an increase in species age diversity and structure across the landscape, and of the resultant positive effect this would have on water resources would not be achieved. The increased severity of fires would increase the chance of hydrophobic soils and therefore reduce infiltration.

Cumulative Impacts – The No Action alternative places less emphasis on fire prevention. The cumulative impact would be an increased occurrence of large scale fires and the subsequent negative impacts associated with that. This would result in increased amounts of riparian habitat affected by wildfire and negate all other management efforts identified in the Elko/Wells RMP, including implementation of grazing management changes, to improve riparian habitat conditions and the attainment of Elko/Wells RMP objectives and Standards and Guidelines for Rangeland Health.

2. Full Suppression Alternative

The effect of the Full Suppression alternative would be similar to the No Action alternative, except that the buildup of fuels would become more extensive and thus fires could be the most severe. The negative effects on water resources described for the No Action alternative would be magnified under the Full Suppression alternative; i.e., peak and total stream discharges, stream temperatures, and nutrient and sediment loading would increase further.

Cumulative Impacts – The cumulative impacts are the same as those described for the No Action alternative.

3. Limited Suppression Alternative

Under the Limited Suppression alternative, the risk to water resources would occur sooner than under the No Action and Full Suppression alternatives. With minimal efforts on suppressing fires and post-burn rehabilitation of a site, nutrient and sediment loading, spikes in peak and total stream discharges, and an increase in stream temperatures would become common in the water bodies in the District.

Cumulative Impacts – The cumulative impacts are the same as those described for the No Action alternative.

4. Proposed Action

The management of these resources occurs in the A3 polygons and provides guidance aimed at the protection of these resources. The Proposed Action (i.e. an integrated approach to fire management) and guidance found in polygon A3 would result in increased fire prevention, leading to less erosion and impacts to water resources due to a decrease in large wildfire events. Fire, whether natural or prescribed, reduces vegetative cover. Water availability in soils should increase where either prescribed fire or the management of unplanned ignitions is used to remove deep rooted, heavy, water-using species and create openings for the establishment of grass and forb cover. Therefore, fire will eventually increase infiltration unless the soil becomes hydrophobic, which is less likely with prescribed fire. However, fire inevitably leads to runoff and at least localized erosion and increased sedimentation levels. Immediately after and area has burned, negative effects on surface waters from fires would include increased surface runoff and the associated increased turbidity from sediment in stream flows, greater peak flows and total discharge, changes in pH, and increased nutrient levels in streams. Additionally, if natural regeneration does not occur, or rehabilitation efforts are not successful and vegetative cover is not reestablished, there would be increased runoff and sedimentation in surface waters. Because prescribed or managed fires are of smaller scale than wildfires and are used in accordance with the management objectives of a site, the potential effects in the future should be minimized.

Post fire erosional processes that deliver sediment to streams over long periods of time due to the lack of re-vegetation, roads, or fire lines can have long-term negative effects on aquatic ecosystems (Lotspeich et al. 1970; DeByle and Packer 1972). However, short-term pulses of sediment and large woody debris, often associated with functioning terrestrial and aquatic ecosystems during post-fire landslides and debris flows, may be beneficial. Over time, large woody debris and sediment are moved downstream by fluvial processes which form productive aquatic habitats (Reeves et al. 1995, Benda et al. in press, Miller et al. in press; Minshall in press). The most effective way to reduce the negative effects of fires on aquatic systems is to protect the evolutionary capacity of these systems to disturbance (Bisson et al. in press). Restoring physical connections among aquatic habitats may be the most effective and efficient step in restoring or maintaining the productivity and resilience of many aquatic populations (Bisson et al. in press; Dunham et al. in press; Rieman et al. in press, Rieman and Clayton 1997, Pilliod et al. in press). We should focus on protecting aquatic communities in areas where they remain robust and restore habitat structure and life history complexity of native species where it is possible (Gresswell 1999). However, where restoring connectivity between aquatic populations is not feasible, active management to reduce the impacts of fires

and fire suppression actions may be an important short-term conservation strategy (Brown et al. 2001; Rieman et al. in press).

As discussed in the BA, wildfire and fire suppression can effect aquatic biota. Minshall et al. (1989) speculated that chemical toxicity from smoke or ash would cause fish mortality in second and third order streams. Ammonia and phosphorus levels have been documented to be above lethal limits to fish during fires (Spencer and Hauer 1991). Water temperature may also increase after riparian vegetation is burned, however, predicting the biological consequences is difficult (Beschta et al. 1987).

Macro invertebrates can also be affected by wildfires (Minshall et al. 1995, Minshall in press, Spencer et al. in press). The most ecologically significant change is an apparent shift in functional feeding groups from shredder and collector dominated communities, usually associated with allochthonous production from the riparian vegetation, to scraper and filter feeder dominated communities (autochthonous production from increased sunlight and temperature) (Jones et al. 1993).

The use of retardant and foams and construction of dozer lines in the proximity of streams are the primary concerns with fire suppression activities. The use of heavy equipment near streams may destroy riparian vegetation, disturb stream channels, and increase sedimentation. Fire retardants and surfactant foams are known to be toxic to aquatic organisms (Jones et al. 1989, Gaikowski et al. 1996a, Gaikowski et al. 1996b, McDonald et al. 1996, McDonald et al. 1997, Buhl and Hamilton 1998, Buhl and Hamilton 2000, Little and Calfee 2000, Little and Calfee 2002a, Little and Calfee 2002b, Little et al. 2002). The BA and SOP's outlined in Chapter 2 provide procedures aimed at protecting these resources.

Using well-planned fire prevention techniques or prescribed fires in which factors such as season of burn, fire severity, fuel loading, fuel and soil moisture content and relative humidity are carefully monitored, the Proposed Alternative is expected to increase the percentage of herbaceous cover, as well as increase species age diversity and structure across the landscape. This would lead to a reduction in fuel loads that in turn would reduce the occurrence of large-scale destructive fires and the negative after-effects from such events on water resources (increased erosion leading to siltation of water bodies). Although the initial impact associated with many fire prevention activities may be to water resources (i.e., initial erosion associated with most fire prevention treatments), the net effect of the Proposed Action on water resources is expected to be beneficial. A more detailed evaluation of potential effects of water resources is described in the biological assessment.

Cumulative Impacts – The integrated approach and use of prescribed fire and other fire prevention measures are expected to lead to increased herbaceous cover, an increase in species age diversity and structure across the landscape, reduced surface runoff, and reduced sediment and nutrient loading. This in turn will reduce impacts to critical habitats such as riparian areas and will also benefit sensitive species living in these environments.

G. Wild and Scenic Rivers

1. No Action Alternative

Under this alternative, the buildup of natural fuels is expected to lead to hotter and larger fires, which in turn would minimize the beneficial mosaic pattern in the open slopes and interior basins. This could lead to large-scale fires within the entire river corridor, which would reduce the scenic, fisheries and wildlife values of the eligible river segments.

Cumulative Impacts – Appropriate grazing management systems may improve the riparian habitat; however, if the uplands degrade into large expanses of even-aged or disturbed vegetation communities, the possibility exists for wildfire to damage the riparian areas.

2. Full Suppression Alternative

Similar to the No Action alternative, under the Full Suppression alternative, the buildup of natural fuels is expected to hasten compared to the other alternatives. This would lead to hotter and larger fires, which would in turn minimize the beneficial mosaic pattern in the open slopes and interior basins. This could lead to large-scale fires within the entire river corridor, which would reduce the scenic, fisheries and wildlife values of the eligible river segments.

Cumulative Impacts – Appropriate grazing management systems may improve the riparian habitat. However, if the uplands do not have a vegetative mosaic, the possibility exists for a wildfire to damage the riparian areas.

3. Limited Suppression Alternative

SOPs would continue to prioritize the protection of streams through appropriate fire prevention measures. The buildup of fuels adjacent to riparian zones is expected to be minimized under this alternative. With minimal effort on fire prevention, suppression and rehabilitation, vast expanses of even-aged vegetation or degraded vegetation communities are expected to characterize the upland landscape. Over time fuel loading would not be moderated, and longer vegetative recovery, increased erosion, channel incising and stream sediment loading are expected, which would reduce the scenic, fisheries and wildlife values of the eligible river segments.

Cumulative Impacts – The effects of low levels of fire prevention, suppression, and rehabilitation could negate any grazing management strategies that could improve wild and scenic rivers.

4. Proposed Action

An integrated approach to fire prevention, use of suppression techniques and rehabilitation following fire would help maintain the plant diversity and health of fire-dependent ecosystems in the segments of the South Fork Owyhee River designated as wild (23.6 miles) and scenic (1.0 mile), and a segment (2.2 miles) of Fourmile Creek found eligible for wild river status.

Prescribed fire may not be a viable option within portions of the South Fork Owyhee River segments where sparse fuels would limit the fire's spread and its effectiveness. Such case-by-case conditions would be evaluated for all existing and eligible wild or scenic rivers and other fire prevention techniques may be considered. Where there are slopes, small basins or other areas with suitable vegetative cover, managed prescribed fire could be used. In addition, the use of naturally ignited fire within designated or eligible river corridors is not expected to affect the scenic, recreation, geologic, fisheries, wildlife or cultural values associated with those rivers. The use of fire prevention and suppression techniques, and rehabilitation within the WSA's encompassing the South Fork Owyhee River and Fourmile Creek must comply with the WSA Interim Management Guidelines, as well as SOPs pertaining to protection of riparian areas described in Chapter 2.

Prior to using fire prevention measures within an existing or eligible wild or scenic river, the management objectives and site-specific constraints would be analyzed, public and agency input would be obtained, and required surveys would be conducted. Over time, an integrated approach to fire management is expected to improve the conditions, as warranted, within existing or eligible wild or scenic rivers; and just as important, to improve the conditions to areas adjacent to these valuable river systems. These expected beneficial effects would, in turn, reduce the risk to the rivers from negative influences that may be near it.

Cumulative Impacts – The Wild and Scenic designated waters are located in WSA's. Under WSA guidelines, fire is allowed as a natural part of the ecosystem. Suppression efforts associated with wild fire are considered only as an emergency tactic. In all cases, the use of mechanized equipment must be considered in the context of not impairing the suitability of the WSA. If appropriate grazing management systems are used to improve riparian areas that are within or downstream of grazing allotments, the cumulative impacts would be that of regaining a more natural diversity of vegetation type, structure and age, thereby improving riparian habitat overall. If appropriate grazing management systems are not in place, natural fire may impact riparian areas, putting these systems at risk for increased losses of vegetation, accelerated rates of erosion and increased sediment loading.

H. Wilderness

1. No Action Alternative

Under this alternative, the use of more flexible management techniques would not be available. The potential for stand-replacing fires would be increased in the mixed conifer communities, as compared to the Proposed Action.

Cumulative Impacts – The effects of past, present and future fire suppression activities would be that of increasing fuel loadings and continuity, and increasing the possibility of large stand-replacement wildfires. Fire suppression activities, together with minimized efforts at fire prevention, would be expected to move vegetation communities toward a climax condition. Wildfires of high intensity would possibly lead to the colonization of the areas by invasive plant species These cumulative effects would degrade the vegetative landscape surrounding the WSAs, which would in turn increase the risk of negative effects within each WSA.

2. Full Suppression Alternative

Similar to the No Action alternative, under the Full Suppression alternative, the use of more flexible management techniques, such as prescribed fire, management of unplanned ignitions, and other fire prevention measures to improve or enhance the naturalness of a WSA would not be available. The potential for stand-replacing fires would be increased in the mixed conifer communities, beyond that expected from the Proposed Action and No Action alternatives.

Cumulative Impacts – The effects of past and present fire suppression activities and increased future suppression would be that of increasing fuel loadings and continuity, and increasing the possibility of large stand-replacement wildfires. Long-term fire suppression activities, together with minimal fire prevention efforts and rehabilitation after fire, would be expected to move vegetation communities toward a climax condition. These cumulative effects would degrade the vegetative landscape surrounding the WSAs, which would in turn increase the risk of negative effects within each WSA.

3. Limited Suppression Alternative

Under the Limited Suppression alternative, the use of more flexible management techniques, such as prescribed fire, management of unplanned ignitions, and other fire prevention measures to improve or enhance the naturalness of a WSA would be less available. Because efforts at fire suppression would be minimized, the potential for stand-replacing fires would be increased in the mixed conifer communities, as compared to all other alternatives.

Cumulative Impacts – The effects of past and present fire suppression activities and decreased future suppression, together with lesser efforts at fire prevention and rehabilitation after fire, would be similar to those noted for the No Action and Full Suppression alternatives above. The anticipated cumulative effects would degrade the vegetative landscape surrounding the WSAs, which would in turn increase the risk of negative effects within each WSA.

4. Proposed Action

Fire management activities, such as prescribed fire, management of unplanned ignitions and the use of other fire prevention measures conducted in accordance with the management objectives of the site could help maintain the plant diversity and health of fire-dependent ecosystems in WSAs. These measures could improve or enhance the naturalness of a WSA through the restoration of native plant communities. These measures could also be used to limit the size of stand replacement fires within mixed conifer communities in WSAs by reducing fuel continuity and fuel loading.

The majority of the D fire management categories surround WSAs. The descriptions for these polygons recommend the use of prescribed fire to reintroduce fire into the ecology of the area, and stress that fire suppression methods must have a minimum impact on the land. Prior to using fire management measures within a WSA, the management objectives and site-specific constraints would be analyzed, public and agency input would be obtained, and required surveys would be conducted. During the implementation of future actions, all SOPs and existing guidance (BLM Manual Handbook H-8550-1, Interim Management Policy for Lands Under Wilderness Review)

pertaining to WSAs would be upheld. Over time, an integrated approach to fire management is expected to improve the conditions within a WSA, as warranted, and (just as important) to improve the conditions in areas adjacent to a WSA. These expected beneficial effects would in turn reduce the risk to a WSA from negative effects that may surround it.

Cumulative Impacts – Integrated fire management would increase vegetative mosaics, and reduce fuel loading and continuity. This would assist in the restoration of native plant communities and fire frequency return intervals.

I. Areas Of Critical Environmental Concern (ACEC)

1. No Action Alternative

The Salt Lake ACEC occurs in areas are dominated by desert shrub plant communities that do not have fire as part of their natural ecology. Because occurrence of natural fire is very low and the general management objectives for these plant community types is to maintain the native community, fire prevention treatments would not be proposed in these areas. Therefore, the Salt Lake ACEC would not be impacted by the No Action alternative.

Cumulative Impacts - Fire does not play an important role in the natural ecology of the Salt Lake ACEC area. The No Action alternative would not result in any cumulative impacts affecting the management objectives to preserve the integrity of the Salt Lake ACEC for peregrine falcon reintroduction.

2. Full Suppression Alternative

The impacts to the Salt Lake ACEC from the Full Suppression alternative would be the same as the No Action alternative.

Cumulative Impacts - Cumulative impacts to the Salt Lake ACEC from the Full Suppression alternative would be the same as the No Action alternative.

3. Limited Suppression Alternative

The impacts to the Salt Lake ACEC from the Limited Suppression alternative would be the same as the No Action alternative.

Cumulative Impacts - Cumulative impacts to the Salt Lake ACEC from the Limited Suppression alternative would be the same as the No Action alternative.

4. Proposed Action

The Salt Lake ACEC occurs within the proposed fire management plan B-3 polygon. As described in the No Action Alternative, these areas are dominated by desert shrub plant communities that do not have fire as part of their natural ecology. Because occurrence of natural fire is very low, the Salt Lake ACEC would not be impacted by the Proposed Action.

Cumulative Impacts - Cumulative impacts to the Salt Lake ACEC from the Limited Suppression alternative would be the same as the No Action alternative.

J. Recreation

1. No Action Alternative

The potential for large and severe fires that could affect both dispersed and developed recreation would continue to increase. Reductions of viable wildlife habitat and areas characterized by a vegetative mosaic would decrease the value of the area for most outdoor recreation. Safety concerns would be raised if wildfires occurred in or near developed recreation sites.

Cumulative Impacts – Overall habitat values would decrease in the area, reducing wildlife viewing opportunities for users.

2. Full Suppression Alternative

Due to an increased build-up of fuels, the potential for large and severe fires that could affect both dispersed and developed recreation would be higher than expected under the No Action alternative. This would further decrease wildlife habitat value and the area of vegetative mosaic. The initial emphasis on suppression would reduce the safety risk near developed recreation sites; however, the continued accumulation of fuels would increase safety concerns in developed recreation sites over time.

Cumulative Impacts – The cumulative impacts would be a build-up of fuels increasing the potential for larger wildfires. The result would be reduction in the mosaic pattern of vegetation and overall habitat quality, effecting wildlife and hunting opportunities.

3. Limited Suppression Alternative

Both the near and long-term safety risk near developed recreation sites would increase under this alternative. Because minimal efforts would be placed on prevention methods to reduce the size of fire, on fire response to suppress fire, and on post-burn rehabilitation, the effects on wildlife and visual diversity would diminish camping, sightseeing, photography, and hiking recreational values throughout the District.

Cumulative Impacts – The cumulative impacts would be greater than those noted for the No Action alternative.

4. Proposed Action

Generally, recreation users would be displaced from a burned area, and this displacement could continue for several years if restriction of the site is necessary to ensure successful natural regeneration. Similarly, if rehabilitation of the area is determined to be necessary, then displacement of recreators would be necessary until the applied rehabilitation efforts have been completed and deemed successful. Aside from these types of access restrictions and for the first few spring seasons following fire, the flush of annuals that develop would be a positive effect on the camping, sightseeing, photography and hiking recreational values by increasing the visual diversity throughout the area. The vegetative diversity would encourage more wildlife diversity, which would

also contribute to the recreational enjoyment in the area. Other fire prevention measures (e.g., creation of fuel breaks or fire access roads, and reduction of fuel loads via mechanical or chemical methods) that may be applied in or near recreation areas would not be expected to diminish the recreational value of those areas due to the relatively small amount of area that would generally be affected by those measures.

Mechanical treatments, chemical applications, prescribed fire and the management of unplanned ignitions in or near developed recreation sites could affect the quality of a visitor's experience because of vegetation clearing, smoke, health, and safety concerns. These negative effects would be temporary. Protection of developed recreation sites could be improved through the use of fire prevention measures to create fuel breaks around these areas.

Cumulative Impacts – The development of vegetative mosaics, which would result from applied fire prevention and rehabilitation measures, would be expected to increase the number of wildflowers and wildlife species available for viewing. Several of the surface waters in the District are used for recreation. The benefits derived from improving the vegetative conditions throughout the District would minimize erosion that would, in turn, benefit the water resources and recreational activities associated with those resources. An integrated approach using a variety of fire prevention, response and rehabilitation techniques could improve wildlife habitat diversity. This could lead to increased recreational opportunities associated with wildlife viewing and hunting.

K. Visual Resources

There are a number of considerations with respect to fire, fire management, and the nature and condition of the endemic plant communities that influence evaluation of the alternatives relative to visual resource management. They include the following:

- The diversity of plant communities developed in this region, in response to pre-existing, natural environmental conditions, has the highest level of visual interest. Natural communities reflect the desirable visual qualities of harmony, diversity and overall unity/integrity.
- The noxious weeds and invasives (principally cheatgrass) in this area have created extensive monocultures that lack the diversity and visual interest of the naturally occurring vegetation, which they have replaced. Further, they are prone to, and often advantaged by fire, which regularly creates extensive blackened areas that retain the scars of fire suppression activities. Together these conditions create contrasting form, line, color, and textural modifications to the landforms and vegetation.
- Both fire prevention and suppression activities can create unnatural modifications, which remain indefinitely in this arid region without active rehabilitation.
- There are differences in the natural role of fire in the maintenance of health and regeneration within the various plant communities that exist within the Elko District. Some are fire adapted and others are not. Recognizing these differences and formulating plans around their differing adaptations will provide the best chance for renewing and/or maintaining the desirable visual characteristics of each community. A uniform approach will unnecessarily disadvantage some communities.
- General Fire Management: Among other things, the general fire management element sets the FMC allocations, which differ among the four alternatives, from

nearly uniform prescriptions to those with a mix of approaches. Those with nearly uniform prescriptions do not give adequate consideration for the variations in plant community adaptation and conditions that exist within the District. As a result, they would disadvantage certain plant communities while favoring others to the detriment of the visual condition and character of the landscape.

- Fire Prevention: This component addresses reduction in fuel loads which will reduce the potential for very large fires over time and thus the extensive blackened areas. Fire prevention also can create visual contrast through the development of green strips and fire access roads that can create contrasting form, line, color and texture if poorly planned from the visual resource perspective.
- Fire Response: Fire suppression activities create visual contrasts in the form of bladed roads and fire breaks. The resulting form, line, color and texture contrasts can be highly visible and of long-term duration in this open and arid landscape. While aggressive fire response may reduce the extent of blackened areas in the short run, over time it creates increased fuel loads that make suppression more difficult and the extent of long-term disturbance greater.
- Fire Rehabilitation: Rehabilitation of fire damaged areas and the suppression-caused landscape disturbances that accompany it are of critical importance to the long-term reduction of visual contrasts. As with the other fire management elements, fire rehabilitation should be given greater attention in those areas of greater visual sensitivity (VRM Classes I and II) and lesser attention in VRM class III and IV areas.

Together, these landscape and fire management considerations formed the basis of the visual resource assessment and comparison of alternatives. A brief description of the results follows.

1. No Action

The No Action alternative would be a continuation of the present situation with regard to fire management. This would result in increasing fuel loads and large fires with the extensive contrasts created by the fires and associated aggressive fire suppression activities. This would create short-term visual impacts as well as contribute to the continued long-term expansion of invasives with a corresponding decrease in visual variety and interest.

Fire rehabilitation would remain a high priority throughout the District, but would no doubt be difficult to completely achieve over time due to the increased frequency and extent of fire. Without active involvement of the visual resource staff, these treatments may not be effective in maintaining compliance with VRM class objectives of VRM Class I and II lands.

Cumulative Impacts – The cumulative impacts would increase as larger fire occur which require additional suppression activities. An addition impact would be a loss in the stand and age types of vegetation, decreasing visual quality.

2. Full Suppression

This alternative is similar to the No Action alternative except for two important distinctions that have visual resource implications. One difference is the increased allocation of land (95%) where fire would be considered negative to the lands and resources. Under this alternative there would be no lands where fire would be

considered a benefit. This would substantially increase the fuel loading and further favor invasives beyond what is currently taking place. Secondly, under the Full Suppression alternative, there would be a low emphasis on rehabilitation. When combined, the effects of these two differences would result in larger fires, increasing invasives, and increased long-term visible landscape contrast as a result of suppression activities.

Cumulative Impacts – The cumulative impacts would be greater than those noted for the No Action alternative.

3. Limited Suppression

The FMC premise under this alternative is that fire is beneficial on 95% of the lands in the District, and that there would be limited prevention, response and rehabilitation of fire events. Because there is little active management, large fires would continue throughout the District where fuel loads are high. Response to these fires would be less than is currently the case, which would reduce the ground disturbance of fire fighting. However, the extensive contrasting burned areas will continue, which will favor a further increase of invasive plants in areas unburned and limit the rehabilitation of areas already burned.

Cumulative Impacts – The cumulative impacts would be greater than those noted for the No Action alternative.

4. Proposed Action

This alternative represents an integrated approach to fire management in each of the four fire management elements. As a result, it provides greater flexibility in the formulation of specific area plans and would therefore facilitate prescriptions that are more appropriate to the vegetative conditions of an area. This would favor the long-term reestablishment of plant communities with a more natural and visually appealing composition. Specifically, the FMC allocations are closer to the proportions of natural fire adapted plant communities, and they provide the flexibility of treatment options needed given the range of current plant community conditions.

The integrated approach to fire prevention is also desirable in that fire prevention activities can be both positive and negative as noted above. An integrated approach provides the flexibility to use more aggressive approaches in areas of lesser visual sensitivity and less aggressive and damaging measures in areas of higher sensitivity. Of particular concern is the creation of fire access roads in areas of high visibility. Similarly, fire response can create lasting scars. The integrated approach to fire response also would provide a measure of flexibility in fire suppression that could be tailored to the visual sensitivity of an area.

This alternative's approach to rehabilitation also allows the flexibility to respond with increased emphasis in areas of high visual sensitivity. This is one of the most critical of the fire management elements and needs particular attention to reduce long-term visual impacts.

Cumulative Impacts – The long-term effect should be an increase in habitat quality and therefore improved visual quality.

L. Wildlife

1. No Action Alternative

This alternative would limit the tools available to treat wildlife habitat areas to create the desired mosaics that favor most wildlife. Allowing continued fuel buildup through high fire suppression and low fire prevention increases fuel loading so that when wildfires occur they would burn at higher intensity levels over larger areas. This increases the chances of stand replacement fires, which reduces the quality and viability of numerous acres of wildlife habitat.

Cumulative Impacts – Past, present and future suppression efforts that would characterize the No Action alternative would lead to heavier fuel buildup, which in turn would lead to larger burned areas, reduced edge effects, reduced cover and vertical structure, and reduced browse for wildlife species. The effects of severe fires (e.g., higher temperatures and the resultant mortality of underground roots, burls, and seed; increased erosion) would increase the cost of rehabilitation efforts and the implementation of SOP's. The likelihood of success of the rehabilitation of wildlife habitat following large stand replacement fires would be reduced. Potential loss of important wildlife habitat (i.e., open stands of sage brush habitat with native grasses and forbs important for sage grouse breeding grounds) could result if the vegetative structure is changed (i.e., to closed canopy brush or non-native invasive species) as a result of large fires and/or decreased fire prevention. Wildlife species diversity would likely decrease in areas where large fires have occurred and closed canopy monocultures have established and continue to be perpetuated by shortened fire cycles. These negative cumulative impacts for the No Action alternative become increasingly worse over time for the viability of wildlife.

2. Full Suppression Alternative

This alternative would limit the negative local effects of wildfire, as in the No Action alternative, because of the increase in fire suppression activities. However, fire rehabilitation and fire prevention activities would be low in this alternative. When large stand fires occur due to high fuel loads from high fire suppression, rehabilitating the lost wildlife habitat would become very costly and the success of reestablishment severely reduced.

Cumulative Impacts – As discussed in Chapter 3.0, Affected Environment, in both short and long-term management scenarios of the natural lands within the District, wildlife would not benefit from a Full Suppression alternative to fire management. Large scale losses of habitat diversity would result from increased fuel loads (i.e. decreased emphasis on fuels prevention would result in increased shrub dominance and reduced herbaceous species in the plant community) and the eventual increase in number of large scale fires.

3. Limited Suppression Alternative

A Limited Suppression alternative would be the most detrimental to wildlife in general because a limited fire suppression plan coupled with limited fire prevention measures would likely result in large catastrophic fires that would replace large contiguous stands of important wildlife habitat. Additionally, this alternative would only allow limited

amounts of fire rehabilitation (due to the magnitude of burn areas) and limited fire management, which could lead to unforeseen losses of wildlife populations in areas that would normally be protected from burning within a given wildfire event.

Cumulative Impacts – Much of the District is already under stress from the impacts of the numerous large fires in recent years. This alternative would exacerbate the problem for wildlife species and their habitats. As discussed in Chapter 3.0, Affected Environment, in both short and long-term management scenarios of the natural lands within the District, wildlife would not benefit from a Limited Suppression alternative to fire management.

4. Proposed Action

Wildlife is managed under most polygon categories. In general, wildlife responds well to recently burned habitat. Depending on fire intensity and pre-fire vegetative conditions, burned areas usually produce an abundance of grasses and forbs. However, woody species that are burned and do not resprout can be lost as browse for a longer period of time. This could cause a detrimental effect on big game winter ranges. A small, block-mosaic design and avoidance of important upland browse zones, fawning, and upland game bird nesting areas would minimize detrimental effects on wildlife habitat. The mosaic patterns created by habitat manipulations would insure that vertical contrast would be created. Vertical contrast is needed for thermal cover, escape routes, and hiding areas. Mosaics also create ecotones where species, both plant and wildlife, of different communities interact. Impacts to the majority of wildlife species from the Proposed Action would be minimal. Limited mortality of reptiles and birds, especially ground nesters, may occur when fires are stand replacing and severe. Some species shift may occur when, for example, burned areas provide attractive foraging areas for antelope by improving production and diversity of grasses and forbs.

Mosaic burning patterns for planned burn units will help reduce the size and severity of wildfires, thus reducing the impacts such large and severe fires can have on wildlife and their habitats. Green strips and/or restoration projects designed to act as fuel breaks would provide protection to adjacent unburned habitats. Fire suppression measures should not have significant environmental consequences in upland habitats and would benefit wildlife species, particularly big game winter foraging areas and sage grouse habitats, when used to control large severe fires. Fire rehabilitation measures will continue to reestablish habitat for wildlife species while preventing soil loss and water quality problems. Existing habitats affected by exotic species invasion, loss of diversity, or abundance of fuel loads, can potentially be improved by the proposed alternative. The integrated approach of the Proposed Action will benefit wildlife species in the majority of taxonomic categories as fuel loads are reduced and patchy vegetation patterns are reestablished. The Proposed Action FMC's and polygon descriptions outlined in Chapter 2 provide additional direction aimed at the protection of specific wildlife resources. In some cases, polygons were formulated to minimize impacts to wildlife and improve habitat (see Chapter 2, Polygon B9).

Cumulative Impacts – The Elko District has created over 50 wildlife water catchments and has used prescribed fire, brush beating, and some chaining in the past to improve wildlife habitat. Currently, approximately 30 acres of selective cutting is done per year to improve wildlife habitat in pinyon-juniper habitats. Seed mixes used on all fire rehabilitation and range seedings are selected specifically to include wildlife food and

cover species where determined appropriate. Through the allotment evaluation process, standards and guidelines for rangeland health and the multiple use objectives outlined in the Elko/Wells RMP are evaluated for attainment or non-attainment. Where wildlife habitat objectives are not met, appropriate changes in management are implemented to ensure progress toward meeting stated goals and objectives. The cumulative impacts of these wildlife habitat improvement techniques combined with an integrated approach to fire management would increase wildlife habitat diversity and condition. The overall impacts would be beneficial to wildlife populations in the District.

M. Special Status Species

1. No Action Alternative

Fuel loadings would continue to increase, possibly leading to severe fires that could damage sensitive habitat for threatened and endangered species that have been identified in the Elko District (see Appendix 3). The options for improving or expanding the habitat for these species via mechanical, chemical, and grazing methods, and through the use of fire would be reduced. This could decrease the opportunity for recovering and delisting these species. Rehabilitation efforts in fire-damaged critical species habitats would continue, but efforts may be futile for species recovery in severe stand replacement fires.

Cumulative Impacts – Past, present and future fire suppression efforts could reduce the range of fire-adapted species by changing the habitat and eliminating the ecological conditions needed by these species. Cumulative costs for fire suppression efforts and fire rehabilitation in critical habitat areas could become exorbitant if not balanced with fire prevention measures. An increased incidence of fire suppression, versus an integrated approach to fire management, would result in the increased use of fire suppression chemicals and in turn increase the chances for direct impacts to aquatic life should chemicals come in contact with riparian/wetland areas. In general, under the No Action Alternative, an increase in fire suppression would result in a long-term increase in fire impacts to special status species and their habitat. This would be counteractive to all other resource management activities being implemented in accordance with the Elko/Wells RMP and local conservation plans.

2. Full Suppression Alternative

Increasing fire suppression efforts will perpetuate fuel build in habitats occupied by or adjacent to those occupied by sensitive species (i.e. sagebrush-grassland communities for sage grouse). Limiting controlled fire situations coupled with low fire rehabilitation and increased use of fire suppression chemicals would likely be detrimental to many sensitive species (particularly aquatic species). Soil erosion and sedimentation into aquatic habitats would likely increase due to severe fires from extensive fuel build-up. The use of chemical suppressants would likely increase und the Full Suppression Alternative and the potential for direct or indirect (through run-off) introduction of fire chemicals into streams and/or aquatic habitats would increase. These actions would be reactionary rather than preventative. This could increase the potential of killing listed fish and amphibian species, such as the Lahontan cutthroat trout.

Removing fire (as much as possible) from the management of the District public lands will allow for continued loss of sagebrush habitats through overgrowth of sagebrush.

Because sage grouse require a more diverse age class structure, proposed burns would allow for a mosaic management of the land, increasing habitat for the sage grouse and other sagebrush obligates, rather than decreasing it through a Full Suppression management alternative. Impacts, at a minimum, would include loss of habitat due to severe stand-replacing fires, loss of habitat diversity due to a dominance of climax vegetation communities and early successional communities, and increased impacts from sedimentation loads.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

3. Limited Suppression Alternative

Impacts of limited fire management, response, prevention and rehabilitation would result in more detrimental effects to Federally listed and BLM sensitive fish and wildlife than a Full Suppression alternative. Fire would not be as closely managed; increasing the likelihood that special status species habitat would be lost due to larger fires. In addition, the listing of species being considered for possible listing as a threatened or endangered species could become justifiable because large populations of species could be immediately destroyed or indirectly affected through the loss of habitat due to large severe fires left to burn. Additionally, Lahanton cutthroat trout and other listed species with limited population sizes may be further impacted by a Limited Suppression Alternative due to the loss of individuals from low fire suppression activities in critical habitat areas.

Cumulative Impacts – Cumulative impacts would be compounded by limited fire management activities in a District already stressed from a history of high fire suppression. Without population monitoring, rehabilitation of highly disturbed habitat, fire response measures to avoid loss of critical habitats, and fire prevention measures to keep the system healthy, listed species decline could be a long-term problem.

4. Proposed Action

Threatened or endangered species would benefit from an integrated approach to fire prevention measures and rehabilitation, as described in the Proposed Action. Fire prevention measures would reduce the risk of severe large fires in sensitive habitat that would result in further loss of special status species. Fire prevention measures designed to establish required habitat characteristics in parts of a listed species historic range would reduce severe fires and loss of habitat while creating potential habitat. Rehabilitation of wildlife habitat to benefit the site-specific requirements of listed and special status species will promote population viability and recovery. This integrated approach to fire management and fire response will enable fire managers and biologists to assess a fire to determine the appropriate response level and technique needed to protect sensitive habitats. Standard Operating Procedures (SOPs) for listed and candidate species as well as polygon descriptions will be used to guide fire management officers in choosing the best approach in any given situation (see Appendix 2). These SOPs are designed to protect and minimize the loss of listed or candidate species or their habitat. The Biological Assessment (BLM, 2003) further describes potential impacts to listed species. The BA concludes that the Proposed Action may affect Lahontan cutthroat trout, the Independence Valley speckled dace, the Clover Valley

speckled dace, and the Columbia spotted frog, but that the Proposed Action is not likely to adversely affect any of these species.

As part of the Proposed Action, prescribed burning would be used as a preventative measure against large severe fires and as a means of creating more diverse habitats for plant and wildlife species. Unknown populations of special status plant and animal species in or near a treated site could be impacted, depending on the habitat requirements and reproductive ecology of a particular species. The probability of impacts to special status plant and animal species during a proposed burn would be low because each proposed project would be screened for potential impacts to threatened, endangered and special status plants and animals during the site-specific environmental analysis process. If special status animals or plants were found in a proposed burn area, the burn plan would be modified as per the Operational Procedures/Project Design.

For example, riparian/wetland habitats for the Lahontan cutthroat trout, Independence Valley speckled dace and Clover Valley speckled dace, federally listed threatened, endangered, and candidate species respectively, can be impacted by wildland fire to varying degrees. The degree of impact to these habitats is dependant upon the various parameters of each specific fire scenario that affect fire intensity and severity (i.e. topographic features, fuel loading, water levels and soil moisture characteristics, etc.). Direct species losses can occur from intense fires that result in water temperatures being increased above species critical thresholds for survival. Toxicity effects from fire suppression chemicals (i.e. surfactant foam or retardant formulations) may also occur in riparian areas, when such chemicals are applied directly into water or adjacent to water where overland erosion may cause them to enter the water. Indirect impacts to these aquatic species occurs from secondary habitat degradation due to increased erosion and stream channel incisement, lowered water tables, decreased vegetation cover for stream shading and subsequent increases in water temperatures, and increased sedimentation.

The Proposed Action is expected to result in a decrease in the amount of LCT habitat affected by wildfire. Because it has been a SOP to not apply fire suppression chemicals within 300 feet of riparian areas (unless there is a threat to human life or property) there have been no instances where fire suppression chemicals have been applied in a manner that caused them to enter directly or indirectly into the water. However, post fire evaluation of some fire incidents has indicated that, in some cases, fire impacts to LCT habitat could have been reduced had fire suppression chemicals been applied within 300 feet of the riparian area. The SOPs for species protection listed in Appendix 2 allows for a determination to be made on a site specific basis whether or not to deviate from the standard protocol and apply fire suppression chemicals within 300 feet of the riparian area. This determination would be made based on all the available information and only if it is determined that the impacts of applying retardant within 300 feet of the stream channel or across the stream channel are significantly less than the long term resource damage associated with the expected loss of riparian habitat to wildland fire. Where fire suppression chemicals are authorized within 300 feet of the riparian zone, they would be applied in such a manner and/or degree to minimize potential impacts to aquatic life. Based on the history of occurrence of wildfire in LCT habitats and the projected decreased degree of impact due to implementation of the Proposed Action, it is expected these situations would be an extremely rare occurrence. The potential effect

of chemical suppressants to listed species was evaluated in the Biological Assessment for the FMA prepared in accordance with Section 7 of the Endangered Species Act.

The existing Elko/Wells RMP states that vegetation management (i.e. treatments) in sagebrush habitats will be in accordance with the procedures specified in the Western States' Sage Grouse Guidelines, as amended, and as future studies might dictate. These guidelines were updated in 2000 (Connely, et. al. 2000). The BLM agreed via an Interagency Memorandum of Understanding to consider the new Western Association of Fish and Wildlife Agency (WFWA) Guidelines for the management of sage grouse populations and habitats in state and local conservation plans and other appropriate information in their respective planning processes. The Nevada BLM is a cooperating agency in the development of a statewide Governor's Sage Grouse Strategy. This strategy calls for the development of local conservation plans to address sage grouse population and habitat management issues. Until local conservation plans are completed, the BLM has established interim guidelines for the management of sage grouse habitats in Nevada which include SOPs for fire suppression and fire rehabilitation activities (see Appendix 2). All fuels and/or habitat treatments in sage grouse habitat will be completed in accordance with approved planning efforts and in concert with local sage grouse/sagebrush conservation planning efforts. The use of these management guidelines when implementing the Proposed Action, together with consideration of the goals and objectives of local planning efforts, will reduce the potential impacts to sage grouse.

The Proposed Action could increase brood rearing and roosting habitat for sage grouse. Reducing the occurrence and associated impacts of larger wildland fires to known sage grouse leks and brood areas would significantly reduce the potential impact to sage grouse populations. The potential to adversely impact sage grouse resources occurs when large stand replacing wildfires occur in sage grouse habitat. Planning small fuels reduction projects in these areas would reduce the likelihood of impacts to this species. Using appropriate fire control methods could reduce the impacts of large fires in known sage grouse habitats.

One of the primary objectives of the Proposed Action is to create a diverse age class structure of vegetative communities to reduce fuel loads and reduce the occurrence of large fire events. If fuels management treatments are designed in concert with local sage grouse/sagebrush conservation goals and objectives, this would provide more diverse habitat for sage grouse and other wildlife, including many sensitive species. For example, the sagebrush-grassland ecotype provides existing and potential habitat for as many as twenty sagebrush obligate wildlife species. The frequency of occurrence and dependency of the various species upon particular sagebrush-grassland habitats varies based upon the ecological condition of the sagebrush habitat. Some sagebrush obligate species thrive in a more shrub dominated ecological condition, while most prefer a more diverse shrub/herbaceous community. The greatest direct impacts would be from wildfires or vegetation treatments that occur during the breeding season of passerine birds. The integrated approach to fire management would improve habitat for sagebrush obligate species by creating a mosaic of sagebrush age classes and improved overall diversity of sagebrush and sagebrush-herbaceous communities over time. As outlined in Appendix 4, the predicted species response to the implementation of the Proposed Action in sagebrush dominated communities would be an improvement in overall species diversity.

Cumulative Impacts – The expected cumulative impacts for sensitive species would be the same as those noted under cumulative impacts for the Wildlife Proposed Action. An integrated approach to fire management, which includes a fire prevention program, would enhance plant species requiring fire as part of their ecological cycle. Past suppression efforts may have reduced their ability to flourish. Plants and animals, which do not have fire-adapted characteristics, could be affected if the operational design features are not followed. The cumulative affect of implementing an integrated approach to fire management will allow for successful implementation of other resource management activities designed to enhance habitat for special status species consistent with the Elko/Wells RMP and local sage grouse/sagebrush conservation plans.

N. Migratory Birds

1. No Action

Under the No Action alternative, limited fire prevention coupled with fire suppression activities would lead to increased fuel loadings and the continued occurrence of large scale impacts to the landscape due to wildfire. Vegetative diversity would not be accomplished due to limited fire prevention and large-scale rehabilitation efforts would continue to be needed with the potential for decreased success. The long-term loss of vegetative diversity would likely impact migratory bird species.

Cumulative Impacts – The No Action alternative places less emphasis on fire prevention activities and the appropriate use of fire. The result would an increase in fuel loads and chances for a catastrophic fire. Vegetative diversity goals may not be accomplished resulting in long-term impact to migratory bird species.

2. Full Suppression

Under the Full Suppression alternative, short-term impacts to migratory birds would be lessened. However, long term buildup of fuels and change to shrub dominated vegetative communities would lead to large scale fire events and the ultimate loss of vegetative diversity. Coupled with a lack of fire prevention and limited rehabilitation, this alternative would have a significant measurable affect on migratory bird populations.

Cumulative Impacts – The Full Suppression Alternative would be the same as the No Action alternative

3. Limited Suppression

Under the Limited Suppression alternative, impacts to migratory bird populations would be similar to the Full Suppression and no action alternative. However, the long-term impacts due to loss of vegetative diversity would be realized much sooner under this alternative.

Cumulative Impacts – The Limited Suppression Alternative would result larger fires without a consideration for the potential vegetative response. The result would be an increase in the homogenous vegetation types and potential for a negative vegetative response to fire (e.g. noxious weeds). This action would decrease habitat suitable for migratory birds.

4. Proposed Action

The greatest threat to migratory bird populations from the effects of fire is the large scale loses of habitat diversity due to increased wildfire occurrences across the landscape. Maintaining complete, diverse plant communities is integral to conservation efforts for these species. Using an integrated approach to fire management would reduce the impacts of large-scale wildfires to migratory species. Rehabilitation of burned areas, particularly low elevation sagebrush sites vulnerable to conversion to cheatgrass types following wildfire, coupled with secondary efforts to re-establish sagebrush on the stabilized site (as necessary) should provide beneficial impacts to these species.

Fire prevention treatments would have less impact to migratory bird populations as compared to the impacts of large scale wildfires since they would be controlled actions that would take into consideration site specific resource concerns. The integrated approach to fire management which includes fire prevention, suppression, and rehabilitation would create the greatest amount of vegetative species and age class diversity across the landscape over time. This approach would be consistent with the conservation measures listed in Section 3 (e) of the President's Migratory Bird Executive Order, specifically:

- Restore and enhance the habitat of migratory birds, as practicable;
- Within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance, ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as Partners-in-Flight.
- Ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

Cumulative Impacts – The expected cumulative impacts for migratory birds would be the same as those noted under cumulative impacts for the Wildlife Proposed Action. An integrated approach to fire management, which includes a fire prevention program, would enhance plant species requiring fire as part of their ecological cycle. This would provide the necessary diversity to support a variety of migratory bird species.

O. Soils

1. No Action Alternative

The lack of an integrated approach to fire management within the Elko District would lead to the further accumulation of fuels, and thus the potential for more severe and large-scale fires. The occurrence of large-scale fires during high risk fire periods (July and August) followed by high-intensity summer rains would lead to severe runoff and erosion impacts, especially on steep slopes. Impacts on cryptogamic crusts could be severe if burning of heavy fuels produce soil temperatures of 176°C or higher. Because larger and hotter fires would be expected under the No Action alternative, the risk to cryptogamic crusts would increase as well. Less crust species diversity may also occur. Mosses and lichens may be lost, and only a few species of cyanobacteria may remain.

Wind and water erosion risk would increase following wildfire. If a high intensity rain occurs, before the vegetation is reestablished, rilling and/or loss of surface soil could occur. Organic matter and soil nutrients would be removed, as well as soil structure being ruined. Under this alternative the protection provided by vegetation would decrease, as would the productivity of soils.

Cumulative Impacts – The absence of prescribed fire and other fuel reduction methods in areas that are being encroached upon by juniper would lead to higher fuel buildups in these areas as the tree canopy increases, causing more severe fires and the accompanying loss of soil and fertility. Heavier fuel loadings in the grass/sagebrush areas would create similar conditions, increasing the loss of soil structure and increasing the potential for hydrophobicity and increased runoff. The loss of topsoil from erosion and the resultant loss of vegetative cover would negatively effect native habitats and the wildlife dependent upon those habitats. Erosion can result in unsightly scars in formerly natural terrain.

2. Full Suppression Alternative

The negative effects on soil described under the No Action alternative would be magnified under the Full Suppression alternative. Full fire suppression would eventually lead to a greater accumulation of fuels, and thus the potential for the most severe, large-scale fires. With minimal efforts proposed for fire prevention and rehabilitation, the negative effects of wind and water erosion are expected to increase, and thus soil protection and productivity would decrease.

Cumulative Impacts – The cumulative impacts would be greater than those described for the No Action alternative.

3. Limited Suppression Alternative

Under the Limited Suppression alternative, the protection of vegetation would be removed from the landscape more quickly than under the other alternatives. With minimal efforts at rehabilitation and suppression, weed infestations would be accelerated. The negative effects of wind and water erosion are expected to be the worst under this alternative. Soil protection and productivity would be lost over time.

Cumulative Impacts – The cumulative impacts would be greater than those described for the No Action alternative.

4. Proposed Action

The effect of fire on soils depends on the soil type, soil moisture conditions, and burn severity, the latter of which is influenced by the fuel load. Soil temperature would increase both during and after a fire. During a fire, the heat transferred to the soil is influenced by the amount and type of duff and organic matter insulating the soil. Under dry conditions, soil heating impacts would be expected to be greatest in vegetation types where there is a heavy duff buildup, which is primarily found in the mixed conifer, closed canopy pinyon-juniper and mountain bh communities. After a fire, the presence of dark, burned material on the soil surface usually would cause the soil to heat up faster than vegetated or unburned soil. High soil temperatures during and after fires could negatively effect the regeneration of many vegetative species. Because a goal of the

Proposed Action is to reduce fuel loads and the occurrence of large-scale wildfires, the integrated approach to fire management would result in moderating the effects of fire on soils.

In areas where an extensive cryptogamic soil crust has formed, burns that cause the removal of the crust would lead to increased runoff and soil erosion, reduced nitrogen fixation, and decreased plant health for certain species. Because the majority of the soil crusts within the Elko District are composed of cyanobacteria, which typically recover within 1 to 5 years after a fire, the effects of fire on cryptogamic soil crust would be short term. Using an integrated approach to fire management, with its goal of reducing fire size and severity over time, this potential temporary impact to soil crusts would be minimized in scale and occurrence.

Under the Proposed Action, prescribed fires conducted at the appropriate season, in accordance with SOPs and the management objectives for the site, and followed by appropriate rehabilitation measures as warranted, are expected to lead to a healthy succession of native vegetation. The establishment of native annuals, perennial grasses and seedlings, and post-burn resprouts of the woody native species would lower the risk of wind and water erosion. The establishment of a vegetative mosaic of native plant communities would reduce the amount of erosion and thus the sediment load following rains in the first several post-burn years. This would have a commensurate reduction in siltation impacts in riparian systems and water bodies. Moreover, a reduction in the extent of even-aged vegetative stands and fuel continuity, as expected under the Proposed Action, would also reduce the risk of hydrophobicity that can occur in the sagebrush and forested areas within the District.

Mechanical clearing as a fire prevention measure, the maintenance of existing fire access roads, or addition of new roads, the creation of fuelbreaks, and fire suppression methods would all generally result in a localized increase in soil erosion. However, this impact would be remediated by a reduction in fuel loads and occurrence of large-scale wildfires, and the resultant improvement to vegetative cover and soils that are expected under an integrated approach to fire management.

Cumulative Impacts – Appropriate grazing management strategies in conjunction with an integrated approach to fire management are expected to lead to a higher herbaceous vegetative cover within rangelands, and a healthy succession of native vegetation in general, thereby reducing the effects of wind and water erosion in the District. Over time, improvement of the vegetative cover and a reduction in the occurrence of devastating fires will better assure the protection and productivity of soils throughout the District. Despite the usual reduction in the amount of soil-holding groundcover following fire, prescribed burning and erosion control are compatible. Smaller burn areas, cooler fires, and less plant mortality associated with periodic burning help retain important root systems that provide structure to underlying soils.

P. Wetlands and Riparian Zones

1. No Action Alternative

Continued fuel buildup in areas adjacent to riparian zones would increase the probability of severe fire burning into and through the riparian areas. Large fires that escape suppression attempts normally occur during July and August when the soil moisture is

the lowest in the riparian areas. Riparian areas would be most damaged by fire at this time of year. Although the No Action alternative is expected to increase the extent of wildfires over time (thereby leading to the direct and indirect effects to riparian systems noted above), impacts to wetlands and riparian systems would be similar to the Proposed Action as SOPs recommend the protection of riparian areas from devastating fire effects.

Cumulative Impacts – The chances of a severe wildfire burning in July or August when riparian areas are at their driest would increase. Fires of this type could lead to longer vegetative recovery, increased erosion, channel incising and stream sediment loading. Progress in achieving land use plan objectives for good riparian habitat conditions would be adversely affected by increased impacts from wildfire.

2. Full Suppression Alternative

Similar to the No Action alternative, under the Full Suppression alternative there would be an increased fuel buildup in areas adjacent to riparian zones; this would in turn increase the probability of severe fire burning into and through the riparian areas. Although the Full Suppression alternative is expected to increase the extent of wildfires sooner than that expected under the No Action alternative, thereby more quickly leading to the effects to riparian systems noted above. Impacts to wetlands and riparian systems would be similar to the Proposed Action as SOPs recommend the protection of riparian areas from devastating fire effects.

Cumulative Impacts – The chances of a severe wildfire burning in July or August when riparian areas are at their driest would increase beyond that noted for the No Action Alternative. Fires of this type could lead to delayed vegetative recovery and increased erosion, channel incising and stream sediment loading. This could negate any management strategies already in place that could improve riparian vegetation.

3. Limited Suppression Alternative

With minimal effort expended on fire prevention, suppression and rehabilitation, vast expanses of even-aged vegetation or degraded vegetation communities are expected to eventually characterize the upland landscape. Under these conditions, fires would burn hotter and would be more extensive. The result would be longer vegetation recovery, increased erosion, channel incising and stream sediment loading. Other impacts would include potential nutrient and sediment loading, spikes in peak and total stream discharges, changes in pH, and an increase in stream temperatures. The moisture present in riparian areas likely reduces fire occurrence and severity, however, large stand replacing fires from increased fuel loads or from drought conditions, could increase severe loss of important riparian habitat and long-term impacts. Without rehabilitation measures following large fires in riparian areas impacts to the streams and wildlife could be detrimental.

Cumulative Impacts – The expected impacts to riparian/wetlands associated with low levels of fire prevention, suppression, and rehabilitation are expected to severely impact BLM's ability to achieve Elko/Wells RMP objectives for riparian/wetland improvement.

4. Proposed Action

Many of the riparian areas in the Elko District do not have surface flow and are maintained by high soil moisture content. Prescribed fire would assist in keeping these areas from being encroached upon by sagebrush and other non-riparian vegetation. However, riparian systems that do carry surface water flows, and that are not bordered by an appropriate vegetated buffer strip, would be sensitive to the effects of short-term erosion, sedimentation, turbidity, and in-stream temperature increases that can follow fire. For wetland and riparian systems in general, the optimal burning time would be when the duff and organic matter have moisture content of 100 percent or more. This would limit loss of organic material, reduce soil heating and minimize damage to rhizomes and the basal buds of the vegetation. Several critical streams are within the boundaries of WSAs, areas where prescribed burns may be used, and where unplanned ignitions would generally be allowed to burn.

In light of the numerous existing guidelines intended to protect valuable wetlands and riparian zones, the general objectives stated in the FMC polygons, and the future activity-specific analyses that would be conducted to address riparian and wetland systems where relevant, the overall effect of the Proposed Action on wetlands and riparian areas, as well as the upland habitats that surround them, is expected to generally benefit these important resources. However, depending on fire intensity and pre-fire conditions, anticipated residual impacts would include severe erosion, sedimentation, down cutting of the stream channel and lowering the water table. These impacts would degrade the health of the riparian system

Cumulative Impacts – Appropriate grazing management strategies combined with fire prevention techniques on adjacent areas usage could lead to healthier and more diverse riparian areas. The Proposed Action provides a strategy to lesson the frequency, size and severity of fires. This would allow the BLM to continue to use other techniques to improve riparian health without the impacts of larger fires.

Q. Vegetation

1. No Action Alternative

Under this alternative, the likelihood of severe wildfire would increase over time. Vegetative management objectives would not be met in specific areas. As vegetative community types grow older and more decadent, species composition and productivity, and age and species diversity would continue to degrade or decrease over time. In addition, the susceptibility of vegetative communities to disease and insect infestation could increase as well. Far fewer acreages of mountain brush, sagebrush, pinyon-juniper and aspen stands, mixed-conifer communities and grasslands would benefit from fire prevention measures and prescribed fire, and more acreages would require both fire suppression measures and rehabilitation post-burn. It is likely that type conversion from shrub-grassland communities to cheatgrass or other annual species would increase, having a lasting impact on the landscape.

Cumulative Impacts – The trend would be towards a more climax-dominated ecological condition, which is not natural in disturbance-prone communities. The increased probability of severe wildfire could counteract the effects of appropriate grazing management systems and other management programs designed to improve/increase

healthy vegetative diversity to meet various resource objectives outlined in the Elko/Wells RMP.

2. Full Suppression Alternative

Similar to the No Action alternative, under the Full Suppression alternative the likelihood of severe wildfire would increase. Less acreage of vegetation as compared to the Proposed Action would benefit from fire prevention measures. The initial need for post-burn rehabilitation is expected to decrease because most fires would be suppressed. Higher fuel loads and the resultant intense fires that escape suppression are expected to greatly increase the need for post-burn rehabilitation in many vegetation communities. Because rehabilitation would have a low activity level under the Full Suppression alternative, impacts would be greater than the No Action alternative.

Cumulative Impacts – Similar to the No Action alternative, the trend would be towards a more climax-dominated ecological condition, which is not natural in disturbance-prone communities. The increased probability of severe wildfire could counteract the effects of other resource management programs.

3. Limited Suppression Alternative

Similar to the No Action and Full Suppression alternatives, under the Limited Suppression alternative the likelihood of severe wildfire would increase. Acreage of vegetation communities benefiting from fire prevention measures would be less than the Proposed Action. Because both fire suppression and rehabilitation would be limited, the diversity of vegetation community composition and stand age would continue to decrease.

Cumulative Impacts – The trend would be toward vast expanses of even-aged or degraded vegetation communities that would characterize the landscape. Without well-planned prescribed fires, with Limited Suppression and only minimal efforts at site rehabilitation, this trend would perpetuate and worsen over time. The continued trend toward large areas of degraded vegetative communities would conflict with other resource management objectives outlined in the Elko/Wells RMP, local sage grouse/sagebrush conservation planning efforts, and the Great Basin Restoration Initiative.

4. Proposed Action

Current FMC's and polygon guidance have been designed for optimum vegetation response. In general, appropriate response, prescribed burning, the management of unplanned ignitions, and other fuel load reduction techniques (mechanical, chemical, and biological treatments) are expected to decrease wildfire risk, size and severity. These activities would remove ladder fuels and excess litter accumulation, reintroduce a mosaic pattern of vegetative cover types or successional stages to the landscape, reduce the flammability of vegetation at appropriate locations, and provide safe work zones and access for future fire fighting needs. Over time, a well-balanced use of fire prevention measures is expected to decrease the frequency and extent of fires and increase the ability to control and suppress fires as they occur, thereby minimizing negative effects on vegetative communities. This, in turn, is expected to moderate the need for fire rehabilitation measures.

In woody plant communities, species composition immediately following fire would temporarily shift from a dominance of woody species to a dominance of herbaceous species. However, for the fire-adapted woody plant communities, a gradual return of the pre-burn woody species would occur via the growth of resprouts or regeneration of individuals from seed. The shift in plant composition would be due to fire altering the site conditions and reducing competition for moisture, nutrients, heat and light, and by reducing accumulations of litter and humus exposing bare soil for seedling establishment. These initial conditions would favor the establishment of herbaceous species from seed stored in the soil. There would be a short-term reduction in productivity of many species; however, this would vary depending on site conditions and the proportion of vegetative regeneration. Depending on the objectives of the burn, most target species would increase in productivity within a few years following fire.

The Proposed Action would favor the woody shrub species in mountain brush communities, such as serviceberry, snowberry and ribes species (*Ribes* spp.). These species are expected to resprout vigorously following fire prevention treatments, which would promote conditions favorable for vegetative regrowth. Similarly, prescribed fires of low to moderate intensities would benefit big sagebrush-dominated communities by reducing sagebrush density, canopy cover and competition for space, moisture, and nutrients between sagebrush and other herbaceous plant species. In addition, herbaceous species such as bluebunch wheatgrass, Great Basin wildrye, bottlebrush squirreltail, Indian ricegrass, Idaho fescue, and many forbs would increase in distribution, composition and production.

The low to moderate response of vegetation in early seral sagebrush areas indicates that mechanized equipment should be used sparingly during suppression in order to avoid leaving long-lasting scars on the landscape. This and other constraints will be considered when conducting fire prevention activities in this and other vegetation communities. Overall, it is expected that through the use of habitat treatments, stand structure and age diversity would increase across a sagebrush landscape, which would in turn improve habitat value for wildlife and decrease the size of future wildfires reducing impacts to wildlife habitat

In the woodland vegetation communities, prescribed burning alone, or mechanical or manual treatment followed by prescribed burning, would minimize encroachment by pinyon and juniper into other vegetative community types. Treatment within older pinyon-juniper woodlands would create openings in which younger stands could establish. Well planned prescribed fires and other vegetative treatments would increase productivity within decadent pinyon-juniper woodlands and expansion of pinyon and juniper into other adjacent range sites would be minimized.

Moreover, replacement of important pinyon-juniper stands from devastating large-scale fires could be minimized through beneficial fire prevention and response techniques. : Implementing greenstripping and/or other fire prevention techniques in the interface of the pinyon-juniper woodland and adjacent shrub-grassland communities would help prevent wildland fires from entering woodland vegetative types. In addition, reducing fuels or otherwise thinning older stands through mechanical or chemical treatments, and then burning when there is sufficient moisture conditions would minimize the incidence of stand-replacing fires. Descriptions for some of the FMC polygons recommend the use of mechanical treatments over prescribed fires to change stand structure and

composition. In particular, pinyon-juniper woodlands that straddle boundaries between the Elko and Battle Mountain and Ely Field Office areas are at risk from large wind-driven or plume-dominated fires. The effects of fire in these areas would be minimized by applying other fire management techniques, where needed. The SOPs and site-specific considerations would be reviewed in order to meet the management objectives within woodland vegetation communities.

The SOP's for fire management in Appendix 2 incorporate recommendations from a study of aspen communities in the Elko District completed by Dr. Charels E. Kay in March of 2002. In areas where aspen species dominate, prolific resprouting of aspen following fires of moderate severity would be expected. With proper post-fire management, this would allow for existing decadent stands that lack recruitment to reestablish themselves with younger, more vigorous stands. In addition, prescribed fire would decrease encroachment by sagebrush and mixed conifers into aspen stands.

In the mixed-conifer vegetative community, reduced fuel loading and reduced fuel continuity would open up mineral soil for seedling establishment. Prescribed fire would also reduce the potential for large and lethal stand replacement fires. In particular, the present stand structure in mixed conifer woodlands on the Cherry Creek Mountains could be severely affected by an unplanned ignition. The effects of fire in this and other areas would be minimized by applying other fire management techniques, where needed. Prescribed fire may also change the species composition, resulting in increased pine populations. Opening up the stands could increase forest health by reducing competition. The SOPs and site-specific considerations would be reviewed in order to meet the management objectives within woodland vegetation communities

The Proposed Action alternative will enhance grasslands if prescribed burning is scheduled outside of times when key species are sensitive to fire (i.e., when species are actively growing or have green tissue, or when basal fuels are highly concentrated causing more intense surface fires or smoldering). There is a potential for undesirable plant species such as cheatgrass (*Bromus tectorum*) to occupy a burned site. Cheatgrass is an exotic annual with limited nutritive value for livestock and wildlife and creates a new, fire-prone environment. Fire prevention techniques would be carefully planned as to location, avoiding areas with high potential for cheatgrass conversion in order to minimize this impact. An integrated approach to fire management will also reduce the size and extent of wildfires and in turn decrease the potential for cheatgrass invasion.

Under well-planned prescribed fires in which factors such as season of burn, fire severity, fuel loading, fuel and soil moisture content, and relative humidity are carefully monitored, the Proposed Alternative is expected to improve the overall health and productivity of targeted vegetative communities. Through the use of prescribed fires or managed unplanned ignitions, and other fuel load reduction techniques (mechanical, chemical, and biological treatments), the Proposed Alternative is expected to reduce the occurrence of large-scale destructive fires and the negative after-effects on vegetation communities from such events (undesired stand conversion, increased erosion, and invasion of exotic species).

Properly conducted prescribed burns are expected to increase the diversity of successional stages in a variety of plant communities, beginning with the grass and forb-dominated vegetation types that flourish on a site the first spring season post-fire, and

progressing to more shrub or tree-dominated vegetation types. Properly conducted prescribed burns and other fire prevention techniques, fire suppression where necessary, and rehabilitation is also expected to counteract undesired vegetation community type conversions that have occurred, or undesired encroachment of species into other communities. The total result of these effects would be healthier vegetative communities that exhibit more diversity in plant distribution, composition and production. Although the initial impact associated with many fire prevention activities may be (i.e., initial erosion associated with mechanical and chemical treatments), the net effect of the Proposed Action on vegetation communities within the District is expected to be beneficial.

Cumulative Impacts – The allotment evaluation process sets appropriate grazing management practices and provides for rangeland improvement (vegetative and non-vegetative) projects. These, in conjunction with fire prevention techniques, appropriate fire response and post-fire rehabilitation measures, would improve the health of the vegetative communities by increasing species diversity and improving age structure, which would lead to greater vegetative production overall. An integrated approach to fire management will result in healthier vegetative communities through fire prevention techniques reducing fuel loading and creating patchy diverse vegetative communities with various age structures and seral conditions. This will lead to wildfires having less impacts to large areas. This change in vegetative structure across the landscape will provide a diversity of wildlife habitat, provide improved wildlife and livestock forage and reduce the occurrence of large severe wildfire events. This integrated approach will compliment current resource management goals and objectives outlined in the Elko/Wells RMP and other BLM initiatives such as the Governor's Sage Grouse Strategy, local sage grouse/sagebrush conservation planning efforts, and the Great Basin Restoration Initiative.

R. Noxious Weeds

1. No Action Alternative

The No Action alternative provides less direction on the strategies to control invasive weeds as it relates to wildland fire. In addition, limiting fire prevention activities is expected to result in a continued build up of fuels, which in turn would lead to severe fires that are known to promote the further spread of noxious weeds. The tendency for weeds to expand would likely overwhelm efforts to control weeds.

Cumulative Impacts – If weed control activities are not successful and if severe fires burn large acreages, the opportunities for weed colonization could increase. This would conflict with other resource management program objectives and initiatives.

2. Full Suppression Alternative

Under the Full Suppression alternative, fire prevention activities would be further limited and rehabilitation efforts would be minimized. This alternative would lead to a comparatively rapid build up of fuels, which in turn would increase the occurrence of severe fires that would be difficult to suppress. This alternative is expected to hasten the spread of noxious weeds.

Cumulative Impacts – The cumulative impacts would be the same as for the No Action alternative.

3. Limited Suppression Alternative

Similar to the Full Suppression alternative, under the Limited Suppression alternative fire prevention and rehabilitation activities would be minimal. The rapid build up of fuels would lead to severe fires for which minimal suppression measures would be taken thus leading to the further spread of noxious weeds.

Cumulative Impacts – The cumulative impacts would be the same as for the No Action alternative.

4. Proposed Action

Under the integrated approach to fire management, fire prevention, fire response and fire rehabilitation have been designed to address areas with high concentrations of noxious weeds in order to reduce the possibility of their expansion within the burned areas, and invasion into adjacent areas. Strategies include high fire suppression in areas which would not have a negative vegetative response such as invasive weeds. Fire prevention activities and fire rehabilitation activities would be designed to return a favorable vegetative response.

For example, cheatgrass, a highly invasive exotic annual, is dry and extremely flammable when native perennial grasses are still actively growing. Therefore, burning within areas of dry cheatgrass will lead to the expansion of this invasive grass at the expense of the native grasses. In some cheatgrass areas, however, it may be possible to choose a prescription for burning that will favor other species. The B-1 polygons encircle District-wide areas of exotic species invasions. The integrated approach to fire management within these areas would be to use prescribed fire in conjunction with mechanical or chemical treatments to convert those areas to perennial vegetation. As an alternative method, in areas where cheatgrass invasion is a concern, a post-fire grazing plan could include a short duration of grazing in the spring as a tool to prevent the establishment or production of cheatgrass, which would reduce competition with perennial grasses. Under the Proposed Action it is expected that the large-scale, fast-burning fires that characterize the B-1 polygons can be minimized, thereby, reducing the expansion of exotics into adjacent vegetation communities and moderating the need for suppression and post-fire rehabilitation measures. In other areas, immediate suppression has been recommended if a negative vegetative response is anticipated.

In areas of closed-canopy sagebrush, prescribed fire can be used to increase the density and cover of perennial grasses and forbs and to reduce bare ground that would serve as a target for invasion of noxious weeds. Prescribed fire can be seen as a preventative treatment for areas that currently do not support large concentrations of noxious weeds. Long-term effects could include a reduction in the extent or spread of noxious weeds, because the increase in herbaceous plant cover would mean a concurrent decrease in barren, disturbed areas where weeds tend to establish. Sites with a shrub mosaic or predominately herbaceous composition would have fewer open/barren areas for weed invasion than closed stands of brush and trees with bare ground.

Prior to implementing location-specific measures to eradicate weed species, the management objectives and site-specific concerns would be analyzed, public and agency input would be obtained, surveys as required would be conducted, and documentation as required under NEPA would be prepared. During the implementation of future actions against weeds, existing SOPs and guidelines provided in existing documents would be upheld. The use of prescribed burns and other fire prevention measures to remove nonnative species, or to invigorate native vegetation as a preventative measure against future weed invasion, together with appropriate rehabilitation measures, is expected to aid in the control of weed species.

Cumulative Impacts – Implementation of noxious weed control, appropriate grazing management, herbicide treatments used in rangeland improvement operations, and prescribed fire can be used to improve the health of the vegetative communities. This is expected to minimize the potential for weed colonization within native vegetation communities and reduce the expansion of weeds.

S. Wild Horses

1. No Action Alternative

Under the No Action alternative, activities that could increase forage or create a mosaic of cover for wild horses would be conducted on a limited basis. A continued buildup of fuels would be expected to lead to more large-scale and severe wildfires. These types of fire negatively impact the availability of forage and cover for wild horses and could cause the displacement of herds. This alternative would not aid in regaining an ecological balance in areas where the long-term suppression of fires has already led to decadent and unfavorable conditions.

Cumulative Impacts – Increased fuels buildup, coupled with decreasing vegetative diversity and large severe wildfires, could reduce wild horse habitat and cause displacement of wild horses if the forage base was degraded enough.

2. Full Suppression Alternative

Under the Full Suppression alternative, the buildup of fuels would be expected to exceed that of all other alternatives, which would perpetuate the occurrence of large-scale and severe wildfires. The occurrences of these types of fire negatively impact the availability of forage and cover for wild horses and could cause the displacement of herds. Similar to the No Action alternative, the Full Suppression alternative would not aid in regaining an ecological balance in areas where the long-term suppression of fires has already led to decadent and unfavorable conditions.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

3. Limited Suppression Alternative

Under the Limited Suppression alternative the availability of forage would increase for wild horses. However, due the minimal efforts that would be conducted to suppress fires that do not meet the objectives of the site and to rehabilitate an area post-fire, the availability of forage and valuable shelter and foaling areas would be decreased. Similar

to the No Action and Full Suppression alternatives, the Limited Suppression alternative would not aid in improving critical habitat.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

4. Proposed Action

The Proposed Action outlines strategies for improving wild horse habitat. Short-term actions, such as fire prevention activities (e.g., prescribed burns, reduction of fuels using mechanical and chemical methods, creation of new fuels breaks and access roads) could negatively impact wild horses. If these activities are conducted within an HMA, they would be subject to review under NEPA to avoid and reduce stress or displacement of wild horses. These potential short-term impacts could be minimized by limiting such activities within HMA's, and by timing the potentially activity to occur outside of critical periods for wild horses (e.g., foaling). Post-fire rehabilitation sometimes includes emergency gathers of wild horses and could require fencing those areas to limit grazing. Close monitoring of enclosures would be conducted to ensure horses are not trapped
The integrated approach to fire management would improve range quality within HMA's, which would benefit wild horses by increasing herbaceous forage. Fire in HMA's with heavy pinyon-juniper cover could create a mosaic pattern of cover for wild horses. This integrated approach to fire management is expected to improve the vegetation communities throughout the District, and regain an ecological balance in areas where the long-term suppression of fires has led to decadent or unfavorable conditions. This objective is consistent with objectives stated within the Wild Horse Amendment (1993).

Cumulative Impacts – Implementation of Appropriate Management Levels (AML) of wild horses in conjunction with an integrated approach to fire management would improve habitat for horses, increase forage availability, and increase the mosaic of tree cover to provide better shelter and foaling areas.

T. Rangeland / Grazing Management

1. No Action Alternative

Under this alternative the majority of fires would continue to be suppressed and the use of prescribed burning and other fire prevention techniques would be less under the No Action alternative, there would be fewer instances where livestock would be excluded from burned areas, which would in turn reduce the immediate negative economic impact to livestock permittees. Through time, it is anticipated that there would be a greater impact to range management conditions because the acreage burned by wildfires has the potential to increase as unnatural fuel loading conditions worsen and fire intensity and severity escalate. As a result of escalation in wildfire occurrence and the risk of irreparable damage to vegetative communities, the potential for recovery of these areas is expected to decrease. More allotment closures would ultimately occur under this alternative. Overall, this would result in a long-term increase in negative economic impacts to the livestock permittees in areas where these incidents occur. This long-term increase is expected to exceed the cumulative short-term economic impact to the livestock allotment permittee(s) that could occur under the Proposed Action. In addition, the potential for beneficial economic impacts resulting from use of prescribed fires, where appropriate management response is implemented, would not be realized. There

is a long-term potential for the loss of perennial grass. Competition from sagebrush and other shrubs would out-compete the perennial grasses reducing their production per plant and reducing total numbers of grass plants.

Cumulative Impacts – The use of appropriate grazing management strategies to improve the condition of the vegetative community would be at least partially negated by the exclusion of fire. The continued suppression of most fires could increase brush cover, thereby minimizing the conditions suitable for the establishment of herbaceous cover. Severe wildfires burning in closed canopy sagebrush would reduce the recovery rate of plant species because the increased fuel loadings would create hotter burn conditions, thereby increasing the potential for damage to plants and soil. Without an integrated fire management approach, the success of local sagebrush planning efforts and the GBRI would be impacted.

2. Full Suppression Alternative

All fires would be suppressed to the greatest extent feasible and there would be few instances where livestock would be excluded from burned areas. This situation would have the lowest immediate economic impact to livestock permittees. Similar to the No Action alternative, it is anticipated that there would be a greater impact to range conditions because the acreage burned as a result of wildfires has the potential to dramatically increase in the future as unnatural fuel loading conditions worsen and fire intensity and severity escalate. Other negative effects of the Full Suppression alternative would be similar to the No Action alternative, yet more pronounced due to the emphasis on suppression and minimal efforts on the prevention of fire or rehabilitation after fires. This would result in negative economic impacts to the livestock permittees and the least benefit from the use of prescribed fires that could have been conducted in accordance with the management objectives of a site.

Cumulative Impacts – The cumulative impacts would be similar to those described under the No Action alternative although, in the long term, they would be more pronounced under the Full Suppression alternative.

3. Limited Suppression Alternative

Because minimal efforts would be placed on suppression of fires, there would be an increase in the instances where livestock would be excluded from burned areas and thus an immediate negative economic impact to livestock permittees. With minimal efforts placed on fire prevention and post-fire rehabilitation, it is anticipated that there would be a greater impact to range conditions because the acreage burned as a result of wildfires, and the severity of the effect on site productivity, would increase over that of all other alternatives. Other negative effects noted for the No Action and Full Suppression alternatives would be similar to the No Action alternative, although the effects would be hastened and more devastating. This would result in the worst economic impacts to the livestock permittees.

Cumulative Impacts – The cumulative impacts would be similar to those described under the No Action and Full Suppression alternatives, although all effects would occur sooner under the Limited Suppression alternative.

4. Proposed Action

In most instances where wild fires have occurred, the burned areas would be temporarily unavailable for grazing in order to allow vegetation to recover. Post-burn closure of an area to livestock grazing could affect the permittee's ability to use forage allocated through their grazing permits. The length of the post-burn resting period would be dependent upon the severity of the burn and the resource objectives in the areas. This may cause a short-term economic impact to the livestock permittee(s) due to the temporary closure of the allotment or portion of an allotment. Table 4T-1 shows the amount of livestock forage in Animal Unit Months (AUMs) temporarily suspended due to wildfires that occurred in 2001.

Table 4T-1
August 2001 Fire Complex Allotments and Operators by Fires

Allotment	Public Acres Burned	Private Acres Burned	Total Private and Public Acres Burned	Total Private and Public Acres in Allotment	% of Allotment Burned
Indian Springs	338.6	641.9	980.6	34,083	2.8%
Pine Mountain	93.5	126.8	220.4	63,821	<1%
Squaw Valley	12,361.8	2,820.1	15,181.9	273,823	5.5%
Midas	181	244.8	426	6,910	6%
Spanish Ranch	4,053.5	1,343.3	5,396.9	189,699	2.8%
Private	41.9	140.6	182.5	N/A	N/A
Twenty-Five	7,706	3,448.1	11,154.1	523,292	2%
Hadley	27.1	375.2	402.3	96,089	<1%
Tuscarora	23.9	22.6	46.5	97,731	<1%
Twenty-Five	316.2	0	316.2	523,292	<1%
Little Goose Creek	4,476.2	0	4,476.2	72,947	6%
Gamble Ind.	4,334.8	0	4,334.8	330,468	1.3%
Bluff Creek	12.6	0	12.6	58,319	<1%
Private	661	9061	9,722	N/A	N/A
Squaw Valley	3,9614	270.7	39,884.7	273,823	14.5%
Twenty-Five	28,716.8	2,306.9	31,023.7	523,292	5.9%
Big Springs	572.9	4.8	577.7	473,713	<1%
Boulder Field	666.7	678.9	1,345.6	11,900	11.3%
Twenty-Five	2,040.1	2,143.9	4,183.6	523,292	<1%

Table 4T-1 August 2001 Fire Complex Allotments and Operators by Fires					
Allotment	**Public Acres Burned**	**Private Acres Burned**	**Total Private and Public Acres Burned**	**Total Private and Public Acres in Allotment**	**% of Allotment Burned**
Twenty-Five	42,356	41,316	83,673	523,292	16%
Devil's Gate	4,113.3	188.8	4302.1	68034.4	6%
Stag Mountain	1,847.3	47.01	1894.4	40376.9	4.6%
Deeth	13,382.1	0	13382.1	141429	9.4%
Black Butte	3,493.9	2,174.6	5668.5	61772	9%
HD	9.3	1,326.7	1336	379763	<1%
Little Humboldt	2,217.1	137.9	2355	84817.2	2.7%
Jakes Creek	8,856.6	4,451.9	13308.5	61358.9	21.7%
Bullhead	969.2	1,202.7	2171.9	N/A	N/A
Osgood	383.7	726.1	1109.8	N/A	N/A
Osgood	383.7	726.1	1109.8	N/A	N/A
T. Lazy S.	71.9	0	71.9	175,747	<1%

NOTE: Acres were calculated by GIS. Allotments and operators may have been affected by more than one fire.

Appropriate post fire management of burned areas is critical to successful re-establishment of healthy perennial plant communities. Typically, specific objectives for each fire or portions of the burned area(s) (i.e. grazing allotments) are developed to ensure attainment of the primary goal of watershed stabilization and preventing establishment of invasive plant species or noxious weeds. In many areas, the rehabilitation of burned areas will involve a natural revegetation response or a release of those plant species burned but not affected by the fire. In some areas, reseeding is necessary to meet resource objectives and provide for watershed stabilization. In either case, livestock grazing will need to be deferred to allow for plant regrowth and reestablishment. In many cases, it could take two growing seasons following the burn or reseeding for plant species to become established enough to withstand the impacts of grazing and still provide necessary watershed protection. However, because of the inherent variability in soils and site potentials within large burned areas and uncontrolled climatic influences, site specific monitoring will determine just when resource objectives have been achieved on specific burned areas. Annual site specific monitoring could show that grazing may occur sooner than two growing seasons or that longer deferment is needed. These determinations are made on a case by case basis based on sound resource data, scientific principles, and experience. In those areas where cheatgrass invasion is a concern, a post fire grazing plan could include short duration early spring grazing as a tool to prevent cheatgrass establishment or production, therefore, reducing competition with perennial grasses for available moisture. However, such grazing strategies must take into consideration the phenological needs of existing perennial plant species. Because livestock grazing is administered by individual grazing allotments, the

post fire grazing management for each allotment within a burned area is developed, monitored, and evaluated on a case by case basis consistent with site specific resource management objectives.

There is the potential for an increased forage base from fire or other treatments. It is anticipated that the Proposed Action would increase plant species diversity, plant composition, and forage production for livestock and wildlife. The integrated approach to fire management is expected to improve the vegetation communities throughout the District, and regain an ecological balance in areas where the long-term suppression of fires has led to unfavorable vegetative conditions. This large-scale effect outside of allotment areas would indirectly benefit livestock by improving area conditions that are at risk for devastating wildfires that could sweep through allotments at unfavorable times. A decrease in fire occurrence and size would reduce the potential impacts to livestock operations by reducing the loss of livestock forage.

Initially after a fire, livestock forage would be temporarily lost and site rehabilitation will be an important step in the recovery of many areas. Over time the need for rehabilitation may be minimized as fire management reduces the size and frequency of fires. Wherever rehabilitation measures are applied, however, there is the potential to impact range management conditions if the rehabilitation of burned areas is not successful. This potentially impact would be minimized through the application of fire prescriptions and suppression strategies that are appropriate to the site, thereby better assuring the post-fire rehabilitation success.

Impacts to livestock grazing from the implementation of fire prevention treatments may be lessoned through consultation and coordination with the livestock operator. In some cases, treatments can be timed to coincide with existing grazing schedules (i.e. during the fall prior to a scheduled rest or deferred grazing year) or adjustment can be planned to allow for successful treatments with minimal impact to livestock operators.

Another potential benefit to livestock would be the use of grazing as an alternative fuels treatment measure in the creation or maintenance of greenstrips. Using grazing as a pre-treatment technique for cheatgrass control or to reduce fuel levels within wide blocks or strips of land may provide a benefit for ranchers. The use of grazing as a fuels management tool would be based on site specific objectives and evaluated against other alternative methods of achieving stated resource objectives.

Cumulative Impacts – Appropriate pre and post fire grazing management strategies coupled with rangeland developments and an integrated approach to fire management is expected to increase vegetative diversity and production, leading to better future rangeland conditions and increased forage availability for livestock and wildlife. The Proposed Action would result in a decrease in large fire occurrence and coincide well with existing land use plan objectives to manage for healthy sustainable rangelands. The Proposed Action will also facilitate successful implementation of local sagebrush conservation planning and the Great Basin Restoration Initiative.

U. Socioeconomic Conditions

1. No Action Alternative

Initially there would be fewer instances of wildlife disruption from burned areas, leading to better hunting and recreational opportunities. Over time, there could be impacts to wildlife diversity as larger fires disrupt larger acreages of wildlife habitat and as diversity within the habitat declines. This could reduce hunting and other recreational opportunities. The potential for increased economic benefits resulting from the use of prescribed fire, where appropriate management response is implemented, would not be realized.

Cumulative Impacts – Past, present and future suppression efforts would lead to higher fuel loadings and more severe wildfires. Therefore, there is a potential for long-term cumulative impacts to the ecotourism economy if wildlife habitat, water quality, and the visual aesthetics of the landscape degrade as a result of fire suppression or severe wildfire. Moreover, wildfire rehabilitation costs would increase as larger areas would require more monies to stabilize the watersheds damaged by severe wildfires.

2. Full Suppression Alternative

Due to the emphasis on suppression, there could be greater impacts to wildlife as larger fires disrupt larger acreages of habitat and as diversity within the habitat declines. This could further reduce hunting and other recreational opportunities. The potential for increased economic benefits resulting from the use of prescribed fire, where appropriate management response is implemented, would not be realized.

Cumulative Impacts – The cumulative impacts would be similar to those noted for the No Action alternative.

3. Limited Suppression Alternative

Initially the instances of wildlife disruption from burned areas and the effects on hunting and recreational opportunities would increase. Given the low levels of activity proposed for fire prevention, response, and rehabilitation and the resultant increase in wildfire frequency and size, negative effects on all recreational activities would increase as the viability of vegetation communities decreases and the effects of erosion increase.

Cumulative Impacts – The low levels of activity proposed for fire prevention, response, and rehabilitation would lead to an immediate degradation to many areas that currently benefit from a ecotourism economy. There is a high potential for long-term cumulative impacts to the ecotourism economy as wildlife habitat, water quality, and the visual aesthetics of the landscape continue to degrade as a result of poor fire management.

4. Proposed Action

The increased vegetative diversity resulting from fires could have a positive impact on big game and upland bird species, increasing the hunter days spent within the Elko District. Bird-watching, hiking, photography, camping, and other dispersed recreational activities could increase as new vegetative diversity improved opportunities for non-game wildlife pursuits as well as the visual attractiveness of an area. The potential for

increased economic benefits resulting from the use of prescribed fire, where appropriate management response is implemented, would be realized. Though these sectors represent only a small share of the economy, some benefits would occur. Impacts relating to grazing are described in Section T.

Cumulative Impacts – Hunting and recreational incomes may increase as the vegetative diversity would lead to an increase in big game, upland bird, and non-game habitat quality and quantity. This could increase the hunter and visitor days spent within the Elko District. Future visitors pursuing white-water rafting, fishing and other water-based activities would benefit as the integrated approach to fire management is expected to prevent large-scale wildfires that lead to destructive rates of erosion, sediment loading, and scarring of the landscape.

V. Evaluation and Monitoring

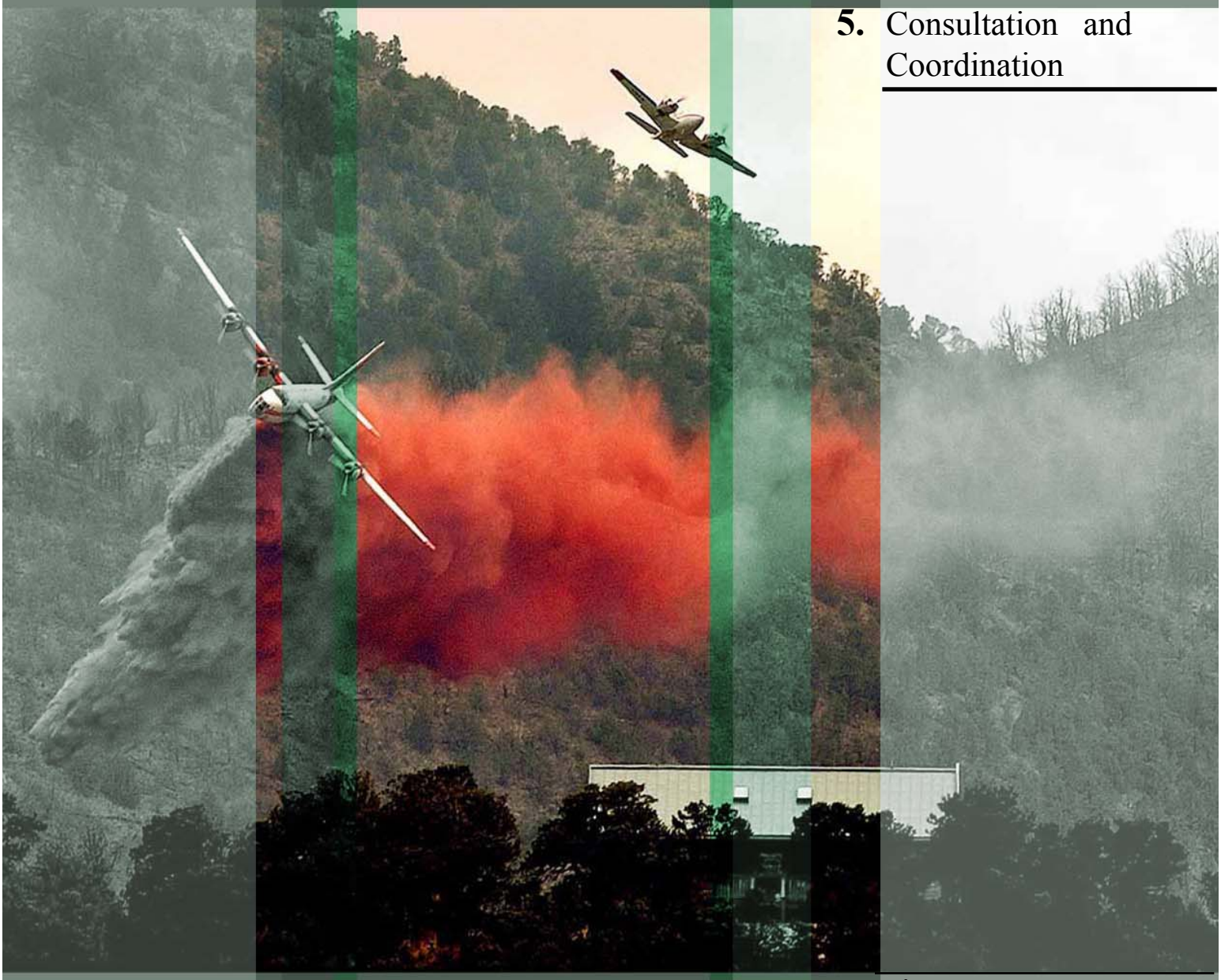
Monitoring and evaluation provisions of the Elko and Wells RMPs would extend to the FMA. Monitoring includes not only provisions for tracking progress toward meeting resource objectives but monitoring the implementation of the FMA itself. Completion of actions in support of plan objectives will be tracked and documented to insure conformance with the overall scope and extent of the FMA. Site specific and district-wide indicators for fire prevention, fire suppression and fire rehabilitation efforts should be monitored. District-wide indicators would have to be monitored over long-periods of time in order to determine success and ancillary factors such as weather patterns would have to be accounted for.

To ensure adequate monitoring activities, a yearly fire season report will be developed documenting how much area burned and where it burned, allotment openings and closures resulting from fire, rehabilitation efforts, and other activities. General indicators such as those found in Table 4V-1 should be included in the report.

Table 4V-1
General Indicator Table

Activity	2000	2001	2002	2003 Acres
Fire Prevention – Acres of Treatment	<10,000	<10,000		
Fire Suppression -Burned Acreage	383,032	252,067		
Fire Rehabilitation – Acres of Rehabilitation	155,000	145,000		

Monitoring activities include plan maintenance. Since the District cannot predict future weather and fire patterns, periodic maintenance and adjustment will be necessary. This involves incorporating new information, refining strategies and updating FMC and polygons delineations. In addition, implementation of the FMA would be evaluated as part of the evaluation for the Elko and Wells RMP's.



5. Consultation and Coordination

Fire Management Amendment Environmental Assessment

CHAPTER 5 - CONSULTATION AND COORDINATION

During the planning process for this environmental assessment, formal and informal efforts were made by the BLM to involve other federal agencies, state and local governments and the public. The BLM initiated the EA process by requesting comments to determine the scope of issues and concerns that needed to be addressed during the EA process. Public scoping meetings were conducted in September, 2001. Additional public meetings were held in May, 2002. Also as part of the resource inventory, various agencies have been contacted to request data. The EA has been distributed to relevant agencies and the interested public for review and comment. This chapter describes these efforts, including the formal consultation required and the public involvement activities that were conducted.

A. Persons, Groups or Agencies Consulted

A number of persons, groups and agencies were consulted throughout the FMA/EA process. These included:

- Elko Field Office Mailing List
- Nevada Division of Forestry
- Nevada Division of Wildlife
- Nevada Natural Heritage Program
- United States Fish and Wildlife Service
- Public Land Users Advisory Council
- Northeastern Nevada Stewardship Group
- Northeastern Nevada Stewardship Group Fire Management Pod

Native American and Section 7 Consultation are discussed below.

Native American Consultation

In accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the Federal Land Policy and Management Act (P.L. 94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L. 101-601) and Executive Order 13007, the BLM has provided the affected Tribes and Bands the opportunity to comment and consult on proposed BLM land management actions. Consultation will remain ongoing for this particular action due to the sensitivity and sacred nature of Native American religious activities, ceremonies, and religious site locations. Traditional practitioners are often reluctant to release sacred or religious information until there exists a direct and immediate threat to an area of cultural significance.

Section 7 Consultation

Because BLM's fire management programs have the potential to affect species that are protected by the federal Endangered Species Act (ESA), it was necessary to coordinate and consult with the U.S. Fish and Wildlife Service (USFWS). This was first done at the national level, resulting in certain agreements and guidelines between the two agencies. At the state level, BLM began consulting with the local USFWS staff in Reno early on in this project. It was agreed then that the species needing to be covered by a Section 7 (of the ESA) Consultation between the two agencies for the Fire Management Plan Amendment are Lahontan cutthroat trout, Independence Valley speckled dace, Clover Valley speckled dace, and Columbia spotted frog. The first meeting was held on 20 November 2001 between BLM Elko Field Office and

USFWS Reno Field Office to initiate early coordination/informal consultation for the proposed Fire Management Amendment. USFWS responded to BLM's 14 December 2001 request for a species list on 26 December 2001. In accordance with the August 30, 2000 interagency Memorandum of Agreement for Programmatic Section 7 Consultations and Coordination, a consultation agreement was developed to define the process, products, actions, and timeframes and to serve as the guiding document for both BLM and the USFWS throughout the consultation process. This consultation agreement was approved on 9 September 2002. As part of the early coordination process, the Elko BLM also developed draft Standard Operating Procedures (SOP) for species protection to be included as part of the proposed action for the Fire Management Amendment. BLM incorporated USFWS comments to the draft SOPs in January 2002. These SOPs are designed to be consistent with the national guidelines issued in April 2000, as amended, with respect to application and use of fire retardants and suppressant foams. The SOPs for the listed species are incorporated into the BA as mitigation. The potential affects on listed species are addressed in the biological assessment which has been prepared. The BA concludes that the Proposed Action may affect Lahontan cutthroat trout, the Independence Valley speckled dace, the Clover Valley speckled dace, and the Columbia spotted frog, but that the Proposed Action is not likely to adversely affect any of these species. BLM has submitted the BA to the USFWS with a request for their concurrence with this conclusion.

B. Public Involvement Activities

Public involvement, at the earliest stages of planning, was critical to the success of this project. As part of the public scoping process, the District mailed newsletters to 730 individuals, agencies and groups on the District's mailing list; issued a news release; and ran radio announcements to notify the public of scoping meetings. Public scoping meetings were held September 25, 26, 27 and 28, 2001, in Elko, Eureka, Jackpot and Wells.

Newsletters to 730 individuals, radio announcements and new releases were also used to notify the public of a second round of meetings to discuss the Proposed Action. These meetings were held on May 20, 21, 22 and 23, 2002, in Elko, Eureka, Jackpot and Wells. These meetings led to further refinements. Comments received at the scoping and public meeting included:

- Citizens would like to see more use of the local community to fight fires. Reasons cited include reduced cost, more local knowledge, more equipment and faster response time.
- Allow more dormant season grazing use after a burn. Do not simply close allotment for 2 years following a burn.
- The local community would like to see greater use of grazing to manage fuel loads.
- The use of prescribed fire, mechanical manipulation and herbicide are acceptable means to manage high fuel load areas.

The results of these meetings helped to formulate and refine alternatives. For example, grazing as a tool is considered in the alternatives as well as a description concerning the closure period of allotments is provided. A full list of comments received during these meetings are summarized in Appendix 1

Additional comments were received during the draft FMA/EA public review process. Letters and responses are found in a separate document entitled Public Comment Letters and Responses, and can be requested from the BLM Elko District. Responding individuals and organizations to the draft FMA/EA included:

- U.S. Fish and Wildlife Service
- Nevada Division of Wildlife
- Goods From The Woods
- Nevada Division of Environmental Protection
- Committee for the High Desert and Western Watersheds Project
- Nevada State Historic Preservation Office
- Wildlife Management Institute
- Mark Belles

Based on comments received, additional information was included describing the relationship between pinyon and juniper woodlands, riparian areas and fire. Sage grouse SOP's were added and modifications were made to rehabilitation standard operating procedures. A range condition class was provided to further described range lands. Maps were also modified to increase legibility. Additional changes can be found in the Public Comment Letters and Responses document.

C. List of Preparers

1. Elko BLM Field Office

Carol Marchio	-	Soil, Water, Air
Clint Oke	-	Renewable Resources
Dave Stout	-	Management Direction
Gerald Dixon	-	Native American Consultation
Helen Hankins	-	Management Direction
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Jason Allen	-	Realty
Jeff Arnberger	-	Fire Control Officer
Joe Freeland	-	Project Manager, Fire Management
Karl Scheetz	-	Range Management
Kathy McKinstry	-	Wild Horses and Burros
Lorrie West	-	Environmental Coordination
Mark Coca	-	Weeds
Marlene Braun	-	Environmental Coordination
Melissa Peterson	-	Public Affairs
Ray Lister	-	Wildlife
Skip Ritter	-	Forestry
Steve Dondero	-	Recreation/Wilderness
Tamara Hawthorn	-	Wilderness Study Areas
Tim Murphy	-	Archaeology, Paleontology
Tom Warren	-	Fire Rehabilitation

2. EDAW, Inc.

Brian Hoffmann	-	Special Status Species
Bruce Meighen	-	Project Manager
Cannon Ivers	-	Graphic Design
Craig Severn	-	Vegetation, Soils
Craig Taggart	-	Visual Resources
Jim Kurtz	-	Air Quality
Kim Lanford	-	Wildlife, Special Status Species
Linda Spangler	-	Technical Editor

Paula Jacks	-	Fire Ecology
Tom Keith	-	Technical Oversight

Acronyms & Terminology

The following key fire management terminology and acronyms will be used frequently throughout this document. A general definition is included for each word or phrase.

BA Biological Assessment

BAER Burned Area Emergency Rehabilitation Plans

BLM Bureau of Land Management

EA Environmental Assessment

EIDC Elko Interagency Dispatch Center

ESR Emergency Stabilization and Rehabilitation

District Lands administered by the Elko Field Office

Firebreaks Any area that, because it fails to provide additional fuel to the fire, serves to substantially impede or stop the progress of a wildfire. Firebreaks can be man-made or may be natural barriers. For example, it may be a relatively narrow (20 to 30 feet wide), strategically placed line from which all vegetation is removed down to the mineral soil. Existing barriers, such as roads, barren rocky areas devoid of vegetation, streams and lakes may also serve as firebreaks.

Fire Frequency The number of fires per unit time.

Fire Line A narrow line, typically 2 to 10 feet wide, from which all vegetation is removed down to mineral soil by clearing just ahead of firing out the line. The fire line may be a roadway or simply a strip cleared by hand or machine, strictly for fire control purposes. Often, it is a line within a wider break, such as a roadway within a fuelbreak.

Fire Regime The type of fire, intensity, rate of spread, frequency, interval (time between fires) and season of burn make up the fire regime.

Fire Road A 30-foot wide road from which all vegetation is removed down to the mineral soil.

FLPMA Federal Land Policy and Management Act.

FMO Fire Management Officer.

FMP The Fire Management Plan is an administrative document prepared by the fire management officer that identifies the most efficient fire

	organization that meets the BLM's mission to sustain the health, diversity and productivity of the public lands.
FMA	The Fire Management Amendment is an amendment of the Elko and Wells Resource Management Plans and provides the necessary guidance for an effective integrated fire management program.
FMC	Fire Management Categories are geographical areas that outline general fire management strategies.
Fuelbreak	A strategically located, wide block, or strip, on which a cover of dense, heavy or flammable vegetation has been permanently changed to one of lower fuel volume or reduced flammability as an aid to fire control.
Fuel Loading	Fuel loading refers to the volume of all vegetation susceptible to wildland fires (as in grasslands, coastal sage scrub and chaparral) and is expressed in pounds or tons per acre for a given area.
MIST	Minimum Impact Suppression Tactics are based on the "light hand on the land" practices to minimize disturbance caused by suppression actions.
NDF	Nevada Division of Forestry
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NFRP	Normal Fire Rehabilitation Plan
Polygons	Geographic areas based on resource management objectives and goals with reference to fire management practices. They comprise the larger FMC's.
Prescribed Burn	A controlled fire set by land managers under prescribed circumstances to reduce fuel loads in order to reduce the risk of wildland fire hazard and/or achieve other resource management objectives.
RMP	A Resource Management Plan provides guidance and ensures that public lands are managed in accordance with the intent of Congress as stated in FLPMA.
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedure
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VFD	Volunteer Fire Department

WSA Wilderness Study Area

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Appendix 1:
Public Meeting Summary

Appendix 1 – Part A

PROPOSED ELKO/WELLS RESOURCE MANAGEMENT PLAN
FIRE MANAGEMENT AMENDMENT
PUBLIC MEETING SUMMARY REPORT

Background

In July 2001, the Bureau of Land Management (BLM) initiated work on a Fire Management Amendment to the existing Resource Management Plans (RMPs) for the Elko District. This RMP Amendment is being developed to provide overall direction as well as define operational procedures for fire management activities within the Elko District. Development of the Fire Management RMP Amendment will be guided by the following goals:

- Provide for the protection of life and property.
- Provide for the protection of habitat required by special status species.
- Provide for safe and cost effective resource protection and enhancement.
- Reduce hazardous fuels.

The overall planning process will include an Environmental Assessment (EA), Biological Assessment (BA), and RMP Amendment. These documents will incorporate public and regulatory comments as well as guidance received throughout the public review process.

A number of preliminary issues were identified prior to the public scoping meetings. These issues emerged from a variety of sources including the BLM, other agency staff, phone calls, e-mails and letters from individuals and groups. Preliminary issues were published in the Federal Register under a Notice of Intent and include:

- Need for enhanced guidance for setting suppression strategies
- Use of prescribed fire in high fuel load areas to reduce potential impacts from severe wildfire and to improve habitat
- Protection of sage grouse habitat
- Use of controversial Emergency Stabilization and Rehabilitation (ESR) procedures including fencing and seeding of nonnative plant species
- Managing forest resources to address diverse agency and user concerns
- Management of invasive, nonnative weeds
- Economic effect of fire suppression on local communities
- Communication, training, and cooperation with local communities

To better understand public concerns, public scoping meetings were held September 25, 26, 27 and 28, 2001 in Elko, Eureka, Jackpot and Wells. These meeting led to the identification of additional issues. A second round of public meeting were held May 21, 22, and 24, 2002 in Elko, Eureka, Jackpot and Wells to discuss the proposed action. The District notified the public using 730 newsletters, news releases and radio adds. The following report describes the information obtained at these meetings. Also included in this report is a summary of an interactive issue identification exercise conducted at each meeting.

<u>Public Scoping Meetings – September 25, 26, 27 and 28, 2001</u>

At each scoping meeting, Joe Freeland (Elko District Fire Management Officer) gave a slide presentation that included a description of the Fire Management RMP Amendment process, the

need for the Amendment, the existing fire management areas and the tools available to the District to help manage fire.

Mr. Freeland described how the Fire Management RMP Amendment will provide guidelines for the BLM to modify or reclassify the fire response areas, and will provide guidance for the use of other suppression methods such as mechanical manipulation, prescribed burning and chemical treatments to reduce fuels. Mr. Freeland pointed out that the Amendment would not address large-scale changes or existing polices, but instead would focus on using available tools to help manage fire. Information from the public scoping meetings will be used to develop a draft Fire Management Amendment and Environmental Assessment for public review in the beginning of next year.

Following is a summary of comments made by the public during each public meeting:

<u>September 25, 2001 at Elko, NV</u>
Attendance: 25 members of the public
Note: The Rangeland Resources Commission was present to film this meeting for use in a documentary on the public scoping process.

- The Fire Management RMP Amendment should be integrated with other existing plans (e.g., the sage grouse management plan). This coordination is important since there are other guiding documents currently in place and other planning processes under way in the area.

- The Fire Management RMP Amendment should address the burn periods historically found in the area. Pre-historic burn periods may have varied from 10 to 100 years, depending on the vegetation type and other factors. On average, the burn cycle for our region may be 50 years (average of all vegetation types and conditions). Assuming that the region would benefit from a 50-year average burn cycle, then the BLM would need to burn 600,000 acres/year. The BLM should move toward that goal, which could be determined by evaluating the pre-historic burn period.

- The BLM should utilize local resources more often to help manage fire. Increased use of local resources would reduce costs. The local population has the greatest vested interest in suppressing fires on or near their land/resources.

- The efficiency and success of initial attacks has improved from the "old days." There seems to be a reduced level of politics than from prior times, including quicker response time, streamlined procedures and better coordination with local ranchers.

- Suppression methods are limited whenever cultural resources are present, or suspected of being present. Cultural resources would incur greater damage from very hot fires than from the immediate use of fire suppression actions. Preemptive measures to manage fires, such as fuels reduction in culturally sensitive areas, could be achieved through such measures as the prescribed use of the herbicide, Spike™ (Tebuthiron).

- Grazing could be used as a tool to reduce fuel loads. The concept of managed grazing should be further explored to determine whether there are circumstances under which grazing could be utilized. This could include managed grazing on a burn parcel by the second season if the appropriate conditions are present.

- Grazing management must be coordinated with the needs of wildlife. In general, grazing and other fire management techniques should not compromise the health of wildlife habitat.

- Large fires can be the greatest detriment to wildlife. Ranchers help enhance and manage wildlife habitat, and grazing helps reduce the potential for large fires.

- The management of Wilderness Study Areas (WSA) is impeding fire management activities. A BLM WSA is a roadless area, or island, that has been inventoried and found to possess wilderness characteristics as described in Section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1964. Since this designation is made by federal law, the Fire Management RMP Amendment process cannot modify this designation. In the Amendment, it should be made clear that suppressing fire within a WSA is not precluded, and should otherwise clarify strategies for suppressing and managing fires within WSAs.

- Currently, the BLM recommends a 2-year rest from grazing post-fire. The post-burn grazing of cheatgrass can help feed cattle and improve the establishment of native vegetation if the cattle are removed prior to the emergence of natives.

- Deviations from the recommended 2-year rest should be reevaluated on a case-by-case basis. Under the right conditions, grazing may be able to resume more quickly post-burn. Examples of where a longer rest may be needed could be in select areas that have been ranched too aggressively or if conditions do not favor a quick recovery of native vegetation. Such areas may require a longer rest to recover from the combined effects of fire and aggressive ranching methods.

- It was suggested that the BLM should employ alternative management techniques. The effectiveness of the various techniques could be studied through the establishment and monitoring of test plots. The BLM should be flexible in the methods they pursue. For example, the University of Nevada Cooperative Extension is assessing grazing on test plots that were seeded (seeded plots where grazing was allowed vs. not allowed). The Extension has collected their first season of data and the results of those initial studies will soon be available.

- Some areas are susceptible to repeated burns, such as the I-80 corridor. Furthermore, where there used to be burns that affected 500 to 2,000 acres, we now have 6,000-acre burns in those same general areas. The Fire Management RMP Amendment should address the factors that contribute to such patterns.

<u>September 26, 2001 at Eureka, NV</u>
Attendance: 10 members of the public

- Fire suppression is a leading industry in this region. The lack of grazing in some areas may be the major cause of fire, which therefore supports the fire industry. We should focus on making livestock the leading industry.

- It is more economical to immediately put out small fires than to suppress larger fires.

- It appears that fires of recent years are more of a problem than they used to be. Many factors influence the occurrence of fires and their ultimate size and effect on the landscape (e.g., the weather cycle, the modern emphasis on suppression, and past disturbance at unacceptable levels that resulted in an adverse change in fuels). These factors are

complex. A summary on the interplay of such factors will be included in the Fire Management RMP Amendment.

- Fire suppression can be impeded by the delays in waiting for archaeologists to arrive and check for cultural resources before bulldozer work can begin. Known cultural resource sites could be noted on maps and used for the initial identification. Fire suppression activities should not be delayed unless a cultural site is identified in the area. Additional measures should include training BLM staff to identify cultural and environmental resources, therefore facilitating resource protection and fire suppression activities.

- Heavy equipment, such as bulldozers, should be continually working once on site. Local heavy equipment resources should also be used since they have more of a vested interest in fire suppression in their area. Money should be spent to buy equipment that locals could use vs. paying for non-local operators.

- Better coordination is needed between local volunteer fire departments, the Nevada Department of Forestry, the BLM, the Forest Service and land management agencies adjacent to the Elko BLM District. In addition, an incident commander who cares about the local area and is accountable for the results of the team should lead the fire fighting efforts.

- It is more economical to redirect funding from fire suppression to fire rehabilitation. Efforts would then be spent rehabilitating an area rather than putting all fires out.

- Federal funding for fire suppression may be reduced in the future (in light of other world concerns), and fire suppression may have to focus on strategies to prevent catastrophic fires. Therefore, fuels should be reduced to minimize the need for such large-scale suppression efforts.

- It was agreed that prescribed burning was appropriate for some areas, and should be tried whenever resource specialists will allow it.

- When grasses are dominant, range management may be one tool to reduce fuel. It was suggested that sheep be used for grazing in areas where range management is needed.

- Green strips, generally ¼-mile wide, are another tool in fighting fire. The purpose of creating a green strip is to slow down the fire; therefore, flashy fuels within the strip must be eliminated. It was stated that the use of kochia (a broad-leaved herbaceous plant) in the green strip is effective, as this plant stays relatively green and provides food for wildlife. Green strips can be maintained by brush beating, prescribed fire and chaining. It was cautioned, however, that while green strips are generally effective, they cannot prevent very hot fires from moving through these areas.

September 27, 2001 at Jackpot, NV at Cactus Pete's Ballroom
Attendance: 4

- The BLM Elko Field Office should compare areas designated as "Fire Class A" (full suppression areas) with areas identified by wildlife biologists to be sage grouse habitat.

- Fire Class polygons include several designations (e.g., A, B, C, D and U) and subclasses. The District will be analyzing whether existing subtypes may be adjusted and how. Some existing polygons may be further subdivided to separate resources within an area (e.g., separate pinyon-juniper from mixed conifer); in other cases, existing polygons could be lumped if it is determined that the fire management strategy is effectively the same between neighboring polygons. In general, the subdivisions within a Fire Class were created to separate resources (e.g., cultural sites, cheatgrass, and big sagebrush areas) or geographic areas (e.g., Municipal Watersheds, Spruce Mountain, and Intermixed Woodlands, NE Corner), and as such, there is not a simple explanation of what defines the subtypes.

- The Fire Management RMP Amendment should include an explanation of what future conditions would lead to the reclassification of any Fire Class to another (i.e., Fire Class B to Fire Class A or C). The Amendment should include a table summarizing what each Fire Class is, and the varying combination of events that would lead to reclassification of the Classes.

- Improvements have been made in the delays caused when a cultural resource specialist must evaluate the area for cultural resources prior to beginning suppression activities, which could lead to disturbance. Now, the incident commander generally undertakes the role of the cultural resource specialist and, in some cases, may be able to assess an area for the occurrence of cultural resources.

- The challenge of preparing the Fire Management RMP Amendment was appreciated. In order to address fire management, the Amendment must address all resources, which is a comprehensive and complex task.

- Plant community restoration is important for the long-term viability of an area, and vegetation attributes that indicate the plant community has been restored are independent of those for grazing. It was suggested that the post-burn monitoring guidelines used by the BLM be included in an appendix to the Fire Management RMP Amendment (e.g., aspen must attain a specific height before grazing can return). These guidelines should be used to determine when post-burn grazing can occur.

- The BLM should get the consent of the leasee prior to conducting vegetation treatment in an area. The BLM strives to gain the support of affected interests in order to achieve resource management objectives.

- The resource management objective in an existing cheatgrass area, which has a low-grazing capacity, is to improve the vegetative cover. That objective is aimed at the long-term viability of the vegetation and is not an objective to improve grazing.

September 28, 2001 at Wells, NV at the Wells City Hall
Attendance: 21 members of the public

- The landowner (or permitee) should be allowed to accompany the District's suppression operator.

- The 2-year rest from grazing post-fire is too long. Although restrictions need to be applied, it would be preferable if use of the land could be regained sooner as circumstances allow. For instance, restrictions during the first spring are understandable, but it seems logical to allow cattle to return to the area by September, just like wildlife return to an area post-burn. During the second spring post-burn, cattle could be restricted again. The BLM responded by saying that there are several instances where permitees have been allowed to resume grazing after a fire before two years have passed. It should also be understood that there may be cases where a 3rd year of rest may need to be imposed. The 2-year rest is a recommendation, and overall, flexibility on when grazing may occur is allowed.

- Cattle are an effective means of knocking seed off of the plant and working it into the ground. Thus, if you remove cattle, this action is also removed.

- Landowners should be provided information relating to the seed mixes used for rehabilitation. These mixes should never be entirely sagebrush and should include grasses. One characteristic of a successfully rehabilitated site should be the regeneration of a relatively diverse vegetation community. The degree of diversity preferred may vary from site to site; however, the structural diversity that is obtained from including some woody component to the seed mix is generally a positive attribute. In many cases, the goal is to re-establish sagebrush habitat; however, grasses would typically still be included in the seed mix. Another positive component of seed mixes is Kochia because of its high protein content. Inclusion of this plant in the seed mix can increase the utilization of an area within one year as compared to areas where it was not used.

- The BLM cannot do anything in Wilderness Study Areas (WSA) that would reduce the suitability of the WSA to function as wilderness. In particular, the BLM is not supposed to enter a WSA with mechanized equipment to perform suppression measures. These areas are designated based on Section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1964. Since this designation is made by federal law, the Fire Management RMP Amendment process cannot modify this designation. The public could encourage Congress to resolve or modify what is allowed in WSAs.

- A clear chain of command should be used to organize and direct local resources to attack the fire first. The BLM should only bring in help from outside the area as a last effort. The government should not make a business out of suppressing fires.

- The BLM should conduct more joint training, especially with volunteer fire departments (VFD). Training sessions should be held during evenings or weekends because most of those who participate in VFDs cannot attend weekday classes.

- Aerial attacks could be more effective. The ideal time to schedule an air attack is during the morning when the air is calm.

- The amount of money spent by the BLM on fire fighting seems too high. This amount could be reduced if some of the money went to local VFDs; they have more of a vested interested in suppressing the fire efficiently and could possibly do so more cost effectively.

Issue Exercise

During the public meetings held on September 25, 26, 27 and 28 in Elko, Eureka, Jackpot and Wells, attendees participated in an issue identification exercise for the Fire Management Amendment. Each person was asked to write down the issues or suggestions they have for the Amendment. If a comment was already on the presentation boards, they were asked to place a green dot adjacent to it if they supported the comment and a red dot if they did not. The following table lists (in ascending order of concern) issues/comments received or supported during the public meetings.

- Citizens would like to see more use of the local community to fight fires. Reasons cited include reduced cost, more local knowledge, more equipment and faster response time.
- Allow more dormant season grazing use after a burn. Do not simply close allotment for 2 years following a burn.
- The local community would like to see greater use of grazing to manage fuel loads.
- The use of prescribed fire, mechanical manipulation and herbicide are acceptable means to manage high fuel load areas.
- Local ranchers would like to see the development of forage banks provided in the event of the loss of grazing land.
- Land should be managed for wildlife and ranching.
- Citizens expressed concern over the present economic incentives to allow burns to grow larger, thereby creating more jobs to manage and fight the fires.
- The historic and natural burn cycle should be re-established.
- Citizens expressed concern over delays in fighting fires due to cultural resource investigations.
- The protection of livestock forage should be a priority.
- Once equipment has been deployed to a fire, there should be no delays in its use.
- The impact of fire management strategies on local economies must be a priority.
- People would like to see more public education regarding fire management, especially for isolated communities.
- Citizens would like to see more rapid and larger response utilizing local forces to put out fires in a timely manner.
- Residents are concerned with the threat of fire to home and property.
- Management should utilize bombers/helicopters to put out fire quicker.
- Emergency stabilization and rehabilitation after fire should be a priority.
- Citizens feel that fire suppression is an industry, and they would prefer to switch the economic focus to grazing for fire prevention.
- Grazing should be used to manage fuel in green strips.
- Citizens agree that invasive weeds should be controlled after fuel management prescriptions and fire.
- Nevada Department of Forestry should work in a conjunction with the BLM.
- Outside tactical leaders should be accompanied by a local liaison to explain local conditions.
- The protection of big game habitat should be a priority.
- Use of grazing should be balanced with the management of wildlife habitat.
- Grazing for fuel management does not work with sagebrush and pinyon juniper.
- Costs could be minimized by prioritizing which fires to suppress.
- The timing of reseeding is important for rehabilitation.
- Citizens feel that the limitations put on ranchers do not help fire management.
- Overgrazing will not improve resource health.

- Pilot studies using alternative management techniques to test ideas should be implemented (Battle Mountain and Cottonwood Ranch).
- Herbicides should be used to create breaks and for fuels reduction.
- Forested areas should be allowed to burn.
- FMA should include method to track historic fires. The same places are burning and frequency is increasing.
- Dispatch is doing a great job.
- Plans should be integrated with adjacent districts.
- FMA should include provisions for fighting fires in Wilderness Study Areas (WSA).
- It was agreed that management of blowing dust and ash should be included.
- FMA should plan for a lower level of federal funding.
- Riparian areas should be protected.
- Sensitive species habitat should be protected.
- Watersheds should be protected.
- Citizens agreed that they would like more communication.
- Residents would like to see more money put into rehabilitation instead of suppression.
- In areas where fighting fire would be difficult, they should be reclassified for a "lower" letter - B to C – allowing some fires to burn.
- There should be accountability for decisions and for results.
- Add more firebreaks to reduce the risk of large fires.
- FMA should address the visual impacts of fire management.
- Broaden suppression activities through additional funding.
- Consider potential landslides, erosion/sedimentation when looking at fire management strategies.
- Do inventories of cultural resources ahead of time.
- Integrate other planning activities, such as the Statewide Sage Grouse Management Plan.
- Fighting fire is more effective at night (5 pm to 5 am).
- Fire closure language should be revisited and clarified.
- Focus the protection of cultural resources to known significant resources.
- Improve the types of seed mixtures and communicate the type to ranchers prior to their use.
- Integrate volunteers fully with BLM staff. (e.g., bring Wells Volunteer Fire Department together w/ BLM, etc.)
- Define the impact of herbicide related to sage grouse.
- Keep website up-to-date regarding the status of existing fires (see Winnemucca for example).
- Landowners should work with the incident commander during a fire.
- Livestock should be allowed to graze on cheatgrass.
- Citizens believe aerial attack would be more efficient (better timing).
- Protection of artifacts/cultural resources should be a priority.
- Citizens agreed with protection of Humboldt River.
- Residents would like to see an evaluation of public vs. private firefighters.
- Livestock should be returned by 2nd growing season.
- Citizens expressed concerns over seeding sagebrush in areas that may not make sense.
- Define fire polygons associated with key sage grouse habitat.
- Should rehabilitated areas be changed from B to A ?
- All BLM policies need to be streamlined.
- The cost of suppression is escalating.
- Thinning in forested areas does not help.
- Use resources from all agencies to fight fires.
- Utilize existing studies/recommendations.

- Utilize livestock to establish seeds.
- Define why an initial attack would be conducted on a C or D polygon.
- Define why rabbitbrush/sagebrush is in seed mixes.
- Define why WSAs should burn in the right conditions.
- Wildlife managers need to be integrated in all processes.

These issues were considered in the development of alternatives. For example, grazing was considered as a tool in all alternatives.

Public Meetings – May 20, 21, 22 and 23, 2002

At each public meeting, Joe Freeland (Elko District Fire Management Officer) gave a slide presentation that included a description of the purpose and need for the FMA, the proposed alternatives and the preferred action. Mr. Freeland described how the draft FMA has addressed many of the concerns heard at the previous public scooping meetings. Mr. Freeland presented how the FMA provides a balanced, long-term approach to managing fire that stresses fire prevention activities and an appropriate response to fire. Mr. Freeland pointed out that the other alternatives do not fully address the concerns of public. Mr. Freeland also pointed out that the Amendment would not address large-scale changes or existing polices, but instead would focus on using available tools to help manage fire. Information from the public meetings will be used to refine the draft FMA and EA, available for public review in June, 2002.

Following is a summary of comments made by the public during each public meeting:

May 20, 2002 at Elko, NV
Attendance: 6 members of the public

- The Fire Management Amendment should stress the use of local resources to manage fire. The FMA encourages immediate response in most areas. An accompanying document, the "Fire Plan", prepared by the Fire Management Officer will outline the operational framework to implement components of the FMA, include response tactics.
- Due to the recent fire history, the loss of big game habitat is becoming an increasing concern. The FMA has addressed this concern by creating several new polygons focused on the preservation of critical big game habitat.

May 21, 2002 at Eureka, NV
Attendance: 5 members of the public

- Advance planning for allotments focusing on fire prevention activities should be conducted.
- The plan should include an alternative FMC for WSA's in case their status changes.
- Weed treatments should take into account fire prevention objectives.

May 22, 2002 at Jackpot, NV
Attendance: 0 members of the public

- No comments were made at this public meeting

May 23, 2002 at Wells, NV
Attendance: 2 members of the public

- Proposed rehabilitation efforts need to be clearly communicated to the allotment holder, including fencing location and seed mixes.
- The use of local resources and personnel should be encouraged. Personnel should be trained and equipment certified.
- A local liaison should work with the incident commander. When possible, the incident commander should be from the region.

Issue Exercise

During the public meetings held on May 20, 21, 22 and 23, 2002 in Elko, Eureka, Jackpot and Wells, attendees were asked to revisit the issues identified in the previous scoping meetings. Each person was asked to place dots beside the issue they wanted to reemphasize or to write down additional issues. The following table lists (in ascending order of concern) issues/comments received or supported during the public meetings.

- Citizens would like to see more use of the local community to fight fires. Reasons cited include reduced cost, more local knowledge, more equipment and faster response time.
- The local community would like to see greater use of grazing to manage fuel loads.
- Landowners should work with the incident commander during a fire.
- The protection of livestock forage should be a priority.
- Once equipment has been deployed to a fire, there should be no delays in its use.
- The impact of fire management strategies on local economies must be a priority.
- Improve the types of seed mixtures and communicate the type to ranchers prior to their use.
- Add more firebreaks to reduce the risk of large fires.
- Fighting fire is more effective at night (5 pm to 5 am).
- Livestock should be allowed to graze on cheatgrass.
- Protection of artifacts/cultural resources should not be a priority.
- Forested areas should not be allowed to burn.
- Fire closure language should be revisited and clarified.
- Allow more dormant season grazing use after a burn. Do not simply close allotment for 2 years following a burn.
- Land should be managed for wildlife and ranching.
- Define why rabbitbrush/sagebrush is in seed mixes.
- FMA should plan for a lower level of federal funding.
- Due to the recent fire history, the loss of big game habitat is becoming an increasing concern. The FMA has addressed this concern by creating several new polygons focused on the preservation of critical big game habitat.
- Advance planning for allotments focusing on fire prevention activities should be conducted.
- The plan should include an alternative FMC for WSA's in case their status changes.
- Weed treatments should take into account fire prevention objectives.
  Proposed rehabilitation efforts need to be clearly communicated to the allotment holder, including fencing location and seed mixes.

Federal Register Notice

Elko and Wells Resource Areas Management Plans, Nevada
[Federal Register: April 25, 2001 (Volume 66, Number 80)]
[Notices]
[Page 20830-20831]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr25ap01-78]

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
[NV-010-2810-HT]

Elko and Wells Resource Areas Management Plans, Nevada

AGENCY: Bureau of Land Management, Elko Field Office, Elko, Nevada.
ACTION: Notice of Intent To Amend the Elko and Wells RMPs for Fire Management and Initiate a 30-day Public Review and Comment Period.

SUMMARY: The Elko and Wells Resource Management plans (RMPs) were completed in 1987 and 1983, respectively, for the former Elko and Wells Resource Areas of the Elko District of BLM. These two Resource Areas have since been combined into the Elko District which is managed by the Elko Field Office Since inception, the Wells RMP has been amended for elk, utility corridor, and wild horse issues, while the Elko RMP has never been amended. Neither RMP addresses fire management issues in a comprehensive way, and this lack of coverage has created management challenges for the Elko Field Office in recent years. Neither RMP anticipated the growing importance of the role of wildfire in natural and managed ecosystems, nor the increase in wildfire occurrence, intensity, and numbers of acres burned in the Elko District. This increase in wildfire activity has had serious impacts on natural resources, as well as on public land users who rely on these resources.

The proposed plan amendment to revise the Elko and Well Resource Management plans will provide fire management guidance to address issues raised by local state and federal agencies, county governments, Native Americans, ranchers, and environmental groups. Issues and planning criteria identified to date are listed in this Notice under Supplementary Information.

DATES: Meeting dates and other public participation activities will be announced in public notices, the local media, or in letters sent to interested and potentially affected parties. Persons wishing to participate in this amendment process must notify the Elko Field Office at the address and phone number below. Comments on the proposed issues and planning criteria must be submitted during the public review and comment period from April 23, 2001, to May 23, 2001. The public may review the Elko and Wells RMPs at the address below:

ADDRESSES: All comments concerning the proposed fire management RMP amendment should be sent to the BLM Elko Field Office at 3900 East Idaho Street, Elko, NV 89801.

FOR FURTHER INFORMATION CONTACT: Joe Freeland, Project Manager, Elko BLM Field Office, at the above address or at (775) 753-0308.

SUPPLEMENTARY INFORMATION: This Notice satisfies the requirements in the regulation at 43 CFR 1610.2(c) for amending Resource Management Plan. The 5th Year RMP Evaluation completed in FY 2000 for the Elko RMP identified fire management as an important issue that was not
adequately addressed in the RMP, and for which an RMP amendment was recommended. A similar 5th Year RMP Evaluation will be completed for the Wells RMP in FY 2002. However, since the Wells RMP also lacks any substantive coverage of fire management issues, it is reasonable to recommend that a fire management amendment to this RMP be completed during the same process to amend the Elko RMP.

Issues regarding fire management identified to date include:

1. Suppression Strategy: The Elko Field Office RMPs currently offer little guidance on setting suppression strategies to balance maintenance of healthy ecosystems dependant on fire with protection of other resources. While some public land users advocate full fire suppression on all public lands, others feel that wildfire is a natural process that should be allowed in some areas. Many ranchers propose intensive livestock grazing as a strategy to reduce fuels in fire-prone areas, while other advocacy groups are concerned about the impacts from
this proposed strategy on native vegetation and wildlife.

2. Prescribed Fire Use: The use of prescribed fire is currently an area of public concern due to recent publicity over escaped burns in Los Alamos and California. The Elko District could benefit from prescribed fire use in high fuel load areas to reduce the potential impacts from severe wildland fire and to improve habitat. Local residents need to be involved with all prescribed fire planning and support any proposed prescribed fire projects.

3. Conversion of Sagebrush Habitat: Wildlife managers throughout the Great Basin are concerned over the precipitous decline in sage grouse numbers in recent years, thus causing an increased demand for the protection of sagebrush habitat throughout Elko District. Wildfire can both improve and devastate sage grouse habitat. Managing this habitat in view of competing resource uses and the spread of invasive, nonnative weeds throughout the district is a challenge for local land managers.

4. Emergency Fire Rehabilitation (EFR): Some EFR procedures are controversial, including fencing recently burned and/or rehabilitated areas to prevent grazing on fragile re-vegetation, as well as seeding with non-native grass species which out-compete noxious weeds and cheatgrass. Fencing burned areas in wild horse Herd Management Areas can disrupt movement of wild horses and are not popular with wild horse advocacy groups. Livestock owners are also concerned about the economic impacts of some EFR projects on their livelihood.

5. Forest Resources: Declining forest resources throughout the district put remaining stands at risk. Some stands need fire to insure forest ecosystem health. However, extensive fuels buildup could cause high intensity fires, leading to stand replacement as well as firefighter safety issues. In addition, Native Americans have concerns over the health of pinyon pine tree stands, since the tree and its fruit are important in maintaining their traditions.

6. Invasive, Nonnative Weeds: The significant resources required to fight noxious weed and cheatgrass invasions requires the cooperation of all landowners in affected areas in the district.

Wildfire management is one of the most important factors affecting the spread of these weeds in the Elko District.

7. Fire Suppression Costs and Affect on Local Rural Economies: Although high suppression costs affect all taxpayers, many local rural communities depend heavily on the influx of dollars from fire suppression efforts. Less fire suppression could lead to the saving of tax dollars and the possible improvement of some habitat values, however, several local economies may be negatively impacted by any changes.

8. Community Assistance: Better communication, training, and cooperation with local communities would aid in reducing the threat from wildfire in the wildland urban interface, reduce arson, trespass, and negligence occurrence, and encourage fire prevention.

BLM planning regulations (43 CFR 1610) require preparation of planning criteria to guide development of all resource management plans, revisions, and amendments. Planning criteria are based on: standards prescribed by applicable laws and regulations; agency guidance; the result of consultation and coordination with the public and other Federal, State and local agencies and governmental entities and Native American tribes; analysis of information pertinent to the planning area; and professional judgment. The following preliminary criteria were developed internally and will be reviewed by the public before being used in the amendment/EA process. After analysis of public input, they will become proposed criteria, and can be added to or changed as issues are addressed or new information is presented. The Elko Field Manager will approve all planning criteria, as well as any proposed changes:

-- The fire management RMP amendment will be completed in compliance with FLPMA and all other applicable laws and regulations.
-- The Elko Field Office Planning Interdisciplinary Team will work cooperatively with the State of Nevada, tribal governments, county and municipal governments, other Federal agencies, and all other interested groups, agencies, and individuals. Public participation will be encouraged throughout the planning process.
-- The RMP amendment will establish the fire management guidance upon which the BLM will rely in managing the Elko District, for the life of both the Elko and Wells RMPs.
-- The RMP amendment process will include an Environmental Assessment that will comply with all National Environmental Policy Act standards. --The RMP amendment will emphasize the protection and enhancement of Elko District natural resources, while at the same time providing the public with opportunities for use of these resources.
-- The lifestyles and concerns of area residents, including livestock grazing, recreational uses, and other land uses, will be recognized in the amendment.
-- Any lands located within the Elko District administrative boundary which are acquired by the BLM, will be managed consistent with the amendment, subject to any constraints associated with the acquisition.
-- The amendment will recognize the State's responsibility to manage wildlife.
-- The amendment will incorporate the Nevada Rangeland Health Standards and Guidelines and be consistent with the Nevada Sage Grouse Management Guidelines.
-- The planning process will involve Native American tribal governments and will provide strategies for the protection of recognized traditional uses.
-- Decisions in the amendment will strive to be consistent with the existing plans and policies of adjacent local, State, Tribal and Federal agencies, to the extent consistent with Federal law.

Freedom of Information Act Considerations: Public comments submitted for this planning amendment, including names and street addresses of respondents, will be available for public review and disclosure at the Elko Field Office during regular business hours. Individual respondents may request confidentiality. If you wish to withhold your name or address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your comments. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Dated: April 6, 2001.
Helen Hankins,
Elko Field Manager.
[FR Doc. 01-10210 Filed 4-24-01; 8:45am]
BILLING CODE 4310-HC-M

Elko and Wells Resource Management Plans Fire Management Amendment

Sample Newsletter

In July 2001, the Bureau of Land Management (BLM) initiated work on a Fire Management Amendment (FMA) to the existing Resource Management Plans (RMPs) for the Elko District. The Elko District is located in northeastern Nevada and includes both the Elko and Wells Resource Areas. Public meetings were held on September 25, 26, 27 and 28 in Elko, Eureka, Jackpot and Wells. The information obtained at these meetings assisted in the development of draft FMA strategies.

Air tanker near Elko and Mountain City. August 6, 2001
Photo: Shawn Gibson, Archaeologist, BLM Elko

Purpose of Planning Effort

This FMA is being developed to provide overall direction as well as define operational procedures for fire management activities within the Elko District. Development of the FMA is being guided by the following goals:

- **Provide for the protection of life and property.**
- **Provide for the protection of habitat required by special status species.**
- **Provide for safe and cost effective resource protection and enhancement.**
- **Reduce hazardous fuels.**

The BLM Elko District covers 12.5 million acres, of which approximately 7.5 million acres are managed by the BLM Elko Field Office. Cooperative initial attack agreements are in place with the Battle Mountain, Winnemucca, Ely, Salt Lake and Upper Snake River Field Offices of the BLM. In addition, there are cooperative agreements with the Elko Interagency Dispatch Center (EIDC), U.S. Forest Service, Bureau of Indian Affairs and the Nevada Division of Forestry (NDF). The Elko Field Office is considered to be one of the highest fire load field offices within the BLM. For the base period 1996 through 2000, the District averaged 32 fires that burned an average of 224,348 acres annually. Although wildland fires can occur on a year-round basis in the Elko District, the primary season extends from May 11 to September 27.

Public Scoping Meetings

You are invited to attend public meetings on the Elko/Wells RMP Fire Management Amendment. Four public meetings will be held:

May 20, 2002	**May 21, 2002**	**May 22, 2002**	**May 23, 2002**
Elko, Nevada	**Eureka, Nevada**	**Jackpot, Nevada**	**Wells, Nevada**
High Desert Inn	**Eureka Opera House**	**Cactus Pete's Ballroom**	**Wells City Hall**
3015 Idaho Street	**31 South Main Street**	**1385 U.S. Highway 93**	**1279 Clover Ave.**
Time: 7-9 PM	**Time: 7-9 PM**	**Time: 7-9 PM**	**Time: 7-9 PM**

The public is welcome to attend at any time during the two-hour meeting period. A presentation is scheduled at the beginning of each meeting to provide general information on the planning process. The meeting format is intended to promote interaction and provide opportunities to make written and verbal comments.

Overview of Process/Schedule

The overall planning process has focused on the development of an Environmental Assessment (EA), Biological Assessment (BA), and Fire Management Amendment (FMA). These documents have incorporated public and regulatory comments as well as guidance received through the initial public meetings. The Fire Management Amendment process will be completed within the next 6-month period. Project milestones will include:

- Project Initiation: July 2001
- Data Collection: August 2001
- Public Scoping Meetings: September 2001
- Draft FMA, EA, & BA: May 2002
- Public Meetings on Draft FMA: May 2002
- Final FMA: September 2002

Plan Development

A preferred direction has been identified based on information from a variety of sources, including phone calls, e-mails, public meetings, and letters from individuals and groups.

This proposed action in the FMA is a balanced approach to fire management, providing a range of appropriate strategies for fire management. The proposed action recognizes that wildfire can have a positive or negative influence on resources in the District, depending on geographic location, resources present, land use, fire size, desired vegetative goals, weather and existing fuel conditions.

The FMA uses a number of strategies to address general fire management, fire prevention, fire response and fire rehabilitation on public lands in the District. Implementing these strategies would begin in the year 2002. As illustrated in the attached map, fire response is primarily based on suppression and the protection of resources and property, but also allows some flexibility to use other strategies when appropriate (prescribed fire, fuel reduction, fuel breaks, green strips, clearing, etc.).

The FMA focuses on the integration of fire management strategies to improve the long- term management of fire.

It is anticipated that the upcoming public meetings and other opportunities to comment will lead to additional refinements of the draft FMA.

Photo: Bryan Day
National Interagency Fire Center

How You Can Be Involved

Numerous opportunities for public comment are available, including the upcoming public meetings. Anyone interested in this planning effort is also encouraged to visit the project web page at **http://www.nv.blm.gov/elko**. This site will contain information on current project activities and status, as well as a comment form.

Comments may be e-mailed to:

Joe_Freeland@nv.blm.gov

Or you may write to:

Bureau of Land Management
Attention: Joe Freeland
3900 East Idaho Street
Elko, NV 89801
Or phone: (775) 753-0200

Appendix 1 – Part B

Proposed Elko/Wells Resource Management Plan
Fire Management Amendment

Letters of Comment
on
September 2002 DRAFT

Letter A – U.S. Fish and Wildlife Service (USFWS)
Letter B – Nevada Division of Wildlife (NDOW)
Letter C – Goods From The Woods (GFTW)
Letter D – Nevada Division of Environmental Protection (NDEP)
Letter E – Committee for the High Desert and Western Watersheds Project (High D)
Letter F – Nevada State Historic Preservation Office (NSHPO)
Letter G – Wildlife Management Institute (WMI)
Letter H – Mark Belles (MB)

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Nevada Fish & Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502

December 13, 2002
File No. BLM 6-1

Memorandum

To: Field Manager, Bureau of Land Management, Elko Field Office, Elko, Nevada
(Attention: Joe Freeland, Fire Management Officer)

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Comments on the Elko/Wells Resource Management Plans, Draft Fire Management Amendment and Environmental Assessment

We have reviewed the Elko/Wells Resource Management Plans, Draft Fire Management Amendment (FMA) and Environmental Assessment (EA) dated September, 2002, and received for review by this office on October 21, 2002. The FMA has been prepared to address the need for an integrated approach to fire management, and the EA analyzes the potential impacts of implementing the FMA.

The project area is the Bureau of Land Management Elko/Wells District which is located in northeastern Nevada and includes Elko County and portions of Eureka and Lander counties. The Elko/Wells District encompasses approximately 12.5 million acres, of which the District manages 7.5 million acres. The FMA/EA consists of four key components to manage the occurrence and severity of fires in the District: 1) general fire management; 2) fire prevention; 3) fire response; and 4) fire rehabilitation. Our comments and recommendations on the FMA/EA are provided below.

General Comments

In general, we found the document to be well written and the analysis to be based on both the current understanding of the historical role fire played in the types of ecosystems found in the district and on the current status of the lands managed in the district. Based upon our review of the draft FMA/EA, we support the selection of the proposed action. This alternative provides a balanced approach between the need to suppress fire in some areas of the district, such as the urban interface, and the need to introduce fire back into the ecosystem, such as wilderness study areas.

Within Chapter 3, we noted that some sections include discussion of fire effects but others do not. For example, the sections on Air Quality and Soils give comprehensive descriptions of the effects of fire on those resources. However, the section on Migratory Birds has no discussion of fire effects, while the discussion of fire effects on Water Resources is included in Chapter 4. We suggest making the discussion of fire effects in Chapter 3 consistent from one section to another.

Additionally, some sections reference scientific peer reviewed articles while others do not. This makes it difficult to review the information provided not knowing if the information is based on science, experience, or speculation. We realize that all the topics included in the EA have not been studied scientifically; however, the source or rationale for conclusions made in the document should be stated clearly.

Use of adaptive management and monitoring are important management tools that should be incorporated into the proposed action. Adaptive management uses information from past management experience to evaluate both failure and success and to explore new management direction (Kershner 1997). Monitoring provides the information needed to evaluate management activities (Kershner 1997). We recommend that you have a monitoring plan in place that will allow you to track both natural and prescribed fire to determine whether or not implementation of the FMA is having desired effects. It may be useful to publish a yearly fire season report documenting how much area burned and where it burned, allotment openings and closures resulting from fire, rehabilitation efforts, and other activities. This document would assist both of our agencies in tracking the environmental baseline for the listed species and species of concern in the Elko/Wells District.

Specific Comments

Page 2-3. Last paragraph, 8th bullet.

Replace "Laotian" with "Lahontan".

The term "historic habitats" should be replaced by native range throughout the document when referring to Lahontan cutthroat trout (LCT).

Page 3-6. F. Water Resources, 3rd paragraph.

Impaired water bodies are listed in EPA's 303(d) list, not 3030(d) list.

Page 3-13. N. Migratory Birds.

A recent publication entitled "The role of disturbance in the ecology and conservation of birds" (Brawn et al. 2001) may be germane to the analysis presented in this section.

Page 3-15. P. Wetlands and Riparian Zones.

A recent publication entitled "Fire and riparian ecosystems in landscapes of the western USA" (Dwire and Kauffman in press) may be germane to the analysis presented in this section.

Page 3-20. Q. Vegetation-Pinyon/Juniper

A recent publication entitled "The role of fire in juniper and pinyon woodlands: a descriptive analysis" (Miller and Tausch 2001) may be germane to the analysis presented in this section.

Page 3-20. Q. Vegetation-Aspen.

There are copious amounts of scientific literature on the effects of fire on aspen stands. Relevant information may be found in Shepperd et al. 2001. We suggest you include additional discussion on the effects of fire on riparian cottonwood tree species *(Populus* sp.) (See Gom and Rood 1999).

Page 3-24. R. Noxious/Invasive Weeds

The second sentence states "available literature suggests that most noxious weeds occur on disturbed areas frequently used by livestock, wildlife and humans", however, the pertinent literature is not referenced here. Please provide documentation for this section.

Page 4-13. F. Water Resources.

This section describes the negative effects of fire on water resources. Post fire erosional processes that deliver sediment to streams over long periods of time due to the lack of revegetation, roads, or fire lines can have long-term negative effects on aquatic ecosystems (Lotspeich et al. 1970; DeByle and Packer 1972). However, short-term pulses of sediment and large woody debris, often associated with functioning terrestrial and aquatic ecosystems during post-fire landslides and debris flows, may be beneficial. Over time, large woody debris and sediment are moved downstream by fluvial processes which form productive aquatic habitats (Reeves et al. 1995, Benda et al. in press, Miller et al. in press; Minshall in press). The most effective way to reduce the negative effects of fires on aquatic systems is to protect the evolutionary capacity of these systems to disturbance (Bisson et al. in press). Restoring physical connections among aquatic habitats may be the most effective and efficient step in restoring or maintaining the productivity and resilience of many aquatic populations (Bisson et al. in press; Dunham et al. in press; Rieman et al. in press, Rieman and Clayton 1997, Pilliod et al. in press). We should focus on protecting aquatic communities in areas where they remain robust and restore habitat structure and life history complexity of native species where it is possible (Gresswell 1999). However, where restoring connectivity between aquatic populations is not feasible, active management to reduce the impacts of fires and fire suppression actions may be an important short-term conservation strategy (Brown et al. 2001; Rieman et al. in press).

Wildfire and fire suppression effects on aquatic biota should also be discussed in this section. Minshall et al. (1989) speculated that chemical toxicity from smoke or ash would cause fish mortality in second and third order streams. Ammonia and phosphorus levels have been documented to be above lethal limits to fish during fires (Spencer and Hauer 1991). Water temperature may also increase after riparian vegetation is burned; however, predicting the biological consequences is difficult (Beschta et al. 1987).

Macro invertebrates can also be affected by wildfires (Minshall et al. 1995, Minshall in press, Spencer et al. in press). The most ecologically significant change is an apparent shift in functional feeding groups from shredder and collector dominated communities, usually associated with allochthonous production from the riparian vegetation, to scraper and filter feeder dominated communities (autochthonous production from increased sunlight and temperature) (Jones et al. 1993).

The use of retardant and foams and construction of dozer lines in the proximity of streams are the primary concerns with fire suppression activities. The use of heavy equipment near streams may destroy riparian vegetation, disturb stream channels, and increase sedimentation. Fire retardants and surfactant foams are known to be toxic to aquatic organisms (Jones et al. 1989, Gaikowski et al. 1996a, Gaikowski et al. 1996b, McDonald et al. 1996, McDonald et al. 1997, Buhl and Hamilton 1998, Buhl and Hamilton 2000, Little and Calfee 2000, Little and Calfee 2002a, Little and Calfee 2002b, Little et al. 2002). We recommend inclusion of a discussion of these potential effects, and include a reference to the SOPs in Appendix 3 requiring a 300-foot buffer zone around aquatic environments when using these chemicals during suppression activities.

Page 4-28-29. M. Special Status Species, 5th paragraph.

We recommend that this section emphasize that to the greatest extent practicable, fire suppression and fire rehabilitation activities in the Elko/Wells District will conform to management recommendations and plans developed by local area planning groups working on the Nevada Sage Grouse Conservation Strategy.

Additionally, the EA references SOPs for sage grouse in Appendix 3, however, these SOPs were apparently omitted from appendix. We recommend adding sage grouse SOPs to Appendix 3 and listing all the measures for fire suppression and emergency fire rehabilitation that are provided on pages 13 and 14 of the Nevada BLM State Office Guidance for sage grouse habitats in Nevada.

Page 4-31. 2nd paragraph.

Replace "Lahanton" with "Lahontan".

Page A3-2. SOP #6. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

This statement contradicts Rehabilitation Measures on Page A3-3 #G which states impoundments or diversions structures constructed to facilitate extraction of water from the stream during fire suppression efforts will be removed.

We appreciate the opportunity to provide comments on the FMA/EA. If you have any questions or require additional information, please contact me or Chad Mellison at (775) 861-6300.

Robert D. Williams
Field Manager, U.S. Fish and Wildlife Service

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*All of the In Press Forest Ecology and Management citations can be found at http://www.fs.fed.us/rm/boise/teams/fisheries/fire/workshop papers.htm

STATE OF NEVADA
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December 11, 2002

Joe Freeland
Fire Management Officer
Elko BLM
3900 E. Idaho Street
Elko, NV 89801

Dear Joe,

The following represents further documentation of a pervious e-mail which was sent to you concerning the Draft Fire Plan Amendment for the Elko District. Again I'm sorry for such a late response. On page 2-28 under the heading Rangeland Health/Grazing Management the issue is wildlife use of fire closure areas.

> I realize that livestock interests pushed this approach. We have yet to see wildlife use compromise vegetative response to a burn like domestic livestock can and do. I think our position on this issue is that we don't want to see wildlife compromise the outcome of fire rehabilitation efforts and we would work within the public process with the Bureau to address the problem should it ever occur. I do object to the last two sentences "If big game and/or wild horse numbers are left to increase or just impact rehabilitation areas at current levels without controls, it could have a detrimental effect on the condition of the rangeland resources. In addition, potential grazing and browsing impacts on rehabilitation areas by wildlife and wild horses could also have an impact on existing and permitted livestock grazing levels." These sentences are redundant and imply that the Bureau and NDOW don't manage or don't want to manage these resources in the public's best interest. The bottom line is that the livestock industry feels that if they have to take the hit during fire closure, every one else should too regardless of documented problems. We will continue to work closely with the Bureau on monitoring of these burn rehabilitation areas in an effort to see that vegetative resources are given the best chance at recovery.
>
> While the plan addresses closure from livestock use for at least two growing seasons, it is my concern that in some instances two years may not be enough. Certainly we are beginning to see that once grazing is reauthorized on a burned area we cannot go back to business as usual (same number of livestock, same use dates). We may need to take a stair stepped approach in terms of numbers and a change in season of use. There is certainly no chance of post fire recovery in those allotments which still maintain season long use by domestic stock. Burned areas, especially areas which were in poor ecological condition prior to fire, are going to need additional long term changes in the way we graze domestic stock if we ever hope to promote full recovery. Joe, we greatly appreciate the opportunity to provide input into the District's Fire Plan.

Steve Foree, Supervising Habitat Biologist
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Elko Field Office
3900 Idaho Street
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November 20, 2002

Subject: **Elko and Wells Resource Management Plans Fire Management Amendment**

Joe Freeland
Elko District Fire Officer, Joe Freeland

Dear Mr. Freeland

I work with pinyon pine nuts harvested in Nevada, species p.monophylla. **Goods From The Woods**, my company sold 13,000 lbs of Nevada soft shelled pinon pine nuts in the course of 4 weeks in October 2002. The focus of my comments is the failure of this plan to include an analysis a significant resource, the pinyon pine nut. While on page 2-13 section C-notes that management objectives are for woodland products, the plan completely fails to address any aspect of pine nut production, treatment areas and tree stand age, cyclical production levels and subspecies of pinon. As such, the plan fails on its face to meet primary management goals.

Additionally, I wish to provide new information, which must be considered in the course of your planning. In particular, of the changing conditions in the Southwestern United States of pinyon forests. Because the Nevada pinyon ranges are subparts of larger ecosystems, it is important to examine and plan, based upon larger regional conditions and circumstances.

There has been **no harvest** of species **p.edulis pine nuts** for the last **three years.** The Arizona, New Mexico and Colorado Wildlife wild life species are in crisis as a result- of drought which has their food chain. The primary reason for the edulis crash is the draught, which is especially bad in the edulis forests. The lack of water has made the trees susceptible to insect infestation, which is destroying huge tracts of forest..

The Southwestern drought has put entire pinyon forest systems into jeopardy. In Arizona the pinyon forest already stressed by record-low rainfall, has been infested by a beetle wiping out sections of trees at a time [(2)] "We're talking statewide. How are we going to treat the whole state," said Joel McMillin, a U.S. Forest Service entomologist, noting that the bark beetle has spread to a landscape level." "**There is nothing that's going on nationwide that would be covering any kind of a problematic assessment within forest plans**." "It's got a stranglehold east of Walnut Canyon," Manthei said, noting the l00,000 dead pinyon juniper in the transitional forest area. 1.3 million trees have been ravaged in the Coconino National Forest alone, in an area ranging from Twin Arrows to Blue Ridge. [(3)] A pinyon pine group of 700,000 trees between Winona and Twin Arrows has fallen to the bark beetle, and the rim country alone has suffered losses as high as 500,000 acres.

These pinyon trees and their nuts, will not be replaced for 50 years, or 150 years in the case of p. monophylla. Therefore, the resource management plans need to be amended accordingly.

The relationship between pinyon nuts and migratory birds is well documented in Avian Impacts on Pinyon-Juniper Woodlands, Russell P. Dalada. Pinyon-Juniper Conference, 1984 p. 525. Collectively 70 species are known to breed in these woodlands. The larger the pinyon seed available, the better health one sees in these bird communities. No aspect of the relationship between pine nuts and forest animals has been considered in this plan. P.monophylla nuts arc becoming very important to the entire southwestern ecosystem. These migratory birds are going to rely upon the areas of pinyon forest with nut producing trees.

At this time, it is impossible to predict what numbers and types of wild life species may be migrating into Nevada, where there are pine nuts. While black bears are not currently included as inhabitants of this eco-system, I offer the following information as an example of the importance of indigenous nuts to animal populations. The natural diet of bears is 90 percent made up of nutritious plants - especially nuts, berries and grasses. Early-season frosts followed by the drought all but wiped out the bears' traditional diet. Those that didn't build up enough fat face starvation in their dens. Underweight females may end their pregnancies by reabsorbing their fetuses into their bodies or bear cubs too weak to survive.1 We personally provided 1,000 lb- of p.monophylla pine nuts, for wild life rehabilitation centers. and research protects involving wildlife, which would normally utilize p.edulis.

One indication of bears in search of food is human/bear encounters. Complaints about nuisance bears have soared by 7,000 percent in northern Nevada in the last 12 years.(4) In as much as a bear can travel 40 miles a day in search of food, it is not beyond reason, that some of these starving animals might end up in this region, looking for food.

I am offering the new information about the edulis harvest, together with realization that no problematic assessment address the larger issue of overall health of all pinyon species. This plan fails even to address, even in the simplest terms, the issue of pine nut production.

Additionally, the Nevada nuts are currently replacing the HUGE commercial market left void as the result of the p.edulis crises. In those traditional p.edulis markets, the whole sale price of p.monophylla went as high as $8.00 per pound. It is imperative that the resource management plans be revised to reflect the significance of the pinyon pine nut. Goods From The Woods, only marginally tapped into the market this year. Had we been aware of the huge demand for the nuts, we would have tripled our orders and sales. We discovered in October that there are hundreds of roadside venders who make a livelihood from the sale of pinyon pine nuts. The monophylla nut, was very successfully introduced as a substitute for the edulis. Thus, the economic impact of the woodland forest product plans must be revisited to include this new information. The fire plan would then-need to be revised accordingly.

Furthermore, plan has failed to take into account the following science:

PINYON PINE AND FIRE ECOLOGY

Singleleaf pinyon *(Pines monophylla,).* also called pinyon is a slow-growing. that grows on dry, low mountain slopes of the Great Basin.[5]

Singleleaf pinyon is one of the slowest growing conifers. It usually requires about 60 years to attain a height of 2 m (6.6 ft). [5] Generally, singleleaf pinyon trees do not begin bearing cones before they are 35 years old and do not begin producing good seed crops earlier than 100 years. Pinyon depends upon a standing crop of seedlings for species perpetuation. Seedlings require a nurse crop; thus, most seedlings are found under shrubs in mid succession and under the tree crown in late succession.[5]

Singleleaf pinyon trees more than 300 years old are fairly common on poor sues but rare on good sites. It appears that all the better sites were either burned in the past 300 years or have been cut over in the past century or so.[5]

The poorer sites are **virtually fireproof because** their sparse vegetation will not carry fire, and these sites were not cut because of the small size and poor form of their trees. [5]

Singleleaf pinyon communities does not carry fire well, and fire return intervals of several hundred years are considered typical [6-7]. For example, singleleaf pinyon communities in the San Bernardino Mountains have experienced long-interval stand-replacement fires both before and during suppression with an estimated fire interval of 410 years. Resulting in a mosaic of small scattered patches within uniform old-growth stands across the landscape [8-9]

Burning in pinyon-juniper woodlands requires at least 600 to 700 lb/acre of fine fuel [8]. In the absence of fire and the presence of grazing, tree densities have increased and undergrowth is so sparse in many areas that surface fuels do not support fire [9,10,11,12,14]

Susceptibility to fire depends on the stage of development of the pinyon stand. In young stands, enough shrubby and herbaceous vegetation often exists to carry fire over extensive areas. As the stand develops, understory vegetation becomes too sparse to carry fire, and the trees generally re too widely spaced to carry a crown fire except with the aid of extremely high winds (5). Thus, fire is ordinarily confined to younger stands and to a few individual lightning-struck trees in older stands.

In short, fire suppression efforts over the period of 30-40 years have had a minimal impact on the pinyon forests. However, massive vegetation conversion projects, prescribed burning, rangeland improvement projects have radically altered the region, as grassland development for cattle grazing has been the primary focus of land managers in the Western United States and the Nevada District as a whole. The fine fuel load of grasses, in particularly cheatgrass is the true cause of the catastrophic wild fire problem in Nevada.

> While the plan addresses cheat grass as a primary fire culprit, the vast amount of action, in terms of treatment is on other species of plants. In short, the plan correctly points out the problem, but rather than address the problem, it goes about its decades old cut the trees and make more range solutions. In short, this plan does next to nothing to correct the catastrophic circumstances creating the flash fuel loads. In fact the plan erroneously states that "live biomass" represents high fuel loads and greater risk of large fires. I will gladly provide citations on fuel loads and moisture content of live vegetation, in comparison to fine flash fuels, such as cheatgrass.
>
> Looking back into 2001 to fires in the Elko area, the Buffalo Complex fires. consisted of the Buffalo Fire and Hot Take Fire, both located about two miles south of Midas, Nevada. These fires covered 93,092 acres, yet this plan states, **"fire history is minimal"** p2-24, A 1 Urban Interface. That, like most large Nevada fires was a grassland fire:
>
> > *At first firefighter weren't sure what there was to save, as they traveled thorough parched range land and alongside the treeless Snowstorm Mountains and over drying creeks. This wasn't at all like the tall timber fires of the Pacific Northwest, where flames leap across trees and shoot 100 feet into the air. Here they saw fire sweeping across a desert floor that from a distance didn't even appear flammable" (LA Times 8/17/01)*
>
> Eight-hundred fire fighters received military assistance in battling this fire at a cost $1.7 Million. Similarly, the Spaulding fire was located thirty miles southwest of Winnemucca, Nevada, near the Clear Creek Fire occurred the same year.

The Spaulding fires burned through desert country with cheat grass, sagebrush and juniper. Small patches of forest, about 12% of the area inside the fire perimeter of 75,137 acres burned at higher elevations. Why treat trees (live biomass), when it is flash fuel which is the source of the problem?

I began correspondence with the Nevada BLM about my concerns ***in August of 2000*** about the number of forested public lands which have been deforested as the result of fuel reduction, maintenance, bush clearing and other treatment methods which favor grazing over sustainable forestry for these public lands. In particular the lack of consideration for the mature pinon pine trees, both from the commercial harvest and the obligatory species perspectives.

There exists only the most minimal research on p.mnnophylla seed production, harvest levels, and mature not producing, pinyon tree stands The entire Nevada BLM has repeatedly failed to consider the economic value of pinon pine nuts in its resource planning. This country imports between 5 and 8 million pounds yearly. It is a huge industry. Yet, the BLM is failing in every aspect to manage the resource. The management efforts have been to date concentrated upon the cattle industry. The amount of destruction to our public lands, by cattle grazing, is phenomenal. These practices are leading to a legacy of desertification of forested lands. All the while, the Nevada BLM has ignored a food source that is more efficient in teens of land use and protein produced The lack of care of the pinyon trees as a resource amounts to supreme negligence and waste (in legal context).

Very little is done to monitor harvest levels, and only a small percentage of harvested nuts are reported to the BLM. There has been a contrived effort to ignore the pine nut as a resource and I have found my company thwarted in participation in land planning involvement, time and main. Please read my web Rite, wwv.pinenut.com for a list of correspondence, which to date remains unaddressed.

Should you wish copies of the cited materials, please let me know. Thank you for the opportunity to respond to this plan. I received my copy of the plan, Monday November 18 and wrote these comments very quickly. I plan to amending them. after I have had an opportunity to consider the, plan in further detail.

Thank you. Penny Frazier

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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138

Carson City, Nevada 89706

November 14, 2002

Joe Freeland
Forest Management Officer BLM -
Elko/Wells District 3900 E. Idaho Street
Elko, NV 89801

Dear Mr. Freeland:

After reviewing the Elko / Wells Resource Management Plan (RMP), I have a few general comments to share. The proposed alternative, if executed in accordance with the State Smoke Management Program, (SMP) is sensitive to some of the air quality concerns that we have for the Elko/Wells district.

We appreciate Elko/Wells district has cooperated with the Nevada Bureau of Air Quality Planning (BAQP) in previous planning efforts. However, BAQP does have concerns about smoke impacts for sensitive areas in the Elko/Wells District. In addition, we are concerned that the prediction of future wildfire acreage is inconsistent with the proposed alternative.

I. Comparison of PM-1 O emissions from wildfire versus prescribed fire

The Elko/Wells RMP states that prescribed fires generate 70 to 75 percent of the PM 10 emissions per acre when compared to wildfire. However, wildfires generally burn more intensely and occur in July or August, which allows for a higher plume height and more effective smoke dispersion. By contrast, the season for prescribed burning in the Elko/Wells district is during the fall. Smoke dispersion is generally much poorer in the fall due to thermal inversions and lower fire intensity. Therefore, even though a prescribed burn may produce less PM 10, the risk to nearby residents and affects on visibility may be greater.

I I Cumulative Impacts

BLM may be compelled perform multiple prescribed burns in close proximity to meet higher prescribed burning goals. The RMP has no discussion of possible impacts that could result from multiple prescribed burns. Additionally, there is no discussion of possible cumulative impacts resulting from multiple prescribed burns and preexisting air pollutants. As stated in the report, a detailed discussion of cumulative impacts at the level of this report would be unreliable. However, a commitment to perform cumulative impacts at a site-specific level should be made in the report.

[1] The smoke management program document is available online at http://ndep.state.nv.us/bagp/snioke2.htni

III. Monitoring

The RMP states that burns lasting longer than 1 day will be monitored to ensure that the burn does not adversely affect sensitive receptors. What are the details of the proposed monitoring in terms of equipment and design? How will adverse impacts be assessed - is there a specific threshold that is designated as an unacceptable impact? Do impact thresholds vary by area (i. e. Class 1 vs. Class 2)?

IV. Future wildfire acreage projections

In several sections of the document, it is stated that the prescribed burning, as outlined in the preferred alternative, will lead to a decrease in wildfire acreages. For example, Table 4-1 of the RMP shows potential acreages affected by wildfire and prescribed fire under the various plans. In the proposed action, a 20 percent decrease in wildfire acreages is predicted to occur over the next 20 years (see Table 4-1). This prediction is over optimistic, and could only be achieved with a much more extensive prescribed burning program than is currently proposed.

Utilizing the following conservative assumptions, we can calculate a baseline fire average in the Elko / Wells District:

- The district consists of 7.5 million acres, of which 6 million acres have excessive fuels when compared to baseline conditions.
- 30-year return-fire interval (There is a wide range of baseline fire return intervals on the district - 30 years seems to be a conservative value for purposes of this calculation).

Therefore, in a `natural' fire regime, an average of 200,000 acres would burn in any single year (6 million acres/30 years = 200,000 acres/yr).

According to Table 4-1, following practices in the proposed action over the next 5 years, less than 100,000 acres/yr will be subject to any type of fuel reduction (i.e. prescribed fire and wildfire). There will be a continuing `backlog' of 100,000 acres per year - this acreage suffers from heavier than baseline fuel loads, will remain untreated and accumulate additional fuels, and will likely burn in a wildfire over the next 20-30 years.

Additional evidence against this prediction can be found by examining the past 10 fire seasons (1993-2002). During the past decade, wildfires have burned an average of 110,000 acres on the Elko/Wells district - this is well over twice the projected annual wildfire acreage during the next 20 years. These severe fire seasons could be connected with global warming or critically heavy fuel loading. If either explanation holds any credibility, wildfires will burn more acreage over the next 20-30 years under the practices of the proposed plan.

V. Potential formation of cheatgrass dominated ecosystems

With increasing acreage subject to larger prescribed burns, we are also concerned that the prescribed burns will be of higher intensity to allow a lower per acre cost for prescribed burning on a larger scall recommended in the plan. The more intense prescribed burns may lead to additional cheatgrass invasion. Additionally, as a result of the additional wildlife acreage, more areas may become dominated by cheatgrass following wildlife events.

As noted in the report, cheatgrass burns more frequently and intensely compared to native vegetation, increasing the average acreage burned annually. Currently, there are 365,000 acres of cheatgrass, which burns every 3-5 years. Using the same formula as in Section IV, we can expect an average annual cheatgrass burn of 91,250 acres (365,000 acres/4 years). In addition, we are concerned that future large wildfires may lead to more cheatgrass dominated ecosystems.

VI. Class I Areas

By virtue of being a Class I Area, BLM cannot contribute to increment violations or to negative effects on AQRV's in the Jarbidge Wilderness Area. How will the BLM avoid degradation in Class I areas?

VII. Pre-Existing Air Quality

The report states that: "Because wildfire is a natural part of the vegetation communities within the Great Basin, the effects of smoke on air quality can be considered a part of pre-existing air quality conditions." However, Nevada BAQP distinguishes between smoke caused by wildfire (natural) versus smoke caused by prescribed burning (anthropogenic). Therefore, it is not reasonable to equate smoke from prescribed fire with smoke from wildfire.

If you have any questions, please contact me at (775) 687-9358 or at jacksons@ndep.state.nv.us.

Samuel Jackson
Smoke Management Coordinator
Sergent, NDEP,

November 14, 2002

Helen Hankins
BLM - Elko Field Office 3900
E. Idaho St. Elko, NV 89801-
4611

Here are comments of the Committee for the High Desert and Western Watersheds Project on the Elko BLM's "Elko/Wells RMPs, Draft Fire Management Amendment and EA".

First, we are unclear what this document is - Is it an RMP amendment, or is it a programmatic EA that amends existing fire plans? You must prepare an EIS - an EA is inadequate to cover the vast acreage of public lands and the large number of environmental effects of the broad array of actions that are proposed in this document. All direct, indirect and cumulative impacts must be assessed.

The EA fails to provide current and basic information on the soils, watersheds, native vegetation, wildlife habitats and populations, recreational uses, and other important values of the affected lands. Basic information on ecological condition/seral status of vegetation is not examined. Such information is necessary to ensure protection of values under various fire and vegetation treatment schemes.

The EA fails to provide or rely on any current information that assess the degradation of lands and waters in the affected lands by livestock grazing Since livestock grazing occurs on virtually every square inch of Elko BLM lands, it a is a major disturbance factor, and a major case of weeds, altered fire frequencies, "dense" wood vegetation/hazardous fuels and other conditions this EA discusses, or needs to discuss.

There is an appalling lack of documentation of the condition of grazing-damaged watersheds throughout EA lands. Before BLM can make a decision in this programmatic document to place a land area in a particular fire suppression/fire prescription category, it must first assess the susceptibility/vulnerability of watersheds to erosion following fire-induced disturbance.

Likewise, BLM must assess the vulnerability of all lands placed in various fire management categories to weed invasion following fire or other disturbance There is a clear example of how this can be done in ICBEMP that you have chosen to ignore.

Many elements of the EA ignore the current body of scientific knowledge about the susceptibility/vulnerability of Wyoming big sagebrush and other low elevation native shrub communities to weed invasion following fire. See, for example, your proposal to burn portions of the Owyhee Desert. Such gross failures on BLM's part can only be seen as efforts to placate the livestock industry (Petan and Agri-Beef in the case of the Owyhee Desert), by clearing the way for widespread burning of lands destined to suffer cheatgrass, whitettop and other exotic species invasions following fire.

This EA can not be tiered to the long-outdated Elko and Wells RMPs, as they do not contain a current inventory of BLM lands.

1-3 lists use of grazing to manage fire. There is no valid scientific basis for claiming that grazing can aid in suppression of fires. If that is the case, most of the lands in the Elko District would not have burned - as many areas, at the time of burning, were grazed to ground level. Plus, the mid and long-term consequences of intense grazing in arid lands in inevitable soil erosion and weed invasion.

The EA places an inordinate emphasis on use of exotic species. There are plenty of native species that fill the same role as the exotics you propose to use. You fail to use natives because

their successful establishment requires extended periods 5-10 years or more - of rest from grazing. Native Poas, winterfat and other species should he used in arid low elevation lands.

Forage kochia is an invasive, aggressive exotic that is becoming a weed and threatening rare plant and other important habitats on the Snake River Plain. Your EA will seed it over broad areas of public lands, and result in likely infestations of kochia over vast areas.

We have spent a lot of time on the ground in Elko BLM-managed lands, and have been appalled at the widespread and unaddressed livestock damage to these lands. The ancient RMPs fail to put in place standards of protection necessary to both prevent continued and ongoing livestock damage to these lands, as well as to allow recovery.

The RMPs are so woefully outdated that few if any ORV constraints exist on the affected lands This means that recently burned areas can be crisscrossed by ORVs, and/or new reading develop, and BLM land use plans permit such activities.

Throughout, the analysis, BLM fails to adequately assess the impacts to species dependent on mature or "old growth" communities. While a "mosaic" may create habitat for weedy or generalist species, many species are dependent on intact mature or old growth sagebrush, juniper, pinyon-juniper, mountain shrub, and other plant communities. In many instances, creating a "mosaic" for weedy species like deer mice simply results in fragmentation of habitat for native species like sage grouse and sage-steppe obligate migratory songbirds.

The EA makes reference to burning aspen to get regeneration. This is hogwash. Elko BLM is well aware of the Nevada aspen study by Dr. Charles Kay where Dr. Kay's extensive review of exclosures in Nevada found that exclusion of herbivory (cattle and sheep) resulted in aspen regeneration. Burning aspen destroys important wildlife habitat and beautiful trees important to recreational users of public lands. Your failure to include reference to this work, and continued reliance on out-dated notions of a need to kill aspen to stimulate sprouting, is just one example of your failure to include current science that does not support a large-scale use of fire in the arid West.

Elko BLM has already done some projects discussed in the EA - for example - mowing greenstrips in sagebrush near Midas. We have noted an abundance of cheatgrass in the mowed areas, compared to outside areas. Before you can adopt any of these techniques, we ask that you first assess past problems/successes/failures in areas you have managed.

An example of BLM's abysmal failure to even begin to control livestock grazing in any post-fire environment is that of the Cottonwood allotment in O'Neil Basin. Here, Elko BLM has actually issued TNR grazing use on recently burned lands, and allowed the wanton destruction of burned Goat Creek lands. Also, Elko BLM frequently fails to close important burned areas if lands have not been almost entirely incinerated. We ask that you examine an alternative that closes ALL burned lands from grazing for at least five years following fire.

We are alarmed at increasing mortality of pinyon pine in northern and central Nevada. You must include a current assessment and inventory of this species and its health before you can include it any polygons slated for burning. In addition, for this and other vegetation communities, we ask that you provide maps that show the current extent of past manipulation/seedings/ treatments over the potential habitat of the species This is necessary to understand how much pinyon-juniper and other communities have already been altered.

The EA repeatedly talks about the need to increase diversity. Your analysis fails to take into account the inherent natural diversity that often exists in sagebrush communities, as well as the complex interspersion of many other vegetative communities that vary within localized geographic areas depending on soils, aspect, and other factors.

Some specific comments:

Maps are very difficult to read at such a small scale, with few identifying features and as black and white. We ask that maps be redone as part of a Supplemental EA/EIS released for comment. Since identifying lands to be placed in a particular category is an important part of the EA, these maps must be comprehensible to the public. Maps omit key information such as overall land condition/ecological status, amount of land area seeded to exotics, already invaded by weeds, likely to be invaded by weeds with fire disturbance, and the like.

p. 1-4 - Does the EA cover ALL 12.5 million acres?

p. 1-9. The EA fails to discuss many negative effects of prescribed burning -additive disturbance of fire and grazing to plant communities, likelihood of increased roading from prescribed fire activities.

p. 1-10. You discuss "timing". What you fail to discuss is the TIME and changes in livestock grazing practices, including pre-fire/pre-treatment changes - necessary to ensure adequate vegetative recovery post-fire.

p. 2-4. We do not believe your proposed action is a balanced approach. Instead, it seems designed to speed up the spending of large amounts-of federal fire funds in "treating" lands, while failing to address the causal elements (livestock grazing, roading, other disturbance that have caused altered fire intervals, increased densities of woody vegetation, etc.

p. 2-6. All grazed lands should at least be put in the "areas where ... various factors place constraints on fire use". We do not believe there are any FMC D lands in the Elko Field Office, as all lands that you manage have serious health problems due to grazing. This first needs to be addressed before fire disturbance occurs.

p. 2-7 states that the polygons refine the strategy based on resource value, vegetative response, potential for invasive weeds and public safety. Please provide us with a detailed explanation of how this was done for each polygon as part of a Supplemental document.

We support a suppression alternative until BLM can successfully reign in abusive grazing practices on Elko Field Office lands.

p. 2-9. We believe, and science supports, that there should be many constraints on vegetative manipulation in lands with cheatgrass.

p. 2-13. You have greatly erred in your description of the Owyhee desert. We simply do not believe that most of the area receives 10-14 inches of precipitation per year. There is very little mountain big sagebrush here - it is nearly all Wyoming and Basin big sagebrush and some low sagebrushes. The presence of abundant Wyoming and mountain big sagebrush - all of which is highly susceptible to invasion by cheatgrass, bur buttercup, white top and other exotics - means that you can not say that it has a potentially high vegetative response [to treatment with fire]. Instead, it is much threatened with exotic species proliferation in a post-burn environment, and should not be subject to prescribed burning. The old BLM assessment for the Owyhee allotment is now out-dated, was extremely biased towards production of cow forage, and can not be the basis for your analysis here. Plus, there are large areas that have burned and have invasive species problems.

p. 2-15. We oppose a "goal" for mixed woodlands - or any area - of "providing livestock forage". This should not be a goal of a fire planning effort.

p. 2-16. Pre-settlement fire (Owyhee WSA, elsewhere) can not be a management goal, as pre-settlement vegetative conditions do not exist. Until BLM brings about pre-settlement vegetative conditions, it can not impose an "unnatural" pre-settlement fire regime on these lands.

p. 2-17, 2-18. Dead down and standing trees provide important habitat and are critical for proper nutrient cycling. Your proposal to burn up these scarce high elevation lands is flawed. Again here, pre-settlement vegetative conditions do not exist, largely due to livestock grazing, so pre-settlement fire regimes are not applicable.

p. 2-18. BLM's "Fire Prevention" strategy (of intensive veg. manipulation, fuels reduction, green strips, etc. fails to address the CAUSES of any fire problems.

p. 2-22. Removal or lessening of livestock grazing should be listed as a fire prevention activity, as livestock grazing disturbance cases cheatgrass and other weed invasion, and prevent the recovery/restoration of native species.

p. 2-23. We support maximizing fire response.

p. 2-25. We do not support 2000 acres unplanned ignition caps for the Owyhee Desert, Little Humboldt-WSA, Goshute, South Pequop and Bluebell WSAs. We support the 300 acre figure, and think it should be applied throughout. We commend your analysis of woodlands and intermixed woodlands!

We support spending large amounts of federal fire funds in trying to restore degraded low elevation cheatgrass and crested wheatgrass lands.

Please refer to our earlier comments submitted during scoping. Sincerely,

Katie Fite
Committee for the High Desert
PO Box 2863
Boise, ID 83701

Jon Marvel
Western Watersheds Project
PO Box 1770
Hailey, ID 83333

DEPARTMENT OF CULTURAL AFFAIRS
Nevada State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701

November 6, 2002

Joe Freeland
Fire Management Officer Bureau of Land
Management Elko Field Office 3 900 E.
Idaho Street Elko, NV 89801-4611

Dear Mr. Freeland:

> I have reviewed the second draft of the proposed fire management amendment and environmental assessment for the Elko and Wells Resource Areas. The BLM has adequately identified the kinds of properties that could be affected and the means of preserving them. Staff did a fine job of synthesizing known information on the effects of fire on cultural resources. We would like to thank the BLM for including us in this effort and remind BLM staff that the use of the GIS database (the Nevada Cultural Resources Information System) will make background literatures searches easier.

We have no other comments at this time. Sincerely,

ALICE M. BALDRICA, Deputy State Historic
Preservation Officer

Wildlife Management Institute

Len H. Carpenter, Field Representative
4016 Cheney Drive, Fort Collins, CO 80526
Phone (970) 223-1099 Fax (970) 204-9198
e-mail: lenc@verinet.com

ROLLIN D. SPARROWE
President

RICHARD E. McCABE
Vice-President

October 29, 2002

Joe Freeland.
Fire Mgmt. Officer
BLM Elko Field Office
3900 East Idaho Street
Elko, NV 89801

Dear Mr. Freeland:

I am the Southwest Field Representative for the Wildlife Management Institute. The Institute is a private, nonprofit, scientific and educational organization founded in 1911 and dedicated to the restoration, conservation, and sound management of natural resources, especially wildlife, in North America. Following are my comments on the draft document updating the Elko and Wells Resource Management Plan (RMP), Draft Fire Management Amendment and Environmental Assessment.

First, it is good that the Bureau is updating these plans. It is important that plans be current and address pressing issues like fire rehabilitation. It is also critical that RMPs be based on the latest federal laws, regulations, standards, guidelines, and policies.

Overall, the draft amendment and EA are well done and inclusive. I find the four alternatives reasonable and they provide a good range for decision makers to choose from. It appears that the preferred alternative offers a good blend of fire management strategies.

Concern for sage grouse and their habitats is a big issue today. The document reveals that guidelines developed for sage grouse in Nevada will be incorporated into the plan as will the recently adopted sage grouse guidelines that were developed by the Western Association of Wildlife Agencies and published in the Wildlife Society Bulletin (28:967-985). This is very good and efforts must be taken to ensure these guidelines are followed once the plan is amended.

Rehabilitation of burned areas is a critical issue and the draft document presents only a generic description of this process (see pages 2-26, 2-3L, 2-36, 2-39). 1 would like the final draft to be more specific and emphatic on how previously burned areas will be rehabilitated under each alternative. It is important that the Bureau take a very aggressive approach to rehabilitation.

Cheat grass invasions after fires are a significant problem for both sage grouse and mule deer and the final plan must address how the rehabilitation plans will address this critical issue. I also find that the amended plan does short thrift on the bigger problem of noxious and invasive weeds in general. I strongly suggest the final document provide at least one specific section detailing how invasive weeds will be dealt within the revised plans.

It is good the plan states that the Bureau will take necessary steps to address habitat needs of all threatened, endangered, and sensitive plant and animal species. Management strategies chosen must not cause these species to be further impacted.

It is also important that strategies on grazing management presented on pages 4-45 to 4-47 be followed. This will involve close monitoring of existing grazing allotments. I find the document lax in addressing the overall issue of monitoring. I suggest the final plan must address monitoring in general and identify key monitoring elements in some detail. Furthermore, the revised plan must address how monitoring data will be incorporated into individual grazing allotment plans. It is critical that the revised plans have built-in evaluation standards.

In summary, it is important that the key objective of this revised plan be maintenance of the sage brush-steppe ecosystem so that important functions continue. The bottom line is that soil stability, watershed health, and ground cover on the public lands all are within ranges that promote sound ecosystem function. Appropriate management of both wild and prescribed fire is critically important to achieving this objective.

Thanks for the opportunity for comment. Please be sure that I receive any future documents related to this plan update.

Sincerely,
Len H. Carpenter

cc:
R. Sparrowe, WMI

21 October 2002

Mark Belles
9318 Willard Street
Rowlett, Texas 75088

BLM Elko Office
Attn. Joe Freeland
Fire Management Officer
3900 East Idaho Street
Elko, Nevada 89801

Dear Mr. Freeland,

Thank you for the draft copy of the "Elko/Wells Resource Management Plans, Draft Fire Management Amendment and Environmental Assessment." Please note that all references cited in this letter are to the foregoing document. Please retain my name on the mailing list for this project

I am pleased to see that the BLM is starting the re-evaluation of its Fire Management Plan for the Elko and Wells Resource Management Areas. While I strongly support the reestablishment of natural fire conditions, I do recognize the importance of suppression in localized zones near improvements or historic and cultural sites,

It is disturbing to find a statement in the Purpose and Need section (page 1-1) that, in the midst of stating the purpose of the project, flatly declares that "In most cases, fire will be suppressed immediately, ." This sort of statement, before any discussion of the alternatives or supporting studies cause the reader wonder whether the documentation that follows is merely a facade to decorate a forgone conclusion.

A careful evaluation of the situation on the ground" shows that firm action must be taken to reduce the fuel loads. Past efforts at reducing the fuel loads have been largely unsuccessful (page 1-9, first paragraph). Chaining, aerating and use of the dixie harrow have been shown to be very damaging as a disturbance process and should not be considered for fuel reduction purposes (Page 2-20)

Page 1-2 claims that the document will evaluate the funding mechanisms associated to implement the FMA. Maybe I missed it, but I don't find this analysis in the document. The costs of fire suppression are well known and will continue to rise in the absence of reestablishment of a natural fire regime_ Short term costs associated with this reestablishment may be high as well, but will fall as the ecosystem returns to each natural state

A comparison of the Proposed Action to the No Action, Full Suppression and Limited Suppression alternatives shows that the methods authorized by each alternative are nearly identical, the primary distinction between there helm' the percentage of the effected area that full into the four Fire Management Categories.

Comments related to the Proposed Alternative

I) A careful review of the defined polygons shows that the analyses of only a few justify the full Fire Suppression activities. They are as follows, with the noted reasons,

A-I: Urban Interface
A-3. Watershed protection
B-4: Protection of private land

These areas total 1 36 million acres.

2) Additionally the analysis of some polygons justify suppression of man-made fires as follows, with the noted reasons,

B-2 The low occurrence frequency in the Ruby Marshes, Franklin Lake and Snow Water Lake areas justifies the suppression of man-made fires only.
B-3: The low occurrence frequency in the Low Sagebrush & Desert Shrub areas justifies the suppression of man-made fires only.

These areas total I . 13 million acres.

3) None of the remaining polygon analyses make a strong case for fire suppression.
Comments related to the No Action Alternative

1) The statement that, "For example, a fire under low intensity conditions in an area in which there would be a positive vegetative response would most likely be immediately suppressed even if the area was designated for future prescribed burning." (page 2-32) illustrates the sort of management policies that have allowed the current unstable fuel load conditions to develop over the years. This is precisely the sort of shortsighted management policy that must change and this feature alone is sufficient to rule out the No Action alternative.

Comments related to the Full Suppression Alternative

1) The statement that, "This alternative assumes that fire does not benefit the landscape . . . (page 2-34) is an accurate representation of the alternative that renders is selection as wholly inconsistent with the bulk of the scientific wildfire research since the Yellowstone fires of 1988. This fundamental assumption is sufficient for ruling out this alternative

Comments related to the Limited Suppression Alternative

1) The conclusion that fire in an area that has a high composition of invasive plant species would not be immediately suppressed irrespective of the negative vegetative response.. " (page 2-39) is not supported by the discussion of similar effects in the Proposed Action section. Refer to the discussion of the B-1 zone for the Proposed Action (page 2-9). There is no indication that fire has a deleterious effect on areas of this type. In fact, the discussion mentions the negative effects of mechanized equipment (often associated with fire suppression activities). This inconsistency casts an inappropriate negative outlook on the Limited Suppression Alternative.

2) Rebuttal of the negative outlook noted in the previous paragraph leaves only one negative aspect stated for the Limited Suppression Alterative, that being that the "strategy provides no flexibility to achieve resource objectives" (page 2-37) This vague objection does not identify the "resource objectives" that will not be achieved. In fact several resource objectives are achieved in the zones identified as A-1, A-2 and A-3. The designation of the balance of the area as D-1 is a resource objective, which is the reinstatement of a natural fire regime in as broad an area as is consistent with private property and development concerns.

Conclusions and Recommendations

The percentages of the area addressed by this amendment in Zone D for the Proposed Action is appalling The No Action and Full Suppression alternatives are even worse. There is a vast body of work that show that fire suppression is the cause of the destabilizing high levels of fuel loadings and that a natural fire regime is far and away the most effect means of correcting these

dangerous levels. The mere presence of a public or range structures is not enough to justify full fire suppression. Trade-off assessments should be made to evaluate the relative values of increased natural fire regimes in these areas versus the value of the site. Private developments should receive the most complete protection possible consistent with fire crew safety.

For the reasons stated above I urge a reassessment of these issues and selection of the Limited Suppression Alternative for the Elko/Wells Resource Management Plans, Draft Fire Management Amendment.

Thank you for file opportunity to comment.

Appendix 2:
Standard Operating Procedures

STANDARD OPERATING PROCEDURES

PART A – SOPS FOR SPECIES PROTECTION

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)

Unless a threat to human life or property exists, the following standard operating procedures for species protection will apply to all streams occupied by Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) and native habitats identified as having recovery potential[1]:

SUPPRESSION ACTIVITIES:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[2].

   Exceptions:

   - When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

   - Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

   - When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[3].

   Emergency Consultation:

   Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to LCT.

   If the action agency determines there were no adverse effects to LCT or their habitats, there is no additional requirement to consult with Fish and Wildlife Service (FWS).

---

[1] The Humboldt Distinct Population Segment (DPS) Team will use the 1995 LCT Recovery Plan and the most recent data to develop a list and/or map which specifically identifies stream segments currently occupied by LCT and native ranges identified as having recovery potential. This list and/or map will be reviewed and updated as necessary based on the most current species information.

[2] Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

[3] This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

If the action agency determines that there were adverse effects on LCT or their habitats then the action agency must consult with FWS, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Do not draft fill engines that have surfactant foam mixes in tanks, directly from the stream channel.

3. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the stream channel to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

4. Do not dump engines filled with surfactant foam mixes within 600 feet of the stream channel.

5. Do not conduct retardant mixing operations within 300 feet of the stream channel.

6. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

7. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

8. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

9. Unless specifically identified as a restricted water source[4], dipping water from streams currently occupied by LCT (including beaver ponds) by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and/or contain the fire will be obtained by drafting into portable dipping tanks or drafting directly into the helicopter bucket in accordance with the above standard operating procedures. Water levels in the pond or pool will be monitored continuously. Water extraction will not exceed the ability of the stream inflow to maintain water levels which exist at the time initial attack efforts began. If the water level drops below this predetermined level, all water removal will cease immediately until water levels are recharged.

[4] The Humboldt Distinct Population Segment (DPS) Team will use the 1995 LCT Recovery Plan and the most recent data to develop a list and/or map which specifically identifies stream segments currently occupied by LCT where dipping water from streams (including beaver ponds) by helicopter is restricted due to specific meta-population concerns. This list and/or map will be reviewed annually and updated as necessary based on the most current species information.

10. For streams currently occupied by LCT, extraction of water from beaver ponds or pools will not be allowed if stream inflow is minimal (i.e. during drought situations) and extraction of water would lower the existing pond or pool level.

11. Fire control lines will not cross or terminate at the stream channel. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

12. Access roads and/or fords will not be constructed across the stream channel.

13. New roads or mechanical fire control lines will not be constructed and existing roads will not be improved within 300 feet of the stream channel unless authorized by the Field Manager or the designated Field Manager representative.

REHABILITATION MEASURES:

1. An assessment of the impacts of fire and fire suppression activities to LCT habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the U.S. Fish and Wildlife Service, and representatives from the Nevada Division of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Close the affected watershed and/or stream channel to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

    b. Reconstruct damaged fences and/or construct new fences to ensure protection of the stream channel from grazing. In Wilderness Study Areas, fence construction and/or reconstruction will be in accordance with Interim Management Policy Guidelines.

    c. Monitor stream and riparian habitats to allow for comparison of post-fire impacts to existing baseline information.

    d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects to the stream channel.

    e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential channel erosion, and allow for recovery of riparian functionality.

f. Rehabilitate improved roads located within 300 feet of the stream channel as determined necessary to mitigate potential sedimentation into the stream channel.

g. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

h. Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least one year to protect and stabilize burned areas and associated watersheds. An interdisciplinary assessment will be conducted after the first year to determine if road closures are still needed.

Columbia spotted frog (*Rana luteiventris*)

Unless a threat to human life exists, the following standard operating procedures for species protection will apply to riparian and/or wetland habitats currently occupied by Columbia spotted frog (*Rana luteiventris*):

SUPPRESSION ACTIVITIES:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1].

   Exceptions:

   - When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

   - Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

   - When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines2.

   If and when the Columbia spotted frog is listed as threatened or endangered, or proposed for listing, the following Emergency Consultation guidelines would apply:

[1] Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

[2] This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Columbia spotted frog.

If the action agency determines there were no adverse effects to Columbia spotted frog or their habitats, there is no additional requirement to consult with Fish and Wildlife Service (FWS).

If the action agency determines that there were adverse effects on Columbia spotted frog or their habitats then the action agency must consult with FWS, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Do not draft fill engines that have surfactant foam mixes in tanks, directly from the stream channel or spring/pond.

3. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the stream channel or spring/pond to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

4. Do not dump engines filled with surfactant foam mixes within 600 feet of the stream channel or spring/pond.

5. Do not conduct retardant mixing operations within 300 feet of the stream channel or spring/pond.

6. Fire control lines will not cross or terminate at the stream channel or spring/pond. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

7. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

8. Access roads and/or fords will not be constructed across the stream channel.

9. The intake end of the draft hose will be screened to prevent entry of spotted frog tadpoles. Screen opening size will be a maximum of 3/16 inch.

10. When drafting from beaver ponds or spring/ponds, drafting will occur only in open water areas free of dense aquatic vegetation where egg masses or spotted frog tad poles may concentrate.

11. Dipping water from beaver ponds or spring/ponds by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and/or contain the fire will be obtained by drafting into portable dipping tanks or drafting directly into the helicopter bucket in accordance with the above standard operating procedures. Water levels in the beaver pond or spring/pond will be monitored continuously. Water extraction will not exceed the ability of the stream or spring inflow to maintain water levels which exist at the time initial attack efforts began. If the water level drops below this predetermined level, all water removal will cease immediately until water levels are recharged.

12. Extraction of water from beaver ponds or spring/ponds will not be allowed if stream or spring inflow is minimal (i.e. during drought situations) and extraction of water would lower the existing pond level.

13. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

Rehabilitation Measures:

1. An assessment of the impacts of fire and fire suppression activities to Columbia spotted frog habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the U.S. Fish and Wildlife Service, and representatives from the Nevada Division of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Close the affected habitat area to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

    b. Reconstruct damaged fences and/or construct new fences to ensure protection of the habitat area from grazing. In Wilderness Study Areas, fence construction and/or reconstruction will be in accordance with Interim Management Policy Guidelines.

    c. Monitor stream channel or spring/pond habitats to allow for comparison of post-fire impacts to existing baseline information.

d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects to the stream channel or spring/pond.

e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential channel erosion, and allow for recovery of riparian functionality.

f. Rehabilitate improved roads located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation.

g. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

h. Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least one year to protect and stabilize burned areas and associated watersheds. An interdisciplinary assessment will be conducted after the first year to determine if road closures are still needed.

Independence Valley speckled dace (*Rhinichthys osculus lethoporus*)

Unless a threat to human life or property exists, the following standard operating procedures for species protection will apply to the Independence Valley Warm Springs and ponds which supply water to outflow channels and marsh habitats occupied by the Independence Valley speckled dace (*Rhinichthys osculus lethoporus*):

The Independence Valley Warms Springs and wetlands habitat area is located entirely on private lands. The habitat area emerges from several seeps and springs along a 1-mile segment of the western edge of Independence Valley. The flows are impounded into two reservoirs. The upper, shallower reservoir overflows into the lower, deeper reservoir. The outflow from the lower reservoir flows through a channel before entering a marsh area. Several small shallow ponds exist in the marsh area. Spring heads exist both north and south of the impoundment reservoirs. Independence Valley speckled dace are not known to occur in the spring head areas or the two impoundment reservoirs. The dace are known to exist mostly in the marsh area and to a lesser extent in the outflow channel.

SUPPRESSION ACTIVITIES:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1].

[1] Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

Exceptions:

- When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

- Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

- When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[2].

Emergency Consultation:

Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Independence Valley speckled dace.

If the action agency determines there were no adverse effects to Independence Valley speckled dace or their habitats, there is no additional requirement to consult with Fish and Wildlife Service (FWS).

If the action agency determines that there were adverse effects on Independence Valley speckled dace or their habitats then the action agency must consult with FWS, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Water needed for suppression activities will be extracted from the two impoundment ponds only. Water may be extracted by helicopter bucket dipping or draft filling. Before water extraction begins, a marker (a stake with a painted line, etc.) will be placed in the outflow drainage area below the lower impoundment pond, indicating the level of water flowing from the pond. Water level in the outflow will be monitored continuously. If the water level in the outflow drops below the designated level, all water removal will cease immediately until water levels return to normal levels.

3. Surfactant foam or retardants will not be used within 300 feet of the spring sources, impoundment ponds, outflow channel, or marsh/wetland areas.

4. Do not draft fill engines that have surfactant foam mixes in tanks directly from the spring source, impoundment ponds, outflow channel, or marsh/wetland areas.

[2] This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

5. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

6. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the spring source, impoundment ponds, outflow channel, or marsh/wetland areas to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

7. Do not dump engines filled with surfactant foam mixes within 600 feet of the spring sources, impoundment ponds, outflow channel, or marsh/wetland areas.

8. Do not conduct retardant mixing operations within 300 feet of the spring source, impoundment ponds, outflow channel, or marsh/wetland areas.

9. Fire control lines will not cross or terminate at the spring source, impoundment ponds, outflow channel, or marsh/wetland areas. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

10. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

REHABILITATION MEASURES:

The Independence Valley Warm Springs habitat area is located on private lands. A land exchange has been proposed that, if approved, would change ownership of these lands from private to public. Until ownership changes, rehabilitation measures on private lands are restricted to addressing damages due to fire suppression activities. Therefore, the following rehabilitation measures would apply, assuming private ownership of the Independence Valley Warm Springs habitat area.

1. An assessment of the impacts of fire suppression activities to Independence Valley speckled dace habitat (the Independence Valley Warm Springs wetlands is located on private lands) will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the U.S. Fish and Wildlife Service, and representatives from the Nevada Division of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Reconstruct fences or other structures damaged by suppression activities.

    b. Rehabilitate roads improved or created by suppression activities located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation into the habitat area.

c. Implement appropriate integrated noxious weed control measures in those areas damaged during fire suppression activities where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

d. Re-seed or replant riparian or wetland areas damaged by suppression activities with native species as determined necessary by the interdisciplinary review team to facilitate re-establishment of perennial vegetation.

2. In addition to the above, the following rehabilitation measures would also be considered by the interdisciplinary review team charged with assessing the impacts of fire and fire suppression activities, should ownership of the Independence Valley Warm Springs habitat area change from private to public ownership:

a. Close the affected habitat area to livestock grazing for one or more years to allow for recovery of riparian/wetland vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

b. Reconstruct damaged fences and/or construct new fences to ensure protection of the habitat area from grazing.

c. Monitor riparian/wetland habitats to allow for comparison of post-fire impacts to existing baseline information.

d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects.

e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential effects of erosion, and allow for recovery of riparian/wetland functionality.

f. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

Clover Valley speckled dace
(*Rhinichthys osculus oligoporus*)

Unless a threat to human life exists, the following standard operating procedures for species protection will apply to spring/pond areas occupied by Clover Valley speckled dace (*Rhinichthys osculus oligoporus*):

Clover Valley speckled dace are known to exist in three separate spring/pond habitats all located on private lands in Clover Valley. All three habitat areas are comprised of a riparian/wetland complex consisting of a spring source, one or more impoundment ponds, and one or more outflow channels. Dace are known to inhabit the spring source areas, impoundment pond(s) and/or outflow channels.

SUPPRESSION ACTIVITIES:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1].

   Exceptions:

   - When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

   - Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

   - When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[2].

   Emergency Consultation**:**

   Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Clover Valley speckled dace.

   If the action agency determines there were no adverse effects to Clover Valley speckled dace or their habitats, there is no additional requirement to consult with Fish and Wildlife Service (FWS).

[1] Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

[2] This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

If the action agency determines that there were adverse effects on Clover Valley speckled daceor their habitats then the action agency must consult with FWS, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Dipping water from the impoundment ponds by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and contain the fire will be obtained by drafting from the pond into a portable dipping tank or drafting from the pond directly into the helicopter bucket.

3. Before drafting begins, a marker (a stake with a painted line, etc.) will be placed in the outflow drainage area indicating the level of water flowing from the pond. Water level in the outflow will be monitored continuously. If the water level in the outflow drops below the designated level, all water removal will cease immediately until water levels return to normal levels.

4. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

5. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the spring source, impoundment ponds, or outflow channel to prevent petroleum products from entering the water. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

6. Do not draft fill engines that have surfactant foam mixes in tanks directly from the spring source, impoundment ponds or outflow channel.

7. Do not dump engines filled with foam or surfactant mixes within 600 feet of the spring source, impoundment ponds, or outflow channel.

8. Do not conduct retardant mixing operations within 300 feet of the spring source, impoundment ponds, or outflow channel.

9. Fire control lines will not cross or terminate at the spring source, impoundment ponds, or outflow channel. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

10. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

REHABILITATION MEASURES:

All known spring/pond areas providing habitat for Clover Valley speckled dace are located on private lands. Therefore, rehabilitation measures would be limited to addressing those impacts directly related to fire suppression activities.

1. An assessment of the impacts of fire suppression activities to Clover Valley speckled dace habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the U.S. Fish and Wildlife Service, and representatives from the Nevada Division of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Reconstruct fences or other structures damaged by suppression activities.

    b. Rehabilitate roads improved or created by suppression activities located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation into the habitat area.

    c. Implement appropriate integrated noxious weed control measures in those areas damaged during fire suppression activities where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

    d. Re-seed or replant riparian or wetland areas damaged by suppression activities with native plant species as determined necessary by the interdisciplinary review team to facilitate re-establishment of perennial vegetation, minimize potential effects of erosion, and allow for recovery of riparian/wetland functionality.

PART B – FIRE MANAGEMENT GUIDELINES FOR SAGE GROUSE

The *Management Guidelines for Sage Grouse and Sagebrush Ecosystems in Nevada, October 2000*, recommend the following guidelines for Sage Grouse that are pertinent to fire management.

Vegetation Treatment

1. Consider the habitat needs of sage grouse when planning vegetation treatments and maintenance projects.

2. On all vegetation treatments, manage livestock for the long-term health of the vegetation community and the attainment of the treatment objectives.

3. Vegetation treatments in areas highly susceptible to, or currently dominated by, cheatgrass should be accompanied by rehabilitation. Rehabilitation should include site preparation techniques and seed mixtures appropriate for the soils, climate, and landform of the area.

4. Use appropriate vegetation treatment techniques to remove junipers/conifers that have invaded sage grouse habitat. Whenever possible employ vegetal control techniques that are least disruptive to the stand of sagebrush.

5. Take appropriate precautions to minimize the possibility that noxious weed eradication activities directly impact sage grouse populations or affect sagebrush stands.

6. Implement effective monitoring plans to determine the effectiveness of vegetation treatments.

7. Develop and maintain cumulative records for all vegetation treatment projects to determine and evaluate site specific and cumulative impacts to sage grouse habitats and identify best management practices for successful vegetation treatments.

8. Evaluate recent prescribed burns and wildfires to determine if rehabilitation is necessary to achieve habitat management objectives.

9. Create sites suitable for leks where current leks are compromised by roads and other facilities.

10. Use vegetation treatments to maintain or improve known habitats. Avoid vegetation treatments in known habitats when birds are present.

11. When native plant species adapted to the site are available in sufficient quantities, and it is economically and biologically feasible to establish or increase them to meet management objectives, emphasize them over non-native species.

Fire Management

1. Review district fire management plans annually, incorporate new sage grouse habitat information, and distribute to fire dispatchers for initial attack planning.

2. Where practical, locate fire camps, staging areas, and helibases at least 1 km. (0.6 mile) away from known sage grouse habitat. Also, as part of any preparedness planning process, identify the possible location of these temporary facilities on a map.

3. Ensure known sage grouse habitat information is incorporated into each Wildfire Situation Analysis to assist in determining appropriate suppression plans and prioritizing fires during multiple ignition episodes.

4. Minimize the amount of sage grouse habitat burned:

5. Give wildfire suppression in sage grouse habitat appropriate consideration within the framework of the Federal Wildland Fire Policy (human life and safety as the first priority, with property and natural resources as equal second priorities) (USDI and USDA 1995).

6. Use direct attack when it is safe and effective.

7. Retain, if possible, unburned areas (including interior islands and patches between roads and the fire perimeter) of sage grouse habitat.

8. When modifying water sources for the temporary purpose of fire suppression, ensure that all impacts are reclaimed as soon as practicable following fire suppression activities.

Emergency Fire Rehabilitation

1. Evaluate all wildfires as soon as possible to determine if reseeding is necessary to recover ecological processes and achieve habitat objectives appropriate for the biological needs of sage grouse and prevent the invasion of noxious weeds or other exotic invasive species.

2. Assure that long-term wildfire rehabilitation objectives are consistent with the potential natural vegetation community.

3. Align long-term objectives for seedings with the habitat needs of sage grouse. Seedings should include an appropriate mix of grasses, forbs, and shrubs, including sagebrush, that will recover the ecological processes and habitat features of the potential natural vegetation. Emphasize native plant species when these species are adapted to the site, are available in sufficient quantities, and are economically and biologically feasible.

4. Reseed all burned lands occurring in sage grouse habitat within 1 year unless natural recovery of the native plant community is expected.

PART C – SOPS FOR FIRE MANAGEMENT IN ASPEN AND COTTONWOOD STANDS

Fire Management/Treatments:

1. Treatments that impact any stand should only be implemented if protective measures (such as exclosures, or deferred grazing) have been put in place first to protect the regeneration.

2. The demise of even a single aspen clone should not be an option, especially since so much has been lost already (estimated 30 to 50 percent aspen clone reduction in many areas of this region).

3. Minimize the amount of aspen/cottonwood habitat burned.

4. Retain unburned aspen/cottonwood habitat (including interior islands and patches) unless there are compelling safety, resource protection, or control objectives at risk.

5. Use mechanical equipment sparingly within aspen/cottonwood stands. Minimize ground disturbance to protect the root systems (many roots are only a few inches below the ground surface). Dozers should not be utilized within stands.

6. Aspen stands containing a high degree of disease (> 80 percent infected) should be treated with fire to completely kill the overstory.

7. Severely deteriorated stands containing high crown coverage of competing shrubs/grasses should be spot treated with fire to reduce competition for the aspen regeneration. Measures need to be taken to protect the remaining trees from being scorched from the fire.

Emergency Fire Rehabilitation/Post Fire Treatments:

1. Aspen/cottonwood areas that have been burned should have the livestock removed immediately (aspen starts to regenerate 2 – 4 weeks after being burned) and be totally rested until the aspen suckers have reached an average height of at least seven (7) feet.

2. Fence or otherwise protect aspen/cottonwood sites that are in "high risk" areas (easily accessible riparian settings, loafing areas, or other areas where livestock tend to congregate).

3. Falling operations to reduce the density of dead standing trees should only be implemented within the first two weeks following fire. Any ground disturbing actions within the stands following that time period would be detrimental to regeneration.

PART D – SOPS FOR CULTURAL RESOURCE PROTECTION

Notice: All information related to cultural or archaeological resources, including location of these resources, type or quantity of resources, and value of resources, is proprietary information. Persons accessing or issuing this information are subject to applicable Federal and state laws, as well as Bureau policies and regulations. Any misuses of this proprietary information will subject the involved parties to penalties associated with these laws, regulations and policies.

1. Upon receiving specific locational information on a new wildland fire incident, dispatch will consult the ***Elko Field Office Cultural Alert Map*** of known highly sensitive cultural resources (provided and updated by the cultural resource team), and relay the information regarding any special procedures to the Incident Commander. The Incident Commander will assume responsibility for this proprietary information, and will act in a manner such as to protect the cultural sites and information, subject to policy, regulation and law. Closed circuit communication (i.e. telephone) will be used whenever possible when relaying this information.

2. If the incident is in an area identified on the map as sensitive due to the presence of significance cultural resources, a BLM field office archaeologist will be notified immediately. **NOTE: The Cultural Alert Map contains only a tiny fraction of the known significant cultural resources in the District. The fact that a fire incident falls outside the sensitive areas (A-2 polygons) on the alert map does not signify the absence of important cultural resources or that cultural resources are not a concern.**

3. Should a District Resource Advisor be assigned to an incident, he or she will act as the Field Manager's representative to the Incident Commander, and will ensure that any cultural resource concerns, as well as other resource concerns, are addressed. It is the responsibility of the Resource Advisor to contact a District Archaeologist regarding

cultural resources in the area of the incident (preferably prior to leaving the office) and updating that information as situations change.

4. A District Archaeologist will be notified if earth-moving equipment (i.e. bulldozers, road graders, etc.) is ordered for suppression of any fire on the District. A District Archaeologist will be responsible for recommending assignment of an archaeologist or DAT (district archaeological technician) to the incident to mitigate any potential cultural resource damage. The assigned archaeologist/DAT will report to the Resource Advisor or Incident Commander.

5. When an area is known to contain significant cultural resources and life and property are not imperiled, fire suppression methods other than those that result in substantial ground-disturbance are preferred.

6. Wildland Fire Use Areas ignited by natural sources may be allowed to burn without an area-specific prescribed fire management plan that has been through review by the State Historic Preservation Officer if:

    a. a District archaeologist with concurrence by the appropriate Field manager determines that there is a low probability of discovering vulnerable archaeological sites within the proposed area;

    b. there is written documentation that the area has burned in the last 50 years at a sufficient intensity so that there is a low probability that vulnerable resources could have survived the fire;

    c. the proposed area has been previously inventoried and no historic properties were identified; or

    d. the proposed fire is in an area that has been inventoried for cultural resources and will be managed within prescription limits that protect known historic properties from the fire. This can be by hand-constructing lines, foam wetting agents, fire shelter fabric or other effective methods.

7. Any damage to cultural resources resulting from suppression activities will be addressed in the Resource Advisor's report, and the report will contain proposed mitigation or rehabilitation measures.

PART E – SOPS FOR FIRE MANAGEMENT IN MINING AREAS

1. Let the fire burn across closed or reclaimed mine facilities. These mine facilities include, but are not limited to, the following:

    - heap leach pad
    - tailing impoundment
    - attenuation field
    - constructed wetlands
    - bioreactor
    - cement foundation
    - diversion ditches

- hydrocarbon bioremediation pads
- leach fields

2. It is better to let the fire burn through or across the reclaimed mine facilities due to the cost of repairing the damage created by the fire suppression activities. Repair costs to reconstruct the facilities can result in thousands to millions of dollars. Damages to the closed or reclaimed mine facilities include, but are not limited to, the following:

    - Digging up liners (plastic or clay), pipes, tanks, buried concrete foundation
    - Destroying or damaging liners (plastic or clay) by causing them to leak as a result of either blading or driving across them
    - Getting stuck in wetlands, bioreactors, leach fields, attenuation fields, etc., which could result in broken pipes, damaged liners, acid mine drainage
    - Breaching or destroying the integrity of constructed dams resulting in instability
    - Driving or blading across some constructed slopes may result in instability and slope failure, and erosion problems

3. Consequences of destroying or damaging the closed or reclaimed mine facilities could result in problems such as:

    - Acid mine drainage
    - Erosion
    - Slope failure
    - Degradation of waters of the United States
    - Creating a superfund site

4. Hazardous water quality issues that may be encounter at inactive, closed or abandoned mine sites are:

    - waters latent with chemicals such as (i.e. cyanide, hydrogen peroxide, caros acid, acidic waters, etc)
    - acid mine drainage (water would have a pH range of 1 to 4.5; the closer the pH is to 1 the more hazardous)

        -- Interaction between people and these water quality issues could result in serious health problems, such as (poisoning, burn the skin, rashes, etc.)
        -- Interaction between equipment and these water quality issues could result in equipment damage or failure to work.

Fire suppression activities in the vicinity of the Valmy Powerplant.

1. It is critical to prevent the wooden structures for the powerlines to the pump houses from burning. These powerlines feed electricity to the wells for the Valmy Powerplant. Most powerlines follow roads.

2. It is imperative that a dozer or equipment constructing control lines not damage the cement manholes. These manholes provide access to the pipelines that carry water to the Valmy Powerplant. Most pipelines follow roads.

Appendix 3:
Sensitive Species List

Endangered, Threatened, Proposed Threatened, Candidate Species and Species of Special Concern that may occur in the Elko BLM District

Status	Common Name	Scientific name
BIRDS		
PT	Mountain plover	*Charadrius montanus*
C	Western yellow-billed cuckoo	*Coccyzus americanus*
T	Bald eagle	*Haliaeetus leucocephalus*
SC	Northern goshawk	*Accipiter gentilis*
SC	Western burrowing owl	*Athene cunicularia hypugea*
SC	Ferruginous hawk	*Buteo regalis*
SC	Sage grouse	*Centrocercus urophasianus*
SC	Black tern	*Chlidonias niger*
SC	Least bittern	*Ixobrychus exilis hesperis*
SC	White-faced ibis	*Plegadis chihi*
SC	Columbia sharp-tailed grouse	*Tympanuchus phasianellus c columbianus*
FISHES		
T	Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
E	Independence Valley speckled dace	Rhinichthys osculus *lethoporus*
E	Clover Valley speckled dace	*Rhinichthys osculus oligoporus*
T	Bull trout	*Salvelinus confluentus*
SC	Independence Valley tui chub	*Gila bicolor isolata*
SC	Leatherside chub	*Gila copei*
SC	Interior redband trout	*Oncorhynchus mykiss gibbsi*
SC	Relict dace	*Relictus solitarius*
AMPHIBIANS		
C	Columbia spotted frog (Great Basin pop).	*Rana luteiventris*
MAMMALS		
SC	Pygmy rabbit	*Brachylagus idahoensis*
SC	Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*
SC	Pacific Townsend's big-eared bat	*Corynorhinus townsendii townsendii*
SC	Spotted bat	*Euderma maculatum*
SC	Small-footed myotis	*Myotis ciliolabrum*
SC	Long-eared myotis	*Myotis evotis*
SC	Fringed myotis	*Myotis thysanodes*
SC	Long-legged myotis	*Myotis volans*
SC	Yuma myotis	*Myotis yumanensis*
SC	Preble's shrew	*Sorex preblei*
SC	North American wolverine	*Gulo gulo luscus*
SC	Sierra Nevada red fox	*Vulpes vulpes necator*
INVERTEBRATES		
SC	California floater	*Anodonta californiensis*
SC	Mattoni's blue butterfly	*Euphilotes pallescens mattoni*
SC	Nevada viceroy	*Limenitus archippus lahontani*
SC	Schell Creek mountainsnail	*Oerohelix nevadensis*
SC	Grey's silverspot butterfly	*Speyeria atlantis greyi*
PLANTS		
SC	Meadow pussytoes	*Antennaria arcuata*
SC	Grouse Creek rockcress	*Arabis falcatoria*

Status	Common Name	Scientific name
SC	Elko rockcress	*Arabis falcifructa*
SC	Goose Creek milkvetch	*Astragalus anserinus*
SC	Robbins milkvetch	*Astragalus robbinsii* var. *occidentalis*
SC	Barren Valley collomia	*Collomia renacta*
SC	Broad fleabane	*Erigeron latus*
SC	Sulpher Springs buckwheat	*Eriogonum argophyllum*
SC	Beatley buckwheat	*Eriogonum beatleyae*
SC	Lewis buckwheat	*Eriogonum lewisii*
SC	Grimy ivesia	*Ivesia rhypara* var. *rhypara*
SC	Grimes vetchling	*Lathyrus grimesii*
SC	Bruneau River prickly phlox	*Leptodactylon glabrum*
SC	Packard's stickleaf	*Mentzelia packardiae*
SC	Least phacelia	*Phacelia minutissima*
SC	Cottam cinquefoil	*Potentilla cottamii*
SC	Leiberg clover	*Trifolium leibergii*
SC	Rock violet	*Viola lithion*

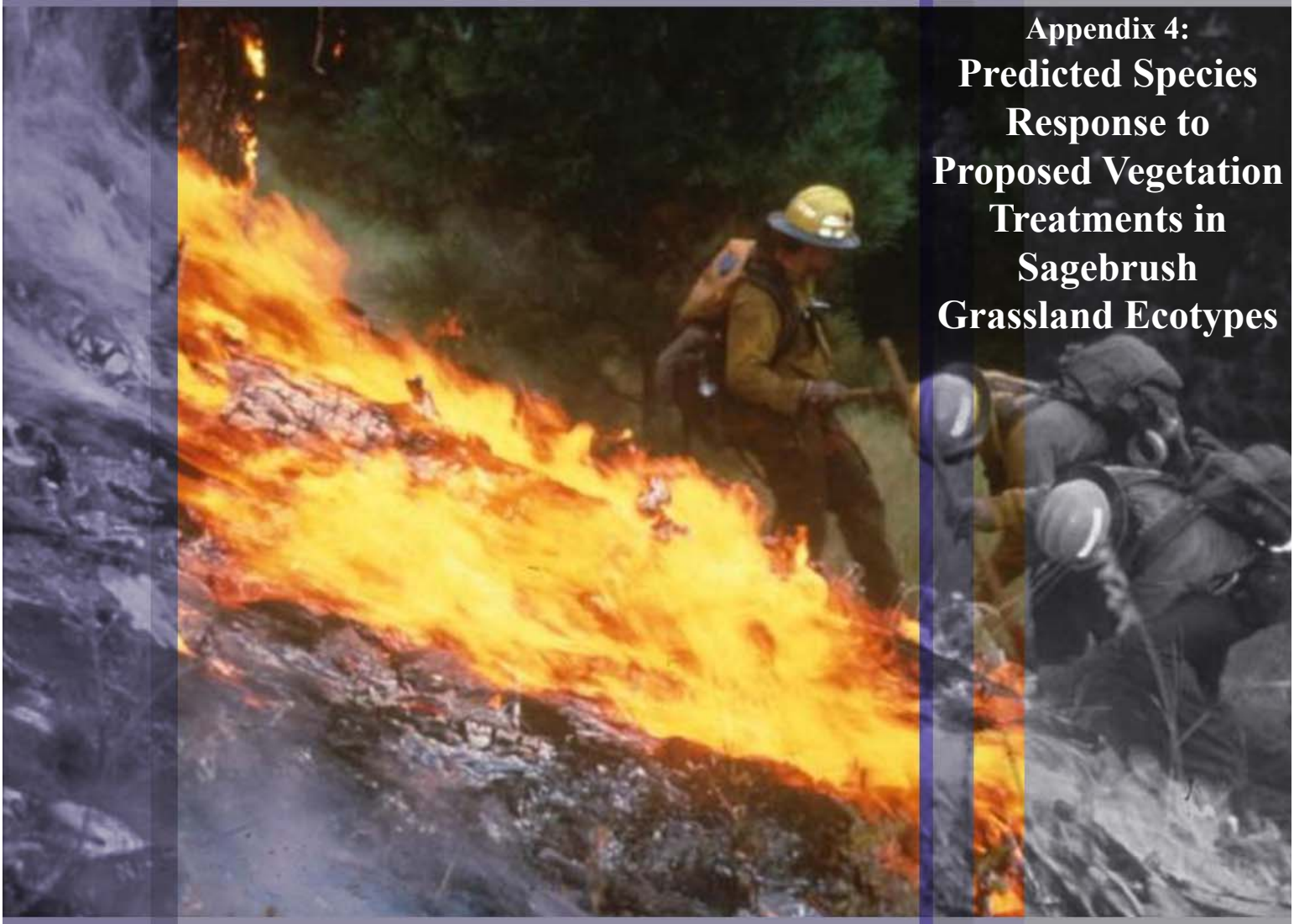
Status Codes

U.S. Fish and Wildlife Service

E = Federally listed as Endangered
T = Federally listed as Threatened
PT = Federally listed as Proposed Threatened
C = A Federal Candidate species for listing

Nevada Department of Wildlife

SC = Species of Concern



Appendix 4:

Predicted Species Response to Proposed Vegetation Treatments in Sagebrush Grassland Ecotypes

Predicted Species Response[1] to Proposed Vegetation Treatments in Sagebrush-Grassland Ecotypes[2]

Species	Present in Project Area	Pre-Treatment	Immediately Post-treatment	10 years Post-treatment	20-years Post-treatment
Black rosy finch	Unknown	Breeding-not present; winter-low	Breeding-not present; winter-moderate to high	Breeding-not present; winter-moderate	Breeding-not present; winter-low
Black-throated sparrow	Unknown	Breeding-not present; winter-low	Breeding-low; winter-moderate to high	Breeding-moderate; winter-moderate to high	Breeding-low to moderate; winter-moderate
Brewer's sparrow	Yes	Breeding-moderate to high; winter-moderate	Breeding-not present; winter-moderate	Breeding-not present; winter-moderate	Breeding-low to moderate; winter-moderate
Burrowing owl	Unknown	Breeding-not present; winter-migrant	Breeding-moderate to high; winter-migrant	Breeding-moderate to high; winter-migrant	Breeding-low to moderate; winter-migrant
Calliope Hummingbird	Unknown	Breeding-not present; winter-migrant	Breeding-not present, but may feed; winter-migrant	Breeding-not present, but may feed; winter-migrant	Breeding-not present, but may feed; winter-migrant
Ferruginous Hawk	Yes	Foraging habitat-low	Foraging habitat-moderate to high	Foraging habitat-moderate to high	Foraging habitat-moderate to high
Gray Flycatcher	Unknown	Breeding-not present to low; winter-migrant	Breeding-not present; winter migrant	Breeding-not present to low; winter-migrant	Breeding-low to moderate; winter migrant
Green-Tailed Towhee	Unknown	Breeding-moderate; winter-migrant	Breeding-not present; winter-migrant	Breeding-not present; winter migrant	Breeding-low to moderate; winter-migrant
Kit Fox	Unknown	Low	Moderate	Moderate to high	Moderate to high
Loggerhead Shrike	Yes	Breeding-moderate; winter-low or migrant	Breeding-not present; winter-low or migrant	Breeding-low; winter-low or migrant	Breeding-low to moderate; winter-low or migrant
Prairie Falcon	Yes	Foraging habitat-low	Foraging habitat-moderate	Foraging habitat-moderate to high	Foraging habitat-moderate
Pronghorn Antelope	Yes	Not present	High	High	Moderate to high
Pygmy Rabbit	Unknown	Moderate to high	Not present	Not Present	Low

Species	Present in Project Area	Pre-Treatment	Immediately Post-treatment	10 years Post-treatment	20-years Post-treatment
Sage Sparrow	Yes	Breeding-high; winter-migrant	Breeding-not present; winter-migrant	Breeding-not present; winter-migrant	Breeding-not present to low; winter-migrant
Sage Thrasher	Yes	Breeding-high; winter-migrant	Breeding-not present; winter migrant	Breeding-not present; winter-migrant	Breeding-not present to low; winter-migrant
Sagebrush Lizard	Yes	Moderate	Not present	Not present	Low to moderate
Sagebrush Vole	Yes	Not present to low	Not present to low	Low to moderate	Moderate to high
Swainson's Hawk	Yes	Foraging habitat- low	Foraging habitat-moderate to high	Foraging habitat-high	Foraging habitat-moderate to high
Vesper Sparrow	Unknown	Breeding-not present; winter-migrant	Breeding-moderate to high; winter-migrant	Breeding-high; winter-migrant	Breeding-moderate to high; winter-migrant
White-Tailed Jackrabbit	Unknown	Not present	Moderate to high	High	Moderate to high
Sage Grouse	Limited Use	Breeding-limited to not present; winter- not present to low	Breeding-low to moderate; winter-low to moderate	Breeding-low to moderate; winter-moderate	Breeding-moderate to low; winter-moderate to low
Number of species for which habitat is optimum		4	6	9	8

Sensitive species are listed in bold font.

[1] Response is in terms of relative population. High populations would be limited to optimum habitat quality; Moderate population levels would be associated with good habitat quality; Low population levels would be associated with poor habitat quality; and Not present would be associated with unsuitable habitat quality.

[2] Pre-treatment would be >25% sagebrush shrub canopy cover, <10% perennial grass basal cover, and <5% forb cover. Immediately post-treatment would consist of a grass-forb community with little or no sagebrush. 10-years Post-treatment would consist of a grass-forb community with <10% shrub canopy cover. 20-Years Post-treatment would consist of a sagebrush-herbaceous community with 10-15% shrub canopy cover.

Source: Northeast Nevada Sagebrush Ecosystem Conservation Strategy - Draft, 2002

Appendix 5:
Migratory Bird Species List

BLM Elko District

Migratory Bird Species List

Order Gaviiformes

Family Gaviidae (Loons)

Common Loon (*Gavia immer*)	Mu

Order Podicipediformes

Family Podicipedidae (Grebes)

Pied-billed Grebe* (*Podilymbus podiceps)*	Sc
Horned Grebe (*Podiceps auritus*)	Mu
Eared Grebe* (*Podiceps nigricollis*)	Sc
Western Grebe* (*Aechmophorus occidentalis*)	Sc
Clark's Grebe* (*Aechmophorus clarkii*)	Su

Order Pelecaniformes

Family Pelecanidae (Pelicans)

American White Pelican* (*Pelecanus erythrorhynchos*)	Sc

Family Phalacrocoracidae (Cormorants)

Double-crested Cormorant* (*Phalacrocorax auritus*)	Sc

Order Ciconiiformes

Family Ardeidae (Bitterns, Herons, Egrets)

American Bittern* (*Botaurus lentiginosus*)	Sc
Least Bittern* (*Ixobrychus exilis*)	Sr
Great Blue Heron* (*Ardea herodias*)	Rc
Great Egret* (*Ardea alba*)	Su
Snowy Egret* (*Egretta thula*)	Sc
Cattle Egret* (*Bubulcus ibis*)	Su
Green Heron* (*Butorides striatus*)	Sr
Black-crowned Night-heron* (*Nycticorax nycticorax*)	Sc

Family Threskiornithidae (Ibis)

White-faced Ibis* (*Plegadis chihi*)	Sc

Order Anseriformes

Family Anatidae (Ducks, Geese, Swans)

Tundra Swan (*Cygnus columbianus)*	Wu
Trumpeter Swan* (*Cygnus buccinator*)	Rl
Greater White-fronted Goose (*Anser albifrons*)	Wr
Snow Goose (*Chen caerulescens*)	Mu
Canada Goose* (*Branta canadensis*)	Rc
Wood Duck* (*Aix sponsa*)	Wu
Green-winged Teal* (*Anas crecca*)	Rc
Mallard* (*Anas platyrhynchos*)	Rc
Northern Pintail* (*Anas acuta*)	Rc
Blue-winged Teal* (*Anas discors*)	Su
Cinnamon Teal* (*Anas cyanoptera*)	Sc
Northern Shoveler* (*Anas clypeata*)	Sc

Gadwall* (*Anas strepera*)	Rc
American Wigeon* (*Anas americana*)	Mc
Canvasback* (*Aythya valisineria*)	Sc
Redhead* (*Aythya americana*)	Sc
Ring-necked Duck* (*Aythya collaris*)	Sc
Greater Scaup (*Aythya marila*)	Wr
Lesser Scaup * (*Aythya affinis*)	Wc
Surf Scoter (*Melanitta perspicillata*)	Mr
White-winged Scoter (*Melanitta fusca*)	Mr
Common Goldeneye (*Bucephala clangula*)	Wc
Barrow's Goldeneye (*Bucephala islandica*)	Wr
Bufflehead (*Bucephala albeola*)	Wc
Hooded Merganser (*Lophodytes cucullatus*)	Wr
Common Merganser* (*Mergus merganser*)	Sc
Red-breasted Merganser (*Mergus serrator*)	Wr
Ruddy Duck* (*Oxyura jamaicensis*)	Rc

Family Cathartidae (New World Vultures)

Turkey Vulture* (*Cathartes aura*)	Sc

Order Falconiformes

Family Accipitridae (Hawks, Eagles, Osprey)

Osprey* (*Pandion haliaetus*)	Mu
Bald Eagle (*Haliaeetus leucocephalus*)	Wu
Northern Harrier* (*Circus cyaneus*)	Rc
Sharp-shinned Hawk* (*Accipiter striatus*)	Rc
Cooper's Hawk* (*Accipiter cooperii*)	Rc
Northern Goshawk* (*Accipiter gentilis*)	Ru
Red-shouldered Hawk (*Buteo lineatus*)	Vr
Broad-winged Hawk (*Buteo platypterus*)	Mr
Swainson's Hawk* (*Buteo swainsoni*)	Su
Red-tailed Hawk* (*Buteo jamaicensis*)	Rc
Ferruginous Hawk* (*Buteo regalis*)	Sc
Rough-legged Hawk (*Buteo lagopus*)	Wc
Golden Eagle* (*Aquila chrysaetos*)	Rc

Family Falconidae (Falcons)

American Kestrel* (*Falco sparverius*)	Rc
Merlin (*Falco columbarius*)	Mr
Peregrine Falcon* (*Falco peregrinus*)	Rr
Gryfalcon (*Falco rusticolus*)	Ax
Prairie Falcon* (*Falco mexicanus*)	Rc

Order Galliformes

Family Phasianidae

Gray partridge* (*Perdix perdix*)	Ru
Himalayan snowcock* (*Tetraogallus himalayensis*)	Rl
Chukar* (*Alectoris chukar*)	Rc
Ring-necked pheasant* (*Phasianus colchicus*)	Ru
Blue grouse* (*Dendragapus obscurus*)	Rc

Ruffed grouse* (*Bonasa umbellus*)	Ru
Sage grouse* (*Centrocercus urophasianus*)	Rc
Sharp-tailed grouse (*Tympanuchus phasianellus*)	Rr
Wild turkey (*Meleagris gallopavo*)	
Family Odontophoridae (Quail)	
Scaled quail* (*Callipepla squamata*)	Rr
California quail* (*Callipepla californica*)	Ru
Mountain quail* (*Oreortyx pictus*)	Rr
Family Rallidae (Rails, Gallinules, Coots)	
Virginia rail* (*Rallus limicola*)	Su
Sora* (*Porzana carolina*)	Su
Common moorhen* (*Gallinula chloropus*)	Rr
American coot* (*Fulica americana*)	Rc
Family Gruidae (Cranes)	
Sandhill crane* (*Grus canadensis*)	Sc
Family Charadriidae (Plovers)	
Black-bellied plover (*Pluvialis squatarola*)	Mr
Snowy plover* (*Charadrius alexandrinus*)	Sr
Semipalmated plover (*Charadrius semipalmatus*)	Mu
Killdeer* (*Charadrius vociferus*)	Rc
Family Recurvirostridae (Avocets)	
Black-necked stilt* (*Himantopus mexicanus*)	Sc
American avocet* (*Recurvirostra americana*)	Sc
Family Scolopacidae (Sandpipers, Phalaropes)	
Greater yellowlegs (*Tringa melanoleuca*)	Mu
Lesser yellowlegs (*Tringa flavipes*)	Mu
Solitary sandpiper (*Tringa solitaria*)	Mr
Willet* (*Catoptrophorus semipalmatus*)	Sc
Spotted sandpiper* (*Actitis macularia*)	Sc
Long-billed curlew* (*Numenius americanus*)	Sc
Marbled godwit (*Limosa fedoa*)	Mr
Western sandpiper (*Calidris mauri*)	Mc
Least sandpiper (*Calidris minutilla*)	Mc
Baird's sandpiper (*Calidris bairdii*)	Mr
Long-billed dowitcher (*Limnodromus scolopaceus*)	Mc
Dunlin (*Calidris alpina*)	Mu
Common snipe* (*Gallinago gallinago*)	Rc
Wilson's phalarope* (*Phalaropus tricolor*)	Sc
Red-necked phalarope (*Phalaropus lobatus*)	Mu
Family Laridae (Gulls, Terns)	
Franklin's gull* (*Larus pipixcan*)	Mu
Bonaparte's gull (*Larus philadelphia*)	Mu
Ring-billed gull* (*Larus delawarensis*)	Sc
California gull* (*Larus californicus*)	Su

Herring gull (*Larus argentatus*) ..... Wu
Caspian tern* (*Sterna caspia*) ..... Su
Forster's tern* (*Sterna forsteri*) ..... Sc
Black tern* (*Chlidonias niger*) ..... Sc

Order Columbiformes
Family Columbidae (Pigeons and Doves)
Rock dove* (*Columba livia*) ..... Rc
Band-tailed pigeon* (*Columba fasciata*) ..... Mr
Mourning dove* (*Zenaida macroura*) ..... Sc

Family Cuculiformes (Cuckoos, Roadrunners)
Greater roadrunner* (*Geococcyx californianus*) ..... Hr
Yellow-billed cuckoo (*Coccyzus americanus*) ..... Ax

Order Strigiformes
Family Tytonidae (barn owls)
Barn owl* (*Tyto alba*) ..... Ru

Family Strigidae (Owls)
Flammulated owl* (*Otus flammeolus*) ..... Su
Western screech-owl* (*Otus kennicottii*) ..... Ru
Great Horned owl* (*Bubo virginianus*) ..... Rc
Burrowing owl* (*Athene cunicularia*) ..... Sc
Long-eared owl* (*Asio otus*) ..... Ru
Short-eared owl* (*Asio flammeus*) ..... Rc
Northern Saw-whet owl* (*Aegolius acadicus*) ..... Ru

Order Caprimulgiformes
Family Caprimulgidae (Goatsuckers)
Lesser nighthawk* (*Chordeiles acutipennis*) ..... H
Common nighthawk* (*Chordeiles minor*) ..... Sc
Common poorwill* (*Phalaenoptilus nuttallii*) ..... Sc

Order Apodiformes
Family Apodidae (Swifts)
Vaux's swift* (*Chaetura vauxi*) ..... Mr
White-throated swift* (*Aeronautes saxatalis*) ..... Sc

Family Trochilidae (Hummingbirds)
Black-chinned hummingbird* (*Archilochus alexandri*) ..... Sc
Calliope hummingbird* (*Stellula calliope*) ..... Sc
Broad-tailed hummingbird* (*Selasphorus platycercus*) ..... Sc
Rufoushummingbird* (*Selasphorus rufus*) ..... Su

Order Coraciiformes
Family Alcedinidae (Kingfishers)
Belted kingfisher* (Ceryle alcyon) ..... Rc

Order Piciformes
Family Picidae (Woodpeckers)

Lewis'woodpecker* (*Melanerpes lewis*)	Rc
Red-naped sapsucker* (*Sphyrapicus nuchalis*)	Sc
Red-breasted sapsucker* (*Sphyrapicus ruber*)	Ax
Williamson's sapsucker* (*Sphyrapicus thyroideus*)	Rr
Downy woodpecker* (*Picoides pubescens*)	Rc
Hairy woodpecker* (*Picoides villosus*)	Rc
Three-toed woodpecker* (*Picoides tridactylus*)	Rr
Northern flicker* (*Colaptes auratus*)	Rc

Order Passeriformes

Family Tyrannidae (Flycatchers)

Olive-sided flycatcher* (*Contopus borealis*)	Su
Western wood-pewee* (*Contopus sordidulus*)	Sc
Willow flycatcher* (*Empidonax traillii*)	Su
Hammond's flycatcher* (*Empidonax hammondii*)	Su
Dusky flycatcher* (*Empidonax oberholseri*)	Sc
Gray flycatcher* (*Empidonax wrightii*)	Sc
Cordilleran flycatcher* (*Empidonax occidentalis*)	Su
Black phoebe* (*Sayornis nigricans*)	Vr
Say's phoebe* (*Sayornis saya*)	Sc
Ash-throated flycatcher* (*Myiarchus cinerascens*)	Sc
Cassin's flycatcher* (*Tyrannus vociferans*)	Ax
Western flycatcher* (*Tyrannus verticalis*)	Sc
Western kingbird (*Tyrannus verticalis*)	Sc

Family Alaudidae (Larks)

Horned lark* (*Eremophila alpestris*)	Rc

Family Hirundinidae (Swallows)

Tree swallow* (*Tachycineta bicolor*)	Sc
Violet-green* (*Tachycineta thalassina*)	Sc
Northern Rough-winged swallow* (*Stelgidopteryx serripennis*)	Sc
Bank swallow* (*Riparia riparia*)	Sr
Cliff swallow* (*Hirundo pyrrhonota*)	Sc
Barn swallow* (*Hirundo rustica*)	Sc

Family Corvidae (Jays, Magpies, Crows)

Steller's jay* (*Cyanocitta stelleri*)	Ru
Western scrub-jay* (*Aphelocoma californica*)	Rc
Pinyon jay* (*Gymnorhinus cyanocephalus*)	Rc
Clark's nutcracker* (*Nucifraga columbiana*)	Rc
Black-billed magpie* (*Pica pica*)	Rc
American crow* (*Corvus brachyrhynchos*)	Rc
Common raven* (*Corvus corax*)	Rc

Family Puridae (Chickadees, Titmice)

Black-capped chickadee* (*Parus atricapillus*)	Rr
Mountain chickadee* (*Parus gambeli*)	Rc
Plain titmouse* (*Parus inornatus*)	Rc

Family Aegithalidae (Bushtit)

Bushtit* (*Psaltriparus minimus*)	Rc

Family Sittidae (Nuthatches)

Red-breasted nuthatch* (*Sitta canadensis*)	Rc
White-breasted nuthatch* (*Sitta carolinensis*)	Rc
Pygmy nuthatch* (*Sitta pygmaea*)	Rr

Family Certhiidae (Creepers)

Brown creeper* (*Certhia americana*)	Rc

Family Troglodytidae (Wrens)

Rock wren* (*Salpinctes obsoletus*)	Sc
Canyon wren* (*Caltherpes mexicanus*)	Ru
Bewick's wren* (*Thryomanes bewickii*)	Rr
House wren* (*Troglodytes aedon*)	Sc
Winter wren (*Troglodytes troglodytes*)	Mr
Marsh wren* (*Cistothorus palustris*)	Rc

Family Cinclidae (Dippers)

American dipper* (*Cinclus mexicanus*)	Rc

Family Regulidae (Kinglets)

Golden-crowned kinglet* (*Regulus satrapa*)	Wu
Ruby-crowned kinglet* (*Regulus calendula*)	Rc

Family Sylviidae (Gnatcatchers)

Blue-gray gnatcatcher* (*Polioptila caerulea*)	Sc

Family Turiidae (Thrushes, Solitares, Bluebirds)

Western bluebird* (*Sialia mexicana*)	Ru
Mountain bluebird* (*Sialia currucoides*)	Rc
Townsend's solitaire (*Myadestes townsendi*)	Rc
Veery (*Catharus fuscescens*)	Ax
Swainson's thrush* (*Catharus ustulatus*)	Sr
Hermit thrush* (*Catharus guttatus*)	Sc
American robin* (*Turdus migratorius*)	Sc
Varied thrush (*Ixoreus naevius*)	Mr

Family Mimidae (Mockingbirds, Thrashers)

Gray catbird* (*Dumetella carolinensis*)	Sr
Northern mockingbird* (*Mimus polyglottos*)	Su
Sage thrasher* (*Oreoscoptes montanus*)	Sc

Family Motacillidae (Pipits)

American pipit* (*Anthus rubescens*)	Rc

Family Bombycillidae (Waxwings)

Bohemian waxwing (*Bombycilla garrulus*)	Wu
Cedar waxwing* (*Bombycilla cedrorum*)	Wc

Family Laniidae (Shrikes)

Northern shrike (*Lanius excubitor*)	Wu
Loggerhead shrike* (*Lanius ludovicianus*)	Sc

Family Vireonidae (Vireos)

Solitary vireo* (*Vireo solitarius*)	Su
Warbling vireo* (*Vireo gilvus*)	Sc
Red-eyed vireo (*Vireo olivaceus*)	Ax

Family Parulidae (Warblers)

Orange-crowned warbler* (*Vermivora celata*)	Sc
Nashville warbler* (*Vermivora ruficapilla*)	Mr
Virginia's warbler* (*Vermivora virginiae*)	Su
Yellow warbler* (*Dendroica petechia*)	Sc
Chestnut-sided warbler (*Dendroica pensylvanica*)	Ax
Yellow-rumped warbler* (*Dendroica coronata*)	Sc
Black-throated Gray warbler* (*Dendroica nigrescens*)	Sc
Townsend's warbler (*Dendroica townsendi*)	Mu
Hermit warbler* (*Dendroica occidentalis*)	Mu
Blackpoll warbler (*Dendroica striata*)	Ax
American redstart (*Setophaga ruticilla*)	Ax
Northern waterthrush (*Seiurus noveboracensis*)	Mr
MacGillivray's warbler* (*Oporornis tolmiei*)	Sc
Common yellowthroat* (*Geothlypis trichas*)	Sc
Wilson's warbler* (*Wilsonia pusilla*)	Sc
Yellow-breasted chat* (*Icteria virens*)	Sc

Family Thraupidae (Tanagers)

Western tanager* (*Piranga ludoviciana*)	Sc

Family Cardinalidae (Grosbeaks, Buntings)

Rose-breasted grosbeak (*Pheucticus ludovicianus*)	Ax
Black-headed grosbeak* (*Pheucticus melanocephalus*)	Sc
Blue grosbeak* (*Guiraca caerulea*)	Sr
Lazuli bunting* (*Passerina amoena*)	Sc
Indigo bunting* (*Passerina cyanea*)	Sr

Family Emberizidae (Sparrows, Towhees, Juncos)

Green-tailed towhee* (*Pipilo chlorurus*)	Sc
Spotted towhee* (*Pipilo maculatus*)	Rc
American Tree sparrow (*Spizella arborea*)	Wc
Chipping sparrow* (*Spizella passerina*)	Sc
Brewer's sparrow* (*Spizella breweri*)	Sc
Vesper sparrow * (*Pooecetes gramineus*)	Sc
Lark sparrow * (*Chondestes grammacus*)	Sc
Black-throated sparrow * (*Amphispiza bilineata*)	Sc
Sage sparrow * (*Amphispiza belli*)	Sc
Lark bunting (*Calamospiza melanocorys*)	Mr
Savannah sparrow * (*Passerculus sandwichensis*)	Sc
Grasshopper sparrow * (*Ammodramus savannarum*)	Su
Fox sparrow * (*Passerella iliaca*)	Sc

Song sparrow * (*Melospiza melodia*)	Rc
Lincoln's sparrow * (*Melospiza lincolnii*)	Su
Swamp sparrow (*Melospiza georgiana*)	Ax
White-throated sparrow (*Zonotrichia albicollis*)	Wr
Golden-crowned sparrow (*Zonotrichia atricapilla*)	Ax
White-crowned sparrow * (*Zonotrichia leucophrys*)	Rc
Harris' sparrow (*Zonotrichia querula*)	Wr
Dark-eyed junco* (*Junco hyemalis*)	Rc
Lapland longspur (*Calcarius lapponicus*)	Ax

Family Icteridae (Meadowlarks, Blackbirds, Orioles)

Bolink* (*Dolichonyx oryzivorus*)	Sc
Red-winged blackbird* (*Agelaius phoeniceus*)	Rc
Western meadowlark* (*Sturnella neglecta*)	Rc
Yellow-headed blackbird* (*Xanthocephalus xanthocephalus*)	Sc
Brewer's blackbird* (*Euphagus cyanocephalus*)	Rc
Great-tailed grackle* (*Quiscalus mexicanus*)	Ru
Common grackle* (*Quiscalus quiscula*)	Vr
Hooded oriole* (*Icterus cucullatus*)	H
Bullock's oriole* (*Icterus bullockii*)	Sc
Scott's oriole* (*Icterus parisorum*)	Sr

Family Fringilliidae (Grosbeaks, Finches)

Gray-crowned rosy-finch* (*Leucosticte tephrocotis*)	Wc
Black rosy-finch* (*Leucosticte atrata*)	Rc
Pine grosbeak* (*Pinicola enucleator*)	Wr
Purple finch (*Carpodacus purpureus*)	H
Cassin's finch* (*Carpodacus cassinii*)	Rc
House finch* (*Carpodacus mexicanus*)	Rc
Red crossbill* (*Loxia curvirostra*)	Ru
Pine siskin* (*Carduelis pinus*)	Rc
Lesser goldfinch* (*Carduelis psaltria*)	Ru
American goldfinch* (*Carduelis tristis*)	Wc
Evening grosbeak* (*Coccothraustes vespertinus*)	Mc

Key

* denotes species which nests or is presumed to nest within the state

STATUS SYMBOLS: (Most common occurrence)

R = Resident
S = Summer visitant
W = Winter visitant
M = Migrant
V = Vagrant: a species wandering outside its usual range; six or more confirmed sightings; includes post-breeding wanderers and "lost" migrants
A = Accidental: a species far outside its usual range
H = Hypothetical: isolated unconfirmed reports
? = Status uncertain

FREQUENCY SYMBOLS:

c = common (usually occurs in suitable habitat)
u = uncommon (occasionally occurs in suitable habitat)
r = rare (occurs very infrequently)
l = local (common only in restricted habitats)
x = fewer than six confirmed reports

Sources: From a list compiled by Carolyn Kitchel Titus, 1996, modified by Janene Auger and Alan Gubanich; and from http://www.nevadadivisionofwildlife.org/game/nenvbird.pdf.

Appendix 6:
Wildlife Species List

BLM Elko District
General Wildlife Species List

INSECTS

Butterflies

Swallowtails (Family Papilionidae)

Rocky Mountain Parnassian (*Parnassius smintheus*)
Old World Swallowtail (*Papilio machaon*)
Anise Swallowtail (*Papilio zelicaon (incl. nitra)*)
Indra Swallowtail (*Papilio indra*)
Western Tiger Swallowtail (*Papilio rutulus*)
Two-tailed Swallowtail (*Papilio multicaudata*)
Pale Swallowtail (*Papilio eurymedon*)

Whites and Sulphurs (Family Pieridae)

Pine White (*Neophasia menapia*)
Becker's White (*Pontia beckerii*)
Spring White (*Pontia sisymbrii*)
Checkered White (*Pontia protodice*)
Western White (*Pontia occidentalis*)
Margined White (*Pieris marginalis*)
Cabbage White (*Pieris rapae*)
Large Marble (*Euchloe ausonides*)
Desert Marble (*Euchloe lotta*)
Stella Orangetip (*Anthocharis stella*)
Clouded Sulphur (*Colias philodice*)
Orange Sulphur (*Colias eurytheme*)
Queen Alexandra's Sulphur (*Colias alexandra*)
Southern Dogface (*Zerene cesonia*)
Sleepy Orange (*Eurema nicippe*)
Dainty Sulphur (*Nathalis iole*)

Gossamer-wing Butterflies (Family Lycaenidae)

Tailed Copper (*Lycaena [Tharsalea] arota*)
Lustrous Copper (*Lycaena cupreus*)
Edith's Copper (*Lycaena editha*)
Ruddy Copper (*Lycaena rubidus*)
Blue Copper (*Lycaena heteronea*)
Purplish Copper (*Lycaena helloides*)
Lilac-bordered Copper (*Lycaena nivalis*)
Coral Hairstreak (*Satyrium titus*)
Behr's Hairstreak (*Satyrium behrii*)
Sooty Hairstreak (*Satyrium fuliginosum*)
California Hairstreak (*Satyrium californica*)
Sylvan Hairstreak (*Satyrium sylvinus*)
Hedgerow Hairstreak (*Satyrium saepium*)
Western Green Hairstreak (*Callophrys affinis (previously C. apama, C. affinis, and C. dumetorum)*)

Desert Green Hairstreak (*Callophrys comstocki*)
Brown Elfin (*Callophrys [Incisalia] augustinus*)
Western Pine Elfin (*Callophrys [Incisalia] eryphon*)
Thicket Hairstreak (*Callophrys [Loranthomitoura] spinetorum*)
Juniper Hairstreak (*Callophrys [Mitoura] gryneus*)
Gray Hairstreak (*Strymon melinus*)
Leda Ministreak (*Ministrymon leda*)
Western Pygmy-Blue (*Brephidium exile*)
Marine Blue (*Leptotes marina*)
Reakirt's Blue (*Hemiargus isola*)
Western Tailed-Blue (*Everes amyntula*)
Spring Azure (*Celastrina "ladon"*)
Rocky Mountain Dotted-Blue (*Euphilotes ancilla*)
Pallid Dotted-Blue (*Euphilotes pallescens*)
Arrowhead Blue (*Glaucopsyche piasus*)
Silvery Blue (*Glaucopsyche lygdamus*)
Melissa Blue (*Lycaeides melissa*)
Greenish Blue (*Plebeius saepiolus*)
Boisduval's Blue (*Plebeius [Icaricia] icarioides*)
Shasta Blue (*Plebeius [Icaricia] shasta*)
Lupine Blue (*Plebeius [Icaricia] lupini*)

Metalmarks (Family Riodinidae)
Mormon Metalmark (*Apodemia mormo*)

Brush-footed Butterflies (Family Nymphalidae)
Variegated Fritillary (*Euptoieta claudia*)
Great Spangled Fritillary (*Speyeria cybele*)
Nokomis Fritillary (*Speyeria nokomis*)
Coronis Fritillary (*Speyeria coronis*)
Zerene Fritillary (*Speyeria zerene*)
Callippe Fritillary (*Speyeria callippe*)
Great Basin Fritillary (*Speyeria egleis*)
Northwestern Fritillary (*Speyeria hesperis*)
Mormon Fritillary (*Speyeria mormonia*)
*Northern Checkerspot (*Chlosyne palla*)
Sagebrush Checkerspot (*Chlosyne acastus*)
Northern Crescent (*Phyciodes cocyta*)
Field Crescent (*Phyciodes pratensis*)
Pale Crescent (*Phyciodes pallida*)
Mylitta Crescent (*Phyciodes mylitta*)
Variable Checkerspot (*Euphydryas chalcedona*)
Edith's Checkerspot (*Euphydryas editha*)
Satyr Comma (*Polygonia satyrus*)
Hoary Comma (*Polygonia gracilis*)
Gray Comma (*Polygonia progne*)
Compton Tortoiseshell (*Nymphalis vaualbum*)
California Tortoiseshell (*Nymphalis californica*)
Mourning Cloak (*Nymphalis antiopa*)
Milbert's Tortoiseshell (*Nymphalis [Aglais] milberti*)
American Lady (*Vanessa virginiensis*)

Painted Lady (*Vanessa cardui*)
West Coast Lady (*Vanessa annabella*)
Red Admiral (*Vanessa atalanta*)
Common Buckeye (*Junonia coenia*)
Viceroy (*Limenitis archippus*)
Weidemeyer's Admiral (*Limenitis weidemeyerii*)
Lorquin's Admiral (*Limenitis lorquini*)
Common Ringlet (*Coenonympha tullia*)
Common Wood Nymph (*Cercyonis pegala*)
Great Basin Wood Nymph (*Cercyonis sthenele*)
Small Wood Nymph (*Cercyonis oetus*)
Ridings' Satyr (*Neominois ridingsii*)
Chryxus Arctic (*Oeneis chryxus*)
Monarch (*Danaus plexippus*)
Queen (*Danaus gilippus*)

Skippers (Family Hesperiidae)

Hammock Skipper (*Polygonus leo (=lividus)*)
Dreamy Duskywing (*Erynnis icelus*)
Persius Duskywing (*Erynnis persius*)
Common Checkered-Skipper (*Pyrgus communis*)
Northern White-Skipper (*Heliopetes ericetorum*)
Common Sootywing (*Pholisora catullus*)
Mohave Sootywing (*Hesperopsis libya*)
Fiery Skipper (*Hylephila phyleus*)
Uncas Skipper (*Hesperia uncas*)
Juba Skipper (*Hesperia juba*)
Western Branded Skipper (*Hesperia colorado*)
Nevada Skipper (*Hesperia nevada*)
Sandhill Skipper (*Polites sabuleti*)
Woodland Skipper (*Ochlodes sylvanoides*)
Yuma Skipper (*Ochlodes yuma*)

Butterfly list derived from: http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/chklist/states/counties/nv_7.htm

FISH

Family Salmonidae

Lahontan cutthroat (*Oncorhynchus clarki henshawi*)
Utah cutthroat (*O. c. utah*)
Yellowstone cutthroat (*O. c. bouvieri*)
Redband trout (*O.* sp.)
Rainbow trout (*O. mykiss*)
Golden trout (*O. aguabonita*)
Brown trout (*Salmo trutta*)
Bull Trout (*Salvelinus confluentus*)
Brook Trout (*S. fontinalis*)

Family Esocidae

Northern pike (Esox lucius)

Family Cyprinidae

Northern squawfish (*P. oregonensis*)
Chiselmouth (*Acrocheilus alutaceus*)
Lahontan Tui chub (*Gila bicolor obesus*)
Lacustrine Tui chub (*G. b. pectinifer*)
Fish Creek Tui chub (*G. b. euchilla*)
Sheldon Tui chub (*G. b. eurysoma*)
Independence Valley Tui chub (*G. b. isolate*)
Pleasant Valley Tui chub (*G. b. ssp.*)
Utah chub (*G. atraria*)
Relict Dace (*Relictus solitarius*)
Lahontan Redside (*Richardsonius egregious*)
Clover Valley Speckled dace (*R. o. oligoporus*)
Independence Valley Speckled dace (*R. o. lethoporus*)
Lahontan Speckled dace (*R. o. robustus*)
Carp (*Cyprinius carpi*)
Goldfish (*Carassius auratus*)

Family Catostomidae

Tahoe sucker (*Catostomus tahoensis*)
Biglip sucker (*C. macrocheilus*)
Bridgelip sucker (*C. columbianus*)

Family Ictaluridae

Channel catfish (*Ictalurus punctatus*)
White catfish (*Ameiurus catus*)
Black bullhead (*A. melas*)
Brown bullhead (*A. nebulosus*)
Yellow bullhead (*A. natalis*)

Family Loricariidae

Suckermouth catfish (*Hypostomus plecostomus*)

Family Cyprinodontidae

Rainwater killifish *(Lucania parva*)

Family Poeciliidae

Mosquitofish (*Gambusia affinis*)
Guppy (*Poecilia reticulate*)
Black molly (*P. latipinna*)
Shortfin molly, Sailfin Molly (*P. mexicana*)
Green swordtail (*Xiphophorus helleri*)
Southern platyfish (*X. maculates*)

Family Cichlidae

Banded cichlid (*Cichlasoma severum*)
Convict cichlid (*C. nigrofasciatum*)
Mottled tilapia (*Tilapia mariae*)
Zebra mbuna (*Pseutotropheus zebra*)

Family Centrarchidae

Sacramento perch (*Archoplites interruptus*)
Largemouth bass (*Micropterus salmoides*)
Smallmouth bass (*M. dolomieui*)
Bluegill (*Lepomis macrochirus*)
Green sunfish (*L. cyanellus*)
Redear sunfish (*L. microlophus*)
Black Crappie (*Pomoxis nigromaculatus*)
White Crappie (*P. annulari)*

Fish species list derived from http://www.brrc.unr.edu/data/fish/fishlist.html

BIRDS

See Appendix 6 for the bird species list for the District.

MAMMALS

Order Insectivora
Family Soricidae

Merriam's Shrew (*Sorex merriami*)
Montane Shrew (*Sorex monticolus*)
Water Shrew (*Sorex palustris*)
Preble's Shrew (*Sorex preblei*)
Vagrant Shrew (*Sorex vagrans*)

Order Chiroptera
Family Vespertilionidae

Big Brown Bat (*Eptesicus fuscus*)
Silver-Haired Bat (*Lasionycteris noctivagans*)
Western Red Bat (*Lasiurus blossevillii*)
Long-eared Myotis (*Myotis evotis*)
Western Small-footed Myotis (*Myotis ciliolabrum*)
Little Brown Myotis (*Myotis lucifugus*)
Long-legged Myotis (*Myotis volans*)
Yuma Myotis (*Myotis yumanensis*)
Townsend's Big-eared Bat (*Plecotus townsendii*)

Family Molossidae

Brazilian Free-tailed Bat (*Tadarida brasiliensis*)

Order Lagomorpha
Family Ochodontidae

American Pika (*Ochotona princeps*)

Family Leporidae

Black-tailed Jackrabbit (*Lepus californicus*)
White-tailed Jackrabbit (*Lepus townsendii*)
Pygmy Rabbit (*Brachylagus idahoensis*)
Mountain Cottontail (*Sylvilagus nuttallii*)

Order Rodentia
Family Sciuridae

White-tailed Antelope Squirrel (*Ammospermophilus leucurus)*
Yellow-bellied Marmot (*Marmota flaviventris)*
Belding's Ground Squirrel (*Spermophilus beldingi)*
Richardson's Ground Squirrel (*Spermophilus richardsonii* or *elegans)*
Golden-mantled Ground Squirrel (*Spermophilus lateralis)*
Townsend's Ground Squirrel (*Spermophilus townsendii)*
Yellow-pine Chipmunk (*Tamias amoenus)*
Cliff Chipmunk (*Tamias dorsalis)*
Least Chipmunk (*Tamias minimus)*

Family Geomyidae

Northern Pocket Gopher (*Thomomys talpoides)*
Townsend's Pocket Gopher (*Thomomys townsendii)*

Family Heteromyidae

Chisel-toothed Kangaroo Rat (*Dipodomys microps)*
Ord's Kangaroo Rat (*Dipodomys ordii)*
Dark Kangaroo Mouse (*Microdipodops megacephalus)*
Little Pocket Mouse (*Perognathus longimembris)*
Great Basin Pocket Mouse (*Perognathus parvus)*

Family Castoridae

American Beaver (*Castor canadensis)*

Family Muridae

Sagebrush Vole (*Lemmiscus curtatus)*
Long-tailed Vole (*Microtus longicaudus)*
Montane Vole (*Microtus montanus)*
House Mouse (*Mus musculus)*
Bushy-tailed Woodrat (*Neotoma cinerea)*
Desert Woodrat (*Neotoma lepida)*
Northern Grasshopper Mouse (*Onychomys leucogaster)*
Canyon Mouse (*Peromyscus crinitus)*
Deer Mouse (*Peromyscus maniculatus)*
Pinyon Mouse (*Peromyscus truei)*
Western Harvest Mouse (*Reithrodontomys megalotis)*
Common Muskrat (*Ondatra zibethicus)*

Family Zapodidae

Western Jumping Mouse (*Zapus princeps)*

Family Erethizontidae

Common Porcupine (*Erethizon dorsatum)*

Family Myocastoridae

Nutria (*Myocastor coypus*

Order Carnivora
Family Canidae
Coyote (*Canis latrans)*
Red Fox (*Vulpes vulpes)*

Family Procyonidae
Common Raccoon (*Procyon lotor)*

Family Mustelidae
Northern River Otter (*Lutra canadensis)*
Striped Skunk (*Mephitis mephitis)*
Ermine (*Mustela erminea)*
Long-tailed Weasel (*Mustela frenata)*
Mink (*Mustela vison)*
Western Spotted Skunk (*Spilogale gracilis)*
Badger (*Taxidea taxus)*

Family Felidae
Mountain Lion (*Felis concolor)*
Bobcat (*Lynx rufus)*

Order Perissodactyla
Family Equidae
Feral Ass (*Equus asinus)*
Feral Horse (*Equus caballus)*

Order Artiodactyla
Family Cervidae
Mule Deer (*Odocoileus hemionus)*

Family Antilocapridae
Pronghorn (*Antilocapra americana)*

Family Bovidae
Mountain Goat (*Oreamnos americanus)*
Mountain Sheep (*Ovis canadensis)*

Mammal Sources: Stephen H. Jenkins, Department of Biology, University of Nevada website, Revised 1995; E. Raymond Hall, Mammals of Nevada, University of Nevada Press, 1995.